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SUMMARY OF REPORT TITLES

Master Plan Report

Feasibility Study Report

Annex I	Soils
Annex II	Water Resources
Annex III	Human Resources and Institutions
Annex IV	Existing Agriculture
Annex V	Livestock
Annex VI	Potential Agricultural Development
Annex VII	Engineering
Annex VIII	Economic and Financial Analysis
Annex IX	Management and Implementation
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Annex XI	Inception Report

PROJECT AREA AND STUDY AREA.

This study contained two elements, a Master Plan covering 67 400 hectares and a feasibility study of 5 000 hectares.

Throughout the reports the term Study Area refers to the area covered by the Master Plan studies and the term Project Area is used for the feasibility study area.

ABBREVIATIONS USED IN THE REPORTS

ADB	African Development Bank
ADC	Agricultural Development Corporation
CARS	Central Agricultural Research Station - Afgooye
DAP	Diammonium phosphate
EDF	European Development Fund
ENB	National Banana Board
FAO	Food and Agriculture Organisation
FAO/PP	FAO Pilot Project (Afgooye - Mordiile Project)
HASA	Hides and Skins Agency
HTS	Hunting Technical Services Limited
HV	High volume (crop sprayer)
IBRD	International Bank for Reconstruction and Development (the World Bank)
ITCZ	Inter-tropical convergence zone
ITDG	Intermediate Technology Development Group (London)
JOSR	Jowhar Offstream Storage Reservoir
LDA	Livestock Development Agency
Libsoma	Libya-Somalia Agricultural Development Company
LSU	Livestock unit
LV	Low volume (crop sprayer)
MLFR	Ministry of Livestock, Forestry and Range
MMP	Sir M. MacDonald & Partners
NCA	Net cultivable area
NCB	National Commercial and Savings Bank (formerly National Commercial Bank)
ONAT	National Farm Machinery and Agricultural Supply Service
PLO	Palestine Liberation Organisation
SDB	Somali Development Bank
SNAI	Jowhar Sugar Estate
TDN	Total digestible nutrients
TDP	Total digestible protein
ULV	Ultra-low volume (crop sprayer)
UNDP	United Nations Development Programme
USBR	United States Bureau of Reclamation
USDA SCS	United States Department of Agriculture, Soil Conservation Service
WHO	World Health Organisation

SPELLINGS OF PLACE NAMES

Throughout the report Somali spellings have been used for place names with the exception of Mogadishu where the English spelling has been used. To avoid misunderstanding, we give below a selected list of Somali, English and Italian spellings where these differ.

Somali	English	Italian
Afgooye	Afgoi	Afgoi
Awdheegle	-	Audegle
Balcad	Balad	Balad
Baraawe	Brava	Brava
Bulo Mareerta	Bulo Mareerta	Bulo Mererta
Falkeerow	-	Falcheiro
Gayweerow	-	Gaivero
Golweyn	-	Goluen
Hawaay	Avai	Avai
Hargeysa	Hargeisa	-
Janaale	Genale	Genale
Jelib	Gelib	Gelib
Jowhar	Johar	Giohar
Kismaayo	Kisimaio	Chisimaio
Marka	Merca	Merca
Muqdisho	Mogadishu	Mogadiscio
Qoryooley	-	Coriolei
Shabeelle	Shebelli	Scebeli
Shalambod	Shalambot	Scialambot

GLOSSARY OF SOMALI TERMS

Cambuulo	-	Traditional dish of chopped boiled maize with cowpeas or green grams.
Chiko	-	Chewing tobacco
Der	-	Rainy season from October to December
Dharab	-	Five jibals or approximately 0.31 ha
Gu	-	Rainy season in April and May
Hafir	-	Large reservoir on farms for storing water for use in dry periods
Hagai	-	Climatic season June to September characterised by light scattered showers
Jibal	-	Area of land approximately 25 m by 25 m or 0.0625 ha
Jilal	-	Dry season from January to April
Kawawa	-	Two man implement for forming irrigation ditches
Moos	-	Measurement of land area equal to a quarter of a jibal
Quintal	-	Unit of weight measurement equivalent to 100 kg
Uar	-	See hafir
Yambo	-	Small short-handled hoe
Zareebas	-	Thorn cattle pen

REFERENCES

- | | |
|------------------------------------|---|
| Central Bank of Somalia | Annual Report and Statement of Accounts, 1975/76 |
| Citaco | Final Design for a Grapefruit Plantation, Rome, 1974 |
| Hunting Technical Services Limited | Project for the Water Control and Management of the Shebelli River, (UNDP Special Fund), 1969 |
| IBRD | Report of the IBRD Project Identification Mission, Nairobi, 1973 |
| IDA | Reconnaissance Mission Report on SDB, 1976 |
| Lockwood Survey Corporation | Agriculture and Water Surveys, FAO, Rome, 1968 |
| Somali Development Bank | Annual Reports |
| State Planning Commission | Annual Development Plan, 1976 |

CHAPTER 1

GOVERNMENT

1.1 Introduction

The population of Somalia was estimated at 3.2 million in 1975 (IBRD, 1977) and the rate of growth is 2.6% per annum; the area of the country is 637 000 km². The population is predominantly nomadic or agricultural and, whereas the population of Mogadishu is approaching 500 000, towns such as Marka, Kismaayo or Qoryooley have approximately 20 000 inhabitants. The agricultural population is concentrated along the Lower Shabeelle river and the Juba river, and the Study Area is the most densely populated agricultural area in Somalia.

The Study Area is approximately 100 km south-east of Mogadishu to which it is connected by a good tarmac road. Communications, although relatively poor, are good compared to the rest of Somalia. For location of the Study Area see Figure 1.1.

1.2 National Government

Following the revolution of October 21st 1969 the Government of Somalia has followed a policy of scientific socialism and has established procedures for central planning and state control of the economy. Most major enterprises are now owned by the state although it is also policy to promulgate the "encouragement and development of the private sector to enable it to grow and contribute to industrial growth" (Annual Development Plan, 1976). At the same time "the economy is being geared to change from an urban to a rural base.... with heavy emphasis on irrigated farming, development of state farms and co-operatives" (op. cit.).

At the moment about 85% of Somalia's foreign earnings come from livestock and agriculture and responsibility for these sectors has been split between many ministries and other organisations. The structure of ministries with an interest in agriculture is shown in Table 1.1. Such fragmentation of responsibility is not necessarily harmful, for example, the Agricultural Development Corporation (transferred to the Ministry of Agriculture since this report was drafted) is efficient and a tribute to the Ministry of Commerce, and the Jowhar sugar estate is quite well run under the Ministry of Industry. In general however there is ample evidence of poor communication and co-ordination between ministries and agencies and this is due partly to the division of responsibility but also to the shortage of skilled technical staff and middle management which places an impossible burden of responsibility on senior staff.

The division of responsibility is such that a state farm relies on the National Farm Machinery and Agricultural Supply Service (known by its old name ONAT) for the supply of inputs and the Agricultural Development Corporation (ADC) for marketing. ONAT is under the Secretary of State for Agriculture and ADC under the Secretary of State for Commerce.

The problems of fragmentation of responsibility have been dealt with elsewhere, particularly in the Livestock Sector Review and Project Identification (HTS Ltd. 1977). However, whilst these problems are real, there is evidence of poor co-ordination within ministries themselves and a restructuring of the agricultural and livestock sector would not in itself provide the complete solution.

In the Ministry of Agriculture most functions are dealt with by ministry staff under six directors who report to the Director-General.

There are, however, autonomous agencies, such as ONAT or the National Banana Board (ENB) which report directly to the Secretary of State for Agriculture. Such agencies are common in other ministries and have the advantage that they are not bound by the same government regulations as the ministries themselves and therefore have more freedom to respond to special situations. Their pay scales are slightly higher than those of the ministries which helps in the recruitment of staff. The roles of the most important agencies and departments are discussed in Chapter 3 of this annex.

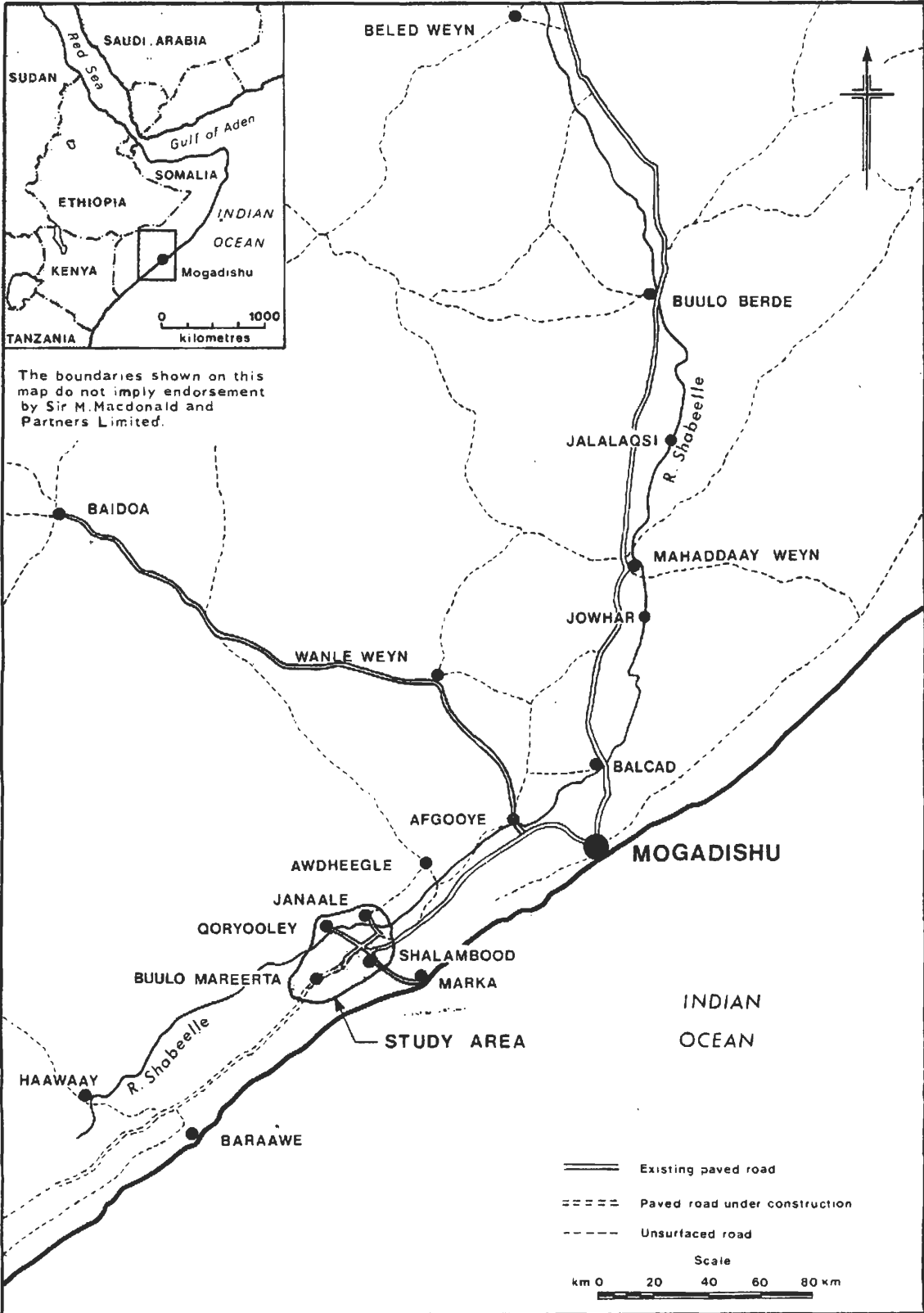
TABLE 1.1

Major Government Bodies Concerned with Agriculture and Livestock

Ministry or government department	Directorate (D) or Agency (A)	
Agriculture	Extension	(D)
	Research	(D)
	Co-operatives	(D)
	Crop Protection	(D)
	Irrigation and Land Planning	(D)
	National Banana Board	(A)
	ONAT	(A)
Commerce	Agricultural Development Corporation*	(A)
	Ente Nazionale di Commercio	(A)
	Hides and Skins Agency	(A)
	Livestock Development Agency	(A)
Livestock, forestry and range	Animal Production	(D)
	Animal Health	(D)
	Forestry and Range and Wildlife	(D)
	Planning Research and Training	(D)
Industry	Leather industry	-
	Skin processing	-
	Kismaayo meat processing factory	-
	Dairy	-
	Jowhar sugar estate (SNAI)	(A)
	Balcad cotton factory (Somaltex)	(A)
Mines	Water Development Agency	(A)
President's office	Crash Programmes	-
	Settlement Development Agency	(A)
	State Planning Commission Libsoma	(A)
Finance	Somali Development Bank	-

Note: * Since this report was drafted the Agricultural Development Corporation has been transferred to the Ministry of Agriculture

LOCATION OF THE STUDY AREA



1.3 Local Government

The Study Area is located in Lower Shabeelle region (Gobolka Shabeelle Hoose) which is one of the sixteen regions of Somalia. The regional governor's office is just outside Shalambood and therefore on the edge of the Study Area. The region is divided into seven districts, viz:-

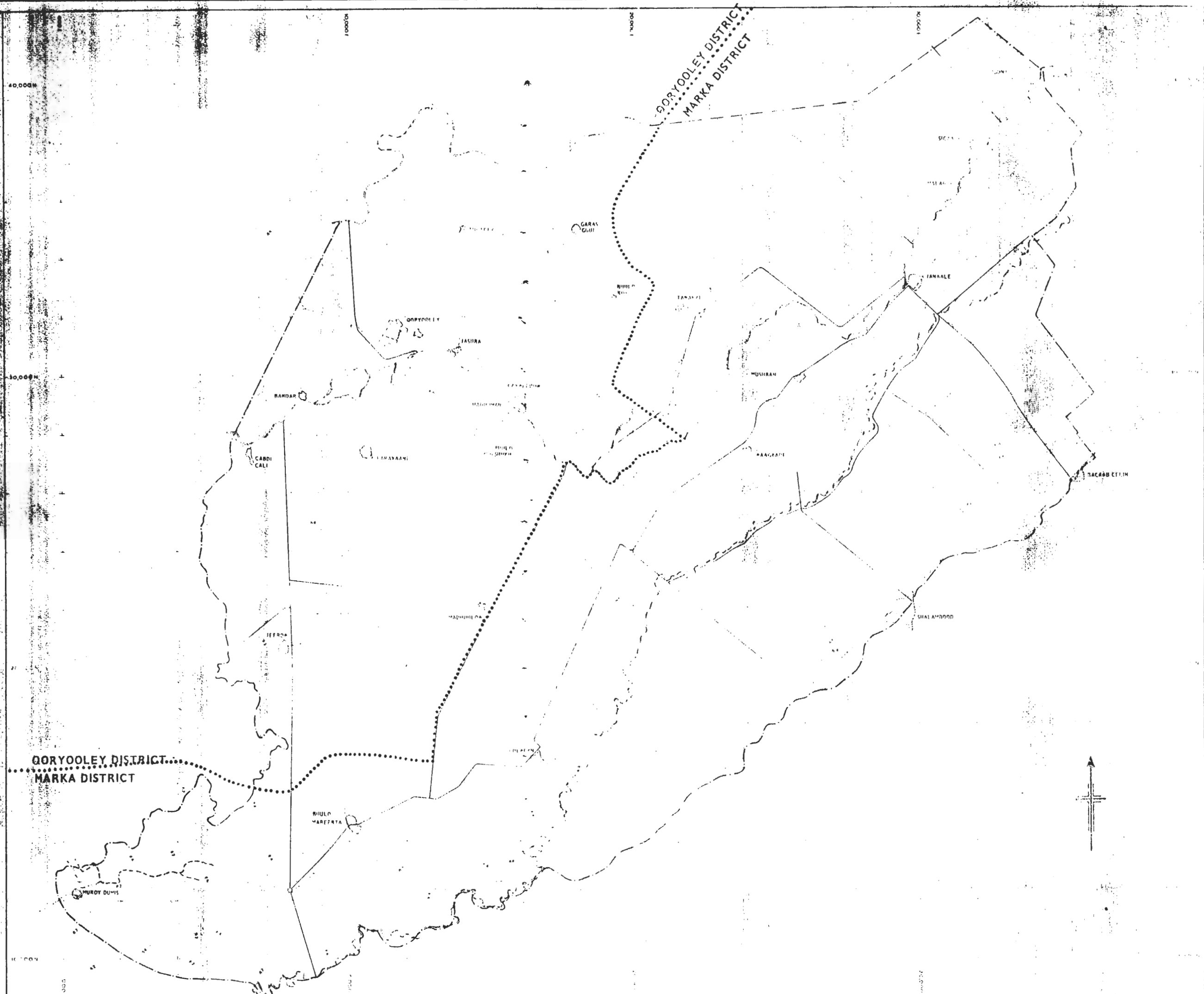
Marka
Afgooye
Wanle Weyne
Qoryooley
Baraawe
Kurtenwaarey
Sablale

The last two districts are governed jointly with the Settlement Development Agency.

