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Somalia
Agricultural Sector Review

(In Three Volumes)

Volume I: Main Report

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CURRENCY EQUIVALENTS

Currency Unit	=	Somali Shilling (So.Sh.)
US$0.1589	=	So.Sh. 1.00
US$1.00	=	So.Sh. 6.295

WEIGHTS AND MEASURES

1 hectare (ha)	=	10,000 m^2
1 square kilometer (km^2)	=	100 ha
1 metric ton (ton)	=	1,000 kg

ABBREVIATIONS

ADC	-	Agricultural Development Corporation
ENC	-	National Trading Company
FYDP	-	Five Year Development Program
GDP	-	Gross Domestic Product
LDA	-	Livestock Development Agency
MLFR	-	Ministry of Livestock, Forestry and Range
MOA	-	Ministry of Agriculture
MNP	-	Ministry of National Planning
NBB	-	National Banana Board
NES	-	National Extension Service
NRA	-	National Range Agency
ONAT	-	Farm Machinery and Agricultural Services Organization
SPC	-	State Planning Commission
TYDP	-	Three Year Development Program

FISCAL YEAR

January 1 - December 31

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AGRICULTURAL SECTOR REVIEW

Main Report

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This report is based on the findings of a mission that visited Somalia in June/July 1979, and which comprised: S. Gafsi (Mission Leader), K. Meyn (Livestock Specialist), M. Devaux (Macroeconomist), U. Kuffner (Water Resources Engineer), E. Goetz (Agricultural Economist), M. Dagg (Research Assistant) (World Bank), C.P. Watson (Fisheries Specialist), H. Newton (Agriculturalist) (Consultants to the World Bank) and D. Aronson (Anthropologist) and C. Miller (Marketing Specialist) (Consultants to USAID). Mr. D. Lister (Agricultural Economist) led discussions of the draft report with Government officials in October 1980 and January 1981 and contributed to the final version.

SOMALIA

AGRICULTURAL SECTOR REVIEW

Main Report

Summary

i. Agriculture, including livestock, crops and fisheries, is the predominant sector in the Somali economy. Over 80 percent of the 4.2 million Somali population 1/ depend directly on agriculture for their livelihood. Three-fourths of these, or some 60 percent of the total population, are nomads. Rural incomes are low, and highly variable due to drought.

ii. Of the three agricultural subsectors, by far the most important is livestock production, which provides over 60 percent of employment, about 50 percent of gross domestic product and over 80 percent of export earnings. Livestock production is based on nomadic pastoralism; there is limited mixed farming of livestock and crops, and some specialized production near urban areas and on large-scale public production units. Crop production employs about 20 percent of the population and generates about 8 percent of GDP and about the same share of exports. Rainfed crop production is based primarily on sorghum, a high risk, low input/low output activity. Under controlled irrigation, crop production is centered on bananas (the principal cash crop and the second largest export commodity), sugarcane, rice and maize. Controlled irrigation is concentrated on state farms. It employs high input technology, but this has not always been realized in practice. In any case, its productivity has been low. Under flood irrigation, crop production has centered on maize and sesame. As under rainfed conditions, this activity is high risk, low input/low output. The fisheries subsector is largely an untapped resource at present. It provides part- or full-time employment to about 2 percent of the population and generates about 2 percent of GDP.

iii. Somalia's economic policy is developed in a socialist framework with public sector leadership, a prominent role for parastatals in production and marketing, and Government controls over prices, credit and supply of inputs. Somali farmers participate to only a limited extent in the monetized economy; the marketable surplus of grain represents about 25 to 30 percent of total production, and nomadic livestock producers are even less involved in market-oriented activities. These conditions limit the effectiveness of market incentives for stimulating production in the short run.

iv. Government-stated objectives for the agricultural sector include (i) self-sufficiency in sorghum, maize and oil seeds, (ii) increased production

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1/ During discussion of the report, Somali authorities stated that the 1980 population, based on a new analysis of the 1975 census, was 5 million, excluding refugees. To the extent that the higher figure is confirmed by further demographic study, the problems indicated in this report would be that much worse, but the proposed strategy would not be affected.

for import substitution of rice, cotton and sugar, (iii) increased production for export of livestock, fish and bananas, (iv) development of new export crops, and (v) protecting the country against the effects of drought. The realization of these objectives would depend on the resolution of a number of critical issues. The first is to ensure that the growing population is distributed in a way that is compatible with the geographical distribution of limited natural resources. The second is to organize production in such a way as to allocate scarce resources equitably among beneficiaries and ensure widespread participation in the development process. The third is to strengthen public sector institutions through manpower training, improved organization and management, and enhanced incentives. The fourth is to decrease the country's vulnerability to drought by increasing production, which has been essentially stagnant for the last decade, and developing programs to cushion the effects of inevitable periodic droughts. The fifth, and most important issue for the immediate future, is the urgent need to restore economic equilibrium in the face of severe external and domestic financial imbalances which beset Somalia in 1980. A satisfactory resolution of this overriding problem is a necessary condition for creating an economic environment in which the other issues can be addressed.

v. For the agricultural sector, resolution of the current economic crisis would require concentration on those activities which can generate increased production and exports in the short run. Such activities would have to focus initially on the more monetized part of the sector. For the livestock subsector, this would involve continuing to provide attractive export prices, animal health facilities at critical points in the marketing chain, selected improvement in market infrastructure, and assistance for improving production and export of hides and skins. For the crop production subsector immediate actions would consist of increasing producer prices and the supply of consumer goods and providing export incentives, rehabilitating irrigated areas, improving input supply and building the capability to forecast and respond to periodic food shortages. Consistent with the macro-economic objective of achieving quick returns at least possible cost, major new investments designed to expand the area under controlled irrigation (i.e. Bardere Dam) should receive lower priority. Such investments should not be considered unless funds for them are additional, non-fungible and provided on a grant basis, and the required technical and managerial staff are provided by external donors so that these projects do not detract from the higher priority rehabilitation effort. Unless these conditions are met, which will be extremely difficult, there seems to be no case for going ahead with the Bardere Dam in the context of the agricultural sector. For the fisheries subsector, immediate attention would be required for making productive use of existing deep sea trawlers, reallocating the motorized coastal fishing fleet to areas where maintenance can be guaranteed and reestablishing the supply of small boats and fishing gear.

vi. These activities should be incorporated in a well defined investment plan designed to overcome the present economic crisis and prepare the way for future sustained development. The management of financial and skilled manpower resources, and the provision of incentives to motivate producers, would be crucial to the success of the plan. As progress is made in carrying out

these immediate activities and as more resources become available, priority would be given to investments which activate other sunk capital, complete other on-going investments and continue the rehabilitation of irrigated and rainfed areas. At the same time, actions (strengthening the information system, institution building, development of manpower) would be started to build the basis for longer term sustained development. This strategy for the agricultural sector would have elements which can be started immediately, others which require supporting services and institutional changes for successful implementation, and still others which would take more time because of the need for more information, adaptive research and improved infrastructure.

vii. Somalia is not well endowed physically and, today, faces many serious problems. Nevertheless, there is considerable scope to better utilize those resources which do exist especially given the country's relatively low population. Provided that Government makes the required hard decisions and initiates actions to reform policies and institutions, rehabilitate the country's underused productive assets and mobilize the necessary human and financial resources, the outlook for the agricultural sector by the end of the century could be considerably brighter. The predominantly nomadic, drought-prone rural population could be transformed into one which is more evenly distributed between livestock, crop and fisheries activities, and which is in better harmony with the country's resource base. The realization of this objective poses a major challenge to Somalia.

SOMALIA

AGRICULTURAL SECTOR REVIEW

Chapter I: The Country and the Economy

A. General Characteristics

1.01 Somalia is located in the northeastern corner of Africa, between the latitudes 11°30'N and 1°30'S (Map). The length of its coastline is 3,000 kilometers. Its area is 63.8 million hectares. The topography consists mainly of plateaus that slope to the Indian Ocean in the east and to the Gulf of Aden in the north. These plateaus are broken by chains of mountains in the north, and they end in a relatively broad coastal plain in the south. Sixty percent of the sparse and dispersed population of about 4.2 million are nomads, 20 percent are settled rural dwellers, and 20 percent are urban dwellers. The lack of communication among settlements presents a serious obstacle to the development of a number of regions and to trade among various parts of the country. Distances to markets and ports are long, which means that certain goods, abundant in some areas, are scarce in others.

1.02 Somalia is among the poorest countries in the world. Estimates of average income per capita range from US$150 to US$200. These orders of magnitude indicate that by international standards, the per capita income is very low; for most Somalis it is not much higher than the level of absolute poverty income, which for the country as a whole is estimated to be about US$150 per capita. Not only are most Somalis poor, but they are also vulnerable to drought which makes even their low incomes highly variable. Traditionally, Somalia was a land with few class distinctions, especially among nomads. Increasing income differentiation in recent years, however, has led to the emergence of at least four distinct classes in the rural sector: agents of the State, rural wage workers, the "mobilized" rural producers and the residual masses (Annex 4).

1.03 Somalia is among the least developed countries in Africa. Not only is it among the poorest, but until recently the general lack of infrastructure - physical and institutional - has made it even more destitute. Efforts are now underway to fill these major gaps, such as the construction of roads, port facilities and irrigation systems, and strengthening of the university and the agricultural research and extension system, but much remains to be done. The Somali nation, independent since 1960, had been arbitrarily divided under colonial rulers. The interest of the former colonial powers was limited to only a few points along the shoreline for strategic and commercial reasons; they were not concerned with developing the interior of the country. The predominance of the nomadic lifestyle was not favorable to the dissemination of education. The absence of incentives to reward individual initiative combined with low salary levels has induced a large number of the few graduates of secondary schools and universities to seek employment in oil-rich

neighboring countries. The result is a widespread lack of managerial and technical talents in Somalia that is reflected in a weak institutional infrastructure.

1.04 The statistical system is so poor as to prevent the generation of any significant data for the purposes of planning and budgeting. There are no national accounts and no comprehensive sectoral data. The data that are available are sparse, coverage is uneven and statistical reliability is low. The first census of population and livestock in the country was taken in February 1975, but the information collected is still being processed. No agricultural census has ever been taken, and data on crop areas, yields, and production and livestock are based on vague estimates of basic parameters. Statistics on foreign trade are available, but with a time lag. There are none on internal trade. Consolidated government accounts are not analyzed according to their economic and functional classifications. Under these circumstances, analysis had to be based on limited quantitative information and on the combination of judgments of the World Bank mission, of the government, and of others who are informed about Somalia. Deficiencies are being addressed progressively by the government, and it is expected that a national program for the development of statistics will be undertaken soon as part of the Agricultural Extension and Farm Management Training Project (IDA Credit 905-SO).

B. The Somali Economy

1.05 In terms of production and potential for growth, the Somali economy is dominated by the agricultural sector. Reliable statistics on the gross domestic product (GDP) are not available, but it is estimated to be of the order of US$1,000 million in 1978. Productive sectors, other than agriculture (manufacturing, mining, construction and public utilities), contribute only 10 percent of GDP and employ 7 percent of the labor force. Services contribute about 28 percent of GDP and employ 13 percent of the labor force. GDP growth was estimated at about 2.5 percent a year in real terms for the period between 1972 and 1978. However, the average growth rate was only about 1 percent a year in the productive sectors while it was 6 to 7 percent in services. Crop production, which showed a decline of 5 percent, was especially disappointing. The rapid growth in the services sectors reflects mainly a rapid increase in government employment.

Socialist Framework

1.06 The country's economic policy is developed in a socialist framework with public sector economic leadership and Government controls. The declaration in 1970 of the socialist nature of the Somali revolution, reflected three main strands of thought -- ending neo-colonial subservience, ending national poverty and changing the face of the countryside. These elements have in turn translated into a number of interrelated policies, the most notable of which have been: (a) nationalization of the banks and creation of state import and trading monopolies for many items to control elements of commerce felt to have

been exploiting the country, (b) efforts to prevent the use of government service to amass wealth, and (c) rapid expansion of the state sector in crop agriculture and expanding irrigation, and the spread of cooperatives in agriculture, trade and industry. Over the years, these measures have tended to produce a lack of incentives for many activities, leading to stagnation in the productive sectors of the economy.

1.07 The 1979-1981 development program states that it is intended that the larger production schemes planned in agriculture, mining, industry and fisheries should be undertaken by the Government itself or by Government promoted cooperatives. The role of the private sector is recognized in crop and livestock production, small-scale manufacturing and retail trade, and it is Government policy to encourage it where the principle of social justice is not sacrificed.

Foreign Trade and Capital Movements

1.08 Exports consist mainly of two commodities: live animals and bananas. In 1978, for example, they accounted, respectively, for 83 percent and 8 percent of total merchandise exports. In volume terms, export trends have been most unfavorable as Table 1 indicates. Although livestock production has recovered from the effects of the 1973-75 drought, exports of live animals have not yet reached pre-drought levels. Domestic consumption appears to have increased faster than production. The sharp drop in other exports is mainly due to the fall in banana production and the cessation of exports of canned meat to the USSR. Export earnings are now more vulnerable due to their dependence on one export commodity and one export market (83 percent of exports in 1978 were live animals and 96 percent of this was to Saudi Arabia).

Table 1

Volume Indices of Exports

	1972	1979
Live Animals	100	91
Other Exports	100	37
Total Exports	100	71

1.09 As a result of recent developments and increasing oil prices, government expenditures rose sharply, domestic price pressure was intensified, and the deficit of the balance of goods and services widened as demands for imports increased faster than exports. The current-account deficit has widened in recent years. The balance of payments is heavily dependent upon flows of concessional assistance, remittances from Somalis abroad, and earnings from exports of livestock.

Fiscal Situation

1.10 Budgetary support of economic ministries in 1978 accounted for 30 percent of government expenditures. This is lower than comparable expenditures in other countries and reflects an unusually large allocation of government resources to defense and general administrative and social services. Government budgetary allocations to economic services also show an inconsistency between ordinary and extraordinary expenditures. 1/ Maintenance and recurrent expenditures are insufficient to maintain existing investments, which are thus allowed to deteriorate. Recurrent expenditures in general are low, and existing capital facilities are very much underused. For the agricultural sector, the budgetary allocations reflect this general imbalance. Ordinary expenditures in this sector, which reflect salaries and recurrent expenditures for the most part, account for about 6 percent of total ordinary expenditures of the government, while extraordinary expenditures account for 39 percent of the extraordinary budget.

1.11 Over the last two or three years Somalia's external and internal financial position has deteriorated sharply. There are a number of reasons for this deterioration, e.g., the Ogaden refugees, the rise in oil prices, etc. The discussion of these developments is outside the scope of this report. One important factor responsible for the recent deterioration is the stagnation of production in agriculture and this report will focus on this sector.

C. The Agricultural Sector

1.12 The agricultural sector provides employment for about 80 percent of the labor force and generates about 60 percent of GDP. Within the sector, livestock production is by far the most important subsector, followed by crop production and fisheries. There is little integration between development activities in the three subsectors. This stems, for the most part, from the physical and geographical separation between areas where livestock, cropping and fisheries activities take place. Institutional arrangements have tended to reflect this separation. However, even in the two limited areas where a potential exists for interaction between the subsectors (North West Region and interriverine area, para. 1.17), development efforts have tended to be sharply defined along subsectoral lines. There will be an increasing need in the future to develop integrated crop and livestock systems, including both irrigated and rainfed farming areas, and to coordinate infrastructural development to serve all three subsectors. The three subsectors are described in Chapters III, IV and V.

1/ The government has an ordinary budget and an extraordinary budget. The former, which represents the bulk of the total government budget, covers current expenditures. The latter covers investment expenditures and expenditures for special programs, such as emergency programs (settlement), or special actions such as crash programs.

1.13 Somali farmers participate only to a limited extent in the monetized economy. The Agricultural Development Corporation estimates that only 15 to 20 percent of grain production is marketed through official channels. It is estimated that another 10 percent of grain production is sold in the unofficial parallel market. The marketable surplus thus represents only 25 to 30 percent of total production. Similarly, the use of marketed inputs is limited and the array of consumer goods available in the countryside is narrow. For these reasons, the impact of price changes on production is less than in many countries, especially in the case of subsistence crops. Livestock producers are mainly nomads who live at the margin of the monetized economy in which they participate to an even smaller extent than crop producers.

The Resource Base

1.14 Climatically, Somalia can be divided into three zones: a northwest zone, which has a semi-Mediterranean climate and an average rainfall of 400 millimeters a year; a central and northern zone, which has a hot arid climate and annual precipitation ranging between 50 and 100 millimeters; and a southern zone (including the Juba-Shebelli interriverine area), which has annual precipitation up to 600 millimeters. Thus, throughout the country, rainfall is low. It is also irregular, both in its total quantity and in its incidence. Rainfall occurs mainly in two rainy seasons, with the result that moisture is inadequate to produce a good crop in one out of five Gu seasons--March-June--and in one out of three Der seasons--September-December. Dry seasons are, however, relatively short, with the result that the feed supply in the rangelands is more even throughout the year than in areas with only one rainy season. Severe droughts occur every eight to ten years and directly affect agricultural production and the survival of both cattle and the human population.

1.15 Two rivers, the Shebelli and the Juba, both with highly irregular flows, provide most of the country's usable surface water. Groundwater resources are unevenly distributed throughout the country. In some areas, groundwater is potentially sufficient to meet human and livestock needs, while in other areas, it has to be supplemented through rain harvesting. On the whole, however, the data indicate that there are adequate supplies of groundwater to satisfy both human and livestock requirements for the foreseeable future. However, even in areas where groundwater resources are thought to be substantial, they often remain unexplored. Water resources are described in detail in Chapter IV and Annex 2.

1.16 The available information indicates that on the basis of soil quality and the incidence of rainfall, 8.2 million hectares (13 percent of the total area) are potentially cultivable in an average year and 28.8 million hectares (45 percent of the total area) are suitable for productive grazing. The remaining 26.8 million hectares are unusable or marginal grazing land. Out of the 8.2 million hectares potentially suitable for cultivation, a very limited area is endowed with some physical and social infrastructure. Where settled or semi-settled, farmers cultivate an average of 0.7 million hectares (1 percent of the total area or 8.5 percent of the cultivable area) each year. About 2 million hectares could be brought under cultivation if

physical and social infrastructure are developed to make settlement feasible. Thus, there appears to be room for introducing a farming system based on rainfed crops in areas where lack of access and lack of drinking water have prevented settlers from developing such a system spontaneously. In addition, about 5 million ha could be brought under cultivation once the necessary work of reclamation has been undertaken to correct such deficiencies as erosion hazard, impeded drainage, low inherent fertility and salinity. The feasibility and economics of such reclamation remain to be checked. On the irrigation side, due to poor control of river flow, inadequate water storage capacity, and low irrigation efficiency, the water from the Shebelli and the Juba rivers is already almost fully used on the area currently under irrigation (paras. 4.05-4.08). Thus, the expansion of irrigated agriculture is primarily contingent upon improved irrigation infrastructure and efforts to increase the effective availability of water through improved management and increased storage capacity. On the other hand, because of the relatively advanced state of irrigation development in the Shebelli basin and the necessity for supplementary irrigation at times of low flow, more detailed investigations should be carried out to determine the extent of the aquifer, and to prevent overexploitation and deterioration of this resource.

1.17 Based on the 1975 census, Somalia has about 5.3 million camels, 4 million cattle, 9.4 million sheep and 15.3 million goats. There are three traditional systems of livestock production--nomadic pastoralism, production by settled farmers and specialized production by urban dwellers. The government has also launched specialized livestock enterprises in the form of ranches, specialized dairy farms, cattle feedlots and poultry farms.

