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ASPECTS  
OF  
DEVELOPMENT

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SMALL-HOLDER IRRIGATION AGRICULTURE - ITS ROLE IN  
NATIONAL DEVELOPMENT

I. The Crop Production Sector

I.I. Relative Importance

Although in the predominantly nomadic and livestock raising Somali economy farming does not take up the overwhelmingly important role it plays in most other African societies, it should still be considered one of the major sectors, about equal in weight to transport and construction, and much more prominent than manufacturing.

Farmers provide basic staple foodstuffs, mainly sorghum, maize, sesame, sugar, fruits and vegetables, to feed the settled urban and rural population, and as a supplementary diet for the nomads. An estimated number of 200,000 families or 20% of the total population are farmers either permanently settled or as semi-nomads.<sup>1</sup>

The contribution to the national value added amounts to about 7% to 10% of GDP, and agricultural export (banana) account for 8% of all exports.

There is a broad consensus that physical resources for agricultural production are underutilized to a considerable extent in Somalia. Out of the total land area of 638,000 km<sup>2</sup>, about 13% or 8.3 million ha are thought to be potentially suitable for farming. But currently only about 700,000 ha are actually farmed each year. Out of these, roughly 110,000 ha receive more or less improved flood irrigation, and 50,000 ha are served by controlled irrigation facilities. The rest of the cropping areas relies on rainfall only. Thus less than 10% of all potential rainfed areas are actually

cultivated, and somewhat around a third of the potential irrigation areas.

Agriculture is concentrated in the southern regions of Somalia, where rainfall reaches 400 to 600 mm in average years, along and between the two rivers. Some farming also takes place in the North-West Region. In all other parts of the country farming is limited to small vegetable gardens around springs.

## I.2. Major Subsectors

For the purpose of socio-economic analysis, three major types of farming enterprises can be distinguished. These are:

- independent small-holders in rainfed or irrigation areas;
- state farms, communal farms of cooperatives, settlement farms and the like;
- commercial enterprises, mostly banana farms.

Although in some individual cases, it would be difficult to assign a particular farm to one of the three types, in general the distinction is quite clear-cut and the criteria are easily defined.

Commercial farms: These enterprises will typically be owned by Somali investors who in many cases are not residents of the location of their farm. Most of them produce bananas for export. This type of farms is concentrated in Lower Shabelle and Lower Juba regions, in areas equipped with irrigation infrastructure (barrages, main and secondary canals, etc.) by the former colonial administration for Italian settlers. The subsector experienced a dramatic decline in productivity and production in the second half of the 1970s, due mainly to a lack of price incentives from the state marketing institution, the National Banana Board, and a lack of imported inputs. Recently, prices were raised, and the Banana Board was merged with an Italian private company to form a joint venture named "Somali Fruit Company", responsible for

marketing, export and input supply on a monopoly basis. The company is also expected to develop new export crops like grapefruits.

In response to these new developments, banana production and exports as well as yields increased remarkably in 1982, and the recovery can be expected to continue. Currently, banana exports amount to less than half the quantity sold in the early 1970s. The maximum area used for bananas was about 9,000 ha in 1972, out of which less than 3,000 ha are currently used.

Besides bananas, commercial farms grow a wide variety of fruits and vegetables for the urban markets. With the general liberalization of the economy, more businessmen can be expected to become interested in this type of farm.

State Farms: The terms "state farms" is used here to include also most of the communal farms of cooperatives and the nomad settlement projects, that is to say all agricultural enterprises run by the government or parastatal agencies. Their common characteristic are a highly centralized management organization for each enterprise responsible for an area of between one hundred and several thousand hectares. Usually, these farms were constructed from capital aid provided by foreign governments and according to plans designed by foreign consultants. They can be expected to be highly mechanized. The total area developed for this type of farm is currently approximately 30,000 ha on irrigated land and about a further 10,000 ha are in the planning or construction phase.<sup>2</sup> Main products are sugar, rice, maize and cotton. This type of enterprise has experienced extraordinarily great problems since its inception in the early 1970s.<sup>3</sup> Capacity utilization and yields are generally far below any levels warranting the immense amounts of capital expenditure effected on the farms, and they are most often even insufficient to cover current costs. Without going into

details here, major reasons for the disappointing performance are inadequate management, lack of foreign currency, and insufficient incentive to labour, leading to idleness of machinery and poor agronomic practices. The waste of capital predominantly provided through hard currency loans to the state has led the government to reconsider this type of investment policy, searching for new organizational models for its large-scale modern-technology agricultural development projects. The new Five Year Development Plan states that during the planning period 1982 - 1986 no new state farms shall be established.<sup>4</sup>

**Small-holders:** Small independent farmers grow the bulk of Somalia's food crops maize, sesame, and sorghum. Their production methods are usually based on hand labour, and except for a few tools all inputs are made on the farms. Production, of course, is largely subsistence oriented but in good years a substantial portion of the output is sold on the market.