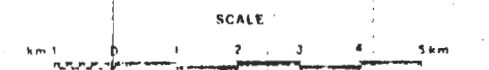
The Study Area lies entirely in Qoryooley and Marka districts. Until this study there were no accurate maps of the area and division between districts is often made by drawing arbitrary lines between villages. The approximate boundary between Qoryooley and Marka district is shown on Figure 1.2. It should be noted that Mukoy Dumis used to belong to Baraawe district and has only recently been transferred to Marka district.

Each ministry should have a regional co-ordinator who is responsible for carrying out the functions of that ministry within the region in co-operation with the governor. Where necessary there should also be an official for most ministries at district level but in practice these posts are often left vacant due to lack of suitable staff. The problem of shortage of skilled staff is most apparent in the regions as, apart from the fact that many posts are unfilled, those staff that are in office are often inadequately trained and poorly motivated. In addition the regional and district staff have poor support, and office facilities and transport are insufficient for the work requirements. There are no simple solutions to these problems, and the training of staff and establishment of effective institutions are slow processes; the only way to reduce these problems is to plan carefully, setting precise objectives and monitoring progress to ensure that the objectives are met.

STUDY AREA



- TOPOGRAPHICAL LEGEND**
- River
 - Major channel remnant
 - Main canal existing
 - Surfaced road
 - Unsurfaced road
 - Track
 - Contour
 - Study area boundary
 - Village
 - District boundary



CHAPTER 2

COMMUNICATIONS

2.1 Roads

Compared with the rest of Somalia, the Study Area is well served by roads. There is a good surfaced road from Mogadishu to Shalambood which is in the Study Area and Shalambood is connected by surfaced roads to Janaale, Qoryooley and Golweyn; these roads were constructed to serve the majority of the banana farms. There is also a short surfaced stretch between Janaale and Buufo (Bacaad Celin) and this forms part of an important short cut from Janaale to Mogadishu, avoiding Shalambood, although this route cannot be used after rains because part of it has never been surfaced.

From Shalambood there is an old surfaced road to Marka which is the seat of the district commissioner for part of the Study Area and the port for export of bananas. Construction has started on the road from Golweyn to Jelib and plans have been made for a road from Janaale to Awdheegle on the right bank of the river which will assist the banana farms in the neighbourhood of Uguunji and Mubaarig; apart from that the new roads will not influence the development of the area significantly since the major market for produce is Mogadishu and the new roads are unlikely to enable other areas to compete with the Study Area.

The surfaced roads and the major earth roads are shown in Figure 1.2. Earth roads are extensive within the Study Area but they are merely lines of communication and have not been constructed apart from the installation of culverts where canals pass under the road. During heavy rainfall, or when irrigation water spills onto them, these roads quickly become impassable because of the heavy clay nature of the soils. In certain cases farmers deliberately cut ditches across the roads to irrigate canals on the other side. During the 1977/78 season the two main roads leading to Gayweerow were both blocked for more than a month; one road was cut by irrigation ditches and the other by surplus irrigation water. The journey from Qoryooley to Gayweerow, some 5 km by the direct road, could only be made by an extensive detour in a four wheel drive vehicle and even then much of the route had to be off the established tracks and through fields. However, it was always possible to leave Gayweerow by passenger ferry. Most of the earth roads could be improved very cheaply by simply raising the level by 0.5 m using basic earthmoving machinery and grading the surface regularly. The most important routes could also be topped by crushed coral and this would provide a cheap all-weather surface; again regular maintenance of the surface would be required but this is a straightforward task.

2.2 River Crossings

It might be expected that the river would form a barrier to communication but the area is well endowed with crossings; there are 5 road crossings and 11 passenger ferries which consist of boats attached to cables. It is impossible to be more than 4 km from a crossing point on the river anywhere in the Study Area. Table 2.1 gives the full list of crossing points.

2.3 Ports

Marka is the nearest port to the Study Area but this is almost entirely used for the export of bananas. Port facilities are poor and all loading has to be done by lighter. There are no plans to develop the port although a feasibility study has been mooted.

Mogadishu is about 100 km from Shalambood and the new harbour there is ideally situated to deal with all imports and exports including bananas.

TABLE 2.1

Road Bridges and Passenger Ferries

Approximate distance from Janaale (measured along the river) (km)	Type of crossing	Location
Upstream of Janaale		
9.8	Cable	
6.4	Cable	Sigaale
5.3	Cable	Malable
0	Road	Janaale barrage
Downstream of Janaale		
7.7	Cable	
9.4	Road	
11.3	Cable	
15.7	Road	Gayweerow bridge
21.0	Cable	Gayweerow
26.3	Road	Qoryooley barrage
26.8	Cable	Qoryooley
31.4	Cable	
34.7	Road	Falkeerow barrage
35.6	Cable	
36.0	Cable	
37.9	Cable	Furuqley

2.4 Electricity Supplies

There is no electricity distribution network in the Study Area but there are diesel alternator sets at Shalambood, Janaale and Qoryooley. However, the units at Janaale and Qoryooley are only operated in the evenings; only at Shalambood is power supplied continuously.

Rural electricity supplies are the responsibility of the district offices which are generally short of expertise and finance. Advice is given by the National Electricity Authority (NEA) but the demand in the Study Area is so poor that there is little prospect of the Mogadishu system being extended beyond Mordiile.

Many large farmers have their own generators.

2.5 Telecommunications

Telecommunications within the Study Area are poor. There are telephone exchanges at Janaale, Qoryooley and Shalambood and also at Marka, just outside the Study Area. Janaale, Qoryooley and Marka are connected to the radio link between Mogadishu, Jelib and Kismaayo but Shalambood is connected by overhead line to Marka and a call from Shalambood to Qoryooley has to be routed via Mogadishu. In addition, the line between Shalambood and Marka is very unreliable and should be renovated.

Because of the importance of telecommunications on the control of the River Shabeelle it is worthwhile studying the telephone network in the Shabeelle Basin. This network is shown schematically in Figure 2.1.

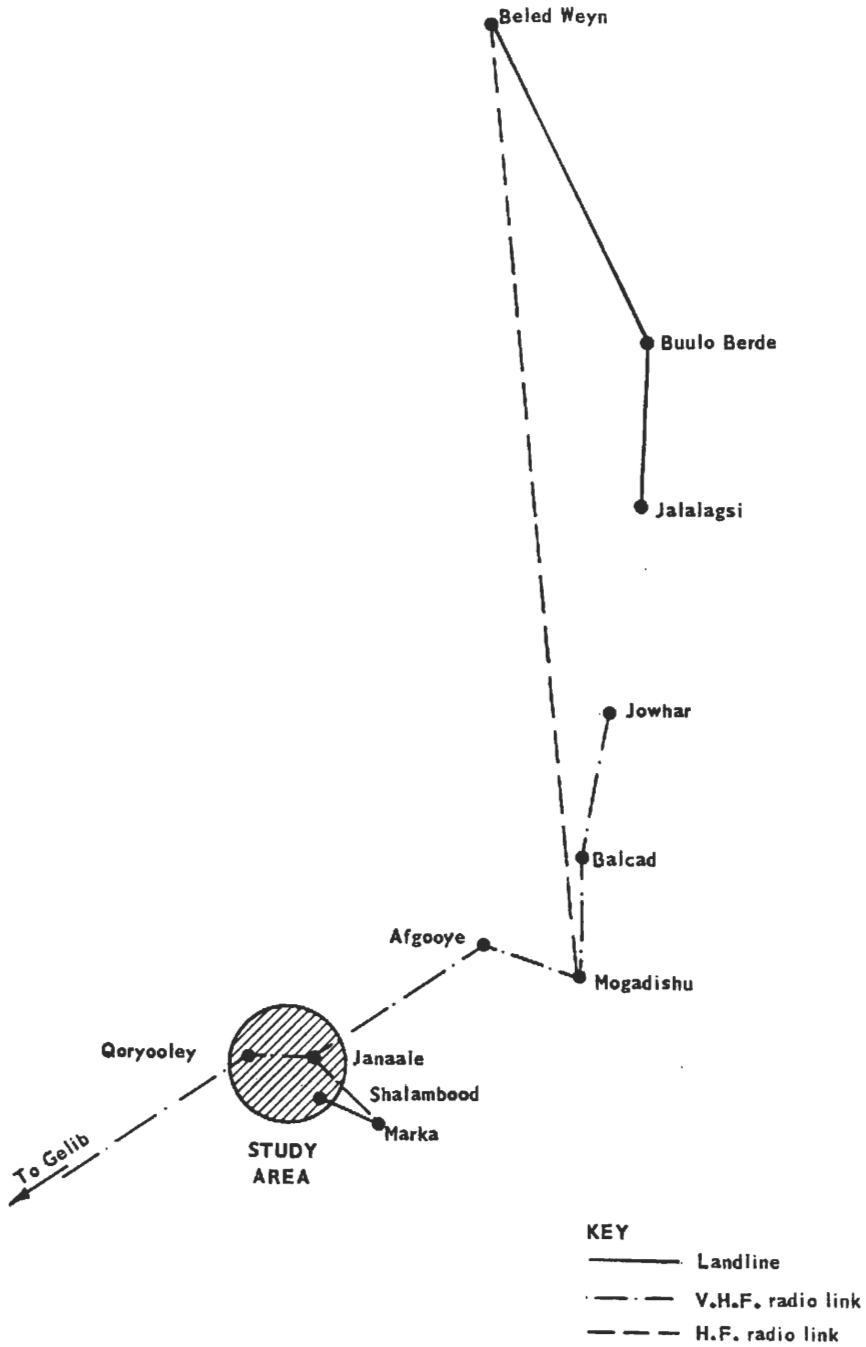
Basically, there is a modern radio link between Jowhar, Balcad, Mogadishu, Afgooye, Janaale, Qoryooley and Jelib which is some 250 km from Qoryooley. There is also a branch link between Janaale and Marka. This system has a low capacity but gives very good quality transmission.

There is also an older high frequency (HF) system between Mogadishu and Beled Weyn but since this is part of the system serving the north of Somalia it can only be used at certain times of the day. Beled Weyn is connected by land lines to Jalalaqsi and Buulo Berde so that river gauge readers at the last two points can contact Mogadishu by using police lines to Beled Weyn and the HF radio link to Mogadishu provided that they make their call when the radio link is open.

There are telex links between Jowhar and Mogadishu and a teleprinter is being installed at Marka. It can be seen therefore that telecommunications are not good but the Study Area is probably the best served area in Somalia.

FIGURE 2.1

TELEPHONE COMMUNICATIONS IN THE SHABEELLE BASIN
SCHEMATIC DIAGRAM



CHAPTER 3

AGRICULTURAL INFRASTRUCTURE (CROP PRODUCTION)

3.1 Introduction

Agricultural infrastructure is considered as those institutions, official or private, that are responsible for supplying services to the existing agricultural production sector. In relation to the Study Area, these can be divided into services for livestock and for crop production. Infrastructure relating to the livestock sector is discussed separately in Annex V. Within this annex, discussion of agricultural infrastructure applies to crop production only, with agricultural credit discussed separately in Chapter 7.

An assessment was made of all institutions operating within the Study Area in order to appraise their role in existing and future agricultural development. This included assessment of related post-harvest crop-handling facilities (e.g. rice milling) as well as institutions operating outside the Study Area but whose activities are directly related and applicable to the Study Area, for example, technical training, seed multiplication and research. The information was collected as follows:-

- (a) by discussion with departmental and regional heads of appropriate ministries, state organisations and institutions
- (b) field surveys within the Study Area
- (c) reference to "Agricultural Sector Project Identification Report" (IBRD/IDA 1973).

With the exception of a small private sector involving tractor hire and local marketing of fruit and vegetables, agricultural infrastructure within the Study Area is the responsibility of the Ministry of Agriculture, together with three major state organisations. These organisations are the National Farm Machinery and Agricultural Supply Service (ONAT), the Agricultural Development Corporation (ADC) and the National Banana Board (ENB). All four institutions have their regional offices and depots for Lower Shabeelle region within the Study Area. These organisations are discussed in detail in this chapter.

3.2 Ministry of Agriculture

The functions and departments of the Ministry of Agriculture are outlined in Table 3.1. Within the Study Area, the ministry deals specifically with co-operatives, production, farmer training extension, pest control, irrigation and land registration under the administration of the regional agricultural co-ordinator for Lower Shabeelle region. Work in each district is, in turn, administered by a district co-ordinator. Other functions (research, seed multiplication and staff training), although carried out at institutes within the region, are administered directly from Mogadishu.

The regional co-ordinator's office for Lower Shabeelle region is located in Janaale with district offices at Janaale and Qoryooley, except for the Plant Protection Service which has both regional and Marka district offices at Mushaani, 4.5 km south-west of Janaale. The number of technical staff currently employed within the Study Area is given in Table 3.2.

TABLE 3.1

Departmental Organisation and Functions of the Ministry of Agriculture

Department	Function
Co-operatives	<ul style="list-style-type: none"> (a) formation and organisation of smallholder co-operatives (b) supply of technical assistance.
Extension and Training	<ul style="list-style-type: none"> (a) supply of technical assistance to farmers (b) operation of farmer training centres (c) training of technical staff at three levels:- <ul style="list-style-type: none"> (i) post-secondary school induction and in-service training (ii) diploma (Afgooye Technical School) (iii) degree (Faculty of Agriculture).
Production	<ul style="list-style-type: none"> (a) operation of state production farms and agricultural crash programmes (b) operation of seed multiplication units for annual crops and fruit trees.
Plant Protection Service	<ul style="list-style-type: none"> (a) pest control advisory assistance (b) free pesticide supply service (c) field pest control spray programme (d) vertebrate pest control, particularly monitoring and eradication of <u>Quelea quelea</u>.
Land and Water	<ul style="list-style-type: none"> (a) hydrology, irrigation, flood control and canal maintenance services (see Annex VII) (b) registration of agricultural land.
Research	<ul style="list-style-type: none"> (a) crop, vegetable and fruit field research (Afgooye) (b) soils and water quality survey and research work (Afgooye).

Source: Ministry of Agriculture.