1.18 Somalia has 1,000 kilometers of coastline on the Gulf of Aden and 2,000 kilometers on the Indian Ocean. The continental shelf is generally narrow. Much of the seabed is rocky, uneven, and steeply sloping except off the northeast coast between Ras Asir and Eil, where an extensive trawlable area exists. On the basis of the available information, estimates of potential sustainable annual catches are put at 8,000 tons of large pelagic species such as tuna and mackerel, 100,000 tons of small pelagic species such as sardines, herring, and anchovies, 40,000 tons of large demersal species such as grouper, snapper, and flounder, 30,000 tons of sharks and rays, 2,000 tons of spiny lobster, 400 tons of shrimp, and an unknown quantity of turtles, cephalopods, and mesopelagic species. The main fishing area for the large pelagic species lies in the Gulf of Aden, and the main concentration of large demersal species is along the east coast. The abundance of pelagic species is subject to seasonal and annual fluctuations, while demersal species tend to undergo only limited migration and can therefore support a year-round fishery.

Sectoral Objectives

1.19 The successive development programs of Somalia have stated consistently that the long-term objective of the country is to raise the standard of living of the people through provision of opportunities for gainful employment, the eradication of all forms of exploitation, and the creation of a society based on social justice and individual freedom. In the agricultural sector, this broad objective is translated into four general intermediate objectives.

1.20 Continued drive toward self-sufficiency in sorghum, maize, and oil seeds. Somalia produces an estimated average of 140,000 tons of sorghum, 100,000 tons of maize, and 40,000 tons of sesame and groundnuts in an average year. Self-sufficiency would mean that production of sorghum would at least keep pace with the natural increase in the population and the increased demand brought about by the settlement of nomads, that production of maize would increase to cover present imports of about 60,000 tons, which is equivalent to 60 percent of local production, and in addition keep pace with the increase in the population, and that production of sesame and groundnuts would at least double to cover present imports, in addition to keeping up with the growth of the population.

1.21 Increased production for import substitution of rice, cotton, sugar, and--to a lesser extent--wheat. Somalia produces about 6,000 tons of rice and imports about 30,000 tons; it produces about 4,000 tons of seed cotton, which meets about a third of the country's ginning capacity; it produces about 30,000 tons of sugar and imports about 50,000 tons; and it produces about 3,000 tons of wheat and imports about 40,000 tons.

1.22 Increased production for export of livestock, fish, and bananas and the development of new export crops, such as cotton, sesame, fruits, and vegetables. In the case of livestock, this would mean healthier animals, more efficient marketing, increased offtake through better management of the range, and intensive production of meat; in the case of fish, production would be increased as a result of the development of coastal and deep-sea fisheries, both of which are, so far, underdeveloped.

1.23 Protecting the country against the effects of drought. This has two components. The first aims at a decrease in the number of people who live off the economic activities that are most vulnerable to drought. This implies decreasing the proportion of nomads in the total population and assisting them in making a sustainable living through activities in which the risk of drought can be managed such as in the settled farming and fisheries subsectors. The second is an effort to develop a national food security program to cope with emergency situations whenever and wherever they arise. This implies increased food availability through local production and/or through imports and developing a logistical system for reaching the people affected. Perhaps fortunately, the first objective of sedentarization of nomads has not been pursued for its own sake, because worldwide experience has shown that premature or forced sedentarization of pastoral people simply does not work short of massive coercion. Creating the conditions

under which pastoralists do not have to search for water, forage, minerals, craft materials, market opportunities and other necessities provides the best basis for encouraging their settlement.

Development Efforts To Date

1.24 Past agricultural development efforts in Somalia have been haphazard. The availability of external financing has been a principal criterion in the selection of investments, which, because of the absence of well-defined priorities, has often tended to produce unrelated activities which do not lead to self-sustained development. Following the Five-Year Development Program, 1974-78 (FYDP), the government produced an interim Three Year Development Program, 1979-81 (TYDP), to bridge the gap between the earlier program and the anticipated five-year program for 1982-86. The TYDP, like the programs that preceded it, is simply a collection of ongoing activities, the long-term viability of which is often unproven and loosely identified projects and project ideas for which external financing has been secured or appears to be in sight.

1.25 About 35 percent of total expenditures planned under the TYDP (Table 4) are allocated to the agricultural sector. This represents average yearly expenditures of So.Sh. 830 million (US$130 million) compared to a yearly average of So.Sh. 280 million (US$44 million) under the FYDP, 1974-78. It is estimated that about 60 percent of planned expenditures were actually spent during the period 1974-78.

Table 4

Planned Expenditures Under the TYDP, 1979-81

	So.Sh. Million	%
Agricultural Sector	2,500	35
- Livestock subsector	(640)	(9)
- Crop Production subsector	(1,600)	(22)
- Fisheries subsector	(260)	(4)
Mining and Manufacturing	1,270	18
Public Utilities and Transport	2,060	29
Services	1,270	18
Total	7,100	100

1.26 The TYDP calls for So.Sh. 2,600 million in domestic resources, with government budgetary participation to the extent of So.Sh. 1,900 million, or an average of So.Sh. 633 million a year (US$100 million). This is a substantial undertaking, and in the light of the fiscal performance of the country during the past few years, may not be feasible. A new feature in the TYDP is the expressed expectation that the private domestic sector will contribute So.Sh. 70 million--about 1 percent of the financing needed. However, the TYDP does not specify any actions to ensure that this participation by the private sector will be forthcoming.

Chapter II: Major Issues Facing the Agricultural Sector

A. The Resource Base and the People

2.01 Somalia has limited natural resources. However, there is substantial scope for making better use of its land, water and fisheries resources to improve production, provide productive employment and establish a basis for long term growth of the agricultural sector. Past trends in the size and geographical distribution of the population have led to a situation where some resources are overused while others are underused. Four examples illustrate this point. First, land presently under rainfed cultivation is underused in the sense that it can be made more productive through integration of crop and livestock activities at the present level of technology. Second, because of lack of access roads and water, good quality land in areas with adequate rainfall is being underused as range. Third, because of overuse, the productivity of rangelands has been deteriorating and range is fast reaching the limit of its ecological potential. Fourth, water resources, which are among the most valuable resources in the country, are either unused or poorly managed. The proper use of land and water resources is an urgent matter not only because of its economic implications, but more importantly, because of the need to relocate people and livestock from areas where the productivity of land is declining to areas with greater potential carrying capacity.

2.02 Population dynamics. On the basis of preliminary information from the 1975 census, the population of Somalia was estimated to be 4.2 million 1/ in 1980, with an annual rate of growth of 2.6 percent. At that rate of growth, and not accounting for the Ogaden refugees who are estimated, as of June 1980, to number over one million, the indigenous Somali population will number about 7.1 million by the year 2000. However, judging from observations in other countries such as Kenya, improved health services would likely result in a higher population growth rate than now prevails. If, an average rate of growth of 3 percent over the next 20 years is assumed, and again not accounting for the Ogaden refugees, the Somali population would number about 7.6 million people by the year 2000. Table 5 gives population projections under the two alternative rates of growth, assuming the present rate of rural-urban migration. The question arises at what level the country can support this many people and what each of the agricultural subsectors--livestock, crop production, and fisheries--could contribute to the employment of the increasing population.

1/ The Government of Somalia's official estimate of the 1980 population, based on a new analysis of the 1975 census, is 5 million, excluding refugees. To the extent that the higher figure is confirmed by further demographic study, the problems indicated in this report would be that much worse, but the proposed strategy would not be affected.

Table 5

Population Projection
(million)

	Nomad	Settled Rural	Urban	Total
1980	2.4	0.9	0.9	4.2
2000 a/				
A	3.4	1.4	2.3	7.1
B	3.4	1.6	2.6	7.6

a/ Alternative A assumes an overall rate of population growth of 2.6 percent per annum, while alternative B assumes 3 percent per annum. Nomadic population is assumed to grow at the same rate in both cases because of their limited access to improved health services.

2.03 Implications for range resources and the nomads. Nomadism is a practical way of adapting to an arid and unreliable climate. However, the viability of this way of life depends on a high ratio of usable land per capita and per animal unit maintained. The rangelands in Somalia are characterized by low productivity and continuing degradation. The preservation of the productive potential of this resource and the country's desire to improve the welfare of the nomads require control of grazing until the quality and productivity of the range are upgraded. This means that for the foreseeable future, the number of people and animals on the range should not be increased.

2.04 Under the assumption that the population on the range is stabilized at its present level of 2.4 million, the incremental nomadic population of about one million would have to be absorbed elsewhere in the economy over the next 20 years. Further assuming that the present rate of the rural-urban migration continues and given the limited opportunities for productive employment in the non-agricultural part of the economy, settled agriculture and fisheries appear to be the only outlets for absorbing the incremental nomadic population. Settled agriculture and fisheries would also have to absorb the increase of the presently settled rural population, estimated at between 0.5 and 0.7 million over the next 20 years.

2.05 Implications for rainfed farming. Dryland farming is a separate category which must be distinguished clearly from irrigated farming. It represents the last resort for employment and subsistence in Somalia. Land presently under cultivation is extensively farmed, and the production practices take more out of the land than they put back into it. Under these circumstances, the 540,000 hectares cultivated under rainfed conditions provide the basis for the livelihood of about 600,000 people (110,000 families). In the foreseeable future, these areas, if rehabilitated, have the potential for providing a better livelihood for the farming population already there, but not for accommodating more people. The mission estimates that rehabilitation of presently cultivated rainfed areas (e.g., in Bay Region) would cost about US$300 per hectare or US$1,500 per family. This would result in per

capita income progressively increasing from about US$95 at present to US$120 by year 10 and to US$220 by year 20. In addition, there are at least 2 million hectares of land with good quality soils in rainfall zones that could support a farming system similar to that presently practiced in cultivated areas (para. 1.19). Because this land is remote from presently settled areas, bringing it under cultivation would require thorough land use planning, extensive investments in infrastructure, particularly access roads and domestic water supply. Land use planning would be especially important in such new areas in order to avert costly errors in investment decisions. In addition, budgetary and institutional support would be needed for the provision of basic social services and for providing the technological and financial support needed for getting the production process going. The mission estimates that this would cost about US$600 in on-farm investments for each hectare brought under cultivation or US$3,000 per family. New rainfed areas brought under cultivation would progressively reach the level of productivity of areas which have been rehabilitated, hence, allowing the beneficiaries to achieve a per capita income of about US$120 by year 10 and US$220 by year 20. The rate at which the potentially cultivable land could be brought under cultivation depends on the magnitude of institutional and financial means mobilized by the country for that purpose. Based on past experience in Somalia and on observations in other countries, the mission is of the opinion that the process of building up infrastructure to facilitate settlement of nomads and provide room for expansion of farming outside of the presently cultivated areas would be initially slow, not only because of resource limitations, but more importantly because the initial rate of shift from nomadism will be low. Settling one million nomads, even over 20 years, it must be remembered, is a very ambitious undertaking. It would, however, progressively gain momentum as new settlers acquired confidence in the viability of rainfed farming as compared to nomadism.

2.06 If the Government follows a policy of voluntary settlement with public sector support, in the form of infrastructure development and provision of basic services, under the best of circumstances land could be brought under cultivation over the next 20 years at the following average rates:

Period	Area Per Year (ha)	Total Area (ha)
Years 1 to 5	10,000	50,000
Years 6 to 10	20,000	100,000
Years 11 to 15	40,000	200,000
Years 16 to 20	80,000	400,000
Total		750,000

These numbers imply that, by the turn of the century, out of the expected incremental nomadic and rural settled population of 1.5 to 1.7 million, the rainfed farming subsector could absorb no more than 825,000 people (150,000 families, assuming 5.5 members per family). Out of this total, between 380,000 and 480,000 people would represent the natural increase of the already settled farming population, and the 345,000 to 445,000 figure would represent settlement by former nomads. Assuming this ambitious level could be attained, this would still leave between 675,000 and 875,000 people who would have to find a living in either irrigated agriculture, fisheries or non-agricultural employment.

2.07 Implications for irrigated farming. The mission estimates that the 160,000 ha presently under controlled and uncontrolled irrigation provide a livelihood for about 215,000 people (39,000 families). Controlled irrigation (para. 4.05) covers about 50,000 ha and is limited almost entirely to the Shebelli (38,000 ha) and Juba (12,000 ha) river basins. There is less than 1,000 ha of controlled irrigation in the northern areas. In contrast to the areas presently under rainfed farming and uncontrolled irrigation, controlled irrigated areas, if rehabilitated, have the potential for providing a better livelihood for those farmers who are there and an opportunity for absorbing an increased number of people who could make a living through a more intensive use of the same land and water resources. Unlike rainfed farming, irrigation rehabilitation also holds the promise of increased export earnings, since most rainfed crops are grown for subsistence while most irrigated crops are grown for export. The mission estimates that rehabilitation of presently irrigated areas including all infrastructure would cost about US$3,000 per hectare or US$9,000 per family. Based on present farm size, this would result in per capita income progressively increasing from US$200 to about US$500 at full development in case no livestock activities are involved and from US$300 to about US$700 in case livestock and crop activities are integrated. However, increased productivity of areas under controlled irrigation would make it feasible to increase the number of people who could be absorbed in this subsector through a higher man/land ratio than now prevails in Somalia. The mission estimates that the natural increase of the population in areas with controlled irrigation could be absorbed on the same area without causing a decline in the quality of life of those already there or a deterioration of the land and water resources. The average size of an irrigated farm would fall, under these conditions, from 3.0 ha to between 1.5 and 2.0 ha.

2.08 With increased storage capacity on the Juba river and better water management on both the Juba and the Shebelli rivers, controlled irrigation could be expanded to about 200,000 hectares. However, as in the case of rainfed farming, this expansion would require thorough land-use planning, major investments in infrastructure development and improved extension, research, credit and marketing services. The mission estimates that expansion of irrigated farming would require investments of the order of US$7,500 per hectare or US$15,000 per family (in terms of 1979 prices) assuming an average farm size of 2.0 ha. These figures do not include related costs for supporting social infrastructure. If this investment were to be used to foster the development of small scale private farms, the mission estimates that it would generate per capita incomes in the order of US$300-500 depending whether or not livestock activities are integrated with crop activities.

2.09 During the past several years, between 1,500 ha and 3,000 ha of new land has been brought under irrigation, mainly in the Juba valley. It is expected that expansion will continue at the modest pace of 1,000-2,000 ha per year on schemes for which funds are already committed. Due to the urgent need for rehabilitation of existing areas, however, no new commitments for further significant increases in the area under irrigated crops should be undertaken within the next 5 years. Instead, efforts should be concentrated on rehabilitation of existing controlled irrigation and in building up the country's

operation and maintenance capabilities. At the same time, attention should be given to the establishment and collection of irrigation water charges to finance a growing requirement for operation, maintenance and new investment. If these steps are taken now to increase Somalia's implementation capacity, it should be possible to expand the area under irrigation in the Juba valley by 5,000-6,000 ha per year beginning in 1990, by which time the proposed Bardere dam (paras. 2.34 and 6.25-6.26) would be in place. According to the foregoing scenario, the area under controlled irrigation would be rehabilitated and expanded over the next 20 years as follows:

Period	Rehabilitation (mainly Shebelli)	New		
		Shebelli	Juba	Total
1981-1985	10,000	-	5,000	5,000
1986-1990	15,000	-	10,000	10,000
1991-1995	10,000	2,000	25,000	27,000
1996-2000	-	3,000	30,000	33,000
Total	35,000	5,000	70,000	75,000

2.09 If controlled irrigation were rehabilitated and expanded as indicated above irrigated farming could, by the end of the century, accommodate about 138,000 people (25,000 families) on areas presently under controlled irrigation and about 206,000 people (38,000 families) on an incremental area of 75,000 hectares. These numbers added to those assumed to be absorbed in rainfed farming would leave between 425,000 and 625,000 people (77,000 to 113,000 families), in addition to those already engaged in fishing, for whom the only alternatives would be fisheries, employment in the non-agricultural sector (assuming it was available) or migration abroad.

2.10 Implications for fisheries. Compared to the 1978 fish production of less than 4,000 tons of all types of fish, the known resources of Somalia are believed to be capable of sustaining catches of up to 180,000 tons per year, half of which could be generated by artisanal inshore fishing and the other half by commercial offshore fishing. The discussion will be limited to the artisanal fishing as it is the major potential employment generator in this subsector.

2.11 The mission's estimates indicate that present artisanal fish production is about 5 percent of its potential and that about 2 percent of the population base their livelihood on fishing. Accordingly, there is an opportunity for developing fisheries with the objective of creating employment for a larger section of the population. The figures in paras. 2.06 and 2.09 indicate that even under the best of circumstances, there would remain 510,000 to 710,000 rural people who would have to make a living outside of the livestock and crop economy. If these people were to be absorbed in the fisheries subsector, this would mean that between 7.2 and 9.3 percent of the Somali population would, in 20 years, be basing its livelihood on fisheries -- a 6 to 8

fold increase in absolute numbers. On the basis of fish resources alone, this increase appears feasible, but the rate of shift from nomadism is likely to be even lower than in the case of rainfed or irrigated agriculture. In the mission's opinion, investments in infrastructure and services of the order of US$5,000 per family would also be required. Artisanal fisheries would provide a per capita income of the order of US$200.

2.12 Table 6 summarizes the numerical implications of the foregoing set of assumptions. Under this scenario which reflects Somalia's sectoral resource endowment, the Somali population would shift from being predominantly nomadic to one evenly distributed between nomadic, rural settled and urban population. At best, this would be a demanding objective to achieve but the consequences in terms of continued degradation of the range and human impoverishment make it imperative to try.

Table 6

Population Distribution Among Subsectors
('000 people)

	Rangelands		Rainfed Farming		Irrigated Farming		Fisheries		Other Sectors	
	No.	%	No.	%	No.	%	No.	%	No.	%
1980	2,400	57	600	14	215	5	85	2	900	21
2000 a/										
A	2,400	34	1,425	20	465	7	510	7	2,300	32
B	2,400	32	1,425	19	465	6	710	9	2,600	34

a/ A assumes a rate of population growth of 2.6 percent while B assumes a rate of 3 percent.

B. Social Issues

2.13 Allocation of scarce resources among beneficiaries. The government is committed to an egalitarian policy of development, which is reflected in its wage and price policies, and its public ownership of key sectors of the economy. Yet in practice a number of programs have tended to exclude rural producers from the benefits of development. For example, some of the best rangelands are being reserved by the government for ranch sites and, on a first-come, first-served basis, for grazing associations and cooperatives. Although these schemes have the potential to improve the welfare of participants, limited good quality rangelands would permit only a small section of the nomadic population to benefit. Second, although the Government has made efforts to encourage small farms and cooperatives in irrigated areas, the thrust of the agricultural research program to date has been to develop techniques suited to large scale irrigated state farms. Third, in mixed agricultural areas, the provision of agricultural and social services has also tended to favor high-cost alternatives, such as large scale mechanized

farming which can be provided for only a minority because of the high cost per capita and the limited resources. Low-cost inputs and delivery systems in agriculture, preventive health care, and community oriented education could serve more people for the same expenditures.

2.14 Participation in the development process. Past development strategies have made individual families and communities less self-reliant. For example, in an effort to achieve quick results, national programs to encourage food production have favored large-scale over smallholder schemes; second, Government strategy to achieve self-sufficiency in food, especially grains, included actions which discouraged on-farm storage, such as legal limitations on the quantities that farmers can keep for themselves and an unfavorable producer price policy. Third, national policies have tended to discourage capital improvements on farms and rangelands except under direct sponsorship of the government, a direct result of the agricultural price policy and the concentration of infrastructure in areas where the public sector is involved.