Because of livestock and incense trade links to the Arab peninsula, the rural Somali economy has known monetary exchange mechanism for centuries. Farmers sell grain to buy animal products and industrial goods. With the government's restrictive pricing and marketing policies of the 1970s, the amount of grain sold has somewhat declined or been re-channelled to the black market. Recently, the government has taken up a more liberal policy. Therefore, small-holders are slowly adopting a more open attitude towards marketing.

Farming is concentrated in the rainfed areas, but a certain portion of the farmers living along the two rivers practice irrigation to augment the rainfall their crops receive and minimize drought risks. The latter type of cultivation, covering an estimated area of around 100,000 ha, shall be described in more detail in the following pages.

## 2. Small-holder Irrigation Agriculture - How does it function?

### 2.I. Methodology

The information contained in this chapter derives from a series of group interviews conducted with village leaders between 5 to 10 farmers each, and with a number of individual farmers. For both types of interviews written guidelines were used so as to get a consistent picture of all villages. The discussions took place in a remarkably open atmosphere, with a considerable number of participants giving their own opinions. Sometimes lively arguments took place over complicated problems, but always led to specific group answers.

The interviews took place during the Hagai rains, when the Gu season crop of maize was 4 to 8 weeks to harvesting. Supplementary information was drawn from a number of published documents.<sup>5</sup>

Clearly, this type of analysis can at maximum serve to give a first indication of the sector's functions and problems; it cannot replace full-fledged agronomic and sociological research on Somalia's farmers.

Existing information on the sector is scarce and inconsistent. In the past, studies and other documents prepared by aid donor agencies for the government in the course of project preparation and implementation, and which as a whole probably represent the largest body of written information on the country, have tended to disregard the irrigation small-holder sector altogether. As regards sociological features, the only document known to the author is a paper presented by I. M. Lewis in the 1960s presenting a general outline.<sup>6</sup>

The interviews were conducted in two areas of Lower Shabelle region, one between Aw Dheegle and north of Genale, and the other from south of Qorioley to the proximity of Kurtun Warey. These areas were selected because

- no large development projects exist here;
- irrigation is of the traditional "improved flood irrigation" type, and the areas have no access to Genale banana-growing canal system;
- both areas are known for a long tradition of strong agricultural production.

## 2.2. Physical Resources

The annual cycle of the semiarid climate is determined by the two monsoons - north-east from December to March and south-east between May and October, interrupted by less windy seasons in April and November. The mean annual precipitation is around 470 mm, distributed mainly over two rainy seasons. The Gu season is recording the highest rainfall between April and June. The second and less pronounced rainy season is the Der season starting in about middle of October, up to the end of November. In between the two seasons the coastal showers (Hagai) bring light rainfalls, and cloudy sky. The real dry season occurs during the months from January and March (Jilal). Although overall rainfall is one of the highest for the whole of Somalia, the lack of reliability both in quantity and distribution of rains constitutes a constant threat of either droughts or floods.

The soils are heavy clay of alluvial origin. The shrink and crack deeply during the dry season, while the cracks close and the soil becomes smeary when wet.

The Shabelle river is the second largest in Somalia. The water quantity is determined by rainfalls in the Ethiopian highlands. High flow periods enabling gravity irrigation last four to six weeks in May and June in the Gu season, and between two and three months from September to November in the Der season, riverflow data for these periods being between 60 and 70 m<sup>3</sup>/sec.

## 2.3. Social Structure

Population figures for the area are difficult to obtain. The main reasons for this are that an unknown number of nomads migrate into the region during the long dry season, that a portion of village residents are semi-nomads moving in and out of the area with changes in weather and economic conditions, that there is some migrant labour from the Bay region at certain peak labour periods, and that population data are often established by the village for the purpose of distribution of food rations which might lead to exaggerated figures. The numbers obtained during the interviews give an average of 350 families per village, with 8.4 members per family and around 3000 inhabitants per village.

The families are usually composed of the husband and one or more wives with their children, plus possibly a few unmarried close relatives. In some cases, a family head will have one wife with children in the village and another wife in the livestock grazing areas in the Bay region. Other village families will completely move to the livestock regions during the rainy season, thus being unable to do intensive farming.

Size of land holdings vary considerably throughout the area, and the average farmer can be expected to possess about 2 to 10 hectares. There are no indications that land scarcity constitutes a major problem for a large number of farmers in the area. In case a family wishes to cultivate more land than it owns, there is always an option to rent land from large holders or absent semi-nomads.