TABLE 3.2

Ministry of Agriculture Regional and District Technical Staff

Department	Regional staff		District staff	
	Officers	Technical assistants	Marka ⁽¹⁾	Goryooley
Regional co-ordinator	1	-	-	-
District co-ordinator	-	-	Nil	1
Production Extension and Training	1	3	Nil	2
Co-operatives	1	2	Nil	5
Plant Protection Service	1	4	1	1
Land and Water	1	16	Nil	1 ⁽²⁾

Notes: (1) Due to the shortage of qualified staff, work in Marka district is generally undertaken by regional staff

(2) Undertaken by the district co-ordinator

Source: Regional agricultural co-ordinator, Janaale

Staff qualifications vary and are generally low, due, until recently, to inadequate training facilities in Somalia (see Section 3.3). All technical staff had graduated at intermediate secondary school level but had received only one month's induction training prior to joining the ministry. Regional officers have received three to twelve months training either in Somalia or, rarely, abroad. Each facet of the ministry's activity in relation to the study is discussed below with the exception of production farms (see Annex IV, Chapter 5), irrigation and canal maintenance (see Annex VII) and land registration (see Chapter 5; Land Tenure).

3.2.1 Smallholder Co-operatives

The establishment of co-operatives, started in 1974, is the main extension work carried out by the ministry. Co-operative farming is the dominant national policy for development of smallholder agriculture. Two forms of co-operative have been established and receive assistance from the Government by way of trained instruction, initial funds and training of the co-operatives' leaders. The two forms of co-operative are:-

- (a) multi-purpose societies where individual smallholders come into a co-operative society which organises land preparation through hired tractors, input supply and marketing of surplus produce

- (b) group farms where co-operative members communally farm Government-allocated land as well as their own smallholding; storage facilities and, in a few cases, tractors are provided by the Government.

The number, size and operation of existing and planned co-operatives is given in Table 3.3. These co-operatives concentrate on production of the two major annual crops in the Study Area, maize and sesame.

TABLE 3.3

Planned and Existing Study Area Smallholder Co-operatives: 1974-78

	Group farms		1977 Estimated cultivated area (ha)	Multi-purpose societies	
	Number	Members		Number	Members
Existing	27	1 817	963	6	2 150
Planned	9	682	- (2)	1	360
TOTAL	36	2 499	963 (1)	7	2 510

Notes: (1) 963 ha cultivated out of a total allocated area of 1 530 ha (net)

(2) Land allocation not known at time of study

Source: Department of Co-operatives (1977) and survey data

Although the co-operative movement has progressed quickly since 1974, it still embraces only a small section of the community. Table 3.4 shows that the 27 active group farms occupy only an estimated 6% of the net area of annual crops and involve roughly 5% of the estimated working population. Only group farms are included as only they represent change in the traditional farming system. In order to gauge the level of success of agricultural extension work, an assessment was made of crop management on the existing group farms. Only 14 farms (50%) used any form of improved management such as fertilisers and pest control measures, and although 24 farms (90%) had access to tractors for land preparation, only 963 ha (60% of the total cultivable area allocated) was actually cultivated during 1977. This was partly due to poor irrigation water supplies.

TABLE 3.4

Co-operative Farming Activity in Relation to the Study Area

	Estimated NCA annual crops in 1977 (ha)	Farming population
Group farms	963	1 817
Study Area	16 590 (1)	37 880 (2)
% Study Area as group farms	6%	5%

- Notes: (1) Land use survey data (see Annex IV, Chapter 4)
 (2) Population survey data assuming two working adults per family (see Chapter 4)

Source: Table 3.3 and survey data

The multi-purpose societies, despite having roughly equal total registered membership, have had little impact on farming methods of the community involved. For example, no smallholders outside the group farms used either fertilisers or agrochemicals (see Annex IV, Chapter 5).

3.2.2 Farmer Training

There are only five farmer training centres (FTCs) in existence in Somalia, all of which have been established since 1965. One is situated in Janaale and occupies the buildings of a former agricultural secondary school which had been used from 1960 to 1967. It was re-opened as the FTC in 1972 and is now the only FTC in existence along the Shabeelle river. Each FTC is planned to give four one-month courses per year, involving 45 farmers per course, as well as providing a base for staff in-service training. However, during 1977, the FTC at Janaale was not used for formal training.

3.2.3 General Extension Services

Apart from the extension activity aimed at establishing group farm co-operatives, there is little general extension work carried out amongst the other farmers. This is due mainly to the shortage of trained staff. As can be seen in Table 3.2, there is only a maximum of six technical staff dealing with extension work for the whole of Marka and Qoryooley districts. With an estimated farming community of over 18 500 families in the Study Area, this is totally inadequate, particularly for the necessary follow-up in the villages. The main intended method of approach is to train farmers at the Janaale FTC before they become unpaid 'extension agents' in their own villages. However, although 100 trained farmers were reported to be 'extension agents' in Qoryooley district, only one such agent was identified during various village surveys. Also, as reported in Section 3.2.2 above, no smallholders use fertilisers or chemicals and no training courses had been run at Janaale FTC during 1977.

3.2.4 Plant Protection Service

The intended objectives and operation of this service are as follows:-

- (a) to survey any reported pest infestations
- (b) where warranted, provide a free supply of appropriate chemicals to farmers and give technical advice on rates and methods of application
- (c) operate a free crop spraying service
- (d) operate a monitoring service for Quelea quelea (redbilled quelea or Sudan Dioch). Seasonal migratory flocks of quelea frequently damage rice crops in Lower Shabeelle region. Roosts are identified and an eradication unit, based in Mogadishu, notified. Three roosts were eradicated in 1976.

Accurate information on the operational efficiency of this service was difficult to obtain. A maximum of seven technical staff and 20 operators using standard knapsack sprayers were available in 1977. A maximum of 40 knapsack sprayers were reported as being available during certain times of the year, but since only a few large-scale farmers and group farms possess their own sprayers, the majority of pesticides applied in the Study Area were through the free spraying service.

From survey data it was estimated that 900 ha of annual crops (mainly maize) were sprayed in 1977, of which 550 ha were reported to have been sprayed by the free service. The 550 ha constituted gu maize crops of 14 group farms and two large-scale farmers, and represents only about 3.5% of the total estimated area of maize planted in the 1977 gu season. Maize stalkborer (Chilo partellus) is the most important pest affecting annual crop production in the Study Area, sometimes reducing yields by at least 50%. An estimate of the total area of maize that would theoretically be sprayed during the gu season is given in Table 3.5.

The estimated sprayable area of 860 ha represents only about 5% of the total area of maize planted in the 1977 gu season, and indicates the total inadequacy of the present free spraying service. On the other hand, operational efficiency of the Plant Protection Service in the Study Area is low. The 550 ha sprayed represents a maximum efficiency of 60%, assuming availability of 20 sprayers and spraying each crop twice. Actual efficiency is considered to be much lower. Not all sprayed crops were given two treatments and more than 20 sprayers were reported available. Also, outside stalkborer control, little other work was reported on other known pest problems during the remaining months.

TABLE 3.5

**Estimated Area of Gu Season Maize Crops Sprayable by the
Plant Protection Service**

Detail		Notes
Average number of available knapsack sprayers	20	See text
Estimated spraying time per hectare per sprayer	3 hours	
Estimated area per sprayer per day	1.7 ha	Assumes 5 hours per working day
Total area sprayed:		
(a) per day	33 ha	
(b) per season	1 720 ha	60 day operating period (1)
Total net area of maize sprayable	860 ha	Assumes 2 sprays per crop
Estimated NCA maize in 1977 gu season	16 590 ha	See Table 3.4

Note: (1) Assumes Study Area maize crop planted over 45 day period and that first spray given at 10 to 15 days and second spray from 20 to 25 days after planting. 60 day period assumes six day working week.

3.3 Agricultural Training of Technical Staff

Until recently, agricultural training facilities in Somalia were minimal. Agricultural graduates were trained abroad (in Eastern and Western Europe, America and the Middle East) and between 1960 and 1967 the Ministry of Agriculture operated an agricultural secondary school at Janaale. From 1967 to 1972, the only source of agricultural training in Somalia was short in-service courses held at farmer training centres in Hargeysa and Bonka (near Baidoa). At the Bonka FTC, a University of Wyoming aid team trained the first extension workers in Somalia by running several three-month courses between 1965 and 1969.

In 1972, the Faculty of Agriculture of the University of Mogadishu was opened near Afgooye, funded by the Italian Government and staffed mainly by lecturers seconded from the University of Florence. The first 50 students graduated from the four year degree course in 1975. Current intake rate was reported to be 65 students each year. Italian is the language of instruction and its continued use may prove unsatisfactory in the long term.

An agricultural secondary school, sited near the Faculty of Agriculture, was opened in 1973 to provide a four year course to diploma level. The first 38 students graduated in 1977 and it is planned to increase the capacity to between 50 and 60 students each year. Diploma students will be able to register for further training at the Faculty of Agriculture after completing one or two years successful field work. In addition, in 1976, a further 60 students were trained abroad to degree level and 15 to diploma level.

Consequently, the critical shortage of trained agricultural manpower which existed until recently should quickly be overcome. However, this will only take place if graduates are absorbed effectively into institutions and production units operating on the vital practical side of agriculture and working within the framework of a controlled post-graduation probationary period. Conversations with recent graduates indicated current training to be over-theoretical, mainly due to the overall lack of current crop production recommendations (see Section 3.4). This problem has already been recognised and a World Bank mission is currently appraising agricultural management and extension officer training. Provisional proposals are for a training centre at Afgooye and utilisation of Janaale state farm as a management training model farm. It is reported that further plans will be made available later in 1978.

Within the Study Area, in-service training of present staff and group farm co-operative leaders takes place at a general orientation centre near Marka. No suitable practical agricultural facilities exist at this centre, whereas the unused Janaale FTC is located within grounds ideally suited for practical work and crop demonstrations.

3.4 Agricultural Research

Agricultural research in Somalia began as early as the late 1920's when a research station was established at Janaale as part of expanding banana production. Apart from the war period of 1939-1950, the station maintained an active irrigation crop research programme until 1958 under Italian administration. The work dealt mainly with cotton, maize, groundnuts, grapefruit and castor but, after the initial varietal assessment programme carried out between 1928 and 1930, very little work was carried out on bananas. The major period of research was from 1950 to 1958 during which fertiliser, pest control and varietal studies were undertaken, including the development of a hybrid maize variety. Unfortunately very little of this work was officially published and almost no results remain in Somalia.

In 1964, the University of Wyoming, funded by USAID, established a research station at Afgooye, which has subsequently become the Central Agricultural Research Station (CARS) within the Ministry of Agriculture. From 1964 to 1970, the Wyoming team ran an applied research programme investigating soils, irrigation and irrigated management of a wide range of crops including fruit and vegetables, some of which had previously been unknown in Somalia. In-service training of counterpart staff was carried out, including fellowships to study in America. A rudimentary extension service was established, particularly at Bonka (near Baidoa) where a small sub-station and training centre was set up to study dryland farming.

From 1971, a reduced research programme was maintained under Somali administration, with trials being carried out mainly on cereals (maize and upland rice), oilseeds (sesame, sunflower and groundnuts), citrus and tomatoes. Also from 1971 onwards, liaison with FAO Regional Research Centres in Syria and Nigeria (IITA), resulted in CARS being the site for international maize, sorghum, bulrush millet, cowpea and soya trials. This assistance was further strengthened by the establishment in 1976 of an FAO advisory team covering irrigation, agronomy and entomology. To date, CARS, with a sub-station at Bonka, remains the only official research station in Somalia. Physical and climatic conditions at Afgooye are virtually identical to the Study Area. Therefore, research findings are considered applicable to the Study Area.

Unfortunately, despite 12 years of almost continuous research at CARS, very few practical recommendations have been produced. This has been due to staffing problems, poor organisation and, more importantly, an overall lack of planning in any particular programme for a sufficient length of time. An assessment was made of past and present research work at CARS through observations during 1977 and a review of reported work from 1965 (CARS, 1965-1975). The lack of recommendations and low calibre of research are highlighted by the following points:-

- (a) No reports were available in 1977 for research carried out in 1975 and 1976. Some results from 1975 onwards were collected by verbal communication only.
- (b) Between 1965 and 1974, 149 trial results were reported, which is an effective average of 16 trials per year or only 8 trials per season.
- (c) Few trials were repeated in subsequent seasons and never for more than one year.
- (d) Research concentrated heavily on maize and upland rice with 54 trials held between 1965 and 1974 which represents 36% of the entire reported research.
- (e) Excluding the establishment of a varied and interesting fruit nursery, from which little quantitative data exist, 25 other crops and vegetables have been assessed totalling 95 trials between 1965 and 1974, which is an average of fewer than four trials per crop within that period.
- (f) Only four trials had been held assessing sesame, the most important oilseed crop along the Shabeelle river.

- (g) Although varieties of maize, groundnuts, sunflower and upland rice have been released, no supervision of purity or regular maintenance of pure stocks ('breeder's seed') has been carried out. Often seed would be obtained directly from trial plots for multiplication, including seed from ant-pollinated crops like maize and sunflower. Consequently, mixed seed had been passed on for further bulking at the Afgooye Seed Multiplication Centre.
- (h) Few trials have examined either water requirements or likely production costs of the more important crops. Effective entomological and pest control research only began in 1976 in conjunction with the FAO programme.

Two other small irrigated research programmes have been established along the Shabeelle river since 1967. In 1965 a separate paddy rice and tobacco experimental farm was established at Jowhar sponsored by the People's Republic of China. Although under the Ministry of Agriculture, it still remained virtually independent. Tobacco research proved unsuccessful due to the poor leaf quality produced, but two high-yielding 120 day paddy rice varieties have been selected and are now being grown at several projects along the Shabeelle river. In 1976, the tobacco unit was transferred to near Afgooye for reassessment.

Between 1973 and 1975, short-term intensive research was carried out by an FAO team at the Afgooye - Mordiile pilot project. This project was designed to provide data, at both the field and experimental plot level, on irrigated production of maize, upland rice, cotton, pulses, sunflower, groundnuts, sesame and forage crops specifically for the planned 3 000 ha Afgooye - Mordiile scheme. Some 28 production trials, varying from 4 to 36 ha per crop, and 67 field experimental trials were carried out during its three years in operation.

Findings from both these projects are also considered applicable to the Study Area.

In 1976, much needed agrochemical research was instigated by Ciba-Geigy with a programme of pesticide and herbicide assessment in order to assist the development schemes established since 1974 (e.g. Afgooye-Mordiile), as well as the long-standing sugar and banana plantations. The work entails assistance at CARS, the partial re-establishment of the Afgooye-Mordiile pilot project and large-scale field application trials.

3.5 Seed Multiplication and Certification

Existing facilities for annual and perennial crops on the Shabeelle river and applicable to the Study Area are given below.

3.5.1 Annual Crops

Until 1970 there were no seed multiplication or certification facilities in Somalia. In 1970, under assistance from the German Federal Republic, the Cotton Seed Multiplication Centre was established near Afgooye and was officially transferred to Ministry of Agriculture administration in 1972. Its output remained static until it was re-established as a 100 ha general seed multiplication centre in 1975/76 as part of an FAO/UNDP assisted project, which also established three other seed centres elsewhere in Somalia. Crops and varieties being multiplied in 1977 are listed in Table 3.6. After multiplication, seed is graded, dressed and bagged prior, officially, to despatch to ONAT for onward sale to farmers.