C. Institutional Issues

2.15 Skilled manpower. Resources of skilled manpower are scarce, and better use could be made of those that are available. The links between the education system and the economic development process are weak. For example, the importance attached by the government to irrigation in its development programs is in contrast to the absence of programs for the training of irrigation engineers and technicians. Vocational training for agriculture is limited. There exists only one agricultural secondary school, and it is badly equipped for training. Curricula at all levels of the education system place too little emphasis on technical and scientific subjects. Training abroad is not planned to meet identified needs in the country but is left instead to be influenced by the bilateral relations between donor agencies and the government.

2.16 Present employment policy guarantees a job to anyone who attends school, without regard for matching qualifications with job requirements and with only limited consideration of national priorities or of whatever opportunities may exist for productive employment. Once on the job, people are not given incentives, either professional or monetary. Decision-making is concentrated at the top, and in most agencies there is limited professional challenge to any but those in the top positions. Salaries, extremely low, bear no relationship to expected performance. No allowance is made for recognition of superior performance. Technical assistance is often used as a substitute for local manpower rather than as a complement to it. As a result of all this, people become disenchanted and either leave their jobs or adopt strategies to ensure their own survival through multiple jobs, minimum involvement in each of them, complete rejection of responsibilities, and emigration.

2.17 Despite these widespread shortcomings in the mobilization and use of Somalia's limited skilled manpower, there have recently been some encouraging signs of change. According to the President's speech of October 1980, the

Government intends to control public employment and direct secondary school leavers to vocational training institutes. Recent operational experience with the Ministry of Agriculture and the National Range Agency indicates that the Government is making greater efforts to match individual skills with job requirements, provide incentives to qualified staff for good performance, assign counterparts (sometimes in advance of the arrival of their advisers) and delegate more authority.

2.18 Organization and management. In the mission's opinion, there is an unnecessary proliferation of virtually autonomous public agencies, apparently created as measures of last resort to get around the weaknesses of existing agencies and to enable them to perform specific functions within a given period. An example is the recent establishment of the Trade Agency for Vehicles and Spare Parts (WAGAD), which has taken over the import and trade of tractors, earth-moving equipment, and spare parts from the Farm Machinery and Agricultural Services Organization (ONAT). Another example is the overlapping functions of the Agricultural Development Corporation (ADC), the National Trading Company (ENC), the Milling Company, the Textile Company (SOMALTEX), and the Settlement Development Agency for Crash Programs . No mechanism has been created to control these agencies and ensure that they perform efficiently the functions for which they were created or to disband them once the purposes for which they were created have been accomplished. At present most public institutions provide only an administrative framework for development activities, and there is little effective management. Responsibilities of individual agencies are theoretically defined, but the responsibilities defined are rarely assumed. There is no mechanism for monitoring the extent to which they are assumed and, for that reason, there is no accountability within the system, it is impossible to enforce discipline, and management has become difficult.

2.19 The Ministry of National Planning (MNP) was established to be a prime mover in the process of improving organization and management in the country. Despite the substantial amount of technical assistance it now receives, the Ministry still needs strengthening to fulfill its leadership function as a coordinator of the technical ministries and as a liaison between the executive branch of the government and the technical ministries. Its planning capability needs to be reinforced by developing its departments of statistics, planning, and international cooperation. The last department is responsible for deciding on the amount and quality of and the source of technical assistance, procuring such assistance and planning (with the technical ministries and the Ministry of Education) for the replacement of the technical assistance staff with Somalis. MNP does not yet have effective monitoring and evaluation capability to serve as a basis for planning and management of resources.

2.20 For the agricultural sector, there are three single purpose ministries (Agriculture, Livestock and Fisheries), and several semi-autonomous agencies dealing with the sector. In addition, other ministries, such as Water and Mineral Resources and Commerce and Industry, have major responsibilities which impinge on the sector. While it may have been appropriate for these agencies to operate independently in the past, the increased market

orientation of the sector and the growing importance of mixed farming would require close coordination and cooperation in the future.

2.21 Two areas which need coordination are extension and research. Full cooperation among the ministries of Agriculture, Livestock, Fisheries and Water and Mineral Resources, along with the National Range Agency (NRA), the Livestock Development Agency (LDA), the ADC, and others, in establishing extension services, methodologies, and programs is imperative. Similarly, research needs to be made responsive to the requirements of producers and be aimed at improving the integrated system from which they gain their livelihood. No research is now being done on the production systems of smallholders, the constraints they face, and the alternatives for improving their productive potential.

2.22 For the organization of crop production, Somalia must choose the right balance between large-scale publicly managed schemes and cooperatives and small-scale privately managed production units. Both have considerable scope for improved efficiency and productivity and have a place in Somalia's agricultural development strategy. Without large scale, mainly irrigated agriculture, the country could not sustain the flow of exports. Similarly, rainfed farming is the only alternative for many Somalis as well as one of the country's main sources of foodcrops. However, there is, in the mission's opinion, a lack of balance in government support (financial, managerial and technical) to these two types of production systems in favor of large-scale, publicly run production units and cooperatives. Large-scale production and to a lesser extent cooperative schemes require foreign exchange-intensive technologies, are management-intensive, and provide few employment opportunities. In contrast, small-scale production units are based on low input technology, require little foreign exchange, and are oriented toward participation by a large number of people.

2.23 Incentives. The problem of incentives is that of breaking the vicious circle of lack of motivation, low productivity, limited base of government revenues, budgetary constraints, decline in economic activity, need for one section of the economy to subsidize the other, and so on. This vicious circle is created chiefly by two elements in the package of incentives, namely, remuneration of manpower and the prices of inputs and outputs. The issue of manpower remuneration is only partly financial, but in that context it can be regarded as part of the price issue. The larger aspect is professional motivation, as reflected in the allocation of responsibilities and the opportunity for taking initiatives. Furthermore, within the public sector, there is no clear system for rewarding superior performance. Concerning prices, the government is torn between the need to encourage producers to increase their marketable surplus and what it perceives as a political requirement to ensure the availability of food at a price that the urban population can afford.

2.24 As Table 7 indicates, at the official exchange rate of 6.3 Somali shillings to the U.S. dollar, producer prices of sorghum and maize are about par with the farm-level equivalent of world market prices. The producer prices of cotton, sesame, and bananas are far below world market prices, while the producer price of rice is higher than the world market price. If the

exchange rate prevailing under the franco-valuta system were used--9 Somali shillings to the U.S. dollar--all producer prices except that of rice would be substantially lower than world market prices. If the parallel market exchange rate of 11 Somali shillings to the U.S. dollar were used, even rice producers would be underpaid by world market standards.

Table 7

Farmgate Prices
(So.Sh./ton)

Crop	Official price	Prices derived from world market price (US$1=So.Sh. 6.3)	(US$1=So.Sh. 9)	(US$1=So.Sh. 11)
Sorghum	750	705	1,063	1,334
Maize	750	750	1,130	1,412
Rice (Milled)	3,500	2,224	3,027	3,763
Sesame	2,400	4,353	6,416	7,944
Cotton	2,600	3,632	4,962	6,108
Bananas a/	750	1,040	1,580	1,980

a/ Official price at packing station.

2:25 While producer price policy is important, its initial effectiveness as a tool for increasing production and the marketable surplus of crops in rainfed areas is likely to be limited (para. 4.09). It would likely have a more immediate impact on the production of irrigated crops and fish. On the demand side, price policy could be used to encourage the consumption of foods in which the country has a comparative advantage. For example, at present, there is no difference in the consumer prices of maize and sorghum. The result is a strong demand for maize, part of which must be imported. Similarly, the fast-increasing demand for rice and wheat could be checked by setting consumer prices high enough in relation to the prices of sorghum and maize. In addition, present policy prescribes uniform prices for all locations and time periods. While recognizing that this leads to misallocations of resources at the margin, the mission considers reform in this area less urgent because basic production decisions are presently dictated more by considerations of natural resources and climate than prices.

2.26 Prices in Somali shillings paid to producers for exportable commodities have to be high enough to stimulate exports. At the same time, Somalia cannot allow its export prices to become uncompetitive in relation to world market prices. These conflicting objectives have been informally reconciled with respect to certain products by means of the franco-valuta system, which is a temporary solution to the problem of an overvalued shilling. In the case of livestock, the minimum export price is allowed to lag behind the actual export price. The difference between these two prices is repatriated at the parallel rate of exchange. For exporters, this is equivalent to a price increase, which, because the livestock trade is essentially free, would be

reflected in producer prices. Accordingly, the greater the difference between the minimum price and the actual export price, the higher the producer price and the greater the export of livestock. This system can continue to perform as it does at present only if the difference between the minimum export price (which is fixed by the government) and the price received abroad (over which the government has no control) is large enough to motivate exporters. For example, the price of sheep in Jeddah is US$60 a head. The minimum export price in Somalia is US$40 a head. The difference of US$20 is repatriated at an exchange rate that varies between 9 and 12 Somali shillings to the U.S. dollar as opposed to an official exchange rate of 6.3 Somali Shillings to the U.S. dollar. The exporter thus receives a premium of between So.Sh. 54 and So.Sh. 114 a head. Unfortunately, banana exports do not benefit from the franco-valuta system; exporters of bananas receive only the official price, which is far below the export parity price (Table 7).

D. Vulnerability to Drought

2.27 Agricultural production has been essentially stagnant with wide fluctuations due to periodic droughts. The last major drought of 1973/75 resulted in serious losses in human and livestock population and created a preoccupation with drought proofing the country through increased production to ensure a certain degree of food security and settlement of nomads in areas where public services can be provided.

2.28 Increasing production. Crop production in Somalia has been stagnant over the period 1970-1980 and in the case of bananas it has been declining (Table 8). Available information indicates that areas under various crops have been constant, which implies stagnant yields. Although there are no data to substantiate it, the mission believes that, because of increasing settled population due to both natural growth and spontaneous settlement, the area under crops must have been increasing over the years. This would imply declining yields. Field observations in the irrigated subsector tend to confirm this suspicion.

2.29 Whether stagnant or declining, productivity in agriculture has been low. There is a wide range in the sophistication of technological practices from the low input/low output shifting cultivation to large scale mechanized farming. However, while there is a wide range of yield performance within each technology, there is a surprisingly narrow range of average yields between technologies. In the case of the state farms, the poor results appear mainly due to inadequate managerial skills and lack of timely inputs.

2.30 Rainfed crop production involves mainly sorghum. The technology is low input/low output, involving family labor, rudimentary hand tools and low quality seeds. Average yields are low. Sorghum averages about 400 kilograms a hectare; intercropped pulses average about 70 kilograms a hectare; groundnuts, a relatively new crop, average about 600 kilograms a hectare. Yields actually achieved by better farmers using this technology under field conditions are at least twice those averages. Furthermore, the technology could be improved by introducing animal traction as a means of improving cultivation practices and expanding the area under cultivation. It could be further

Table 8

Production of Agricultural Crops in Somalia
(in thousand metric tons)

Year	Maize	Rice	Sorghum	Beans	Staples (Total)	Sesame	Groundnuts	Vegetables	Cotton	Sugar Cane	(Sugar)	Banana Production	Banana Export
1970	122.06	2.94	158.12	10.94	294.06	43.40	3.03	28.76	3.52	450.4	(46.0)	145.5	(99.7)
1971	99.36	2.39	128.74	8.88	239.37	35.33	2.47	23.41	2.86	-		150.8	(103.3)
1972	114.92	3.47	149.13	10.34	277.86	41.01	2.86	27.17	3.32	-		188.5	(134.0)
1973	98.87	3.47	128.36	8.91	239.61	35.37	2.47	23.44	2.87	-		168.3	(112.0)
1974	96.75	4.12	125.72	8.76	235.35	34.73	2.42	23.02	2.81	382.6	(30.3)	157.5	(103.3)
1975	103.62	4.93	134.72	9.39	252.66	37.29	2.60	24.71	3.02	370.0	(30.6)	106.0	(81.8)
1976	107.60	5.38	139.94	9.78	262.70	38.77	2.71	25.69	3.14	333.3	(33.2)	96.6	(72.8)
1977	111.27	8.38	145.12	10.23	275.00	40.59	2.83	26.90	3.29	320.0	(30.0)	71.7	(53.8)
1978	107.74	12.06	141.09	10.06	270.95	40.00	2.79	26.51	3.24	N.A.		87.3	(57.1)
1979(est)	108.15	13.60	140.13	10.12	271.97	40.15	2.80	26.60	3.25				
1980(est)	110.53	16.68	140.45	10.31	277.97	41.03	2.86	27.19	3.32				

Source: Ministry of Agriculture - Planning and Statistics

improved by combining animal traction with other innovations such as correct plant population, disease, insect and weed control and good quality seeds.

2.31 At the other end of the spectrum, controlled irrigation, practiced mainly on the banana and sugar farms and on state farms, was conceived as a high input/high yielding activity. So far, however, technology has been often poorly used and productivity has been low. Average yields are about 800 kilograms per hectare for maize, 300 kilograms per hectare for sesame, 700 kilograms per hectare for cotton, 15 tons per hectare for bananas and 45 tons per hectare for sugarcane. Given proper management and adequate input supplies, technology presently used in controlled irrigation should permit yields two to three times those averages. In general, the use of "modern" technology has not brought about significant increases in yield over what is being achieved with "traditional" practices. There is thus room for increased productivity and production regardless of the technology used.

2.32 In the case of livestock production, offtake is about 3 percent at an average liveweight of about 300 kilograms for camels, 7-11 percent at an average liveweight of 220 kilograms for cattle, and about 15 percent at an average liveweight of 25 kilograms for sheep and goats. Productivity of camels is about three quarters of that reported in more favorable environments in Kenya. Productivity of cattle is comparable to similar environments in East Africa but low in comparison to much higher yields in the East African highlands. Productivity of sheep and goats is comparable to that in environments similar to that of Somalia with higher slaughter weights but lower reproductive efficiency than in more humid pastoral areas of Africa. Improving the productivity of livestock could be achieved through three types of actions namely, improving the quality of the range through better management, integrating livestock and crop production activities and developing a feed base for intensive livestock production. These are inherently long term activities. In the nearer term, however, the offtake rate (hence, livestock exports) could be increased through improved veterinary services, market incentives and improved marketing services and facilities.

2.33 Drought proofing. The Government's approach to drought-proofing has emphasized resettlement of nomads and horizontal expansion of irrigated agriculture. Judging from the results to date, organized massive settlement does not appear to be the right approach to resettling nomads under Somali conditions. The settlement program, started in 1975, has not succeeded in achieving its objectives of creating self-sustaining communities for the former nomads.

2.34 As for horizontal expansion of irrigated agriculture, the major investment contemplated by government is the Bardere dam. The Dam itself is expected to cost about US$438 million at 1981 prices without the needed downstream infrastructure to use the water. While increasing the water storage capacity is among the few opportunities Somalia has for reducing its vulnerability to drought, care must be taken that the most economic use is made of an investment of this size. The choice of crops in terms of the country's comparative advantage and the need to earn or save foreign exchange are important considerations in planning for the use of the Bardere water. The timing of the investment is also crucial. Given Somalia's limited financial and technical resources, and opportunities for increasing output and

employment in the short run by completing on-going projects and rehabilitating potentially productive older schemes, the Bardere Dam does not look like an attractive investment in relative terms.

E. The Present Economic Crisis

2.35 Many of the issues discussed so far in this chapter will take time and patience to resolve. Without detracting from their importance, the severe external and domestic financial imbalances which currently face Somalia dictate that the most urgent attention be given to prompt and effective measures to restore economic equilibrium (paras. 1.08-1.11). A satisfactory resolution of this overriding problem is not only inescapable but a necessary condition for creating an economic environment in which the other issues can be addressed.

2.36 Central to the problem has been the steady decline in recent years in agricultural exports (which represent over 90 percent of total merchandise exports) and the increase in imports, notably in food grains and other agricultural produce. In 1978, the volume of exports was almost 30 percent lower than it was in 1972 (Table 1). For exports of live animals, the decline was 9 percent while for all other exports, including bananas, the decline was 63 percent. With the increase in population and the stagnating crop production higher imports of food grains, sugar and cotton were needed. Measures to increase the production of those agricultural products in which the country has a current comparative advantage is therefore the immediate task facing Somalia.

2.37 We have already noted in paras. 2.28-2.32 above that there are good prospects for increasing production and exports which have to be considered as fundamental elements for the country's economic recovery. In view of the magnitude of the decline in crop exports, the remedial measures would have to focus particularly on the irrigation subsector, but not to the exclusion of rainfed development. Because of its important overall contribution to exports, the livestock subsector would also have to be examined to see whether exports can be quickly increased through improved incentives and facilities, and there may be further scope to expand exports from fisheries. A program aimed at economic recovery would require fast disbursing external financing. But, in order to achieve early and substantial benefits, external resources would have to be used for maximizing the production capability of sunk capital which is now underutilized.

2.38 The success of such an export-led economic recovery will, however, heavily depend on the adoption of a range of policy reforms and a package of improved incentives which are discussed in detail elsewhere in this report. These will entail a significant restructuring of the agricultural economy and a reordering of priorities within it and will require some bold and courageous decisions by Government. The extent to which the immediate economic crisis can be overcome and the speed with which the longer term problems can be addressed will much depend on the adequacy of Somalia's response to this challenge.

Chapter III: Livestock Production

A. General Characteristics

3.01 About 60 percent of the Somali population practice nomadic pastoralism as a way of adapting to the arid and unreliable climatic conditions. Most nomads keep a mixture of species of livestock in their herds in order to minimize risks and maximize benefits. Livestock producers generally prefer a mix of species which allows them to make fuller use of vegetation by taking advantage of various feeding habits, take advantage of variations among species in biological coefficients and tolerance to drought, and cater to the needs of their families for milk, meat, transport, cash income, and investment.

3.02 Animal husbandry is practiced in conjunction with crop production in limited areas in the Juba and Shebelli river valleys, the Bay Region, the northwest, and, to some extent, around Erigavo in the northeast. Farmers tend to keep lactating cattle and a few sheep and goats near their homes, while camels, dry cattle and sheep and goats are herded farther away in a manner similar to the herding of nomadic stock. The major cities of Mogadishu, Kismayo, and Hargeisa obtain the greater part of their milk supplies from urban producers. In Mogadishu, cattle are kept in private compounds at the outskirts of the city, and most of the feed is carted from the Shebelli valley. Sheep, goats, and chickens are also raised on a subsistence basis. Details on the livestock production systems are presented in Annex 1.

3.03 Efforts to improve the productivity of the livestock subsector have included attempts at the introduction of organized range development and management, large-scale dairy farms, ranches, and modern methods of poultry production. Present efforts toward improvement of the range are concentrated in the northern rangelands and are being extended to the central rangelands. Efforts to establish ranches, dairy farms, and feedlots are still experimental, for suitable technology has not yet been proved and the economics of these activities has not yet been studied. The production of poultry suffers from the irregularity of feed supplies and losses caused by outbreaks of disease, although the Serum and Vaccine Institute can now deal more effectively than in the past with most diseases.

B. Role of the Subsector in the Economy

3.04 Livestock raising is the principal economic activity; two thirds of the population are engaged in it. The contribution of this subsector to GDP is estimated to be about 50 percent. Milk produced on rangelands constitutes the main diet of the nomads during several months of the year. There are no statistics indicating trends in production, but it is thought to be closely correlated with the size of the herd and strongly influenced by the pattern of droughts. The livestock sector contributes over 80 percent of the country's export receipts. Part of these foreign exchange earnings are

remitted through the franco-valuta system (para. 2.26) which has provided the sector with an effective price incentive. This is reflected in a substantial increase in exports between 1976 and 1978 from 385,000 to 739,000 sheep, from 381,000 to 715,000 goats and from 58,000 to 77,000 head of cattle.