Each village has a village committee led by a village chairman. He is usually also the chairman of the local party unit. The committee acts as counterpart to the district and regional authorities in all matters pertaining to rural

policy. There are cooperatives of different types in the study area. The most common is the multi-purpose cooperative, established in most villages to facilitate purchase of inputs, procurement of tractor services, and the like. The majority of these cooperatives have kept a low profile of activities. Where they exist, membership is universal. Sometimes their main purpose is seen to function as a relief agency in case an emergency should arise, and to mobilize farmers to fulfill national development and political goals.

Group farms represent another type of cooperatives, which like the former belong to the Union of Somali Cooperative Movements being in turn a section of the party. They usually consist of 100 ha provided by the government together with tractors, tools, and inputs. They are farmed by about 20 families communally. The settlements of religious communities represent a third type of cooperative. The land is worked on a communal basis, without individual claims to land.

#### 2.4. The Irrigation System

The villages studied get water through small hand-dug canals, only during periods of high river flow, that is for about four to six weeks on average in the Gu season, and between two to three months in the Der season. The canals are from a few meters to six kilometers long, 30 to 70 cm wide, and usually not deeper than half a meter. Most of them have been built at least fifty years ago, for nobody in the village can remember their construction. They are usually completely made of earth, with no concrete structures whatsoever. Sometimes wooden poles are used to help block the intake on the river. Water control is achieved through small earth banks which are removed to allow the water to flow into branch of field lateral canals.

Canals are operated and maintained under an indigenous cooperative system.

All the farmers served by a specific canal (from 10 up to 100 farms) form a canal committee. The committee is headed by an elected chairman called aw or oday. Depending on the size and length of the canal, the chairman has one to three helpers, called sagaalo or yersin. These are also elected by the farmers. In order to qualify for the office of chairman or helper, a person should meet certain requirements. Both should possess fields on the canal. The chairman should be known for wisdom and justice, be a good farmer, should be able to mobilize people, and preferably have been a helper before. Helpers should be strong men, should have a reputation of regular work on their fields, and of reliability. Unless displaced by a committee decision, both chairman and helpers may remain in post for many years.

In case anyone notices a damage on the canal, he will notify the helper, who will then in turn either repair it immediately or inform the chairman and call together a work force of men to do the repair.

Water distribution is decided upon by the chairman, and the related work of opening and closing laterals or field inlets are carried out by the helper.

The main principle governing water distribution is, that each farmer will get 24 hours of water, i.e. the canal is blocked for one day and water is diverted into his field, irrespective of the size of the plot. Thus, a farmer possessing more land than can be irrigated during 24 hours will have to wait his turn again for the irrigation of the rest of his field. Water distribution always starts on those plots closest to the river, farms being served one by one with growing distance to the river. An exemption is made when farmers farther inland are ready for irrigation earlier than the ones close to the river. Whenever there is

a shortage of water, daily meetings take place at the house of the chairman to define the following day's water use.

The water distribution regulations are not monetized, the chairman deciding on water allocations purely on the ground of set rules and practical considerations but not of financial capacities of individual farmers. Small fees of between five and twenty shillings are levied, however, mainly as an equivalent of the chairman and his helper's services not as a payment for water.

Maintenance and cleaning of canals is effected before a new season starts. All farmers served by the canal are appointed certain stretches to clean. They can either do the work themselves or have them done by hired labour. A farmer not fulfilling his duty will obviously become quite conspicuous and sanctioned by the committee. In case anyone fails to clean his stretch, it is the chairman's duty to see to the completion of works, if necessary out of his own resources. The work is supervised by the canal helper, who in the evening reports to the chairman.

There is a rule governing allocations of stretches to clean, stating that all farmers have to work on the first stretch from the river up to the first lateral canal, but only those served by the next stretches continue, so that the farmers at the end get no help from those situated close to the river. This rule is probably a reflection of the diminishing size of canals with growing distance from the river, and it also facilitates admission of new members to the canal committee, who, their fields being the last in line, augment the work force on the old stretches.

## 2.5. Agriculture

By far the most important crops in the study area are maize and sesame. All other crops play a minor role. Maize is the dominant Gu season crop and the main staple food in the

area, and it is grown predominantly for subsistence purposes. Maize is usually not a very interesting crop from the commercial point of view. Surpluses are sold only if the food requirement of the family including a reserve for drought seasons are met. Maize is stored close to the family's home in underground pits where it can be kept for several years in edible condition, although the quality deteriorates. Farmers stated that on average they need about 0.17 quintals of maize per family member and month. These figures would lead to a yearly requirement of 17.15 qt (1 qt = 100 kg) for a family of an average size of 8.4. The figures have to be taken cautiously as the number of farmers interviewed is too small to provide for definite conclusions. They can give an indication of the order of magnitude involved, however. As average maize yields in poor soil areas with insufficient irrigation will hardly exceed 6 qt/ha, farmers here would have to cultivate at least three hectares each Gu season only to feed their families.