TABLE 3.6
Material under Multiplication
at Afgooye Seed Multiplication Centre, 1977

Crop	Variety	Source of planting material	Previous relevant history
Maize	Somalia Composite	CARS, Afgooye	Bred 1974, CARS but purity not maintained Ex Tanzania. Seed from variety trial harvest For selection only
	Toxipena	CARS, Afgooye	
	Local White	-	
Groundnuts	Florigiant	Unknown possibly CARS and Bonka FTC	Tested at CARS previous to 1969
	Local Large		
	Local Small		
Sesame	Local	-	For selection only
Sorghum	20 varieties	Philippines	Untested in Somalia
Upland rice	Vista	CARS	Tested at CARS from 1966 (Dawn) and 1972 (Vista)
	Dawn	CARS	

Note: Gross area of the centre is 100 ha.

Source: Afgooye Seed Multiplication Centre, Central Agricultural Research Station (CARS), Afgooye.

However, as can be seen from Table 3.6, multiplication work at the centre is of dubious significance, with the possible exception of the two upland rice varieties. The maize seed was known to have been obtained from variety trials and not from isolated bulking plots where its purity would be assured. Groundnut seed was reported to be mixed prior to planting in 1977. The selection of lines from local material (maize and sesame) and multiplication of untested seed (sorghum) is a waste of valuable facilities and usurps a major function of CARS. Furthermore, as a result of observations at the seed centre during 1977, it was noted that:-

- (a) overall management of crops, including pest control, was poor;
- (b) technical staff had been inadequately trained to organise and handle seed multiplication as opposed to ordinary crop management with the result that:-
- (c) the three maize varieties were not planted in isolation but directly adjacent to each other
- (d) both varieties of upland rice were known to be mixed at harvest (examination of material received from the seed centre by Libsoma Farm, Afgooye, October 1977)
- (e) no roguing of off-types had been carried out.

At present, no grading equipment is available at the seed centres. Post-harvest operations are carried out by a small stationary thresher and much hand labour which greatly increases the risk of mixing of seed varieties. It is reported that proper grading, bagging and seed-dressing equipment will arrive during 1978 under the FAO/UNDP assistance programme but at present the facilities and standards of operation at the seed multiplication centre would constitute a serious limitation to the development of irrigated farming in the Study Area.

3.5.2 Perennial Crops

There are two nurseries currently in operation to provide improved planting material of perennial crops along the Shabeelle river. Both are situated in the Study Area. The banana nursery, operated by the National Banana Board and situated between Golweyn and Madhuulow, was established in 1976 and is discussed fully in Section 3.9 (National Banana Board).

A 40 ha grapefruit nursery was established in 1972, with financial assistance from the European Economic Community (EEC) and is located in the old research station and agricultural secondary school complex in Janaale. Its current operation is outlined in Table 3.7. In 1976, in addition to its role of supplying budded seedlings to the general public, it became involved in preparing similar planting material for the European Development Fund grapefruit scheme currently being established in the Study Area near Golweyn. The 40 ha unit also contains citrus and mango orchards providing budwood and seed as well as areas for budding, seedling maintenance and sale. Mango seedling production is planned to start within the next year. A large 50-year-old coconut grove situated in the grounds is used as a seed source for seedling production. Under the management of a qualified graduate, this centre is providing an adequate supply of budded seedlings of reasonable quality.

TABLE 3.7**Production Estimates of Janaale Grapefruit Nursery, 1976 - 1978**

Area in production (grapefruit, mango, coconuts)	40 ha
Estimated number of budded grapefruit seedlings available in 1978	10 000 ⁽¹⁾
Estimated number of seedlings sold or supplied in 1977	2 500 ⁽²⁾
Grapefruit seedling sale price (each)	So. Shs. 5
Age of seedlings at sale	2 - 2.5 years
Rootstock used	Sour Orange, Rough Lemon
Budded varieties	IPC, Marsh Seedless

Notes: (1) sufficient to plant an estimated 80 ha

(2) sufficient to plant an estimated 20 ha

Source: Janaale Seed Multiplication Centre (1978)

3.6 National Farm Machinery and Agricultural Supply Service (ONAT)

ONAT was originally established as a machinery hire agency in 1964 to service the main plantation areas on the Juba and Shabeelle rivers. In 1975, after reorganisation of the agricultural supply and marketing sector, ONAT was expanded greatly, taking over seed supply and another tractor hire service from the Agricultural Development Corporation, as well as chemical and fertiliser supply from the National Banana Board. Thus, ONAT became the official state supply agency for seed, chemicals, fertiliser, agricultural machinery, equipment and spare parts. ONAT is a semi-autonomous agency responsible to the Ministry of Agriculture.

The regional depot for Lower Shabeelle region is situated in Shalambood at the edge of the Study Area, there being no district depots for Qoryooley and Marka districts, although one is planned for Qoryooley in 1978. The operation of ONAT in relation to the Study Area is described below.

3.6.1 Agricultural Machinery, Equipment and Spare Parts

ONAT Mogadishu currently has a limited supply of tractors, cultivation equipment (ploughs, harrows and ridgers) and planters. Due to limited and sporadic demand, specific orders are placed (mainly those for Government projects) rather than

maintaining a certain level of stocks. No stocks are maintained at Shalambood and all orders are placed directly in Mogadishu. Due to past and present agricultural links with Italy the tractors and equipment used in Somalia are mainly of Italian manufacture (Same and Fiat tractors, Nardi equipment) although some Massey Ferguson machinery has recently been imported for general sale. Sales to the private sector are limited due to the static or declining nature of large-scale private farming.

Availability of spare parts is also limited and is a major cause for the poor utilisation of agricultural equipment. This has been accentuated by the fact that during the rapid agricultural expansion from 1974, introduction of equipment was unco-ordinated and resulted in the importation of small numbers of a wide range of machinery. For example, during 1977, nine tractor makes from seven countries were observed at various farms and co-operatives within the Study Area.

On the other hand, ONAT has plentiful stocks of a limited selection of hand-operated equipment and tools. Ample stocks of several types of knapsack sprayer are available in Mogadishu and Shalambood. Hand tools, however, are limited to scythes and gardening equipment, the latter being totally unsuited to use on a farm scale.

There is a noticeable lack of animal-drawn equipment for crop production. Official policy has tended towards mechanical farm operations which partially accounts for the lack of stocks of intermediate technology equipment commonly used and available in other parts of Africa and the Indian sub-continent, such as planters, drills, cultivators and threshing, shelling and decorticating equipment.

3.6.2 Maintenance of Agricultural Equipment

ONAT Shalambood possesses a well equipped workshop which is mainly used for the repair and manufacture of irrigation equipment for the Ministry of Agriculture (see Annex VII for details), maintenance of tractors used for ONAT's hire scheme, and repairs to pumps and motors when required by the National Banana Board. Only limited work is possible on other government departmental vehicles such that the majority of machinery maintenance in the Study Area is carried out as follows:-

- (a) a small workshop at Janaale is operated by the Ministry of Agriculture
- (b) several large but poorly maintained private garages are situated in Shalambood
- (c) small welding shops also operate in Qoryooley and Janaale
- (d) several banana farmers possess small workshops and undertake vehicle maintenance work.

Due to the lack of experienced mechanics, shortage of spare parts and overall high costs, the general standard of maintenance is poor.

3.6.3 Equipment Hire

ONAT Shalambood operates a small fleet of tractors, track-laying equipment and graders for land preparation and basic land levelling work. Details of current availability and hire costs are given in Table 3.8. Bulldozers were all more

than ten years old whereas most of the wheeled tractors were less than two years old. Availability of this hire equipment is very limited because poor maintenance restricts operation efficiency to a reported 145 working days per tractor per year. This represents about 50% efficiency as the agricultural work year is effectively only nine months. However, no actual operation data were available. The small stock of equipment is more or less permanently hired out to government departmental farms and co-operatives in the Study Area and to two state farms upstream of Janaale (Beerdiid and Tugarey). From survey data, it is estimated that less than 1 000 ha were prepared by ONAT prior to the 1977 gu rains in April. This represents only about one month's work per tractor. Also, 18 out of 20 surveyed villages and eight out of 27 group farm co-operatives could not obtain tractors from ONAT. This high demand for tractor hire, particularly for the gu maize crop, is mostly satisfied through the hire of privately owned tractors. From survey data, there are estimated to be between 100 and 120 privately owned tractors in the Study Area of which at least 25% are hired out at certain periods each year. Private hire rates are between So.Shs. 40 and 50 per hour for 60 hp tractors, this being higher than the equivalent ONAT rate. The ONAT service is reported to be moderately subsidised, but no precise data were made available for the Consultants.

TABLE 3.8

ONAT Agricultural Equipment Hire, Shalambod Depot:
Availability and Cost, 1977

Type	Make	Rating (hp)	Country of origin	Hire cost per hour (So.Shs.)(2)		Numbers available	Utilisation
				Private	Gov't plus co-ops		
2 WD (1) Tractor	MTZ	50	USSR	25	30	19	Disc ploughing, harrowing, bunding and irrigation channels
4 WD(1) Tractor	Fiat DT750	75	Italy	45	55	8	
Track- laying equipment	S-100	100	Italy	48	70	(a) 5 (b) 16	Preparing high flood banks for sesame fields. Land levelling and deep ploughing
Graders	-	85	-	50	70	3	Land levelling

Notes: (1) 2 WD or 4 WD refer to two or four wheel-drive
(2) Hire costs do not include fuel and transport cost

Source: ONAT, Shalambod

The survey clearly showed that the ONAT hire service is severely under-equipped to meet present demand. However, the exact size of this demand was difficult to estimate for the following reasons:

- (a) large-scale credit was made available to three large villages early in 1977 as a boost to agricultural production; these and three other large villages out of the 20 surveyed reported nearly all land prepared by hired tractor;
- (b) although other villages expressed a desire to hire tractors, they were unable to do so due to shortage of funds reported by most farmers. Taking the average size of a smallholding at 2 ha and an estimated So. Shs. 180 to 240/ha for full land preparation, the So. Shs. 360 to 480 outlay financially restricts most farmers from hiring tractors without some form of credit;
- (c) medium and large-scale farmers appeared to have no difficulty in hiring bulldozers to prepare flood banks for the 1977 der season sesame crop, but little evidence was observed of other large-scale land preparation on private holdings during the same period;
- (d) private hire will only be available during slack periods, effectively limiting any spare capacity to the jilal season.

Discussion of machinery requirements for future development of the Study Area is given in Annex VI. However, even for just basic land preparation, ONAT hire services must be greatly expanded if increased cultivation and production are to be obtained. This expansion will also require more regular credit availability.

3.6.4 Seeds

ONAT Shalambood currently maintains seed stocks of annual crops and vegetables. Availability and quality are discussed below.

(a) Annual Crops

The current absence of any effective seed certification programme in Somalia has caused ONAT to obtain its seed supplies directly from government farms along the Shabeelle river. In 1977, ONAT officially supplied, in Somalia, seed of cotton, groundnuts, maize, sorghum, paddy rice, upland rice and sesame. The supply of sunflower and pulses had earlier been stopped due to poor overall demand.

Present stocks (1978) at ONAT Shalambood of maize (local variety), upland rice (varieties Dawn and Saturn) and sesame (local variety) were all obtained from Beerdiid state farm (near Janaale) during 1976/77. These stocks, without field selection or further purification, grading and dressing, represent seed similar to that retained by any smallholder. The seed storage building at Shalambood is an adequately ventilated brick and concrete structure and is periodically fumigated such that minimal storage pest damage was seen. However, no regular quality inspection or testing of seed was reported to be undertaken. In October 1977, as part of the agricultural survey, random seed samples were collected for

purity and viability assessment. Results are given in Table 3.9 together with current sale prices to farmers. The results indicate that until the certification programme is effective, the current method of seed supply is unnecessarily costly to both ONAT and farmers, particularly as ONAT sale prices are higher than ADC purchase prices for the same product (see Section 3.7). ONAT prices include a handling charge of So. Shs. 15/q for all seed except maize. The handling charge for maize is So. Shs. 31/q. Occasionally, ONAT Shalambod stocks small amounts of cotton seed, groundnuts and paddy rice to supply a low demand in areas downstream of the Study Area in Qoryooley and Baraawe districts.

TABLE 3.9

**Purity and Viability Analysis Results of ONAT Seed Stocks:
Shalambod Depot, October 1977**

Crop	Variety	Sale price So. Shs./q (3)	% purity	% Germination ⁽²⁾		Mean	Estimated post harvest storage period
				Test 1	Test 2		
Maize	Local White	116	70	92	96	94	3 months
Sesame	Local	170	99.5	99	99	99	9 months
Upland rice	Dawn	270	95	70	53	62	9 - 12 months
Upland rice	Saturn	270	95	58	38	48	9 - 12 months

- Notes: (1) % purity indicates incidence of broken seed.
- (2) Germination test on seed after purity analysis and by damp chamber method at room temperature (+ 28°C); 100 - 200 seeds per variety per test. Final counts made at day 10.
- (3) Includes handling charge.
- (4) No stocks of cotton (So. Shs. 100), groundnuts (So. Shs. 150) and paddy rice (So. Shs. 225) were available for testing. Sale prices per quintal are in parentheses.

(b) Vegetable Seeds

All vegetable seeds sold by ONAT are imported from East Africa or Italy. Current (1978) stocks are plentiful with 15 different types available, including five varieties of tomato. All seed is in vacuum sealed tins (100 g or 250 g per tin), having been checked and certified at source by known seed inspection services. However, all stocks, including recent supplies, were certified only until 1975 and were stored in a small unventilated and extremely hot room. Storage under these conditions explains farmers' reports of poor germination from these stocks. Correct storage and a simple inspection service to check regular importations would improve an already useful and well-utilised service.

3.6.5 Chemicals and Fertilisers

Until the establishment of ONAT in 1975, the supply of chemicals and fertilisers in the Study Area was handled by the National Banana Board (ENB) or its various predecessors that co-ordinated banana production. The effect of this is still evident in 1977. Current stocks and sales at ONAT Shalambod are of those chemicals and fertilisers required by banana farms.

Ample stocks of three basic fertilisers imported from Italy (urea, diammonium phosphate and sulphate of potash) are held in a large well-managed store within ENB grounds in Shalambod. Until recently, stocks of a compound fertiliser (12:6:20) specific to bananas were also held. In the first eight months of 1977, only 7 688 quintals of fertiliser were sold which is sufficient to provide the minimum requirement for bananas (1 q/ha every two months) on only 1 922 ha. This area is equivalent to 54% of the net area of bananas, downstream of Mubaarig. All sales were reported to be to banana growers. Such low sales, therefore, reflect a declining banana industry rather than availability problems. Both urea and diammonium phosphate are adequately suited for application on a wide range of crops.

In contrast to the fertilisers, agricultural chemicals are very poorly stored. Existing stocks are old and held in a badly-managed store with many damaged cartons and spillages, which remained unattended for long periods. Stocks consisted of mainly:-

- (a) Nemagon (70% DCP) for the control of burrowing root nematodes;
- (b) Gammexane (10% gamma-BHC) and "Essesiap forte" for the control of Cosmopolites weevil;
- (c) wetting agents and copper fungicides.

There is presently a very low demand for these commodities. Sales of Nemagon, for example, for the first one-third of 1977 were adequate to treat only 58 ha of bananas at planting or an estimated 23% of the crop planted in a similar period. There is a small sale of Gammexane to smallholders for pest control on vegetables. The low level of stocks and minimal demand for chemicals by other farmers are due to the following reasons:-

- (a) the Plant Protection Service at Mushaani (see Section 3.2.4.) orders its stocks directly from Mogadishu;
- (b) until Ciba-Geigy instigated their chemical research programme in 1976/77 and commencement of entomological research at CARS, Afgooye during 1976, no specific pest control recommendations for annual crops existed in Somalia;
- (c) since 1974, the main users of chemicals on annual crops are large government production schemes, mostly situated upstream of the Study Area, and they, along with the ENB production farms, also order from Mogadishu.