3.05 Although the livestock sector is responsible for a substantial part of Somalia's economic activity and represents the largest single source of foreign exchange, the sector contributes only 1-1.5 percent of government revenues, through a tax levied on exports. The tax levied on domestic slaughter of cattle in municipal slaughterhouses represents a small contribution to the budgets of local governments. On the other hand, government expenditures affecting the livestock subsector in 1978 amounted to only 1.5 percent of the ordinary budget. Given the important role livestock could play in increasing the country's foreign exchange earnings in the short run, the government would be justified in allocating more resources to the subsector and in relying more heavily on it as a source of revenues.

C. Past Development Efforts

3.06 Many projects listed in the TYDP, 1979-81, are carried over from earlier development programs. There is no clear distinction in the TYDP between new investments and replacement investments in the context of older projects which by now should have become part of the ordinary budget. The program thus overstates the resources allocated to incremental development.

3.07 The animal health program consists of seven projects aimed at reinforcing development activities already under way. Among the ten animal production projects, six are ongoing operations and four would be new, large scale production enterprises of the government. The production of poultry would be expanded through two industrial poultry complexes to produce 2.5 million broilers for export to the Middle East and an egg production complex to produce 30 million eggs, also for export to the Middle East. Improvements in the marketing of livestock would continue to be made through the Trans Juba Livestock Project, in addition to the development of holding grounds and meat processing facilities in the north for export of 9,000 tons of chilled meat annually. Development of rangelands would continue through the Northern and Central Rangelands projects. Livestock-based industries would be strengthened through continuation and expansion of ongoing projects, and a new feed plant would be established to produce 21,000 tons of concentrated feed a year for dairy cattle and poultry.

3.08 The major weakness of this program is that government proposes to continue to fund ongoing projects without assessing their potential for becoming self-sufficient or financially less demanding. The new projects are too broadly defined and inadequately prepared making it difficult to relate proposed funding to objectives. It is also difficult to place the proposed activities in an appropriate time frame with respect to past achievements and future actions. Although the present efforts to establish range and famine reserves are an attractive rational approach to the problem of range management

which should be supported, care must also be taken that the investments and recurrent expenditures in the ecologically fragile areas stay in line with the limited economic productive capacity of the land. There is also no advantage to Somalia in importing feed grains in order to export poultry meat. Wages are low, but they constitute only a small part of the cost of producing broilers and eggs. The saving in labor costs would not offset the higher cost of feed. Investment in poultry production is thus unlikely to be profitable, and this risk is accentuated by the limited availability of trained technical personnel and managers specialized in poultry production under Somali conditions. Until Somalia is able to produce grain surpluses, there seems little point in developing an export oriented poultry industry subject to fluctuations of feed prices and other imponderables. In the absence of raw materials and qualified personnel, the planned development of several feed plants also appears premature.

D. Priorities for Future Development

3.09 The government goals for the livestock subsector are (i) increasing foreign exchange earnings from export of livestock and livestock products, (ii) increasing incomes for the 60 percent nomadic population and the 20 percent sedentary farmers, and (iii) improving the supply of animal protein to both rural and urban consumers. In order to achieve these goals, there are two orders of priority. The first involves actions having an immediate impact on production and export and should aim at increasing the productivity of past investments with high potential. The second involves longer term development activities.

3.10 First order priority actions include:

(a) Animal health. The risk of disruptions to the export market as a result of disease outbreaks could be decreased through (i) more regular and ample supply of drugs, particularly along stock routes and in holding areas, and (ii) improved animal health services and control facilities at shipping points.

(b) Market infrastructure. Transport and shipping facilities would inevitably become a bottleneck with increased offtake directed towards the export market. These should be addressed as soon as possible with the minimum necessary investments in shipping capacity, port facilities and holding grounds to achieve an improved flow of animals.

(c) Hides and skins. The hides and skins industry could be quickly improved to take advantage of good export market prospects. The Hides and Skin Agency could be assisted to improve its management, the quality of its products and its overseas marketing capability.

3.11 The priority developments proposed above are anticipated to cost about So. Sh. 1,250 million over a ten-year period of which animal health would take perhaps one half. Until epidemic disease is under good control, investments in livestock production are of limited value. Government basically agrees with this assessment, but is concerned about how to finance the cost.

3.12 In response to this strategy, annual production is forecast to rise by 1990 from 175,000 to 280,000 cattle from 3.5 million to over 4 million sheep and goats and from 90,000 to 140,000 camels. Local consumption would switch towards beef (which is cheap) leaving more mutton and goat meat for export. During the period, annual exports would increase by 1,000 cattle, 380,000 sheep and goats and 14,000 camels after allowing for an increase of 40,000 tons in domestic consumption of meat. The value of total livestock exports would rise by about 2% annually through the decade and in 1990 would have a value of about So. Sh. 800 million at 1980 prices.

3.13 In addition to the increased production of meat, milk yield (which would all be consumed locally) would increase as a result of the program by an estimated 1.8% per annum. This would be brought about by 5-7% increase in total animals, by a higher proportion of the animals being breeding females (as slaughter stock would be marketed at an earlier age), and by females giving birth more regularly due to their improved health and therefore body condition. Higher milk production would produce faster growing offspring and more milk for human consumption. During the decade, the incremental annual production would amount to about 20% of total in-bucket production, or about 170 million litres with a value of So. Sh. 187 million at 1980 prices.

3.14 Second priority actions, the implementation of which would depend on the availability of resources, should continue to exploit past investments and initiate new development activities aimed at immediate increase in production and improvement in the allocation of resources. These include upgrading of animal health and livestock marketing services, assistance to the meat and meat by-products industries, and improving the supply of inputs and other services. More efficient management practices, possibly through technical assistance, and sound commercial practices should be introduced on selected state farms and government production enterprises, in order to improve their efficiency.

(a) Veterinary services. The fundamental problem is poor management of the field service. The professional standard of many field staff could be improved through more clearly defined work programs and through effective control. A vaccination campaign that would cover the national herd quickly and systematically should be undertaken. The availability of veterinary drugs in field offices should be monitored carefully, in order to serve farmers efficiently and persuade them not to obtain drugs illegally. Following the establishment of three veterinary laboratories, district-by-district disease surveys should be made so that an appropriate policy with respect to vaccination and treatment can be formulated. The availability of vehicles and veterinary drugs should also be improved.

(b) Livestock marketing. Several measures are required to make the livestock marketing system more effective:

(i) control of disease would prevent disruptions of the market flow of slaughter stock for local and export markets; this would require control of the movement of livestock, beginning at the point of entry into the marketing system;

(ii) movement of livestock needs to be facilitated by improving stock water supply and infrastructure to make trucking possible;

(iii) management of quarantine and handling facilities needs to be improved;

(iv) the supply of feed for market livestock, especially during the voyage, requires reorganization;

(v) market information needs to be provided to livestock traders and producers on a regular basis; and

(vi) a system of communications needs to be established.

(c) Dairy extension. Large-scale dairy farms have so far proved difficult to manage efficiently and a heavy burden on government budget. As a substitute to direct involvement in milk production, government would, instead, establish a marketing and extension service for dairy farmers in and around Mogadishu and in the Shebelli valley. The private dairy industry in and around Mogadishu would be studied and suggestions for improving it would be tried on a pilot basis.

(d) Large-scale government farms. The government would provide the Afgoi Dairy Farm, the poultry farms, and the feedlots with technical assistance in improving their accounting and reporting procedures.

3.15 As the implementation of the above activities progresses, a need would arise for improvement of the information base, the development of manpower, the future development of institutions, and the investigation of agro-industries, as follows:

(a) Information base. Intensive efforts are required to produce technical, social, and economic data as a basis for future investment projects. Several areas in the livestock subsector would be studied and researched in depth:

(i) the response of local cattle at various ages and weights to intensive feedlot feeding with various rations and to pasture fattening supplemented with concentrates;

(ii) the performance of sheep and goats in the feedlot under various feeding regimes;

(iii) the incidence of parasites in sheep and goats and their effect on their productivity;

(iv) feeding regimes for dairy cattle, including calf rearing;

(v) the performance of various genotypes of cattle in milk production;

(vi) pastur and fodder production under rainfed conditions and under irrigation;

(vii) an inventory of forestry and wildlife resources;

(viii) the effects of upgrading from selected local Zebu cows;

(ix) camel diseases, breeding, feeding and productivity; and

(x) the effect of range management practices on range productivity and animal performance.

(b) Training. Animal production extension staff and managers and foremen of state farms would undergo extensive practical training, either in a special course at the Farm Management and Extension Training Center or by setting up a special training institution in conjunction with the experimental unit proposed above for studying intensive production of animals. Appropriate in-service training is required in all services--veterinary, animal production, range management, forestry and wildlife, livestock marketing, hides and skins, and meat processing--in order to upgrade the skills of government officers.

(c) Institution building. A Livestock Research Service, essentially working with the existing Agricultural Research and Extension Services, would be needed to develop appropriate technological packages for animal producers. Research would include:

(i) an experimental unit for studying intensive production of animals, including beef, sheep and goat feeding, dairying, and fodder production;

(ii) the integration of livestock and crop production activities beginning in the peri-urban, irrigated areas and extending eventually to the rainfed areas using a systems approach at research centers in the main crop producing areas. The latter will be especially important as population pressure on the range forces more and more nomads into sedentary mixed farming. It will also lay the groundwork for joint extension activities in the long run; and

(iii) range studies, which would be carried out through the Department of Research, Training and Planning of the NRA under the Central Rangelands Project. The NRA would also be enabled to carry out forestry and wildlife studies.

(d) An animal production extension service would be developed for livestock producers in peri-urban, irrigated areas and under rainfed conditions, and livestock and crop extension would be integrated. Range extension on the one hand, and forestry and wildlife extension on the other, would be organized as specialized services in the NRA. In addition, a need exists to strengthen the MLFR and to review the role of existing parastatals in livestock development.

(e) Agro-industries. Following the breaking of relations with the USSR in 1977, and as a consequence of increasing demand for live animals from the Arabian peninsula, Somalia's two meat factories have had difficulty obtaining slaughter stock. The SOPRAL meat factory in Mogadishu was closed in 1977 and the Kismayo Meat Factory in 1978. Current prices offered for live animals and for frozen and chilled meat point strongly in favor of live animal exports. Yet the Government, confident that there is a role for meat plants in Somalia, intends to invest in a third abattoir and cold storage in Hargeisa and is determined to keep the two existing meat plants operating. The rationale for this position is that live exports of slaughter stock has its own risks. Disease outbreaks or political conflicts may suddenly close the Saudi Arabian market. The memory of the 1973-75 drought which caused the death of a massive number of animals because the Government could not organize emergency slaughter to salvage them is also fresh in the Government's mind. In fact, the two meat factories were re-opened in late 1980 as an emergency measure to help salvage large numbers of livestock which were threatened by the 1980-81 drought. Meat by-products -- hides, skins and bones -- are also consumed locally or serve as raw materials for one of the country's few promising industries. These factors are strong arguments in favor of keeping at least the existing meat plants operational. However, because of the relatively low prices obtainable for Somali canned and frozen meat, the meat factories are almost certain to operate at a loss, necessitating subsidies which the Government cannot afford. Under these circumstances, it is also unlikely that they will be properly maintained with the result that they will be in a poor condition to accommodate a large number of animals in an emergency. The existing factories should therefore be phased out, and no new investments made in meat factories.

3.16 The activities outlined in paras. 3.11 and 3.12 would provide a basis for sustained long term development in the livestock subsector. Possible subsequent developments include:

(a) the continuation of countrywide range development programs on the basis of the experiences gained in the Northern and Central Rangelands Projects, supported by surveys, studies and experimental information;

(b) the development of a modern feeding industry focused on the fattening of sheep, goats, and cattle for export and for urban consumption with a locally generated feed base;

(c) the expansion of the dairy and poultry industries to supply the national market, with particular emphasis on small-producer units and low-cost technology;

(d) the management of the forest resources including development of fast growing species and research to provide the firewood that the country requires and to maximize foreign-exchange earnings from the export of frankincense and myrrh; and

(e) the sustained development of the wildlife resources through conservation and hunting for sport.

Chapter IV: Crop Production

A. General Characteristics

4.01 Settled crop production is concentrated in areas along and between the Shebelli and Juba rivers and in the northwest region. Most rainfed crop production is undertaken by private farmers. However, irrigated land has been allocated increasingly to the public sector in the form of state farms and cooperatives. Traditionally, cultivable land has been held by families whose members acquire the right to cultivate by virtue of birth, kinship, or adoption. Law No. 1973, of October 1975, declared all land to be state property and gave the Ministry of Agriculture responsibility for granting concessions to individuals or entities desiring to use land for agricultural purposes. The intent of the new law is to transform traditional land use into a leasehold system with provisions for transfer and inheritance of leases. At present, however, customary rights to cultivable land continue to be respected.

4.02 Rainfed crop production. Rainfed crop production is a high-risk undertaking in Somalia because of the low and erratic rainfall and the absence of moisture-conserving practices. Nevertheless, some 14 percent of the population earn their livelihood from rainfed crop activities and, as the rangelands and irrigation offer only limited scope for further employment, it is principally in the rainfed areas that opportunities must be found for absorbing the increasing population. Development of rainfed crop production in the past has been by spontaneous settlement. Land is cleared, cultivated for several years until yields become unsatisfactory and then allowed to revert to bush fallow for one to three years. Farmers have little knowledge of efficient practices to maintain soil fertility, conserve soil moisture, avoid high wastages in crop residues and stored food grains and there is little integration between crop and livestock production activities. Only a small minority of farmers have adopted the use of animal traction to increase their planted acreage or save labor. Within this minority, some have diversified their cropping pattern, intensified their on-farm animal husbandry activities and even entered the market economy selling cash crops such as groundnuts and pulses or milk and/or purchasing seeds and plant protection products. Overall, however, the farming system now practiced by the average farmer is extensive, exploitative and not very productive. It is characterized by unsatisfactory land preparation, low quality seeds, inadequate seeding rates, uneven plant coverage and inefficient weed control, and generally uses no other inputs besides seeds, family labor and hoes. Under these conditions, adoption of one input such as improved seeds is uneconomic unless other practices are also changed. The objective of production for market must also be accepted by farmers.

4.03 The average family cultivates about 5 ha annually with sorghum as the main crop, often interplanted with pulses and small areas of millet, maize and more recently, groundnuts. Sorghum is grown in the Gu season and many farmers ratoon the Gu season crop or replant in the Der season. A simple hoe is the only implement used; crop varieties are low yielding, and the low

average yields realized (para. 2.30) are further eroded by high post-harvest losses. As a result, additional income derived from livestock is essential for subsistence and, hence, the average farm family also owns 10 to 12 livestock units, two of which are kept near the homestead and the remainder on the rangelands.

4.04 Rainfed crop production would have to continue to be based on low-cost technology because of the risks inherent in it and because of the low value of the crops, mainly sorghum, which it is likely to produce in the foreseeable future. An alternative technology based on large scale mechanized farming, with expected high output per labor unit but low output per land unit, has been successfully employed in semi-arid areas of the United States and Australia and would appear to be transferable. However, such technology is based on intensive use of machinery and management skills--factors of production which are relatively abundant in the countries where the technology was developed but scarce in Somalia. Further it assumes a scarcity of labor which is relatively abundant in Somalia. It has to be concluded, therefore, that large scale mechanized farming, even if proven technically feasible, would not be justified in Somalia on either economic or social grounds. With continuing focus on traditional farming, increased production in rainfed areas would consist mainly of sorghum and would be derived mainly from area expansion and modest progressive increase in yields. As sorghum consumption per capita is unlikely to rise, Somalia has the potential to generate a sustainable surplus of sorghum which could be exported or--more likely--used to generate animal products of higher values, such as poultry for the local market or quality beef or mutton for export.

4.05 Irrigated crop production. Two types of irrigation are practiced in Somalia--namely, controlled irrigation (50,000 hectares) whereby the river level is raised by a weir or barrage or the water is lifted by pump to the supply canals; and flood irrigation, whereby water enters the supply canals only at flood periods (110,000 hectares).

4.06 Along the Shebelli river, water deficit occurs almost every year, especially in the lower reaches of the river, because of the low efficiency of the existing irrigation system. 1/ While a higher irrigation efficiency could support the needs of existing schemes (38,000 hectares), water requirements under Government's present development program would exceed available flow

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1/ Irrigation water efficiency is defined as the multiplicative effect of system efficiency, which measures water conveyance efficiency (specifying losses in canals as a result of seepage, evaporation, and spillage) and farm efficiency (specifying losses caused by deep seepage and surface runoff). Both these elements are expressed in percentages. For example, the result of a conveyance efficiency of 65 percent and a farm efficiency of 40 percent would be an irrigation system efficiency of 26 percent, which is low. The result of a conveyance efficiency of 80 percent and a farm efficiency of 60 percent would be an irrigation-system efficiency of 48 percent, which would be good in Somalia, given the lack of management and agronomic skills.

during five months of the year. A review of the irrigation requirements of present and proposed projects in relation to available river flow is urgently needed. Along the Juba, the water supply situation is more favorable, mainly because only a limited area of 12,000 hectares has, so far, been developed and because the Juba has greater and more regular flow. It is on this river that Government is proposing major new irrigation schemes and the construction of the Bardere dam. Since both the Juba and Shebelli originate in Ethiopia, caution must also be exercised when drawing up major plans for the lower parts of these rivers.

4.07 The availability of land for irrigation does not represent a constraint along the Shebelli, where estimates show that the 38,000 hectares now irrigated could be expanded to about 85,000 hectares. The limited availability of water and limited storage potential could, however, rule out such expansion. Conversely, the amount of land suitable for irrigation may turn out to be a constraint if water is to be used in the immediate vicinity of the Juba when additional storage and irrigation facilities are built. According to Government estimates, there are 220,000 ha of irrigable land in the Juba valley. Since detailed land classification studies are not available, however, this estimate may have to be revised downward. Nevertheless, there are probably at least the 160,000 ha of Class I and II irrigable land assumed in this report. The government has favored the development of large-scale, technology-intensive state farms along both the Shebelli and the Juba rivers. However, the productivity has been very low and the technology often not effectively used (paras. 2.30 and 2.31). Production of livestock has tended to be insignificant in irrigated farming areas.

4.08 Flood irrigation involves basic food crops, maize and sorghum, with sesame and groundnuts as cash crops. The technology is simple, as it is in rainfed crop production. Yields are low, because crops are subject both to a shortage of water when the river is low and to an excess of water due to poor drainage during floods. Production of livestock is not integrated with crop production, as in rainfed crop production.

4.09 Prices. Crop producers, more than livestock producers or fishermen, have been the victims of a food price policy oriented toward urban consumers. The effects of this policy have been exacerbated by farmers' limited access to the market due to lack of infrastructure, inadequate government support services, limited participation in the monetized part of the economy, and the unavailability of consumer goods. The government has been hesitant to use price as a tool of production policy, partly because of lack of information at the policy-making level and partly because of the budgetary effect if higher producer prices were not reflected in consumer prices, resulting in higher consumer subsidies. However, the Government has recently shown greater willingness to use price incentives as a tool of production policy, especially in 1980 when the prices of some agricultural commodities were increased up to 25%. Further analysis of agricultural price and subsidy policy deserves high priority. Price is a critical incentive for private farmers in irrigated agriculture who have better access to the market and generate a larger marketable surplus. This does not apply to state farms, however, where prices are not a factor in production decisions. Price is

potentially an important incentive factor in rainfed agriculture; but the effectiveness of price policy would depend on simultaneous measures being taken to make increased production technically feasible. Such measures include improved extension, research and marketing and increased availability of marketed inputs and consumer goods in rural areas.

4.10 Production choices. Table 9 provides orders of magnitude of the profitability of various crops. Since so little reliable data on Somalia's agriculture is available, some data from other countries with conditions generally similar to Somalia's were used as a guide in comparing the advantages of one agricultural commodity or production system over another. Rainfed crop production is, and within the short and medium terms will continue to be, dominated by a single crop, sorghum. This is because rainfall is a limiting factor and because the development and diffusion of alternative production technologies in small scale subsistence agriculture requires time, research and extension. The potential exists for intensification of the farming system through integration of crop and livestock activities. There is strong evidence from observations in the field that cash crops such as pulses and groundnuts could be introduced into the cropping pattern, and that fallow management and use of crop residues could create reliable cash earning opportunities from livestock in the form of milk and/or quality meat production. Rainfed crop production is therefore likely to remain in the short and medium terms oriented to the local market.

Table 9

Profitability of Crops
(constant 1977 So.Sh.)

	At Economic Prices[a/]		At Financial Prices[b/]	
	Gross margin[c/] per hectare	Gross margin per man-day	Gross margin per hectare	Gross margin per man-day
Banana	23,000	80	7,000	25
Sugarcane	6,000	60	4,000	40
Cotton	5,000	40	3,300	25
Rice	3,000	60	3,000	45
Sesame	4,000	70	2,000	30
Groundnuts	3,500	45	2,000	10
Maize	1,500	20	1,000	15
Sorghum and pulses	1,000	14	700	10

a/ Based on world market prices and a shadow exchange rate of US$1 = So. Sh. 9.
b/ Based on world market prices and the official exchange rate of US$1 = So. Sh. 6.3.
c/ Gross margin is the difference between the value of production and the direct cost of production.

4.11 Irrigation offers the potential for a wider range of crop production choices although shortages of water and management skills will constrain the range of opportunities in the short and medium term. Dry season water scarcity, particularly along the Shebelli limits the area that can be allocated to perennial crops, although the recent completion of the Jowhar offstream storage should reduce this hazard. Institutional and management weaknesses will inhibit the effective development of large-scale, management-intensive crops such as vegetables, although this situation should also improve over time as improvements in the Agricultural Extension Service and the Farm Management Advisory Service begin to take effect. Given these constraints, irrigated crop production in the river valleys could best serve the country by concentrating initially on locally known crops--bananas, maize, rice, oilseeds, sugar and cotton. As the water and management constraints are relieved, the cropping pattern could be diversified to include a higher proportion of fruits, oilseeds and cotton for export. This would leave Somalia with a significant food item to import, wheat. There may be a potential for growing wheat in the northwest, but this would have to be confirmed through research. Irrigated farming also has potential in the long run to contribute a substantial quantity of milk for the local market and quality meat production for export through on-farm integration of crop and livestock activities. Moreover, as the effective availability of water and local skills is increased, the area under irrigation may be expanded and the country may develop a sustainable exportable surplus in sesame, groundnuts, fruits, cotton, and possibly sugar and vegetables.

B. Role of the Subsector in the Economy

4.12 In the irrigated subsector, bananas are the main cash crop and the second largest export commodity. Production, of which about 90% is in the hands of a small number of private farmers (half Somali and half Italian), and 10% on state farms, has declined from 188,000 tons in 1972 to 70,000 tons in 1978. This reflects a reduction in banana area from 7,100 hectares in 1972 to 6,700 hectares in 1978 and a decline in yield from 26.5 tons to 14 tons per hectare during the same period. This downward trend has several causes -- the progressive decline in investment, lack of management skills, difficulties in the procurement of fertilizer and pesticides, and periodic droughts -- but it is likely that the principal factor is that at present most banana farmers operate at a loss, due to higher input costs and the lag of producer prices behind the value of exports (Table 10). These factors, combined with frequent delays in shipping, have caused considerable losses to producers and a decline in the volume of exports of bananas. The proportion of bananas in the value of exports declined from 26 percent in 1972 to 12 percent in 1977 and 8 percent in 1978.

Table 10

Banana Prices*
(So. Sh./ton)

Year	Export price	Producer price	Banana Board's Cost and Margin
71	619	540	79
72	584	540	44
73	604	540	64
74	686	540	146
75	989	680	309
76	1,217	650	567
77	1,216	750	466
78	1,221	750	471

* Source: International Monetary Fund. Somalia Recent Economic Development, August 7, 1979.

4.13 Maize and sorghum are the two dietary staples of Somalia (Table 8). They are produced almost entirely by small farmers, primarily for their own subsistence. Production has fluctuated with changing climatic conditions but has remained virtually stagnant over the past decade. The production of sugarcane has declined consistently since the early seventies (Table 8). From 463,000 tons in 1970, production fell in 1978 to a low of 312,000 tons. The sharp decline was the result of a reduction in the area under cultivation and a decline in yields caused by such factors as lack of fertilizer, shortage of manpower, lack of pesticides, climatic factors, and salinity problems caused by a badly maintained irrigation and drainage system. The production of cotton has increased slowly, but it is not sufficient to cover the needs of the only textile factory (SOMALTEX).

4.14 Both the contribution of the crop production subsector to government finances and the budgetary resources allocated to it are minimal in relation to its importance in the economy by virtue of its contribution to GDP and of the number of people who make their living from this subsector. By and large, with the exception of those on the banana plantations, farmers do not pay income tax. About 2 percent of the total ordinary budget is allocated to the Ministry of Agriculture. Because irrigated crop production represents one of the few alternatives the country has for increasing and diversifying exports, this activity deserves increased budgetary allocations. Care has to be taken, however, that such an increased claim on the public budget results in increased productivity and production and is matched by an increased contribution to public revenues. In the case of rainfed agriculture, there is a need for increased public expenditures to finance more efficient services to farmers. The returns to such expenditures, however, are likely to come mainly in the form of increased production rather than in the form of direct contribution to government revenues.

C. Past Development Efforts

4.15 The crop production subsector was given an important share of the investments planned for the TYDP, 1979-81. A total of So.Sh. 1.6 billion in the course of the three-year period has been allocated among production-oriented projects (43 percent), irrigation works (37 percent), and support services (20 percent). The program is a bridge between the FYDP, 1974-78, and the anticipated 1982-86 plan. Thus, it includes twenty projects carried over from the FYDP, and twelve new projects.

4.16 Among ongoing projects, the objectives of the Agricultural Research Project are not well defined. The Project is aimed at individual crops rather than farming systems or the solution of on-farm problems. The Agricultural Cooperatives Project is built around the idea of creating a cooperative structure as a means of extending to farmers the benefits of economies of scale, access to markets, credit, extension, and mechanization. This objective, in the mission's opinion, cannot be achieved because there are no economies of scale to be taken advantage of under the country's present resource endowment and because government is at the same time investing in a National Extension Project which has the potential for providing some of the same services the cooperatives project is intended to provide. The Agricultural Input Supply Services Project is intended to strengthen the Farm Machinery and Agricultural Services Organization (ONAT) through provision of machinery. The Agricultural Crash Programme, created to provide farm employment and on the job training, has been a drain on the government budget. In the mission's opinion, it has outlived its usefulness, since the government has now initiated better planned programs for training farmers. The future role of the crash program farms should be reviewed in conjunction with that of the State farms, under MOA, to which the crash program farms should initially be transferred. The farms should be reorganized along the same lines as the State farms to make them more productive. Training should be concentrated in a few places in accordance with MOA and Ministry of Lower Education policy in this field. The training function should not be mixed up with employment objectives and a well-defined curriculum should be followed. The Settlement Program, initiated to assist the 1973/75 drought victims, is another project that has outlived its purpose and usefulness and become a burden on government budget. This program has been implemented as a welfare program and as such it has not succeeded in making those who are involved self-supporting in an environment and with technological means that they can afford and manage. Rather than take over responsibility for the subsistence of each, Government should limit its involvement to a planning, coordinating, regulating and supporting role. All irrigation projects aim at further expansion of irrigation in new areas with limited concern for the productivity of areas already developed, for the effective availability of water for irrigation, and for the extent to which farmers participate in the development of irrigated crop production.

4.17 The projects related to crop production listed above and the others included in the TYDP represent a collection of investment ideas which, in the mission's opinion, is neither an investment program that could be linked logically to an existing situation and a set of goals nor an investment program compatible with the financial, managerial, and technical capabilities of the country. As in the case of livestock, there is no distinction between incremental investments and ordinary budgetary allocations to carry over projects.

D. Priorities for Future Development

4.18 The current conditions in the crop production subsector of stagnant production and decreasing exports are at the base of the overall economic malaise in Somalia, and contrast sharply with the country's objective of achieving self-sufficiency in basic foods and developing a crop based foreign exchange earning capability. As in the case of the livestock subsector, Somalia should establish two orders of priority in the crop production subsector. First order priority should be given to those activities that would quickly result in increased production and exports to help relieve the current macro-economic crisis. This implies an emphasis on rainfed cropping, both rehabilitation and new, and irrigation rehabilitation. Second order priority would be given to longer term activities which would result in sustained development.

4.19 First order priority actions include:

(a) Financial incentives. Crop production would benefit from converting the role of the State from that of monopolist to that of residual buyer at guaranteed minimum prices and manager of grain supplies through buffer stocks. In the interest of efficiency, the desirability of competition from licensed private traders should be considered. More specifically, ways should be found to increase producer prices for bananas. This could be achieved by adjusting the effective foreign exchange rate for exports of this crop. Being a cash crop produced mainly by smallholders, cotton could also be expected to respond significantly to price incentives. Irrigated maize should also prove responsive to price increases.

(b) Rehabilitation of state farms. Many irrigated farms in Somalia are heavily capitalized but are not commensurately productive, notably those that produce bananas, maize, rice and cotton. The most serious impediment to improved productivity appears to be poor management. Because of the importance of these crops to the recovery of the economy in the short and medium-term, government supported actions that rely on imported skills in the form of management contracts would be justified. For the longer term, improved input supply systems, training and incentives for local staff would be more important.

(c) Improved input supply. Three marketed inputs are of major importance for improving crop productivity, namely, high germination rate seeds, insecticides and fertilizers. Seeds and insecticides are needed both in rainfed and irrigated agriculture while fertilizers are needed only in irrigated agriculture. The present system of supply for these inputs serves a very small section of the farming population, partly because of the limited availability of these inputs and partly because the distribution channels are inadequate (Annex 6). Improving these channels through greater private sector involvement or through a strengthened ONAT, would be important for the success of a rehabilitation effort in the subsector. In the long run, ADC because of its already existing output marketing network and close contact with farmers, would be best placed to assume the responsibility for input supply at minimum cost.

(d) Food security. Somalia has recently been faced with a series of emergencies which, because of the country's unpreparedness, have diverted government attention from planned development. To avoid this in the future, the government should develop the capability to forecast food shortages and should acquire skills and means for managing the supply of food and distributing it as the need arises. Regional monitoring of rainfall and food supply would be a vital way of giving early warning of probable food shortages. Simultaneously, storage facilities should be upgraded and emergency reserves built up in areas in which shortages are likely. Local communities should be encouraged to maintain and manage their own emergency reserves, thereby decreasing the burden on central government institutions and reducing the cost of the program.

(e) Irrigation Water Management. Because of existing and impending shortages of irrigation water, the Government must revise existing commitments, or face more serious water shortages than during the past years. Actions the Government may consider include: (i) halting the ongoing horizontal expansion of irrigation schemes, or reducing the proposed expansion drastically; (ii) intensifying rehabilitation of existing irrigation projects to increase irrigation water efficiency and introduce water saving techniques; and (iii) changing the cropping pattern in view of the seasonal fluctuation of the available flow, the water requirements of perennial crops being more difficult to meet than those of annual crops which occur mostly when water is available. In view of the severity of the present water shortages along the Shebelli river, it is recommended that all major expansion of irrigation schemes be stopped immediately. The actual irrigation water efficiency is so low (about 20%) that all efforts should be concentrated on raising the efficiency at least to levels at which the water requirements of the existing schemes could be

satisfied (45%). As water efficiency is improved and water savings are achieved, a gradual horizontal expansion could be carried out. At the same time, measures should be taken to reduce flood damage and studies should be carried out to investigate any further storage development and the utilization of excess water accumulating in the depressions and swamps along the lower Shebelli.

4.20 Government's present drive toward self-sufficiency in sorghum, maize and oil seeds and toward increased import substitution of rice, cotton and sugar can be enhanced through emphasis on:

(a) rehabilitation and intensification of areas presently under cultivation;

(b) strengthening food security through the public sector support of programs aimed at food self-reliance at the farm level, at the community level and at the national level; and

(c) development of infrastructure to prepare for bringing new areas under cultivation.

4.21 An appreciation of the time frame in which proposed activities can effectively be implemented is critical to the successful phasing of complementary investments in the subsector. The following three examples illustrate this point. First, although the population dynamics justify the immediate horizontal expansion of rainfed and irrigated farming and fisheries, the lack of infrastructure (such as access roads, potable water and irrigation water supply) and the limited capability to quickly expand social services (such as health and education), dictate phasing of such expansion over a longer period than otherwise would be desirable. Second, the country needs to develop alternatives to bananas and livestock for increasing its foreign exchange earnings, but the lack of technical and managerial skills and the uncertainty that surrounds technological packages dictate that Somalia should in the short term concentrate on upgrading those cultivation practices which are already known and on crops with which Somali farmers are familiar. Third, while Somalia's aim to increase its water storage capacity is an understandable response to the drought hazard, short term considerations indicate that the economy would benefit from a strategy which gives priority to rehabilitation of existing irrigated schemes over opening up new ones. Irrigable lands are underutilized at present and considerable potential exists for increasing yields and lowering production costs per unit of produce through better management of the resources already available.

4.22 Accordingly, second order priority would be given to activities which would allow the country to take fuller advantage of existing production facilities in order to increase the effective supply of crops. Efforts would be concentrated principally on increasing food availability through extension and applied research, rehabilitation and improved management of cultivated areas outside the state farms, and improved supply of inputs and marketing of output.

(a) Extension and applied research work would be initiated to identify and remove on-farm bottlenecks in both the pre-harvest and the post-harvest technologies. Extension work aimed at reducing losses from poor on-farm and off-farm storage and handling would improve the effective food availability in the country, even at the present production levels. Bananas require special attention because of their importance as an export crop and as a major fruit for the local market. In rainfed crop production, extension and research emphasis would be on improving productivity in areas already under cultivation through better crop rotations, land preparation, seeding practices, weed control, attempts at the integration of crop and livestock activities, and a progressively higher ratio of cropped land to cultivated land by means of labor saving devices such as animal traction. In irrigated crop production, extension and research emphasis would be on ways to change present cropping patterns in favor of crops that earn foreign exchange in order to bring about a diversification of exports through the development of citrus along the Juba and oil seeds, cotton, and possibly vegetables along the Shebelli.

(b) Rehabilitation of cultivated areas outside of state farms: In addition to extension and research services, farmers in both rainfed and irrigated areas could be induced to increase their production and marketable surplus through better access roads, improved domestic water supply, reliable input supply and increased availability of consumer goods in the market.

4.23 At the same time that these development actions are being implemented, attention would be given to manpower development, institution building, and improvement of the information base for planning and policy making. This would involve the whole MOA, but particular attention would be paid to making operational the Extension Service, the Farm Management Advisory Service, and the Research Service and to defining the proper function of parastatal agencies in the development process. Infrastructure--social, marketing, roads and water--would start to be improved in areas in which potential for crop production has been identified.

(a) Training. The government has already initiated actions to train extension and farm management staff. There is a need, however, to strengthen the Faculty of Agriculture and the Agricultural Secondary School of Afgoi, both of which lack teaching staff and equipment and require assistance in developing curricula adapted to Somali needs.

(b) Institution building. Strengthening of the Ministry of Agriculture would be considered in conjunction with other ministries directly involved in the sector (paras. 2.18-2.22). An important element of institution building should be a study of the function of parastatals to determine ways of ensuring their effective participation in the development process.

(c) Information base. Information is urgently needed on the extent and geographical micro-location of the resource base, particularly land and water, on the present state of the technology in the country, and on the socio-economic framework for decision-making at the farm and community levels. In addition, work should be undertaken to identify technological practices that have been proven in environments similar to that of Somalia and to ascertain their suitability for Somali farms. Information on the effect of recently introduced technologies, particularly the use of farm machinery, should be collected to determine its technical suitability and its economic and social desirability.

4.24 Actions identified in paras. 4.22 and 4.23 would create a firm basis for long term sustained development of the crop production subsector. As these are accomplished, as implementation capacity grows, and as additional resources become available, the horizontal expansion of both rainfed and irrigated crop production could be undertaken. Diversification of crops that earn foreign exchange could be carried out as management, technical skills and markets are developed.

Chapter V: Fisheries

A. General Characteristics

5.01 Artisanal fishing communities have existed along the coastline for a long time. In the absence of internal roads, these communities depended on the traffic of small boats--dhows--which supplied them with their simple fishing boats - houris - fishing gear, and other supplies and collected their accumulated catch of fish that they had dried. The fishermen employed simple fishing gear that consisted mainly of handlines and small nets. Most of the fish were salted and sun-dried. The dhow trade has declined during the past ten years, thereby causing a progressive decline in the prosperity of these coastal centers and hence a decline in their population. Attempts by the government to revive these fishing centers have been concentrated on the establishment of cooperatives as a means of providing financial assistance, in the form of boats and fishing gear, and technical assistance to artisanal fishermen in the form of personnel support for cooperatives. In addition, government has established four coastal resettlement centers organized along producer collective lines to resettle ex-nomads. In terms of increased production, the experience with both the cooperatives and the resettlements has not been successful. In fact, artisanal fishing appears to have declined during the past few years, principally because of the fact that with the failure to keep motorized boats provided by government in operation, many fishermen could not even revert to their traditional small canoes and houris, of which their supply has been cut off since 1970.

5.02 Deep-sea commercial fishing off the coast of Somalia commenced in 1974, when the Somali-Soviet joint venture, Somalfish, was established. There was an active fleet of ten Soviet trawlers until late 1977, when the partnership was dissolved; no records of the vessels or their operations were left in Somalia. Since the departure of the Soviets, Somalfish has attempted to reestablish offshore fishing. It has signed a management contract with an Australian company for the operation of two prawn trawlers and licensed two Italian stern-trawlers equipped with freezers to operate in Somali waters on an exploratory basis. Somalia has also acquired six trawlers from Yugoslavia and, under the Iraqi-Somali joint venture agreement, is negotiating the acquisition of two freezer trawlers and four shrimp trawlers. Somalia is also negotiating with the Italian government for the construction of three freezer trawlers. All told, therefore, as many as twenty modern trawlers varying in length from 23 to 70 meters, could be operating in Somali waters by the end of 1982. This may cause overexploitation of deep-water lobster resources unless quotas are established. In addition, the available berthing facilities and essential shore infrastructure are not adequate to serve a fleet this large.

5.03 The fisheries subsector is by far the least favored subsector in the economy as far as being served by infrastructure is concerned. Harbor facilities are nonexistent in most fishing centers, there is a problem of berthage for offshore fishing vessels, shore based cold storage and freezing facilities are nonexistent, and so are workshop facilities for maintenance of boats and

vessels. Most serious, however, is the lack of transport infrastruture, which is causing a depopulation of previously prosperous fishing centers and which may partly explain the low per capita consumption of fish in Somalia and the low proportion of Somalis involved in this economic activity.

B. Role of the Subsector in the Economy

5.04 Somalia has five fish processing factories but performance has been disappointing at each for a variety of reasons. All four north coast factories - Las Koreh, Candala, Habo and Bolimog - face a common problem of raw material supplies. Provided this can be resolved, the prospects for Las Koreh, Habo and Bolimog should improve considerably. On the other hand, Candala's small size and isolation from the others may well result in its eventual closure. The country's remaining factory at Kismayo was built in 1968 by US interests, but was closed in 1969 and never operated since. It is currently being recommissioned with FAO assistance.