The ONAT Mogadishu depot is, currently, adequately stocked with a reasonable range of 22 general chemicals (9 herbicides and 13 insecticides) of which approximately 70% are Ciba-Geigy products. However, store management was inadequate and potentially dangerous. The sale to large-scale farming organisations is indicated by nearly 50% of the chemicals being marketed in 20 to 200 litre units, which are unsuitable for purchase by smallholders.

Fertiliser prices in Somalia are subsidised in that a proportion of imports are via the FAO fertiliser scheme which provides free supplies (CIF) to certain countries. Chemical prices are not subsidised, but no import duties are levied against any agricultural chemicals. Prices are reported to be reviewed at least annually, with changes reflecting the most recent import charges. Consequently, prices, as given in the 1977 official price list, for the same chemical can vary up to 90% depending upon manufacturer and the age of stocks. Over and above the CIF price, ONAT add handling costs for storage and transport.

3.7 Marketing

Marketing of farm produce in the Study Area can be considered as three sectors:-

- (a) open market with private marketing of vegetables and fruit with resultant seasonal price fluctuations
- (b) controlled private marketing directly to processing factories under fixed predetermined prices
- (c) official controlled purchasing of major agricultural produce solely through state organisations, of which there are two agencies, ADC and the National Banana Board (ENB).

3.7.1 Open Market

This constitutes a small section of marketing in the Study Area and involves the sale of:-

- (a) bananas surplus to exportable requirements or of inferior quality, and all other fruit
- (b) fresh vegetables, particularly tomatoes and green peppers
- (c) chewing tobacco.

Readily available and privately hired or owned 5 tonne trucks are used to transport produce, mainly to Mogadishu, although a limited market exists in Marka, 10 km from Shalambood. Marketing appears to be well organised. Tomato growers, in particular, stack full crates for collection at several kilometre intervals along specific roads; empty crates are returned in a similar way. However, prices for fresh produce fluctuate widely; differences of ten and twenty-fold have been reported for most produce on the free market due to seasonal availability and the easily saturated markets for fresh produce. Marketing of fresh produce within the Study Area is only by local sale at the many small markets found throughout the area.

3.7.2 Controlled Private Marketing

Two semi-autonomous state-run processing factories currently purchase farm produce directly from private farmers:-

- (a) ITOP canning factory, Afgooye, built with Italian assistance, and
- (b) the cigarette and match factory, Mogadishu, built with assistance from the People's Republic of China.

The ITOP factory, established in 1972, concentrates on producing tomato puree and, to a lesser extent, mango juice and papaya jam, with factory gate producer prices set annually. Because of the quality of fruit required for tomato puree production and the need for regular supply, contracts are offered annually to growers, encouraged by subsidised seed of recommended canning varieties and loan of empty crates. Transport costs are met by growers and are usually organised as for the free market. The 1977 producer price was So. Shs. 45/q for grade A fruit, an increase from So. Shs. 40 in 1976. Lower grade fruit was purchased at So. Shs. 15 to 25/q in 1976 but it was reported that little was bought at this price. Since the factory is currently running below its full capacity, quality control is moderately lax and this suggests much low grade fruit was accepted as grade A. Daily intake of the factory in 1977 was estimated at 40 to 50% of the maximum capacity (1 600 quintals of fresh fruit per day) during the peak period from September to February. The factory operates for an average of eight to nine months per year, which includes the processing of mangoes and papayas. In 1976, mangoes were purchased from Kismaayo at So. Shs. 70/q and papayas at So. Shs. 45/q. Both prices were unchanged in 1977.

Very small amounts of Burley and Virginia tobacco are produced in Somalia. Cured leaf of adequate quality is purchased by the recently opened state cigarette factory in Mogadishu for blending with imported tobacco.

3.7.3 Agricultural Development Corporation (ADC)

ADC is a semi-autonomous agency responsible to the Ministry of Commerce and was established in 1971 when the Government nationalised the numerous and varied private marketing agencies in order to co-ordinate the purchasing, storage, handling and marketing of all domestic grains. Originally this covered only maize and sorghum, but by 1976 extended to include rice, sunflower, sesame, groundnuts and cotton. The 1972 and 1977 producer prices paid by ADC are given in Table 3.10 and reflect government encouragement to increase production of basic crops, particularly rice, and to reduce imports. These prices are reported to be reviewed annually.

TABLE 3.10

National Producer Prices, 1972 and 1977: Cereals and Oilseeds

Crop	Producer price (So. Shs./q)		Notes
	1972	1977	
Maize, sorghum	42	75	Threshed grain
Sesame	152	240	Threshed grain
Groundnuts	98	120	Unshelled
Paddy rice	-	285 (1)	Milled rice
Upland rice	-	350 (1)	Milled rice
Cotton - grade 1	140	260	Seed cotton
- grade 2	130	240	Seed cotton
- grade 3	120	220	Seed cotton
Sunflower	-	120	Threshed grain

Note: (1) At Shalambood rice mill (see Section 3.8)

Source: ADC (1977), Citaco (1974).

Because Lower Shabeelle region is considered the most productive region in Somalia in terms of basic food crops, with Qoryooley the most productive district within the region, ADC has established a widespread network of depots and buying stations within the region. There are 20 in the Study Area and their location is given in Table 3.11.

TABLE 3.11

Location of Study Area ADC Depots and Buying Stations

Regional office and depot	Other permanent depots	District seasonal buying stations (and temporary depots)	
		Qoryooley	Marka
Shalambood	Qoryooley	Gayweerow Faraxaane	Janaale Uguunji
Storage capacity 120 000 q	Storage capacity 15 000 q	Buulo Shiikh Madhuulow Jeerow Cabdi Cali Furuqley Bandar Haduuman Jasiira	Degwariiri Buulo Mareerta Golweyn Tawakal Mushaani Waagade
Total 1	1	10	8

Source: ADC, Shalambood (1977)

Produce purchasing methods are as follows:-

- (a) empty sacks are provided at a deposit of So.Shs. 6 per sack, which is levied only if sacks are not returned. This affects only large-scale farmers who usually bag their grain away from the buying stations. Most other farmers transport their small surplus to a station for weighing and bagging;
- (b) purchasing can take place throughout the year at Shalambood and Goryooley, and no special buying seasons are reported; at other stations, staff are temporarily transferred for approximately four months each year (August/September and January/February) during harvest periods; the purchased grain is transported to either Goryooley or Shalambood throughout this period by ADC or hired private trucks;
- (c) for the few large-scale farms in the Study Area ADC can also arrange transportation to either Goryooley or Shalambood; this is reported to be a free service to those farms producing a marketable surplus greater than 100 quintals;
- (d) all payment is direct to the farmers and is in cash.

More than 90% of produce sold to ADC in the Study Area is maize and sesame. Although no accurate figures were available, ADC estimates to purchase 200 000 q of maize and 50 000 q of sesame in an average year in Lower Shabeelle region. In order to stabilise the supply of cereals and oilseeds throughout the country and to balance fluctuations in annual production, ADC holds buffer stocks within each region. Present storage capacity (135 000 q), of which 65% can be under cover, is considered adequate. One major reason for the establishment of ADC was to counter hoarding and black market practices in food grains. It is reported that one family can only retain 100 kg of maize and 30 kg of sesame each month, and that any surplus should be sold to ADC. There was little evidence in the Study Area to indicate rigid adherence to this ruling. In all surveyed villages, farmers were completely satisfied with current ADC purchasing methods and facilities. Observations at buying stations during 1977 also indicated trouble-free operations. All stocks are handled and stored in sacks and labour for loading is easily obtained. However, bulk transport of stocks between Goryooley, Shalambood and Mogadishu was hampered by a lack of suitable transport.

ADC sells purchased produce at fixed wholesale prices to official local government agencies for retailing. Maize and milled rice are supplied directly to these agencies. Sesame is first passed in controlled quantities to local millers where the oil is extracted before being forwarded for final sale. However, persistence in the region of a black market in maize and sesame oil indicates that there are inadequate supplies and that either inefficient distribution or an inadequate price structure from farm gate to retail outlets exists.

3.8 Post-harvest Pre-purchase Processing of Grain Crops

Prior to the purchase of grain crops by ADC, several post-harvest operations are necessary:-

- (a) milling and polishing of rice
- (b) grain shelling and drying.

3.8.1 Rice Milling and Polishing

The only large-scale rice mill on the Shabeelle river presently in operation is situated at Shalambood, and is operated by the Agricultural Crash Programme in conjunction with ADC. All rice offered for sale to ADC must be transported to this mill, at cost to the producer, for processing prior to actual purchase as milled rice. Operational details and costs are outlined in Table 3.12.

TABLE 3.12

Shalambood Crash Programme Rice Mill Operational Details, 1976/77

Daily capacity	8 - 10 tonnes (milled)
Annual capacity	2 300 tonnes (milled)
Average milling percentage	65 - 69 (estimate)
Percentage broken grains	25 - 30 (estimate)
Milling cost to producer	So. Shs. 15 per milled quintal (1976) So. Shs. 20 per milled quintal (1977)

Source: Shalambood Crash Programme (1977)
State Planning Commission (1977)

The estimated milling percentage appears high, particularly as present average rice yields in the region are low. The large percentage of broken grains can be attributed to either faulty milling or inadequate grain-drying.

Estimates of present rice production on the Shabeelle river indicate that this mill will effectively be at capacity from 1978 onwards (see Annex VI). However, ONAT has nearly completed construction of a second mill in Shalambood, which is due to start operation in 1978. Its capacity is reported to be greater than the existing Crash Programme mill. In addition ADC has reported provisional plans for further mills elsewhere along the river to handle planned increased demand in these areas. This will leave the two Shalambood mills available to handle future increased production in the Study Area.

3.8.2 Grain Shelling and Drying

In the Study Area, virtually all maize is dried in stocks prior to dehusking and, if offered for sale, shelling. Most is hand-shelled but a selection of aged, hand-operated or motorised shellers can be hired and are normally brought to ADC buying stations for use during ADC buying months. There appears to be no immediate shortage of functioning shellers. However, most maize is

insufficiently dried. Bentalls, who were working in the area during 1977, estimated average grain moisture at 17%. ADC, in fact, purchases at 103 kg per net quintal to compensate for assumed post-purchase moisture loss. For safe storage under conditions prevalent along the Lower Shabeelle river a grain moisture content of between 12 and 14% is required.

As part of an FAO/UNDP grain storage assistance programme in Somalia, three Bentall ICV 240M grain drying units were under construction for ADC during 1977 at Qoryooley (2 units) and Janaale (1 unit). Each oil-fired unit will have a drying capacity of 7 t/h and possesses two small shellers, a 130 tonne buffer/holding silo and pre-drying grain cleaners. Dried grain will be automatically bagged, weighed and stitched. A wide range of crops can be dried by these units, although maize will be the predominant crop. Completion is projected to be during 1978. Detailed operation and drying charges have yet to be drawn up, including plans for improved storage to maintain dried grain at the desired moisture content.

3.9 National Banana Board (ENB)

From 1943 until 1968, banana production in the Study Area was organised under a grower's shareholding company (SACA), which advised on and assisted technical development of production, acted as input suppliers (fertilisers, chemicals, cartons etc.), arranged transportation of produce to Marka, export and marketing. In 1968 SACA and an equivalent company on the Juba river (SAG) amalgamated to create a general shareholding company Somalbanane SpA, with a marketing subsidiary in Italy (SMO) responsible for distribution and marketing within Italy; 25% of SMO share capital was owned by an Italian financial group, COGIS.

In 1970, Somalbanane was nationalised to form the present National Banana Board (ENB - Ente Nazionale di Banane), taking over all functions of Somalbanane as well as its share in SMO (75%). ENB now directly controls activities of all producers and is a semi-autonomous organisation responsible to the Ministry of Agriculture. Apart from continuing the original function of SACA and Somalbanane, ENB has, since 1974, developed its own production farms and, in 1976, established a nursery for improved planting material. The regional offices and workshops that serve the Study Area are situated in Shalambood, from which ENB presently administers banana production along the Lower Shabeelle river from Afgooye to Buulo Mareerta which presently totals between 3 800 and 3 900 ha (net) and 51 farms. Seven farms are located at Afgooye, three are upstream of the Study Area near Mubaarig, with the remaining 41 farms situated in the Study Area. Present operations of ENB are described below.

3.9.1 Technical Field Services

ENB Shalambood maintains a permanent staff of approximately 350 employees of all grades, of which an estimated 200 are reported to be trained technical staff. The remaining 150 employees are administrative staff or permanent labourers such as tractor drivers, irrigation labourers and foremen employed in ENB farms. The total number of administrative staff employed by ENB in Somalia is estimated at 300 based in Mogadishu, Shalambood and on the Juba river.

The technical staff are employed as:

- (a) quality control supervisors at the port of Marka and at 22 packing stations (16 in the Study Area)
- (b) technical advisers to all farm field staff
- (c) field officers and assistants managing two ENB production farms at Golweyn and Mushaani, which presently cultivate about 300 ha, and the 80 ha nursery between Golweyn and Madhuulow
- (d) mechanical staff operating a well-drilling and pump maintenance service in conjunction with ONAT (see Annex II; Groundwater Resources).

Training of the agricultural technical staff is not of a high standard. All have received a lower secondary school education and prior to full employment are given 12 months' field training but no formal training facilities exist. There are only about ten full trained ENB staff in Somalia who have received education to at least agricultural diploma level, all of these having been educated abroad. No member of ENB staff has studied banana export production in any other country and neither is any technical contact reported between ENB and other banana exporting countries. Consequently technical experience is very limited and of marginal significance as staff are effectively being trained in an area of poorly managed farms (see Annex IV; Existing Banana Production).

Technical information used by ENB staff has been altered very little in the last ten years. ENB technical department has planned, in the last few years, a small research programme on its Golweyn farm to assess new varieties and nematode control methods, but has yet to implement these plans. A pest survey was carried out in 1976 and verified the severe root nematode problem. The implications of poor up-to-date technical information are discussed fully in Annex IV, Chapter 11 (Banana Production). ENB also offers farmers a six monthly aerial spray service, as a Sigatoka disease prevention measure, at So. Shs. 65/ha through the Desert Locust Control Service.

3.9.2 Packaging and Marketing

Once bananas have been brought to the packing station, they become the responsibility of ENB, although ENB only becomes financially responsible once accepted fruit is being loaded onto the ships. Seven of the 16 packing stations in the Study Area are privately operated by the banana farmers. The other 9 stations are also privately operated but by separate management under contract to ENB. For all stations, ENB provides cartons, other packing material and staff to supervise fruit selection, cleaning, fungicidal treatment (benomyl dip), packaging and loading. The farmer-operated stations purchase benomyl (Benlate) from ENB. ENB arranges transport from each station to Marka, a final quality control at Marka, loading of ships, ships' movements and, subsequently, marketing in Italy. ENB does not handle sale of bananas within Somalia.

Shipping contracts for export of bananas to Italy and the Middle East are aimed at providing one ship per week (i.e. four ships per month) but actual arrivals can vary as is shown in Table 3.13. The main problem is communication. Ships returning to Somalia can be used for various imports and therefore call at Mogadishu for unloading and any necessary cleaning. The ships then proceed to

Kismaayo before returning to Marka for final loading. Thus, ENB are not certain of estimated arrival time in Marka until ships reach Kismaayo. This leaves only four to five days to notify farmers, complete harvesting and packing and commence transportation to Marka.