5.05 Fisheries account for less than 2 percent of GDP. Production has fluctuated between 4,000 and 11,000 tons. About 2 percent of the Somali population are engaged on a part or full time basis in fisheries. A small proportion of the total output is processed, most of it exported as canned fish or frozen fish and lobsters. The contribution of the sector to government finances is negative, since there are no positive transfers to the government through taxation, while the government allocates a small budget to the sector. The share of the Ministry of Fisheries in the ordinary budget is less than 0.5 percent. The share in the extraordinary budget has increased progressively from So.Sh. 5.3 million in 1975 to So.Sh. 9.2 million in 1978 and a budgetary allocation of So.Sh. 27 million in 1979. This increase in allocations has neither been matched by increased government revenues from the subsector nor by increased exports. This situation could, however, be quickly reversed if proper use could be made of the trawlers available in the country and if the lines of supply of small boats and fishing gear were reestablished.

5.06 Despite its present modest role, given the limitations of the livestock and crop subsectors to absorb all the incremental population, the fisheries subsector is the only significant alternative for creating productive employment. Export earnings which amounted to about US$4 million in 1977, could be greatly increased. Employment opportunities exist, particularly in coastal fishing. Moreover, fish is a relatively cheap protein food which can play a larger role in the domestic food consumption pattern than is currently the case.

C. Past Development Efforts

5.07 The fisheries section of the FYDP, 1974-78, emphasized the introduction of new technology in the fisheries subsector and the formation of

cooperatives as a means of accomplishing it. Increased participation of people in fisheries was also sought, mainly through the fishing settlements. The investment program suggested in the TYDP, 1979-81, for the fisheries subsector reflects the continued support of the government for the activities initiated in the previous program. It calls for continued promotion of cooperatives as a means of developing coastal fishing, for the encouragement of joint ventures and parastatals as a means of developing deep-sea fishing, and for the development of human, physical, and institutional infrastructures. There is, however, no evidence that this strategy of "more of the same" is justified on the basis of the experience of the period 1974-78.

5.08 The projects included in the TYDP, moreover, do not reflect the proposed strategy, do not provide the means to resolve issues carried over from the earlier program, and do not set the scene for the development effort beyond the present program. The activities programmed for the TYDP are haphazard in nature and appear to give equal support to all ongoing activities regardless of their success or failure.

D. Priorities for Future Development

5.09 The fisheries development strategy should aim at increasing foreign exchange earnings for the country, fostering broader participation in the subsector, and developing the market for fish in Somalia. The limited experience with this subsector dictates the adoption of a flexible approach to development and the systematic review of development programs in later phases in light of knowledge gained during earlier phases.

5.10 Because of the urgent need to generate foreign exchange, first order priority should be given:

(a) for deep-sea fishing, to making productive use of the trawlers currently in Somalia. The major input would be management and some on-shore facilities. Joint ventures with reliable foreign firms would be one of the best ways for Somalia to take advantage of its deep-sea fish resources in the short run;

(b) for coastal fishing, to reallocating the existing motorized fleet to areas where maintenance can be guaranteed and to reestablishing the system of supply of small boats and fishing gear.

5.11 Second order priority should be given to making use of other salvageable and potentially useful facilities (Annex 3). In the case of deep-sea fishing, any negotiations for additional vessels beyond those already contracted for should be deferred. Studies should be undertaken to develop infrastructure to serve the trawler fleet. Management capability should be

developed, possibly through foreign partners, to initiate the development process and prepare Somalis to take it over. In the case of coastal fishing, emphasis should be placed on redefining the role of cooperatives to focus on provision of marketing services. A fisheries extension service should be established and studies undertaken to prepare a program of infrastructure development to serve fishing centers.

5.12 While these activities are taking place, attention should be given to building the basis for long term development in the fisheries subsector. This would require:

(a) strengthening the information base for planning and decision-making;

(b) training and institution building;

(c) development of infrastructure including ports, on-shore facilities and markets;

(d) development of a communications network to link fishing centers with the rest of the country in order to create outlets for fish products and establish a reliable supply of food and other goods to the fishing centers.

5.13 At the present stage of development, it may be difficult to justify heavy investments in transport infrastructure on the basis of fisheries alone. Justification may, however, be provided by the combined benefits from the fisheries, crop production, and animal production subsectors. An example could be the development of the Erigavo area (crops and livestock) in coordination with the fishing centers on the northern coast. Such an approach would require close cooperation among ministries, a clear identification of development opportunities, and a coordinated plan of action to ensure that whatever infrastructure is built is used effectively.

Chapter VI: Development Strategy and Future Prospects

A. Immediate Needs

6.01 The gravity of the current economic situation (paras. 2.35-2.38) dictates that immediate actions be taken to reestablish a balance between resource availability and use, and to create a suitable policy framework for development to take place. The immediate objectives for the agricultural sector should, therefore, be:

(a) Planning. The new five-year development plan (1982-86) should emphasize those investment activities with immediate potential for increased production, exports and revenue generation. Short term priority investments for the livestock, crop and fisheries subsectors were identified in Chapters III, IV and V. The scope of the plan should be tailored to the domestic and foreign resources likely to be available during the plan period. The next step would be to carry out the necessary feasibility studies to support the proposed rehabilitation effort in irrigated and rainfed crop areas, and for livestock and fisheries development.

(b) Implementation. The major immediate constraints to implementation are local funds and management. Given the prevailing scarcity of financial resources, these need to be carefully allocated to highest priority needs. Likewise, local management must be concentrated on priority investments and complemented by foreign technical assistance selected to meet specific needs.

(c) Incentives. Producer prices and other policy instruments should be used to encourage increased production and export of livestock, crops and fish.

B. Longer Term Objectives

6.02 Having made a start, through the above actions, at overcoming the present obstacles to development, the country can look further ahead to its development needs. As indicated in Chapter II, the magnitude of the required development task can be measured by the fact that the population of Somalia is expected to be between 7.1 and 7.6 million by the end of the century. The overriding objective should be that this population is distributed in a way that is compatible with the geographical distribution of natural resources and their potential to provide productive employment. Ecological conditions and the need to increase rural incomes impose a limit on the number of nomads who can extract a living from the rangelands. The paucity of mineral and other resources limits the potential for industrial development. Accordingly, the burden of productively absorbing the bulk of the increase in population would have to fall on settled farming and fisheries (paras. 2.02-2.12).

6.03 Expected population dynamics would require the settlement of about 1.5 to 1.7 million people in crop areas and fishing centers. The mission estimated that rainfed farming could, by the year 2000, provide productive employment for at most 825,000 people in addition to the 600,000 already engaged in it. As a result, about 750,000 hectares would be added to the 540,000 hectares already under cultivation in rainfed crops. Irrigated farming could, at a man/land ratio 50% than at present, absorb about 250,000 people in addition to the 215,000 people already engaged in it. The area under controlled irrigation would need to be increased from the present 50,000 hectares, to about 125,000 hectares and some 35,000 hectares of existing controlled irrigation would have to be rehabilitated. If by the end of the century the population in range areas were to be stabilized at 2.4 million, this would leave 425,000 to 625,000 people with the limited options of fishing, marginal non-agricultural employment, or emigration.

6.04 Operational objectives designed to facilitate the long term restructuring of the agricultural sector to productively absorb as much of the increase in rural population as possible include:

(a) increasing production for expansion of exports, import substitution, domestic consumption and national food security;

(b) building the basis for sustained growth through development oriented policies, strengthened institutions, improved management and organization of production, and provision of infrastructure and support services.

C. Policy and Institutional Framework

6.05 Regardless of the extent of the resource base, the successful implementation of any development program would be contingent upon the government's undertaking critical reforms in policies and institutions. In addition to the immediate actions referred to in para. 6.01, five items should, in the mission's opinion, be given priority in building the basis for sustained development: budgetary control, management of the civil service, management of foreign financial and technical assistance, planning, and marketing and prices.

6.06 Budgetary control. The introduction of a system of budgetary control for each unit of the public administration (Government agencies and parastatal organizations) should urgently be developed as a tool for the control of expenditures. This would permit a proper performance evaluation of various units and provide a basis for rational allocation of public resources. Specific steps in that direction would include:

(a) upgrading the accounting procedures: The mission suggests the use of a carefully selected accounting firm, over a period of six to nine months, to review present procedures, identify ways of improving them and train Somali accountants in implementing those improvements;

(b) improving the accounting curriculum at SIDAM (school of administration) and increasing the supply of accountants;

(c) establishing a qualified corps of auditors that would allow auditing of accounts of all agencies each year; and

(d) publishing the accounts within 3 months after the end of each fiscal year to allow evaluation of each agency and reflection of the results of such evaluation in the budgetary process.

6.07 Management of the civil service. A prerequisite for effective institutional reform is the introduction of a system of incentives for public servants, including salaries and wages, fringe benefits, promotion policy, work conditions, and a share in the decision-making process. Although experience indicates that the present system is inadequate, a detailed study should be undertaken before specific proposals can be made to reform the salary structure and employment policies. Such a study would identify ways and means for:

(a) eliminating the policy of guaranteed jobs in the civil service to all school leavers;

(b) increasing the level of remuneration for civil servants;

(c) introducing in the pay scale means for recognizing high performance;

(d) reducing absenteeism by adopting effective disciplinary actions against absentees; and

(e) managing migration and reintegration of skilled manpower.

Effective management of the civil service would also require a clear definition of its role in the development process. Based on observed performance, the mission recommends that the role of public institutions such as agricultural parastatals be limited to that of facilitators and regulators, concentrating on such essential functions as planning, monitoring and evaluation, extension, research, infrastructure development, management of foreign technical assistance, and budgetary and financial administration. Public institutions would, thus, participate in the production process only to the extent that their pilot involvement would attract local initiative and/or when the involvement of a public agency is required for technical, financial or managerial reasons, such as in the case of joint ventures with either Somali or foreign interests.

6.08 Management of foreign assistance. The availability of external financial and technical assistance is unpredictable. The flow and quality of use of foreign resources would, in the mission's opinion, be greatly enhanced if:

(a) The country would clearly identify its development priorities and incorporate them in a consistent development plan (para. 6.01);

(b) discussions with donor agencies were based on the plan rather than on individual project ideas; and

(c) the flow of information among donor agencies were improved (with active participation of Somali planners as coordinators) to ensure complementarity of resources.

6.09 With regard to foreign financial resources, the mission further recommends:

(a) integrating foreign financial assistance into the budgetary process;

(b) integrating the budgetary and the planning processes; and

(c) avoiding unplanned use of foreign financial assistance in an attempt to control the volume of recurrent budgetary expenditures and avoid investments that do not fit the country's objectives and priorities.

6.10 With regard to foreign technical assistance, the mission recommends:

(a) establishing a unit within the Ministry of National Planning for identifying the technical assistance needs and sources of supply and for selecting suitable candidates, recruiting them and supervising their performance.

(b) limiting technical assistance to that which clearly complements local personnel and would clearly result in augmenting local skills; and

(c) limiting the number of repetitive studies and technical assistance missions through more active coordination among local agencies involved in discussions with donor agencies and through better integration of technical assistance in the resources available for development.

6.11 Planning and institution building. For the specific purposes of the agricultural sector, institutional reforms should start by making the planning process more efficient and increasing the input of the technical ministries in planning. Technical ministries would be equipped to prepare their own development proposals, which they would submit to the Ministry of National Planning for consideration in preparing the national plan.

6.12 A land-use planning and control unit, serving the whole agricultural sector, should be established in the Ministry of National Planning, which would study the ecological potential of the country, district-by-district, prepare land-use plans, and establish and maintain a land-use register for keeping track of the land-use rights of government departments and of individuals. Along with land-use planning there is an urgent need for the formulation and supervision of a national groundwater development program. The enactment of a national water law also deserves high priority, especially as private sector activities develop.

6.13 Attention would also be given to strengthening the operational links between the Ministries of Agriculture and Livestock at the planning level and in the field. As a second best alternative to merging them completely, the government should consider at least merging their planning departments to ensure complementarity of resources and activities and avoid duplication.

6.14 The Ministry of Agriculture has recently established a National Extension Service to serve settled farmers. A parallel and closely coordinated effort would be undertaken on behalf of livestock producers and fishermen. Research that is oriented toward farming systems would be undertaken for the purpose of generating extension material. Research on the preservation of resources would be developed for the benefit of the fisheries. The need for parastatals and cooperative organizations in agriculture and fisheries and the efficiency of their operation would be reviewed with the specific objective of defining their functions and decreasing their reliance on public funds.

6.15 The Somali Development Bank deserves special mention because if it were given the operational efficiency, the financial means and manpower, it could be of considerable assistance to small communities in expeditiously taking advantage of discrete development opportunities in areas where the resources are available to grow high value crops, such as bananas, citrus and vegetables or in fishing centers.

6.16 Marketing and prices. Private trade in both crops and livestock exists, although it is less developed for crops. In the mission's opinion, direct state involvement in marketing through parastatal organizations should be limited to providing a buyer of last resort to prevent market manipulation and avoid excessive price fluctuations. There is a need for state involvement to encourage the generation of a marketable surplus and to regulate trade in order to strengthen farmers' bargaining position through:

(a) improving marketing infrastructure, including roads and collection centers;

(b) improving on-farm and community storage to reduce waste;

(c) converting the role of marketing parastatals from that of monopolist to that of residual buyer at guaranteed minimum prices and manager of domestic food supply in the context of a food security program including buffer stocks; and

(d) liberalizing food prices to allow the country's comparative advantage to be reflected in production choices.

To the extent that the State is involved in marketing, the responsibilities of ADC and ENC should be drawn along functional rather than commodity lines to avoid duplication of manpower and facilities. ADC should be made responsible for the regulation of the domestic market for food crops, while ENC should take care of the import/export trade.

D. The Strategy

6.17 The resource base, the constraints, the major issues facing the sector and the priorities requiring government attention have been reviewed in earlier chapters. This section of the report defines a strategy for development of the Somali agriculture. Such a strategy should reflect the macro-economic difficulties the country is presently facing. In response to the immediate need to improve the economic situation in the country, priority should be given to activating sunk and underutilized capital which offers quick returns to limited additional investment.

6.18 Somalia's development has, so far, been more constrained by the country's limited absorptive capacity than by the scarcity of external funds and technical assistance. The two major determinants of absorptive capacity have been the lack of management skills and the lack of recurrent local funds necessary to maintain and expand the services and infrastructure needed to support an increased rate of investment. A major effort has, therefore, to be devoted to improving the country's domestic revenue generation and the availability of management skills. Previous performance indicates that existing potential high return investments in the modern sector are not only failing to give the anticipated returns to the economy, but are often demanding additional budgetary support.

6.19 In view of the country's resource endowment, location of infrastructure, and proximity to markets, a high proportion of high return development opportunities will be available in the river valleys, the interriverine area and in the northwest. Such concentration of development efforts may create a regional equity problem in the short and medium terms. This, however, should, in the mission's opinion, be regarded as a necessary price to pay for increased production in the medium term.

6.20 The development of the agricultural sector should be based on five propositions:

(a) development should initially concentrate on completing and improving existing investments which promise quick returns and progressively build on livestock, crop and fisheries activities where Somalia has a comparative advantage;

(b) emphasis would be placed on strengthening public services to the sector including applied research, extension, veterinary services, training and infrastructure development;

(c) as a corollary to (b) and subject to appropriate safeguards, the private sector should be encouraged to assume more responsibility for direct production activities;

(d) a system of communication and transportation, storage and marketing should be developed to open up the country and make feasible the use of resources now unused, such as fisheries and land suitable for irrigated and rainfed farming; and

(e) as resources become available and infrastructural constraints are removed, horizontal expansion of irrigated and rainfed agriculture should be initiated.

6.20 The proposed strategy would build on existing strengths and opportunities for rapid growth while reducing the constraints and preparing the ground for expanded development. Thus, the strategy has elements which can be started immediately, others which require supporting services and institutional changes for successful implementation, and still others which would take more time because of the need for more information, adaptive research and improved infrastructure.

6.21 Chapters III, IV, and V contain outlines of development priorities in the three subsectors -- livestock production, crop production and fisheries. The elements of the strategy include immediate and longer-term investments selected for implementation during the period 1980-1990. This time horizon is indicative and, depending on the rate of progress, Somali agriculture may develop faster or slower than suggested below. Individual project outlines are presented in Appendix 2.

E. Prospects for the Future

6.22 It is not possible to forecast with any precision, the effects of the recommendations made in this report. The mission has, however, prepared estimates to indicate the order of magnitude of the cost and likely benefits of its recommendations. It has to be emphasized that their realization depends not only on Somalia's ability to mobilize the required resources but also to progressively overcome the many constraints which currently limit the productivity of the agricultural sector.

Cost Implications

6.23 Based on past experience in Somalia and elsewhere in Eastern Africa 1/ the mission tentatively estimates the cost (in 1979 prices) of its proposals for the period 1981-1990 as follows:

	US$ million
Rehabilitation	
- rainfed areas	160
- irrigated areas	75
Horizontal expansion	
- rainfed areas	75
- irrigated areas	110
Livestock development	200
Fisheries	200
	US$820 million

6.24 While annual investment of the order of US$80 million is below expectations under the TYDP (para. 1.26), given the shortfall in actual compared with planned investment under previous plans, even this figure may be difficult to achieve in the early years of the decade and above average investment levels would have to be achieved later. The successful implementation of such a program is likely to depend as much on the mobilization of local resources (and critically on adequate counterpart funds) as on the securing of financial assistance from abroad.

6.25 In addition to the above, Somalia envisages investment in the Bardere dam of about US$438 million at 1981 prices. As of December 1980, the Government had secured pledges for about 75% of the necessary financing for the dam (US$317 million), mostly in the form of grants or concessional loans which cannot be transferred to other projects. Construction is due to start in 1982 and take 7-8 years to complete. Downstream development is envisaged over a 30-40 year period, with initial new development on the order of 2,000-3,000 ha per year. However, in view of the overriding need to activate sunk capital and raise production in the short and medium term, and the scarcity of financial, managerial and skilled manpower resources in Somalia today, such an investment should not be undertaken unless its funding is additional, non-fungible and provided on a grant basis and the required technical and managerial staff are provided. The proposed project should also not strain the local financial and manpower resources necessary for the higher priority rehabilitation effort. Unles these conditions are met, which will be very difficult, there seems to be no case for going ahead with the Bardere Dam in the context of the agricultural sector.

6.26 The project as presently conceived includes construction of the dam and power plant only, and its apparent justification (economic rate of return of 10% as estimated by the Government and consultants) is based almost entirely on benefits from energy supplied to Mogadishu and the Juba valley. From the point of view of the agricultural development of the Juba valley, the dam would be only the beginning. In order to provide significant agricultural benefits,

investments on the order of $10,000 per hectare at 1981 prices would be required for downstream development, excluding social infrastructure. Such investment would have to be preceeded by detailed soil surveys, hydrological investigations and feasibility studies for specific projects. Thus the Bardere dam project represents a much larger implied commitment of additional resources (on the order of US$1.5-2.0 billion over the next 30-40 years) from its cofinanciers, if expansion of irrigated agriculture in the Juba valley is to be undertaken.

Benefits

6.27 The investment program, as a reflection of the development strategy detailed in this report, aims to restructure and strengthen the dominant agriculture sector in order to create livelihood opportunities in settled farming and fishing for the increasing rural population, to progressively reduce dependence on imported food grains and increase the volume and range of exportable commodities. Of these, it is least possible to be precise about the extent to which the ten year investment program would absorb the growing population in sustainable livelihood opportunities. However, the implementation of the proposals set out in the preceding chapters should, by 1990, put Somalia well on the way to creating livelihood opportunities for the additional one and a half million people who are expected to live in the rural areas by the year 2000.

6.28 Table 11 presents the balance of food grain production and consumption under three different approaches to increase production. Under the first two options of either rehabilitation and intensification, or extension alone, self-sufficiency in grains could not be reached in the foreseeable future. The third option, a rehabilitation effort combined with area expansion, would lead to self sufficiency between 1990 and 1995 and thereafter generate a surplus in sorghum.

6.29 For other crops, the country should, by 1990, have made significant progress towards self-sufficiency in sugar and should have generated an exportable surplus in oil seeds and cotton while exports of bananas and fruit should increase four-fold.

6.30 In the livestock sector, annual production may be expected to increase by 1990 from 175,000 to 280,000 cattle, from 3.5 million to over 4 million sheep and goats and from 90,000 to 140,000 camels. However, meat consumption is expected to double by the end of the century, with most of the increase in beef. Exports of cattle and camels are therefore expected to remain at approximately present levels with the major export increases coming from sheep and goats at the rate of about 2 percent annually.

6.31 An important benefit of the investment program would be the policy reform and strengthened institutional framework which should increasingly impact on the agricultural sector through the two remaining decades of this century. Indeed, without such reforms and restructuring, the implementation of the program itself would be constrained.

Table 11

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Food Grain Production and Consumption
('000 tons)

	1980	1985	1990	1995	2000
(a) Rehabilitation & Intensification only					
Production	262	310	392	472	566
Sorghum	140	179	232	289	350
Maize	118	127	155	178	210
Rice (Milled)	6	7	8	8	9
Consumption	377	480	589	719	872
Balance	-115	-170	-197	-247	-306
(b) Extension only					
Production	262	299	359	479	680
Sorghum	140	160	204	305	475
Maize	118	122	135	144	165
Rice (Milled)	4	17	20	30	40
Consumption	377	480	589	719	872
Balance	-115	-181	-230	-240	-192
(c) Rehabilitation, Intensification & Extension					
Production	262	338	496	779	1,276
Sorghum	140	200	305	534	950
Maize	118	130	167	204	267
Rice	4	8	24	41	59
Consumption	377	480	589	719	872
Balance	-115	-142	-93	60	404

Source: Annex 7, Table 6.

6.32 As we have observed earlier in this report, Somalia is not generously endowed with natural resources and the country is presently undergoing a period of economic and social difficulty. Nonetheless, Somalia still possesses considerable human and natural resources which could be much more effectively utilized to overcome the immediate difficulties and provide a basis for further development through the rest of this century. However, to take advantage of these opportunities, it will be necessary for Government to take some early and hard decisions in policy and institutional reform. Given the will and determination to do this, Somalia can look forward to the progressive betterment of its people.

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AGRICULTURAL SECTOR REVIEW

Agencies Serving the Agricultural Sector

Livestock Subsector

1. The livestock subsector is served by the Ministry of Livestock, Forestry and Range (MLFR) through its departments of animal health, animal production, planning training and research, and administration, through the Tsetse Unit and through two parastatals - the Livestock Development Agency (LDA) and the National Range Agency (NRA). Top level in these agencies are generally well trained and qualified, but lower level and field staff frequently lack both training and experience. This is compounded by poor means of communication, irregular supplies, poor management, and lack of control. Services at the producer level are particular poor. The traditional marketing system is well established. Market infrastructure is usually simple and sales are based on visual appraisal. Animals are normally trekked, but trucking of sheep and goats is common along well developed roads. Exports are organized mainly by the private sector. The export trade suffers from lack of organization of shipping, port congestion, poor communications and poor institutional credit which is offset, in part, by traditional credit arrangements between livestock producers and traders. Traders' margins appear to be narrow, in the order of 10-15 percent, and so are butchers' margins, in the order of 6-14 percent. Private trade, thus appears to offer an efficient service both to the producer and the consumer. The Hides and Skins Agency (HASA) has the monopoly on hides and skins export from Somalia. It operates 6 marketing offices in 6 regions and employs Hides and Skins Improvement Officers in 10 other regions. The agency sells both in the internal and export markets, 70 percent of exports being in the form of raw materials and 30 percent in the form of semi-tanned products. There are four government and three private tanneries, two government meat processing factories (KMF and SOPRAL) and a government dairy factory, all of which suffer from limited management skills, old age of equipment, irregular supplies and poor marketing organization.

The Crop Production Subsector

2. Crop producers are served by the Ministry of Agriculture (MOA) through its departments of Production and Extension, Land and Water Resources, Plant Protection and Locust Control, Planning and Statistics, Administration and its Research Institute. The ministry is represented regionally by the Regional Coordinators. Overall, the ministry suffers from a shortage of trained and experienced manpower, limited operating funds and facilities, frequent staff transfers, absence of work programs and the lack of control.

The department most directly involved with farmers is that of Production and Extension which oversees extension and training, farm credit and agricultural inputs, state farms, seed production and certification, farm management and monitoring and evaluation. The MOA is assisted by three parastatals, the Farm Machinery and Agricultural Services Organizations (ONAT), which is responsible for the supply of all inputs except seeds, the Agricultural Development Corporation (ADC), which is responsible for the marketing of food grains and seeds, and the National Banana Board (NBB) which is responsible for regulating and promoting banana production and marketing. MOA also operates farmers' training centers and the Agricultural Secondary School at Afgoi. Services at the producer level are very poor. Government is however, preparing to implement a program for strengthening the Extension Service, for training state farm managers and for developing a national agricultural research strategy.

3. The traditional marketing system for crops is not as well developed as in the case of livestock. Roads and other marketing infrastructure are generally poor. Crop production is generally subsistence oriented. Post-harvest technology, particularly storage, is very wasteful. The supply of consumption goods in the countryside is limited and scanty. Government's unfavorable price policy favors the development of a parallel market. All these factors result in a limited marketable crop surplus. ADC was created, among other things, to protect farmers against exploitation by private traders. ADC, however, is not well equipped to deal with small and widespread farmers in an environment with undeveloped infrastructure. For this reason, ADC could not fully substitute for the private traders. Private traders are more efficient because of their lower overhead costs. Observations in Somalia and elsewhere in the world confirm that exploitation by private traders is more of a myth rather than a reality.

4. The NBB, formed through nationalization of foreign owned banana producing and exporting companies, was not able, through its services and policies, to prevent the significant decline since 1972 of the number of banana producing farms, of the areas under banana cultivation and of banana exports. Originally established as a tractor hiring agency, ONAT, from 1975 onwards, was also made responsible for supplying the country with fertilizers, seeds, chemicals, agricultural machinery and equipment. Lack of capital and operating funds and the weaknesses of its management prevented ONAT from performing its functions effectively. As a result, some of its functions were again taken away and given to existing or newly created parastatals.

5. Several agencies outside of MOA provide services to farmers or are directly involved in agricultural production. The National Trading Corporation (ENC) under the Ministry of Commerce, is responsible for the supply and distribution of imported or manufactured food and consumer goods such as sugar, rice, wheat, flour, pasta products, edible oils, tea and coffee. ENC has its storage facilities run in parallel to those of ADC. Sugar and cotton production are in the hands of specialized parastatals under the Ministry of Industry, as are all of the other agro-industrial

plants like oil and flour mills and the fruit processing and cigarette factories. Agro-industries tend to have excess capacity due to insufficient supply of raw materials. The Crash Programme Agency and the Settlement Development Agency were established to take care of emergency situations but became a permanent feature of the institutional landscape requiring considerable budgetary support with no indication that one day they would reach the production goals assigned to them or become economically more viable. Credit for agricultural producers is provided mainly by the Somali Development Bank for long term loans and the Commercial and Savings Bank for short and medium term loans. Experience with agricultural credit in Somalia is characterized by lack of coordination between the agencies providing it limited credit availability and coverage, poor repayment rates and negative interest rates.

The Fisheries Subsector

6. The Ministry of Fisheries (MOF) is responsible for servicing the fisheries subsector. It is presently assisted in this task by two parastatals, the Coastal Development Project which is in charge of fishing resettlements and Somalfish which is in charge of marketing and some deep-sea fishing operations. In addition, there are three joint ventures, one with the Iraqui Government (SIADCO) and two with the Italian Government SOMALITICA and SOMSEC. The MOF does not currently operate any form of extension service except that FAO is providing some technical assistance to fishermen in the area from Mogadishu to Ras Chiamboni. There is also no operational regular marketing channels for fishing supplies and no marketing infrastructure for fish outside of major fishing centers.

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AGRICULTURAL SECTOR REVIEW

Proposed Development Projects

The Livestock Subsector

1. Based on a review of the country's resources and development capability, the emphasis on poultry production, feed plant investments and development of an additional meat factory under the TYDP appear inappropriate. In addition, the rapid expansion of the sheep and cattle feedlot capacity suggested in the TYDP is premature. An export-oriented poultry industry could only be envisaged once Somalia produces sustained feed grain surpluses. Somalia has no comparative advantage in importing feed grains and re-exporting poultry meat, since low wages constitute a small percentage of production costs of broilers and eggs, and the difference would not be sufficient to offset Somalia's higher feed costs. The main demand for concentrate feed would come from poultry and, as other classes of livestock are not as dependent on industrially produced concentrates, there would be lesser need for setting up the feed mills proposed under the TYDP. The supply projections used for feed ingredients are over-optimistic anyway, hence, the new feed mills would operate part-time only for lack of feed.

2. The rapid expansion of the feedlot capacity under the TYDP, from one small feedlot for 200 head of cattle to an annual capacity of about 50,000 head and from zero to 90,000 sheep, involves undue risks. The first results of the two commercial scale feedlot operations that are currently being developed in Trans-Juba and at Balad should be awaited before embarking on further large-scale investments. Several problems will have to be resolved experimentally. In addition, stall fattening of cattle, sheep and goats may be an interesting enterprise for smallholders and may be left as an appropriate investment opportunity for them rather than for state farms. Five projects should be given priority in the short and medium terms in the livestock subsector, namely, and the Livestock Services Project, the Livestock Marketing Project, the Second Northern Rangelands Development Project, the Wildlife Utilization Project and the Agricultural Research Project.

3. Livestock Services Project. This project was identified by the sector review mission. Its objective is the strengthening of animal health and production services through staff training, institution building, experimentation and technical assistance. The Project is a prequisite for the development of the livestock subsector which gives employment to 60 percent of the population and which contributes three quarters of Somalia's exports. The Project may be subdivided into components, the implementation of which could be phased out to meet the country's financial and management capabilities and its development needs.

(a) Veterinary field services. Part of this component is already envisaged under the TYDP. The veterinary field service would be re-equipped with vehicles, camping and veterinary equipment, and with veterinary drugs. In addition, the services would be reoriented towards a "campaign" approach in carrying out vaccinations. The supply of veterinary drugs and livestock movement control and meat inspection would be improved and appropriate accounting and reporting procedures would be introduced.

(b) Disease survey. The three veterinary laboratories would be made fully operational and a systematic disease survey undertaken on a district-by-district basis. New field survey teams would be established as required and attached to one of the three laboratories.

(c) Management training. Regional and district level veterinary officers would be given in-service training to improve their management and operational skills.

(d) Afgoi Livestock Extension, Training and Research Center (LETRC). The Afgoi dairy farm would be converted into an extension and research center for intensive animal production. Modeled on the Farm Management and Extension Training Center, university and livestock school graduates who have been selected as extension officers, farm managers, and foremen would receive practical training in animal husbandry and farm management including some classroom work. Existing animal production staff would be brought back for refresher courses. The animal production extension service for the peri-urban areas and for the river valleys would be centered here, serving both the private producers and state farms. Dairy farmers in and around Mogadishu would get access to an extension service comprising animal health and hygiene, artificial insemination, animal husbandry, feed supplies and milk marketing. The farm would be developed for research into fodder production, dairy cattle production, beef cattle fattening on pasture and in the feedlot, sheep and goat fattening and work oxen. A nutritional laboratory would be provided. A suitable poultry unit, probably the one at km 7, would be added to the center for poultry work. There would be close coordination--through formation of integrated research teams--between this center and the Afgoi Agricultural Research Station regarding the use of crop residues, agro-industrial by-products and fodder crops, and the appropriate management and feeding of work oxen.

(e) Completion of the HASA hides and skins drying shed investment program.

(f) Technical Assistance would be made available for the strengthening of veterinary services, disease survey, management training, training and research at the LETRC, and the HASA. The next step would be for government to identify the project in further detail and to start project preparation.

4. Livestock Marketing Activities. Objectives are to develop and operate better marketing facilities and services specifically for the export of livestock. Private traders would carry out the main trading function while the government and other appropriate departments, would offer better services against fees. The project would include:

(a) strengthened veterinary services in the northern export staging area (Hargeisa-Burao-Berbera triangle) in order to improve veterinary control over all livestock in the area and thus reduce disease risks for trade stock (e.g. assistance to the Northern Region Laboratory);

(b) improvement of marshalling and inspection yards at the Berbera and Kismayo ports;

(c) stock route water in the northern trade areas;

(d) track maintenance for off-main road livestock transport;

(e) livestock transport equipment,

(f) livestock market intelligence unit;

(g) improved telecommunications with Middle Eastern and local markets; and

(h) technical assistance for project implementation.

5. Second Northern Rangelands Development Project. This project, which is strongly supported by the Ministry of Livestock, would be a follow-up to the ongoing First Northern Rangelands Project which is being financed with a loan from the Kuwait Fund. The first project had a slow start but is now making satisfactory progress and funds will be exhausted by mid-1981. It would be very desirable to extend project activities to additional farmers and pastoralists and to keep the momentum going towards creating associations of pastoralists with maximum mass participation who will increasingly take over the management of the pasture resources for maximum sustained productivity. It would be preferable to strengthen the services of NRA in this area and try to make a successful breakthrough in lasting grazing control in a pastoral area, rather than diluting NRA's efforts into new areas which are not yet covered by range development projects. The project would contribute to the long term development strategy in the subsector, in which range development is

a priority. The project would be implemented through services established under the first project. Emphasis would lie on the development and operation of grazing reserves, and range and livestock associations. Project identification has now reached a point of urgency, if a funding gap is to be avoided in 1981. The Government should discuss project ideas with potential donors and get project preparation underway without delay.

6. Wildlife Utilization Project: The TYDP provides for the strengthening of the Forestry and Wildlife Departments of NRA, for forestry development, establishment of the Lag Badano National Park in the south and development of charcoal production. Wildlife utilization activities are omitted. The mission believes that the wildlife resource should contribute, somehow, to the national economy and that in the absence of tourist facilities, the best approach would be licensed and controlled sport hunting in areas of high game density. Provided that the Wildlife Department of NRA were able to administer and control this operation, overseas sport hunters could be invited to shoot surplus game under the supervision of professional hunters. The latter would be contracted from abroad and thus the administrative burden would be small but foreign exchange earnings could be substantial.

7. Agricultural Research Project. The sector review mission has identified the need for more technical data as a basis for sound project planning. Specialized livestock research and extension activities are being proposed under the Livestock Services Project described above. In addition, integrated farming systems should be studied, in particular, in the rainfed and small-scale irrigation areas. Under the guidance of the Afgoi Agricultural Research Station and the Afgoi Livestock Extension Training and Research Center, four farming areas warrant further study and such study should be given consideration in the context of the national agricultural research strategy to be developed under the Extension and Training Project:

(a) Bay Region, the most important rainfed farming area would be served by the Central Research Station and the substation at Bonka;

(b) the North-West would be served by Aburein Research substation;

(c) an investigation center would be warranted to study crop/livestock integration in the Erigavo area; with regard to livestock, emphasis would be laid on high-value fodder production under stream irrigation (alfalfa) and development of a fattening system for exportable sheep and goats;

(d) an investigation center in the Lower Juba or Lower Shebelli area would study fodder production with flood or controlled irrigation for smallholder livestock production with emphasis on cattle.

The Crop Production Subsector

8. The present state of low productivity, lack of basic information and lack of domestic skills does not favor the rapid expansion of irrigation that the TYDP implies. Moreover, past experience with cooperative organizations, the crash program and the settlement program does not justify the continued emphasis accorded them in the TYDP. The role of such organizations need to be critically reviewed in relation to the objectives assigned to them and in light of alternative approaches government may find acceptable for the country. The emphasis on research, institution building, information gathering and training in the TYDP is weak. Banana production which provides the second highest share of foreign exchange earnings in the country and which has been declining was left out. Project selection and priority to be accorded to various action should reflect the country's immediate needs and its long term development objectives.

9. National Food Security Program. The objective of this project is to create a state of preparedness which would allow rational and effective response to emergency situations such as drought and floods. The project would concentrate on strengthening individual, community, regional and national capabilities to plan for and withstand emergency situations through four components:

(a) improving on-farm and off-farm storage;

(b) establishing an information system for production forecasting and early warning of food shortages;

(c) management of emergency food reserves; and

(d) institution building for efficient food supply management.

This project would involve the National Extension Service and the Agricultural Development Corporation. The possibility of including fodder security stocks should also be investigated. Preparation work for this Project should be given priority. Consideration should be given to making external food aid one of the tools used for achieving national food security.

10. Agricultural Applied Research Program. A national agricultural research strategy is expected to be developed in the context of the Agricultural Extension and Farm Management Training Project. This should serve as a basis for the preparation of a comprehensive and farming system oriented applied research program. Care has to be exercised in closely coordinating this project and the research project proposed for the livestock subsector. Both in rainfed and irrigated farming, applied research has to start with a careful review of existing farming practices in Somalia and ongoing research programs and available results in environments similar to Somalia. The idea is to attempt, to the maximum extent feasible, to save time and resources

by identifying practices already locally proven useful and practices known to be useful under conditions similar to those in Somalia. Initial research efforts would then concentrate on adapting this knowledge to meet the special needs of Somali farmers.

11. Research should be undertaken on a multi-disciplinary basis in order to cater to the complementary needs of the farmer and provide answers not only to the technological questions but also to the questions of whether the practices are economic, what institutional arrangements are required to introduce and implement them, and what policy actions are neded to facilitate the diffusion of practices.

12. Irrigation Rehabilitation Program. Irrigated agriculture is presently a high input low output activity due to three major bottlenecks - lack of farm management skills, lack of motivation for economic use and preservation of land and water, and low yields reflecting poor and untimely farming practices, the latter include land levelling, drainage, weeding, insect control, use of farm machinery, and maintenance of irrigation network. Emphasis on horizontal expansion of irrigation has detracted government attention from analyzing the constraints to increased productivity in irrigated agriculture and devising solutions to remove them. Investment in new irrigation schemes, however, cannot be justified at the present low level of productivity. The country strategy should aim at rehabilitating existing irrigation schemes to improve their productivity and provide answers, both technological and managerial, to how to efficiently further expand irrigated agriculture. Priority items in the rehabilitation effort include the following major components:

(a) Water resource allocation: This would include the assessment of Somalia's total water resource and an economic allocation of this resource to present and potential future high-priority users. It would require: (i) the enactment of national water laws (the enactment of laws covering Juba waters is already required but not yet achieved under the ongoing Trans-Juba Livestock Project, (ii) strengthening the Department of Land and Water Resources of the Ministry of Agriculture and giving it fuller authority over regulating water development and use; (iii) the registration of water users; (iv) the carrying out of studies to determine current and optimum future water needs for principal irrigated areas (the Shebelli River, which already is extensively utilized and the Juba River; (v) the identification of specific programs for irrigation rehabilitation in the Shebelli and Juba valleys; and (vi) allocating water rights and establishing priorities of use. The need for such allocation is critical on the Shebelli where irrigated agriculture, already declining in productivity may, in the future, have to share limited surface flows with urban water users. Recent studies have indicated that Mogadishu's groundwater supplies will only suffice until about 1990 and, after that date, conjunctive use of other supplies, including the Shebelli, would be required.