TABLE 3.13

Banana Export: Shipping Details, 1977/78 (Marka)

Total number of ships from January 1977 to February 1978 (inclusive) - 42

Number of days between ship arrivals	Number of ships	% of total ships
0 - 4	8	19
5 - 10	16	38
11 - 14	11	26
15 +	7	17
Average shipping frequency	10 days	
Minimum period between ships	0 days (2)	
Maximum period between ships	30 days	

Notes: (1) Considered optimum harvest frequency with seasonal variation

(2) Two ships arrived on same day.

Source: ENB; SIPA co-operative and daily observations, Marka (1977/78)

Export availability is estimated on a monthly basis. Each farm estimates its exportable production for the following month. ENB then calculates export quotas for each farm per ship, based on the expected arrival of four ships per month. This quota must be met as closely as possible by the farms regardless of actual ship arrivals. Until recently, farmers were fined So. Shs. 7 per carton (So. Shs. 42/q) when quotas per ship were not fulfilled, but after protest this penalty has been abolished. Poor marketing in the latter half of 1977 was the main cause for a sharp drop in exported yield from about 130 q/ha/year to 108 q/ha/year (see Annex IV; Chapter 11).

The overall management of packaging and export is poor. Facilities and equipment have slowly deteriorated and have not been replaced during the last 10 to 15 years. The employment of poorly trained and inexperienced staff has resulted in poor quality control and poor packaging. Transport to Marka is usually in old, poorly maintained trucks that travel the final 10 km along a bad tarmac road. There are no proper temporary storage sheds in Marka and cartons are off-loaded onto a short exposed jetty before loading into old open lighters which slowly move out to the refrigerated ships anchored at least 500 m offshore beyond the coral reef. The coast at Marka is exposed and during windy seasons the lighters have to negotiate relatively heavy seas. Wastage and accidental losses en route from packing station to ship are estimated by ENB to be at least 50 to 85 quintals per ship depending on conditions, with most losses occurring during loading of ships. Loading of each ship takes between two and three days and total losses represent about 1 to 2% of each load.

However, ENB are currently constructing two more packing stations and are planning to start construction of refrigerated storage sheds in Marka in 1978. Efficient operation of these sheds, however, will depend on improvement of an already erratic and non-continuous electricity supply in Marka, but effective refrigerated storage would overcome the problem of erratic arrival of ships. ENB had taken delivery, in 1977, of several new trucks to improve road transportation.

Farmers receive a fixed producer price controlled by ENB and a continuing import preference price in Italy. The current price received by ENB is approximately So. Shs. 120/q (exported fruit) FOB Marka. Gross returns to producers and FOB costs are given in Table 3.14.

TABLE 3.14

Bananas: Estimated Gross Returns and FOB Costs, 1977

	So. Shs./q exported fruit	\$ US/q (5)
Gross producer price FOB Marka	120.00	19.26
Carton costs (1)	45.00	7.22
Net producer price (NPP)	75.00	12.04
NPP adjusted for final quality control	71.25 - 78.75	11.44 - 12.64
ENB service charges (2)	18.00	2.89
ENB packing charges (3)	5.00	0.80
Gross margin to producer (4)	48.25 - 55.75	7.74 - 8.95

- Notes: (1) 16.5 kg (net) fruit/carton = 6 cartons/q = So. Shs. 7.50/carton.
 (2) Covers quality control, customs duty and transport from station onto ship.
 (3) For farms using ENB - contracted stations only.
 (4) Private farm packing costs estimated at So. Shs. 5.00 to 7.00/q inclusive of Benlate (benomyl) costs; therefore effective gross margins are similar to farms using ENB stations.
 (5) US \$ 1.00 = So. Shs. 6.23 (1977)

Source: ENB (1977), banana growers.

Present carton costs absorb 37.5% of the gross producer price and represent between 81 and 93% of the producers' gross margin. The present carton price of So. Shs. 7.50 each is considered unnecessarily high. A more realistic price is estimated at So. Shs. 4 per carton. ENB owns 35% of the carton factory in Kismaayo and therefore is in a position to help reduce these excessive charges. Full FOB costs absorb 57% of the gross producer price.

At Marka, following the final quality control, accepted fruit is graded from 95 to 105% and the net producer price (So. Shs. 75/q) is adjusted (see Table 3.14); FOB costs are then deducted from this adjusted price to obtain the gross margin to producers. However, the current gross margin rarely falls below So. Shs. 52/q of exported fruit. Consequently, until its abolition, the "failed quota fine" of So. Shs. 7 per carton could represent an overall net loss in gross income to the farmer of over So. Shs. 90/q.

3.9.3 ENB Banana Nursery

Situated between Golweyn and Madhuulow, this nursery was established in 1976 on an abandoned banana farm acquired by ENB. The aim is to provide, at cost, improved planting material to farmers. Final planting of the 80 ha net area was completed during 1977. The first suckers were on sale at the end of 1976 and maximum production will theoretically be reached in March 1978. However, due to the overall lack of technical experience, management and planning, the following problems are evident:-

- (a) No fumigation of fields was carried out prior to planting, even though no banana cultivation had been practised for ten years previous to development of the nursery.
- (b) No clean, certified planting material was introduced. Suckers were obtained from farmers' fields and given pre-planting pest and disease control measures no different from those used by other farmers. Observations revealed 80 - 90% of all mats of one-year old fields were moderately infected with Radopholus similis (root nematode). Little post-planting chemical control is undertaken and only token monitoring is carried out. Field sanitation and tool sterilisation measures are non-existent.

The low effectiveness of standard Study Area pest control measures on bananas is fully discussed in Annex IV. The nursery will be able, from mid-1978, to produce sufficient planting material for about 500 to 800 ha/year. However, it is considered that this is, at best, an expensive way to produce very poor quality planting material. The current sale price is So. Shs. 1 per sucker, although ENB estimates the cost price to be nearer So. Shs. 2 per sucker. ENB is planning to introduce improved nematode control measures in 1978, but these have yet to be tested in Somalia.

3.10 Summary and Discussion

The role of agricultural infrastructure services can be summarised as involving:-

- (a) communication - the gathering and dissemination of technical information (research services) and the furtherance of technical knowledge (training, extension services, technical assistance);

- (b) input supplies - the provision of adequate supplies of necessary fertilisers, chemicals, seed and machinery;
- (c) marketing - the availability of post-harvesting processing facilities where necessary, and marketing services to handle planned surpluses of produce.

The generally accepted relationship and necessary liaison between all three sectors are outlined diagrammatically in Figure 3.1. The vital role of training and research becomes apparent in that they supply information and qualified personnel necessary for all three sectors. Consequently, initial establishment of these institutions is of paramount importance to the development of any agricultural sector.

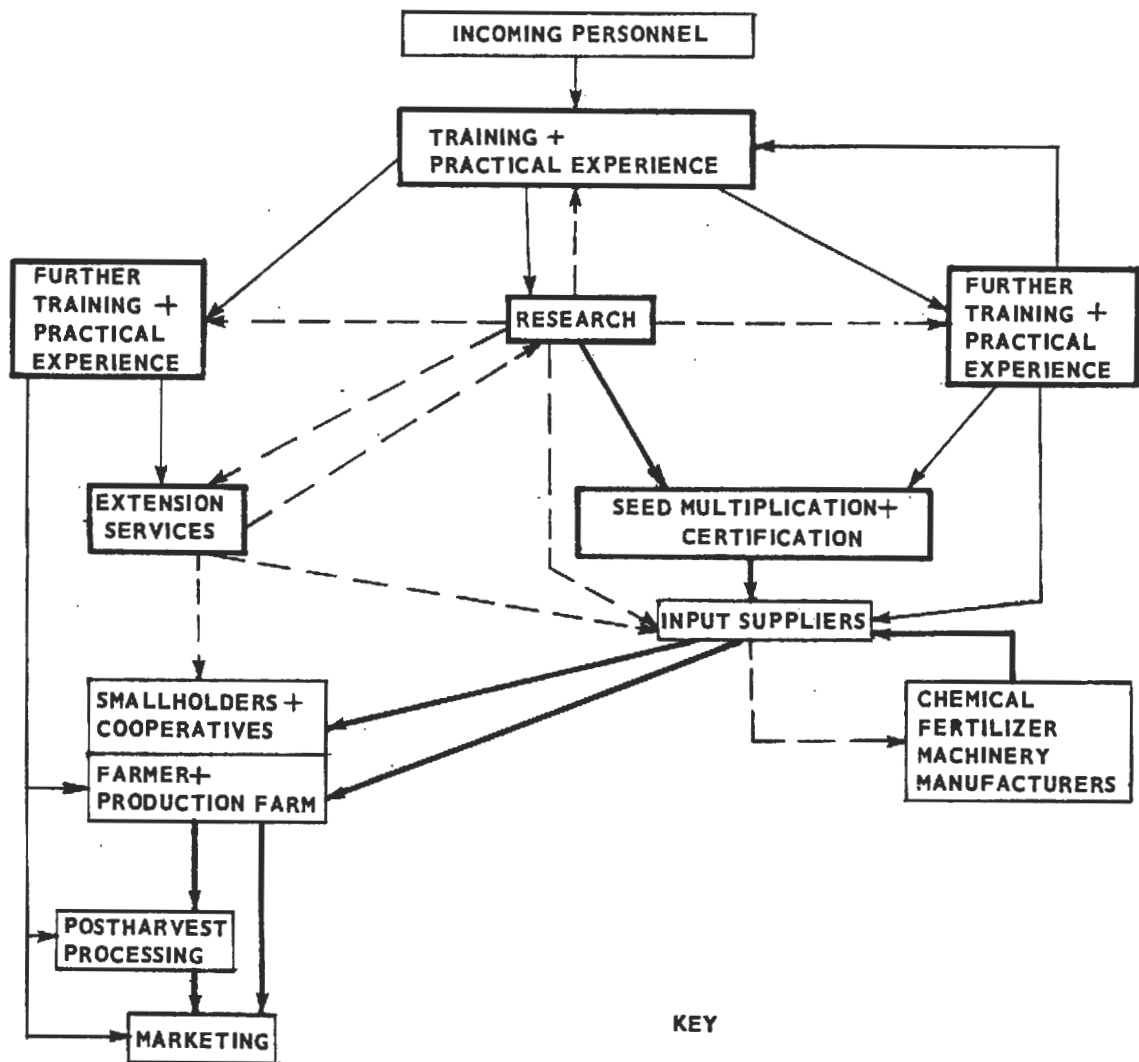
All aspects of infrastructure given in Figure 3.1 exist in Somalia under the direct or indirect jurisdiction of the Ministry of Agriculture, except ADC (marketing) which is responsible to the Ministry of Commerce. All sectors relevant to the Study Area are located within the area or within the Lower Shabeelle region, which includes the Study Area. However, with the exception of marketing, the effectiveness of each institution is limited, the major constraint being inadequately trained or inexperienced staff, caused by the rapid development of agriculture, particularly along the Lower Shabeelle river, since the early 1970s. Despite improved technical training facilities, established during the same period, a natural delay in supply of graduates occurred until 1977. These graduates still have to gain the necessary practical experience before they will be of real value to the agricultural sector. These graduates will be required for research, further training services, seed multiplication, general extension services as well as the technical departments of ONAT, ENB and ADC. The present lack of qualified and experienced staff, therefore, partially explains presently observed and reported ineffectiveness of agricultural services.

Research is one service in greatest need of immediate strengthening. Although research programmes at CARS Afgooye have been in existence since 1965, it has been ineffective apart from some work on maize and upland rice. Future development in the region will hinge greatly upon revitalising and reorganising research services. The efficiencies of extension and training services and ONAT are low, partly because they are all in need of effective research recommendations. Also, the seed multiplication service will be of little practical value until regular, pure stocks of improved crop varieties become available from the research centre.

Financing of the agricultural services is another apparent constraint. Existing Ministry of Agriculture staff are too few to practise the labour intensive and time-consuming job of extension work. Numerous projects and programmes which have been or are being established in conjunction with foreign aid programmes will also require Somali-financed staff at some stage in their development. Consequently, future financing, if limited, requires careful planning in order to select priorities. For example, the Plant Protection Service, although laudable as a service, must be examined as to its true effectiveness. Pest control is an integral part of improved crop management and should not be considered in isolation from other aspects of farming and extension work in general. The free supply of chemicals and spray service are also questionable

FIGURE 3.1

AGRICULTURAL INFRASTRUCTURE: BASIC FUNCTIONS
AND LIAISON OF INDIVIDUAL SECTORS



KEY

- SECTORS INVOLVED WITH TECHNICAL COMMUNICATION
- SUPPLY OF QUALIFIED TECHNICAL STAFF
- SUPPLY OF TECHNICAL INFORMATION
- SUPPLY OF TECHNICAL MATERIAL (SEED, CHEMICALS, PRODUCE)

because, apart from being expensive, such assistance creates a situation where farmers become dependent upon it. The technical services should assist the farming community through guidance rather than attempt to become a substitute for individual or communal endeavour.

The above constraints can also be applied to services provided by the National Banana Board (ENB). However, the major restrictions currently facing banana growers are poor, erratic export marketing arranged by ENB and high FOB costs.

Other constraints upon infrastructural services are moderate and can be rectified easily with improved co-ordination and organisation.

The Agricultural Development Corporation (ADC) represents an example of what can be done to supply an adequate service to the agricultural sector. The degree of organisation together with established buying stations operating within easy access from villages has resulted in an effective service to farmers wishing to sell surplus produce.

CHAPTER 4

POPULATION

4.1 Introduction

A full history of agricultural development in the Study Area is given in Annex IV. In this chapter only an outline of the area's demographic development is described.

Following the inauguration of Janaale barrage in 1925 and during the expansion of banana production under the Italian Administration in the 1930s and 1940s, there was a settlement, both forced and encouraged, of a large workforce into small scattered villages attached to the plantations. This added to the existing population already established in large villages such as Janaale, Qoryooley and Golweyn. The construction of Falkeerow and Qoryooley barrages between 1955 and 1959 led to a further population expansion, as increasing areas of land could be irrigated. This steady influx and expansion has continued until the present day, creating a large population widespread throughout the entire Study Area. With the overall decline of banana production from 1965 onwards, these villages have become increasingly linked with an expanding area of annual crop production. Examination of the 1962 Lockwoods/FAO 1 : 30 000 aerial photography indicated the presence of approximately 170 villages in the Study Area. In 1975 a national village resettlement programme was established in order to centralise villages and facilitate administration, education, and establishment of health centres. This centralisation has been completed in Qoryooley district and is provisionally planned to start in Marka district in 1978.

Present population numbers, distribution and family structure were studied in conjunction with the assessment of existing agriculture (see Annex IV) in order to assess both the utilisation and potential of the existing workforce in relation to proposed agricultural developments.

4.2 Method of Assessment

Population estimates within the Study Area were compiled in the following way:-

- (a) estimation of village numbers and their location determined during land use and agricultural surveys;
- (b) collection of 1977 population data from the Marka and Qoryooley district governors; these were later confirmed by the State Planning Commission as being based on the yet unpublished 1975 national census and are updated annually to facilitate distribution of food rations such as sugar and vegetable oil;
- (c) a household survey in 16 villages and 230 households to determine average family sizes and structure, as part of a separate survey of land tenure and distribution of agricultural holdings.

Reference was also made to socio-economic studies made by Citaco (1974) as part of the final design for the EDF-financed grapefruit project. Most of their demographic data were based on statistics previously collected in 1967 and were, therefore, of limited use.

4.3 Residential Population Distribution

Details of village numbers within the Study Area, size and estimated population levels are given in Tables 4.1 and 4.2. The result of agricultural development in the area is reflected in the high population of 112 316 inhabitants distributed at an average density of 167 inhabitants per km². This compares with the national average of only 5 inhabitants per km² (IBRD, 1977). The population is fairly evenly distributed throughout the Study Area.

For example, 32% of the area comprises part of Qoryooley district and contains 39% of the area population. The uneven distribution of villages is the result of the completed centralisation programme in Qoryooley, which contains only 16 large villages and 5 small private villages within the Study Area compared to an estimated 107 villages in the Marka district section. However, centralised villages are rarely more than 5 km apart. There are approximately 20 to 25 Italian banana growers, including dependants, remaining in the area.

TABLE 4.1

Village Numbers within the Study Area

District	Estimated area (km ²)	Number of villages	Average population per village (2)
Qoryooley	216.1	21(1)	2 124
Marka	458.0	107	633
TOTAL	674.1	128	

Notes: (1) Includes 5 small uncentralised villages near Jeerow

(2) Calculated from population totals given in Table 4.2

Source: Survey data

4.4 Non-residential Population

Apart from the large residential population, there is also a seasonal migration into the Study Area, being part of general migration to river areas during the dry season (jilal) from January to March. This migration involves two types of community:-

- (a) semi-nomadic and nomadic herdsman bringing livestock down to the river areas for improved dry season grazing and watering, and
- (b) village smallholders from Upper Juba and Bay regions who move to the Study Area as a temporary workforce to supplement their own food supplies and farm incomes.

An estimated 94 000 'nomadic' people migrate into Qoryooley and Marka districts during this period (district governor census, 1977) and at other times of the year during poor rainfall years. This temporary influx is unpredictable and, ultimately, a reflection of both available grazing and the degree of success of crop production in purely rainfed areas. For example, during the 1978 jilal season, which followed above average der rains, few temporary villages were observed in the Study Area. In the previous two or three years the influx was reported to have been much higher.

4.5 Family Structure

Estimates of family size and structure are included in Tables 4.2 and 4.3. Figures supplied by the district governors given in Table 4.2 indicate an average family size of 4.65 members, whereas an average size of 5.93 members per household-family was obtained from the Consultant's household survey. State Planning Commission staff considered 4.6 members per family too low, and stated 5.5 per family to be a more accurate estimate for Lower Shabeelle region. During the household survey it was noted that a household often contained part of a second but immediately related family. This entire 'household-family' is dependent upon land owned or rented by one or two members of that household for their livelihood and food supply. It was decided, therefore, that the higher figure of 5.93 members per household-family would more accurately reflect the available labour supply necessary when calculating requirements for project development within the Study Area. The lower figure of 4.65 members per family indicates the true or individual family unit size.

The distribution within each household-family of 5.93 members was estimated as 2.1 adults and 3.74 non-adults. Citaco (1974) estimated 33.8% of the population to be aged less than 14 years, which indicates an average of two true children per household-family. As can be seen in Table 4.3, there is a large variability in age distribution within families. The number of adults can vary from one to four (a result partially due to Moslem Law allowing a maximum of four wives), non-adults from zero to twelve and household-families from one to fifteen.

4.6 Summary

The Study Area population is estimated at 112 316 permanent inhabitants living in 128 villages distributed throughout the entire area. At an estimated average household-family size of 5.93 members, there are approximately 18 940 household-families living in the area, which will be taken as a more accurate assessment for development planning than that obtained from an individual family size of 4.65 members. Despite variability in size each household-family comprises, on average, two adults, two children below the age of 14 and one or two other non-adults.

A seasonal population migration into the Study Area mainly during the jilal season, can temporarily increase the area workforce but is both unpredictable and, as yet, insufficiently quantified.

A village centralisation programme has been completed in the Qoryooley portion of the Study Area, with a provisional start for Marka district given as 1978. It is considered that the final completion will take longer than expected due to the high number of villages still dependent upon the remaining banana plantations for their income. This is unlike the situation in Qoryooley district prior to centralisation where there were fewer villages originally and only one banana plantation. One of the five small uncentralised villages in the Qoryooley portion of the Study Area is attached to this plantation.

TABLE 4.2

Estimated Study Area Population

Village/ Village area	No. of families	No. of males	No. of females	Total population	Average family size
(a) Qoryooley District					
Qoryooley	2 975	6 692	7 922	14 614	5.5
Gayweerow	1 069	2 264	2 370	4 634	4.3
Faraxaane	1 109	2 686	2 750	5 436	4.9
Cabdi Cali & Furuqley	1 055	2 027	2 132	4 159	3.9
Bandar	320	594	631	1 225	3.8
Jeerow	838	1 847	1 870	3 717	4.4
Madhuulow	320	658	731	1 389	4.3
Ga'as Guul, Tugarey & Buulo Koy	261	580	629	1 209	4.6
Jasiira	-	620	703	1 323	-
Haduuman & Buulo Shiikh	820	1 758	2 462	4 220	5.1
Maanya Muruq Falkeerow	624	1 358	1 327	2 685	4.3
Sub-total	9 678 ⁽¹⁾	21 084	23 527	44 611	-
% distribution	-	47.3	52.7	100	-
Mean family size	-	-	-	-	4.5 ⁽¹⁾
(b) Marka District					
Janaale	4 259			17 950	4.2
Golweyn	2 432			9 396	3.9
Buulo Mareerta	2 766			15 451	5.6
Mushaani	1 881			9 431	5.0
Uguunji	1 872			9 360	5.0
Shalambood	1 017			6 117	6.0
Sub-total	14 227			67 705	-
Mean family size	-			-	4.8
(c) District Totals					
Qoryooley	9 678			44 611	4.5
Marka	14 227			67 705	4.8
Study Area Total	23 905			112 316	-
Density per km ²	-			166.7 ⁽²⁾	-
Mean family size	-			-	4.65

Notes: (1) Includes estimate for Jasiira
(2) Calculated from Study Area = 674.1 km²

Source: District governors, Marka and Qoryooley districts (1977)

TABLE 4.3

**Average Household-family Size and Structure of 16 Surveyed Villages
in the Study Area**

Village	Families surveyed	Average no. of adults per household	Average no. of children per household	Average household-family size
Sigaale	15	2.4	4.0	6.4
Madhuulow	9	2.3	3.1	5.4
Waagade	18	2.1	4.7	6.8
Mushaani	21	2.1	3.8	5.9
Degwariiri	18	2.3	3.3	5.6
Majabto	16	2.3	4.6	6.9
Buulo Muuse	15	2.0	2.9	4.9
Haduuman	15	2.0	4.2	6.2
Bandar	18	2.1	2.8	4.9
Cabdi Cali	16	2.2	3.9	6.1
Basiglio, Garas Guul, Garas Jeered, Buulo Koy, Tawakal and Tugarey (1)	64	-	-	5.98
TOTAL	230	-	-	-
Mean	-	2.19(3)	3.74(3)	5.93(2)
Range	-	1 - 4	0 - 12	1 - 15

Notes: (1) Data for individual villages not collected

(2) Weighted mean

(3) Average of ten villages only (Sigaale to Cabdi Cali)

Source: Survey data (1977)

CHAPTER 5

LAND TENURE

5.1 Introduction

As any proposed development within the highly populated Study Area will entail reference to existing land ownership and tenure rights, particularly as a result of the 1975 Land Registration Act concerning private ownership, a study was made of smallholders and large-scale farmers in the Study Area to assess the present situation. The survey included:-

- (a) general interviews with 10 village committees
- (b) a sample survey of 166 household-families in the same 10 villages
- (c) general interviews with 8 large-scale farmers (Italian and Somali)
- (d) comparison of present and past land use in the Study Area. References was made to the Shabeelle River Report (HTS Ltd, 1969), 1962 FAO/Lockwoods 1 : 30 000 aerial photography and present land use survey data (see Annex IV).

5.2 Land Tenure - Previous Situation

Following the 1969 revolution, all agricultural land was constitutionally declared as belonging to the state. Application for the allocation of large areas of land for establishment of development schemes or private farms was made through the Government. In the Study Area, this applied mainly to re-allocation of abandoned or uncultivated banana farms which were the original concession farms allocated for private ownership under the Italian Administration. Smallholders, however, were allowed to continue with existing traditional rights of land title and allocation in accordance with local or Islamic Law.

Until and including 1975, land title rights in the Study Area were as follows.

5.2.1 Smallholders

The traditional system of tenure mainly favoured the male population as simplified in Table 5.1. Basically, inheritance was by proportional allocation to the nearest male relatives, particularly in the absence of sons. This led to highly fragmented holdings as well as complicated ownership claims resulting from divorce and polygamous marriage permissible under Islamic Law. On reaching maturity (adulthood), male children would be allocated up to 50% of parental land or that of other direct relatives, but only if sufficient were available.

TABLE 5.1

Traditional Land Title Rights in the Study Area (previous to 1975)

Owner of land	Inheritance of land			
	Normal situation	With widowed owner	Owner married and without children	Owner widowed and without children
Male	Wife and male children	Male children	Wife and brothers	Brothers
Female	Husband	Male children	Husband	Brothers

Source: Land Tenure Survey (1977)

Transfer of ownership was also possible through sale by private agreement. This usually involved families either permanently departing from or arriving to settle in the village. Farmers wishing to expand and, once sufficient money had been earned, mature children seeking to own land could also purchase land if it were available. Such examples were reported as being infrequent due to the scarcity of unoccupied irrigable land in most areas and the high traditional value of owned land. Departing families would normally transfer land to remaining relatives.

From 1960 onwards, the only remaining unoccupied irrigable land in the Study Area was the area of uncultivated concession farms south of the Dhamme Yaasiin canal and an old river channel extending towards Golweyn. During the period up to 1975/76, gradual encroachment by smallholders occurred on land not repossessed by the Government for co-operatives and production farms (e.g. Crash Programme farms) or, in a few cases, reallocated to Somali businessmen or large-scale farmers. Through the traditional law of title to vacant land by occupation and cultivation, encroached areas reverted to the traditional system of tenure. This also occurred on the few banana farms abandoned completely by Italian owners on emigration.

5.2.2 Large-scale Private Farmers

By 1960, following development of the existing irrigation network and demarcation of concession areas, approximately 200 large private holdings, varying in size from 40 to 621 ha, existed in the Study Area, of which an estimated 56 were Somali-owned. During this initial period holdings were allocated but title was only established after they were developed as farms. From 1960, apart from gradual smallholder encroachment, Government acquisition of uncultivated holdings and the steady emigration of Italian farmers, tenure of the remaining farms in production was as follows:-

- (a) an estimated 30 farms were amalgamated with other farms in production by farming companies or co-operative societies
- (b) an estimated 55 farms were either sold or rented to other farmers or, from the early 1970s onwards, acquired by the Government again for co-operatives and production farms. Only a few farms were abandoned outright.

By 1975/76 only an estimated 15 Italian farmers remained in the Study Area, either on their original holdings or as tenants or managers. A further estimated 85 to 90 holdings were Somali-owned under either bananas or annual crops.

5.2.3 Government Farms

As the establishment of these production farms was invariably on unused holdings or relinquished banana farms, displacement of smallholders was minimal. However, establishment of the 400 ha National Banana Board (ENB) farm near Golweyn in 1974 was on longstanding village land. No compensation was given for the subsequent displacement but the smallholders were given land to farm on a holding ENB had previously acquired, also near Golweyn. 128 individual smallholders were involved.

5.2.4 Land Rental

As the area of unused irrigable land decreased and because of the overall reluctance to sell land, land rental amongst smallholders represented the only means of either obtaining land or increasing their existing holdings. Land would be rented either from fellow smallholders or from large-scale farmers with land near the village. New settlers to villages generally rented land on arrival unless provided for by relatives already in the village. Likewise, mature children, unless allocated family land, would also rent land prior to purchase or true inheritance. Payment is generally made at the end of each crop season and could be with money or in kind (produce or livestock).

5.3 Land Registration Act

This act was introduced in October 1975 in order to create a more equitable distribution of land amongst the farming community and, theoretically, to enable the Government to assess production more accurately. Its introduction cancelled all existing land tenure laws, substituting the following rights for private land ownership:-

- (a) the maximum permissible private holding is:-
 - 30 ha for irrigated annual crops,
 - 60 ha for rainfed annual crops,
 - 100 ha for irrigated perennial crops.
- (b) all land must be registered with and approved by the Ministry of Agriculture

- (c) private holdings may be inherited on death of the owner providing holding size of the inheritor conforms to those given in (a)
- (d) any land registered but not cultivated within two years of registration will be reallocated by the Government
- (e) all land rental is prohibited, large rented holdings are state property and continued tenancy is by lease agreement with the Government
- (f) larger private holdings or leased land are only permissible on the formation of a company or co-operative society,
- (g) compensation for any expropriated land will be for capital assets only (equipment, buildings, roads etc.).

Each applicant must submit details of land or farms to be registered. Verification, measurement and authorisation is then carried out by the ministry. By January 1978, 384 farmers had registered 8 654 ha in Marka and Qoryooley at an average of 22.5 ha per holding (Ministry of Agriculture, 1978).

The current staff shortage in the ministry has resulted in slow processing of applications. Registration of smallholdings will be virtually impossible and is not the primary aim of the programme. However, during 1977/78 the Qoryooley district governor was collecting data on the total area of cultivated and uncultivated land in each village in order to assist re-allocation of land amongst disadvantaged smallholders.

5.4 Land Tenure - Present Situation

As a result of the Land Registration Act, village centralisation and instigation of other social reforms (equal rights, land allocation), modifications to original tenure have occurred.

5.4.1 Smallholders

The traditional system of title rights for inheritance, transfer of land and land rental (see Section 5.4.4) have been changed. Inherited land must be distributed amongst all children. Proportions are either equal or by arrangement amongst the remaining immediate family. Although all 10 surveyed villages report adopting this system, fewer than 17% of surveyed land-owning household-families possessed land owned by a female member (see Table 5.2).

Only 50% of the surveyed villages reported that transfer of ownership outside the immediate family was permissible only by government approval. In all but one village however, sale of land still continued.

TABLE 5.2

Distribution of Study Area Smallholder Land Ownership and Rental

Village	Number of household families			Mean holding size (ha)	Percentage cultivated land as rented land
	Surveyed	Owning land	Renting land		
Madhuulow	14	10	6	2.0	14.9
Waagade	18	15	3	2.5	11.8
Mushaani	21	20	2	1.5	3.9
Sigaale	15	13	5	2.9	22.5
Degwariiri	18	16	4	2.0	6.5
Majabto	16	12	10	2.6	24.6
Buulo Muuse	15	13	3	1.3	10.7
Haduuman	15	10	7	1.4	19.8
Bandar	18	17	2	1.0	2.2
Cabdi Cali	16	13	3	1.4	7.2
Mean	-	-	-	1.86	12.4
TOTAL	166	139	45	-	-
Percentage of household-families	100	83.7 (1)	27.1 (2)	-	12.4

Notes: (1) Comprises 69.8% owned by men and 13.9% women. Therefore, 16.6% of land ownership by women.

(2) Comprises 10.8% where land owned and rented and 16.3% where land rented only.

All households surveyed, owned or rented land.

Source: Survey data (January 1978)

5.4.2 Large-scale Private Farmers

All farmers interviewed expressed few problems concerning the imminent prospect of forfeiting part of their land. Amongst Somali farmers and senior government officials, interpretation of the Land Registration Act was unclear, with several claiming that maximum allocations were per adult member in each family.

Two years grace had been given by the Government for ownership of large holdings to be rearranged in order to agree with the Act's requirements. One common method was the formation of companies or co-operative societies which, on paper, eliminates private ownership but with the owner effectively remaining the farmer. Two Italian-operated companies, with a total estimated net area of 1 000 ha under banana production, have already been registered and 50 year leases issued.