(b) Banana rehabilitation: This effort should include actions aimed at (i) improved productivity; (ii) improved marketing services both for bananas and for production inputs; and (iii) diversification into other fruit crops such as grapefruits, papayas and mangoes. The latter effort should account for the differencial land and water availability in the Juba and Shebelli valleys and be planned according to the availability of market outlets. The Somali Development Bank, if given the means, could play a major role in facilitating the rehabilitation of banana farms. All, however, will be contingent upon the National Banana Board being reformed, its role redefined, its accountability increased, and its financial viability being tied to its effectiveness in providing the services it is meant to provide.

(c) Annual crop production. Rice, cotton, maize and vegetable oils represent major imports. In addition, cotton, sesame, and groundnuts have the potential of becoming export crops. There is an urgent need to improve the productivity of these crops on large scale farms and to extend cotton and groundnuts in particular to small scale farms. The swamp area in the Lower Shebelli should be carefully studied to determine its potential for rice production in particular. The development of all these crops should account for the unstable water availability and include a combination of crops which is responsive to variable water supply both within the year and from one year to another.

(d) Irrigation infrastructure rehabilitation. This should include (i) improvement of the irrigation system and irrigation techniques with the purpose of saving water and preserving the quality of land; (ii) flood control measures; and (iii) drainage. Emphasis should initially be put on the Shebelli valley where water shortages are a real concern and where such essential production units as the Jowhar Sugar Scheme have been deteriorating.

13. Rainfed Farming Intensification Program. Government has already started a major program aimed at increasing the productivity of and the production from rainfed farming. This program includes the First Phase North-West Agricultural Development Project (second phase of this project is being prepared), the Agricultural Extension and Farm Management Training Project and the Bay Region Agricultural Development Project. The benefits from these projects could be enhanced through improved on-farm storage (para. 9), improved farming practices (para. 10) and improved input supply, particularly seeds, farm implements and insecticides.

(a) Seed production and certification. Healthy seeds with high germination rates are among the most yield increasing practices which can be immediately and effectively introduced into rainfed farming. The development of seeds should cover seed production, certification and its distribution.

(b) Input supply. At the present stage of technological development, the major inputs involved are simple farm implements and insecticides. There exists ample room for improving the hand tools (hoe) presently used. There is also a need for introducing labor saving devices such as animal drawn implements. The present capability for manufacturing improved tools and implements is very limited and in many places nonexistent. There is also a need for introducing a capability for draft-animal training. The input supply system has to involve the extension service both to inform and assist farmers and to provide the feed back on the adequacy of the inputs supplied.

14. Rainfed Farming Expansion Program. Rainfed farming has the most potential for absorbing the increasing population into productive employment. The realization of this potential, however, requires careful planning and organization. Areas suitable for rainfed farming have to be identified. Access roads have to be built, and water for human and animal use has to be developed. These have to be followed by the provision of basic education and health services. Once people start settling in the new areas, a major extension effort has to be put into providing them assistance. Preparation of these settlements should, therefore, emphasize extension training and the development of suitable technological packages. The rate of development should be commensurate with the country's financial, physical and institutional resources.

15. Irrigated Farming Expansion Program. The major constraints to the expansion of irrigated farming include the limited supply of three major ingredients, namely, water, management and technical skills and technology. The latter two constraints can be removed in the context of the Irrigation Rehabilitation Program (para. 12). The limited water supply can be improved to a limited extent through savings resulting from improved land and water management. A major improvement in water supply would, however, require increased water storage capacity. Along the Shebelli, available information indicates that the topography is not favorable for building new storage facilities. On the Juba, the water requirements of already committed schemes exceed the unregulated river flow, and the proposed Bardere dam would be essential for the eventual expansion of irrigation in the Juba valley. However, from an agricultural point of view, the dam would be only a beginning, and would have to be followed by major downstream investment. Such investment would have to be preceeded by detailed soil surveys, hydrological investigations and feasibility studies for specific projects. Labor force availbility would have to be confirmed and organizational and managerial arrangements for particular schemes would have to be determined. A six-volume consultant study prepared in 1979/80, which updates and revises the Juba River Valley Development Plan, concludes that, for a wide range of possible schemes, implementation rates, building hypotheses, cropping patterns and intensities, the rate of return would be in the range of 6-7%, which is low. Individual schemes should be carefully selected to ensure that those with the highest economic returns receive priority.

16. Institution Development. This should be part of the overall institutional reform and development in the country. Three components need immediate consideration:

(a) Strengthening of MOA. The objective is to improve manpower quality and availability, and to improve the work environment.

(b) Strengthening Agricultural Training. The Faculty of Agriculture and the Afgoi Agricultural Secondary School need teachers, improved curriculum, laboratory facilities and training equipment.

(c) Agricultural Vocational Training: The introduction of agricultural vocational training should be considered to partly substitute for or to supplement existing primary and secondary education.

The Fisheries Subsector

17. The inadequacy of the input supply system, the inaccessibility of coastal fishermen to local consumption and export markets, the general lack of fisheries infrastructure and the almost total lack of skilled manpower for essential managerial, extension and regulatory roles, are at the root of the poor productivity and low production of the coastal fisheries. The development program should therefore aim at rectifying these problems and deficiencies. With regard to the development of deep-sea fisheries, the main constraints are the lack of qualified personnel for sea going and related onshore activities allied to the acute shortage of berthing space for trawlers and the almost total lack of onshore fish freezing, cold storage and ice plant to facilitate the transhipment of catches intended for export, plus the lack of vessel maintenance facilities.

18. Fishermen need a reliable system for the supply of boats and inputs and financial assistance in the form of credit to acquire them. Controlled distribution of fishing gear (nets, floats, cordage and hooks, etc.) should be supplemented by encouraging a revival of private trade at wholesale and retail levels. Urgent government action is needed to improve marketing facilities at the various fishing centers and at the main domestic consumption areas (Mogadishu, Kismayo, Berbera and Hargeysa). Action is also needed to provide the essential linking communications and transportation infrastructure to serve the coastal fishing industry, including coastal seaborne transport as well as all-weather feeder roads and suitable vehicles.

19. Coastal Fisheries Services Project. A number of activities can be conveniently grouped together under the above common heading.

(a) Inputs and Small Boat Supply. Despite the importation and local manufacture of several hundred wooden and GRP (glass-reinforced polyester) motorboats, most of which are now unserviceable from lack of maintenance, little has been done to find a cheap and simple

non-motorized craft to replace the aging fleet of 2,000 individually owned small wooden canoes (houris) which were formerly imported by dhow from India, but which are now at or beyond the end of their economic working life, following the cessation of the dhow trade since about 1970. These craft are still the main means of production for the coastal fishing industry and there is urgent need for the local manufacture of at least 300 boats of this type annually, made from either wood, GRP or ferro-cement, for purchase by artisanal fishermen. This activity involves the design of a suitable boat, setting up the production line and establishing arrangements for a system of hire purchase to assist those fishermen who lack the finance for outright purchase. There is also need to provide for the local manufacture of simple inshore fishing gear (gillnets, twine, cord, floats and hooks, etc.) all of which now have to be imported as finished products, but which could be locally made from imported raw material, so saving on foreign exchange. A distribution chain to local retailers in the fishing villages should be considered as an alternative to the present system whereby virtually all the fishing gear is imported by government and distributed through fishing cooperatives, leading to recurrent shortages and other difficulties.

(b) Extension and Training. The MOF currently lacks any form of extension service except for the ongoing Fisheries Development Project which assumes a limited extension role in the area from Mogadishu to Ras Chiamboni. It is essential that an Extension Service be established within the MOF structure to take over this responsibility for the whole country. A fishing industry manpower needs study, possibly as part of a broader survey of agricultural manpower requirements, should be undertaken as a matter of urgency before any further decisions are taken on course curricula, staff and training facilities for the fisheries subsector.

(c) Fisheries Research. The MOF already includes a small research division within its establishment, staffed by qualified Somali fisheries scientists, and there are TYDP proposals for the construction of a fisheries research institute allied to the new Faculty of Marine Science at the National University. The work program of this research institute should, for a number of years, be restricted to applied research into fish stocks and fishing effort, designed to provide the biological basis for conservation regulations and to work on fish utilization, product quality control and possibly simple forms of aquaculture. Work should also be done on exploratory fishing and stock assessment studies of the demersal fish and crustacean resources on the Somali continental shelf, the small pelagic species stock off the northeast coast and for offshore tuna along the north coast.

(d) Fishing Boat Maintenance. Past experience in Somalia has amply demonstrated the impossibility of keeping motorized fishing boats in working order in the absence of an efficient spare parts supply system, basic workshop facilities and properly trained mechanics at each of the main fishing centers. Workshops facilities should be built covering the coastline. In the meantime, motorboats should be concentrated at those centers where they can be properly maintained.

20. Infrastructure Development for Coastal Fisheries. The coastal fisheries lack virtually all the necessary infrastructure to facilitate development with the exception of limited processing facilities at a few centers, some which unfortunately proved to have been badly sited and are having to be replaced.

(a) Processing and Marketing. Physical facilities for the hygienic distribution, wholesale and retail marketing of fish are urgently needed at all the main urban centers, coupled with an energetic local demonstration campaign to promote increased domestic consumption. Processing and handling facilities at the coastal fishing centers should also be upgraded to minimize spoilage and the production of poor quality processed fish. Consideration should be given to more active encouragement of Somali and foreign fish traders to buy direct from fishermen. The fixed price system should be modified to a minimum price scheme to safeguard producer interests, hence, allowing retail prices more freedom to reflect market conditions.

(b) Roads. Roads should be constructed to serve communities where the combined benefits to fisheries, livestock and crop production can provide sufficient economic justification for the high cost long distance feeder roads. Examples include Mait-Erigavo-El Dab, Bosaso-Gardo-Garoe, and Ras Chiamboni-Kulmis-Kismayo.

(c) Coastal Ferry Service. Coastal communities which cannot provide justification for roads can be better served, at lower cost, by a coastal ferry service to seaward. For example a service is needed between Berbera and Bolimog (Alula), calling at Karin, Mait, Las Koreh, Boasso and Candala en route, for the carriage of cargo and passengers along the north coast. A similar service from Mogadishu northwards, calling at Adale, Meregh, Obbia, Eil Marina, Bender Beila, Hafun and Bargal en route and perhaps interconnecting with the north coast service at Bolimog, would serve the needs of all the most isolated coastal communities and the inland population adjacent to each port of call. The necessary technical/feasibility studies for such services and for the landing jetties and/or landing craft to connect from ship to shore, should be undertaken.

(d) Ice Plants and Cold Storage. As part of the overall package, assuming that feeder roads and/or ferry services are provided to link with the main domestic and export market outlets, many fishing centers will require the provision of ice plants and chill stores, or freezing and cold storage plants to enable them to sell their fish most advantageously.

21. Rehabilitation of Existing Fish Processing Factories. This would include:

(a) Rehabilitation and recommissioning of the Kismayo fish freezing factory to its original design capacity was completed in 1979. The next stage would be a major expansion program to allow the factory to handle catches from part of the offshore deep-sea fishing fleet. This work is scheduled for the period 1980-83. There seems to be little doubt that the increased capacity would be economically utilized and that subject to proper maintenance and to careful hygiene and fish quality standards, the project would be successful.

(b) The four north coast factories (three canneries and one fish freezing plant) present a very different set of problems, the record of all four having been generally poor in recent years. The freezing factory at Bolimog is currently in the process of being rehabilitated to about 25 percent of original design capacity for a period of trial operation, the Habo cannery, which recently began operating again, has functioned for only short seasons recently, and the Candala cannery has remained closed since 1976. The main reason in all cases has been an inadequate supply of tuna for canning from the small inshore fleet of motorboats.

(c) The Las Koreh factory is the largest of the four, and is a Russian built tuna cannery dating from 1966, with limited buffer cold storage capacity. Parts of the plant, half the cold storage and the fishmeal and oil recovery plant, are unserviceable and probably beyond repair even if the necessary spare parts could be obtained from the USSR. The factory has clearly reached the stage where a major rehabilitation exercise will be needed in the very near future. Before that happens, it is important to determine whether a change in the processing system and range of factory products could produce a more favorable commercial performance. A reduction in canning capacity and increase in freezing and cold storage would reduce the factory's dependence on tuna and impart greater flexibility to utilize other kinds of fish which are unsuitable for canning but which could be sold profitably in Saudi Arabia, for example in the frozen state.

(d) To this end, a north coast fish processing capacity study should be undertaken in conjunction with an offshore exploratory fishing survey in the Gulf of Aden to determine whether existing processing capacity is adequate or excessive in relation to potential fish supplies and what changes, if any, should be made to the processing systems to improve performance and profitability. The logistic and financial advantages, if any, to the factories of establishing a regularly scheduled coastal ferry service which could deliver supplies and take away factory produce for transshipment at Berbera, would also be studied. At present all fuel, other supplies and factory products have to be trucked by land to and from Mogadishu at great expense over very long and very bad roads.

22. Deep Sea Fisheries Development Project. In general it is considered that government could make more use of joint venture arrangements in setting up the Somali deep-sea fishing industry, to develop overseas marketing contacts, to acquire expertise to train Somali personnel in technical and managerial fields, and to fund and develop some of the necessary infrastructure to support the fishing fleet. Indeed the almost total lack of qualified Somali personnel to operate vessels and shore installations, virtually precludes any other approach during the initial formative years. Licensing foreign flag vessels and management contracts would be acceptable short term emergency measures to cover the interim whilst long term joint venture agreements are being carefully negotiated.

(a) Fish Freezing, Cold Storage and Ice Plant: Mogadishu Port Area. Given the investment that has already been incurred in fishing vessels, many of which lack freezing capability and therefore cannot operate without a shore base, the most urgent need is for the provision of a shore complex adjacent to the existing port at which fish can be landed for freezing, and cold storage pending transshipment. Sufficient ice should be produced to enable the wet fish trawlers to remain at sea for several days at a time without loss of catch quality. Preparation of this activity should be given priority.

(b) Marine Slipway and Trawler Repair Workshops. The general area of the northwest Indian Ocean is not well served by ship repair facilities, the nearest to Mogadishu being at Mombasa, Kenya. The need for regular and timely maintenance makes it essential that suitable facilities, including slipway and workshops, be established in the near future at Mogadishu, at least for the smaller classes of trawlers up to say 30 meters in length, of which there are likely to be some twenty vessels in operation by 1982. The lesser number of larger trawlers will have to use Mombasa for the foreseeable future. Several ministries, the Port Authority, and vessel operators are involved and there will be need for close collaboration in any such development.

(c) Fishing Port Facilities at Mogadishu, Kismayo and Berbera. The existing ports at Mogadishu and Berbera are already being fully utilized by mercantile traffic, whilst Kismayo is said still to have some spare capacity. Plans for port expansion appear to take no account of the rapid increase in trawler traffic and the regular use of these ports will pose increasing problems for the Port Authorities and trawler management unless and until special berths can be provided to serve the fishing industry. Urgent inter-ministerial action is needed to commission the necessary civil engineering and feasibility studies to determine alternative courses of action.

(d) Design of Fishing Harbor at Ras Hafun. Large stock of small pelagic fish species occurs off the northeast coast, in the vicinity of Ras Hafun. This stock is believed capable of supporting sustainable catches of up to 100,000 tons per year. The fish are suitable for fishmeal and oil production rather than for human consumption. This necessitates consideration of a new fishing harbor and shore facilities at Ras Hafun because of the impracticability of basing such bulk fishing operations anywhere else. Feasibility studies should be undertaken. The matter is, however, not urgent at this stage.

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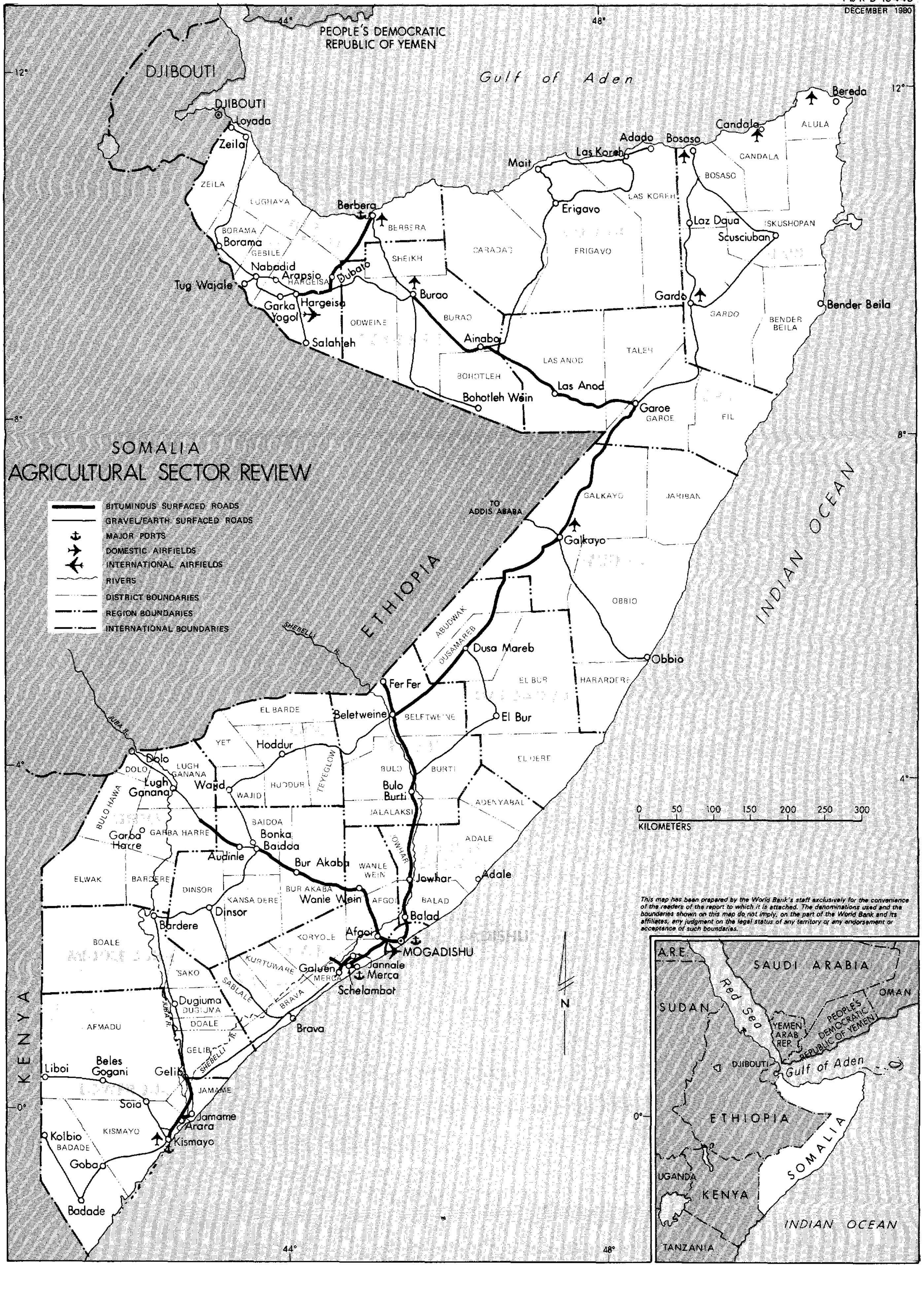

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Dugiuma
Gelib
Liboi
Beles Gogani
Soia
Jamame
Arara
Kismayo
Kolbio
Goba
Badade
0 50 100 150 200 250 300
KILOMETERS
N
12°
8°
4°
0°
44°
48°
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