5.4.3 Government Projects

The only project to be implemented in the Study Area following the Land Registration Act, is the EDF-financed grapefruit scheme. All existing smallholders within the project area of 3 035 hectares (gross) will be displaced, totalling an estimated 600 families. An estimated 400 families could be employed by the project and given first option to do so, being provided with 1.2 ha of land for their food crops (Citaco, 1974). No provision is reported for compensating the remaining 200 families and it is considered that due to the farming density in the Golweyn area, reallocation of land off the project area will be very difficult.

5.4.4 Land Rental

The prohibition of land rental coupled with a programme of land reallocation, where needed, of vacant land is aimed at providing sufficient land at the village level for each family to provide sufficient food for themselves. However, despite 3 of the 10 village committees reporting adoption of rental abolition, the household survey revealed rental still continued in all villages with an average of 27% of household-families renting some land. Details of present land rental are given in Table 5.2. Although more than 80% of household-families possess their own land, a significant proportion (10.8%) supplement their holding through rental.

The degree of land rental reflects the presence of medium or large-scale land owners within the area, such as Majabto which is adjacent to abandoned banana farms. Land rental is still considered a normal transitional method of farming prior to any actual ownership, with the land-owners not being considered as rapacious.

CHAPTER 6

SOCIAL INFRASTRUCTURE

6.1 Education

Since the revolution in 1969, there has been a strong emphasis laid upon education, including adult literacy. In 1973, in the south-western half of the Study Area there were only three primary schools (Golweyn, Buulo Mareerta and Faraxaane) with a total attendance of 287 pupils as well as a larger combined primary and intermediate school in Qoryooley (Citaco, 1974).

The subsequent increase in education facilities can be seen in Tables 6.1 and 6.2. There are three levels within the school structure, each consisting of four years (classes); primary, intermediate secondary and upper secondary. Primary and intermediate classes are often combined within one school. All education is free with pupils only having to provide basic uniforms and stationery. The estimated figure of 4 600 pupils attending primary and intermediate classes within the Study Area, however, is still a low proportion of the eligible population. Assuming the presence of 18 940 household-families with two children at school age, an estimated 10 - 12% of eligible children are currently receiving some formal education. The curriculum is basic, concentrating on literacy, mathematics, the Somali language and simple social studies at primary level, expanding to include geography, history, Arabic, English and basic science at intermediate level. All teachers have graduated from upper secondary school and receive six months to one year's basic teacher-training. The supply of teaching material is limited. This is largely due to the Somali language only being officially formalised in written form within the last six years. An interim period before preparation of an adequate spectrum of text books is to be expected.

The presence of only one upper secondary school in Lower Shabeelle region highlights the problem of giving sufficient young people some form of higher education necessary for the maintenance of general national development. This school, with only 188 students, is located in the town of Marka. The only other similar school is the Afooye agricultural secondary school with an estimated 200 to 240 students (see Chapter 3, Agricultural Training). A second general upper secondary school is planned to open in Qoryooley in 1978/79.

There is also a big campaign to improve adult literacy. At present there is almost total illiteracy among adults in rural areas. All school facilities are used and often many small open air classes are held each afternoon by village orientation centres established by local government authority. Enthusiasm for these classes is quite high, particularly amongst the women.

Prior to and during formal education, children can also receive a traditional religious education in small independent Koranic schools led by religious elders.

TABLE 6.1

Location of Schools within the Study Area

	Marka		Qoryooley
	Primary classes only	Combined primary & intermediate	Combined primary & intermediate
	Tawakal Majabto Degwariiri Mukoy Dumis	Janaale Uguunji Sigaale Waagade Mushaani Buulo Mareerta Golweyn Shalambood	Qoryooley Cabdi Cali Faraxaane Jeerow Madhuulow Buulo Shiikh Haduuman Gayweerow Jasiira Tugarey Garas Guul
Total	4	8	11
Average pupils per school	129	215	215
Total pupils 1976/77	516	1 720	2 365

Study Area total 1976/77 Pupils: - 4 600 Schools: - 23

Source: Ministry of Education (1977)

TABLE 6.2

Education Statistics, 1976/77: Marka and Qoryooley Districts

School		Qoryooley	Marka	Total
Primary and intermediate secondary	Pupils	5 758	9 909	15 667
	Schools	28	45	73
	Pupils	-	188	188
Upper secondary	Schools	-	1	1

Average size of primary/intermediate schools: 215 pupils

Average size of primary schools: 129 pupils assuming a 60: 40 ratio primary: intermediate classes.

Source: Ministry of Education (1977)

6.2 Health

Health facilities in the Study Area are limited. Details of dispensaries and hospitals located in the area and at Marka are outlined in Table 6.3.

TABLE 6.3

Location of Dispensaries and Hospitals in the Study Area

Hospitals	(a) Qoryooley 30 beds ⁽²⁾ Nursing staff only	(a) Marka (general) 80 beds ⁽²⁾ Resident doctor (b) Marka (maternity) 20 beds ⁽²⁾ Nursing staff
Dispensaries	Qoryooley Haduuman Cabdi Cali Gayweerow Jeerow Madhuulow Faraxaane	Janaale Golweyn Buulo Mareerta Uguunji Waagade
Study Area total	7	5
District total	7	9 (1)

Notes: (1) Includes two dispensaries in Marka town
(2) Estimated numbers

Source: Ministry of Health (1977)

The Study Area is relatively fortunate in containing what few facilities are available in Marka and Qoryooley districts. However, hospitals are in a poor state of repair and equipped to deal with only basic medical problems despite expansion of Marka general hospital in 1977/78. A trained doctor is reported to visit Qoryooley hospital periodically. Dispensaries are very basic, often housed in a mud-walled building and capable of handling little more than minor ailments. Malaria, bilharzia, general bronchial and dysenteric infections are reported as the main health problems in the Study Area. Illness is accentuated by:-

- (a) use of canal water for drinking supplies;
- (b) constant exposure to infected water when irrigating crops;
- (c) adequate habitats for invertebrate hosts of bilharzia and malaria in uncleared canals, sub-tropical vegetation close to rivers, banana farms and areas of standing water;

- (d) the fine dust developed during dry periods particularly by the daily movement of cattle and accentuated by seasonal high winds;
- (e) the total lack of sanitation with fields and open areas close to villages being extensively used as uncontrolled toilet facilities. During rainy seasons these insanitary conditions are worsened by the spread of standing water and the gradual downward seepage which contaminates water in any nearby shallow hand-dug wells (see Annex II; Groundwater Quality).

Citaco (1974) reported data collected from Balcad health centre by the World Health Organisation (WHO) for three months in 1972, and out of 751 treated cases of infection, 70% were for malaria, bilharzia, bronchitis, tuberculosis and alimentary diseases. Unfortunately, no accurate statistics of disease incidence through surveys are available. Venereal disease, more by inference than treated cases, appears to be common. Infant mortality is reported to be low and should therefore be considered as normal for tropical Africa.

The World Health Organisation is currently running an extensive smallpox eradication programme as Somalia is one of the few remaining areas of reported cases. Lower Shabeelle region is also reported to have above average incidence for Somalia. The Ministry of Health is offering a So.Shs. 200 reward for any reported incident. Vaccination checkpoints were common around the Study Area during 1977.

Human nutrition, on the other hand, appears to be adequate. A wide range of foodstuffs are usually available in most markets. The staple food is maize either in the form of a porridge (sor) or chopped and boiled with sesame oil (cambuulo). Meat, milk, tomatoes, pumpkins, pulses, sesame oil, coconuts and highly sugared tea form a large part of the remaining diet. Fish is only eaten on a moderate scale, despite being plentiful in the area; fish-eaters are considered socially inferior to meat-eaters. Observations made during 1977 revealed only mild protein deficiency and oedema in children and the usual deficiency symptoms in adults such as deformed limbs, goitres, dermatitis and mild oedema were rarely seen. Due to Islamic traditions, alcohol is very rarely consumed and, through government prohibition, smoking of hashish is virtually non-existent. The chewing of khat, a mild stimulant, is also uncommon, unlike further north in Somalia.

CHAPTER 7

CREDIT

7.1 Introduction

The major credit institutions in the Somalia agricultural section, are the Somali Development Bank (SDB) and the National Commercial Bank (NCB) with the Central Bank acting as the co-ordinator and overall reserve, controlling the two but not being involved directly in the sector. Credit is also granted by suppliers on a short term basis but with much higher interest rates.

7.2 The Somali Development Bank

The Somali Development Bank which took over from the former Credito Somalia specialises in medium and long term loans. It has tended to specialise in loans to industry, as may be seen from Table 7.1, with agriculture and livestock proportions of loans granted up to the end of 1976 being only 16%. However, new emphasis is being given to agriculture and the agricultural proportion of the 1977 loans granted rose to 45% (1977 figures are only estimates). Loans to agriculture are mainly to large farmers, companies and co-operatives for tractors, pumps etc. (average So.Shs. 68 761), this type of loan not being very suitable for smaller farmers. Ninety-five per cent of all loans to agriculture are medium term (two to six years). These loans have always required collateral when up to 75% of the value of the object purchased will be loaned, but recently loans have been granted without collateral and are implemented like NCB short term loans (see the following section on NCB). The interest rate structure is shown in Table 7.2 which shows the preference given to the agricultural sector. These rates have remained fixed over the last three or four years.

SDB has only two branches outside Mogadishu and since the beginning of 1977 the bank has had an arrangement with NCB to implement loans. The local branches have authority to sanction up to So.Shs. 30 000 without SDB permission. Main delays are experienced through ONAT, the state machinery and fertiliser supplier, in implementing the loans in the agricultural sector.

With the bank now committed to allocate So.Shs. 10 million or more to agriculture per year, as decided in 1977, an increase of three times over their previous lending, a considerable increase in investment should occur over the next few years.

Banana farmers have found difficulty in obtaining the loans that they require for improving their holdings, namely for clearing, drainage and replanting, because they require medium term loans but the works themselves are not suitable for collateral. Also the poor financial situation of many of these farmers makes repayment possibilities difficult. An effort is now being made by the SDB in conjunction with the National Banana Board (ENB) to improve the ability of the banana farmers to get credit. A committee composed of SDB and ENB personnel is presently visiting farmers to assess their credit worthiness, based on hectareage, yields and management, after which they will be eligible to apply for medium term loans.

TABLE 7.1

Somali Development Bank - Loans by Sector
('000 So.Shs.)

	1968-71	1972	1973	1974	1975	1976	1977(2)	1968-77
Industry (No.)	2 130 (11)	10 244 (7)	39 127 (14)	26 653 (8)	26 888 (9)	11 284 (5)	9 465 (13)	125 499 (67)
Agriculture (No.)	3 500 (52)	5 475 (86)	3 831 (60)	2 323 (60)	10 371 (72)	4 944 (114)	13 375 (187)	43 388 (631)
Livestock (No.)	3 244 (4)	-	200 (2)	50 (1)	-	300 (1)	373 (4)	4 167 (12)
Fisheries (No.)	129 (2)	234 (6)	572 (10)	58 (3)	780 (9)	329 (4)	200 (3)	2 307 (37)
Other (1) (No.)	10 473 (16)	-	5 627 (4)	3 536 (3)	100 (1)	6 099 (15)	5 873 (13)	33 747 (52)
TOTAL (No.)	19 476 (85)	15 953 (99)	49 357 (90)	32 620 (75)	38 139 (91)	22 956 (139)	29 286 (220)	209 108 (799)

Notes: (1) Includes transport, water development, construction and housing, and tourism.
(2) Estimates

Sources: Somali Development Bank, Annual Report, 1976.
IDA Reconnaissance Mission on SDB, March, 1976.

TABLE 7.2

Somalia Development Bank Interest Rate Structure (as at 1st April 1978)

Period of loan	Interest rate (%)		
	Agriculture/ handicrafts	Industry/ mining	Others
Medium term (2 - 6 years)	5.5	6.0	6.5
Long term (7 - 20 years)	6.0	6.5	7.5

7.3 National Commercial Bank

The sole source of commercial credit is the National Commercial Bank (NCB), providing banking facilities and short term credit. Table 7.3 shows how there has been an increase in lending to the agricultural sector in both livestock and agriculture over the last few years despite a standstill on total lending. The majority of the loans in the agricultural sector go to large farms and co-operatives. Credit is given for a maximum of 12 months for irrigated farms but only seasonal loans are given to rainfed farms. Security has to be provided to qualify for a loan but if normal security is not available (as is often the case), the client is assessed by a district committee formed for this purpose. The committee is normally composed of local representatives of the bank, the Agricultural Development Corporation (ADC), Ministry of Agriculture, the village (probably the Chairman) and the local district commissioner or Chairman. The client's repayment capacity is ascertained based on the crops, areas and yield levels presently attained. As checking accounts are used for payment of crops sold to ADC, repayment of the loan is assured by the bank deducting the amount due, before cashing the cheques. Loans can and have been prolonged in cases of natural regards such as poor rains but no statistics were available on bad debts or loans outstanding. This system of vetting clients (including co-operatives) by committee is also used for loans by the SDB implemented by the NCB. Only farmers with 10 ha or more and co-operatives are eligible for loans.

TABLE 7.3

Commercial Bank Loans by Economic Activity 1973 - 1976 ('000 So.Shs.)

	1973		1974		1975		1976	
	Amount	%	Amount	%	Amount	%	Amount	%
1. Agricultural	39.7	6.4	61.2	6.7	81.4	8.7	99.5	11.3
2. Livestock	19.1	3.1	36.9	4.0	38.3	4.1	72.2	8.2
Sub-total 1 & 2	58.8	9.4	98.1	10.7	119.7	12.8	171.7	19.5
Fisheries	-	-	4.2	0.5	16.6	1.8	25.3	2.9
Industry	49	7.9	136.1	14.9	200.6	21.5	186.6	21.2
Trade (1)	515.1	82.7	677.3	74.0	597.7	64.0	497.3	56.5
TOTAL	622.9		915.7		934.6		880.9	

Note: (1) Including transport, housing and other activities.

Source: Central Bank of Somalia Annual Report and Statement of Accounts 1975/1976.

Interest rates were at 9.0% until the end of 1976 for all private borrowers but in 1977 a special rate of 5.5% was established for loans to agriculture.

In 1977 the Government, through the NCB, made special loans to small farms and co-operatives amounting to So.Shs. 11 million for land preparation at a rate of So.Shs. 200/ha. Results of this scheme are not yet available from the bank, but the uptake appeared to be quite good.

7.4 Other Credit Facilities

Another source of credit is from the Ministry of Agriculture for fertiliser buying (repayable after harvest) but only very few farmers benefit (mainly banana farmers) because of the low uptake of fertiliser in Somalia. Terms of these loans were vague and it is uncertain whether this source can be expanded. In the event of a considerable expansion of demand it is likely that a scheme would be linked to the NCB. Credit is also given from traditional sources such as friends and shops and, although it may be of significant proportions now, it is likely that the majority of any expansion of credit would have to come from the commercial sector.

7.5 Conclusion

There is a fairly widespread banking system with which the farmers are already familiar through drawing their harvest payments. The Government is aware of the need for credit for agriculture and has already taken measures last year - lower interest rates and provision of special funds - to encourage uptake of loans. The Government has already received a loan from the World Bank for extending credit and it is likely that future requests would also be sympathetically received. There do not appear to be serious limitations to increasing credit in the agricultural sector. The biggest single weakness is the lack of credit for smallholders with under 10 ha, although the possibility of forming a co-operative can overcome this. The only areas of the project which this shortage of credit facilities will affect are the general development zones and measures to improve this will be discussed under the detailed Master Plan development.