In good areas, yields can be as high as 15 to 20 qt/ha or more if the land is worked with care, and one hectare might be sufficient to grow food for a family.

Sesame is the main cash crop and it is predominantly grown in the Der season. Sesame is exclusively sold for further processing into oil and animal feed, usually to small oil mills in the villages. Most settlements dispose oil mills owned by private individuals, operated either by a camel or by a small engine. Sesame processing in the villages is not hindered any more by the government as it was the case for a while, to encourage processing at the large oil mill in Mogadishu. Sesame oil is favoured greatly by the Somali consumer over imported soy bean and similar oil types, and fetches high prices. It is an interesting cash crop, and a poor sesame harvest will fetch twice the income of an above average maize crop grown on the same plot of land, production

costs being similar in magnitude.

It is very difficult to establish a single yields figure for the main crops, because the wide variations caused by soil fertility differences, fluctuations of the climate, discriminate access to water, and farm management practices, make any statistical mean value meaningless. There are farmers who consider a yield for maize of above 20 qt as normal, whereas others are happy to receive 6 - 8 qt. Most farmers probably achieve a production in the range of 7 to 12 qt in a normal year. We shall use the figure of 10 qt/ha as an average yield value, keeping in mind that the figure has little significance for the individual farmer.

The situation is similar for sesame. Average yields quoted in the interview varied between 4 and 8 qt/ha. As most of the sesame and part of the maize, plus a good deal of fruit and vegetables not covered in detail in this paper are sold, the area provides a considerable surplus of marketable goods.

Today, almost 100% of all marketing is through private channels. Sesame is sold to small oil mills, and maize and other crops are either marketed directly in the village or taken to city markets. For maize, traders (mostly women) come with lorries from the city to buy the produce. The same system is also used for fruits and vegetables, but sometimes farmers will hire a lorry and take their produce to the marketplace themselves. The Agricultural Development Corporation (ADC) used to play a major role in marketing and maintains a number of storehouses in the area, but its activity is now of minor importance after the government's decision to deregulate food marketing. This liberalization has, however, not been based on any policy pronouncements, and according to the law ADC's monopoly on grain marketing remains unchanged. One might speak of a policy change "through the back door", but it definitely has a great

impact on the rural areas.

Prices received by the farmers fluctuate considerably between seasons, especially for maize. The minimum price for maize paid after the last Der season harvest was around 200 SoSh/qt, slightly above the officially guaranteed ADC price of 180 SoSh/qt.<sup>7</sup> Prices increase sharply when the season advances, and at the time of the interview (early July, about 4-5 months after the last harvest) prices for stored maize were 400 to 500 SoSh/qt, and for fresh produce could be as high as 800 SoSh/qt. All prices are for shelled maize.

Sesame prices fluctuate somewhat less, the minimum being about 1000 SoSh/qt, and the maximum 1400 SoSh/qt. The prices quoted most often were in the region of 1200 to 1300 SoSh/qt.

The main difference in farming techniques between maize and sesame is that sesame is sown after the field has been flooded completely for about four weeks and the soil is soaked with moisture, whereas maize is sown after the first heavy rains and later one or more irrigations are applied. Cost-intensive operations like land preparation and weeding are basically the same.

The first step of cultivation is land preparation. The land is ploughed and small bunds are made, dividing the plot into basins of 1/16 of an hectar. This operation is almost always performed by a hired tractor. Four hours are needed to plough one hectar, and one tractor hour costs on average 150 shillings. An additional quarter of an hour is sufficient for bund-making. Thus the cost for one hectar, to be paid as out-of-pocket expense by almost all farmers, is about 640 SoSh. Most tractors in the area are privately owned and stationed in the larger villages.

Sowing is usually effected by hand, with seeds filled into small holes. If sowing is done by hired labour, the cost per hectar varies between 240 to 320 shillings. The cost depends



on the soil conditions, cheaper rates being applicable when the soil is dry.

Weeding is by far the most expensive operation in terms of labour cost. Unless performed by the family, contracts are given to casual labourers at a rate of 800 to 1120 SoSh/ha for the first weeding, depending on the thickness of weed growth. Rates for second and third weedings are between 400 to 800 SoSh/ha. The number of weedings depends on rainfall or irrigation frequencies, and on the labour and/or financial capacity of the farmer. Often, weeding will not take place more than once. Weed control can be considered one of the most important agronomic problems, and its intensity increases with the number and quantity of irrigations. The use of chemical herbicides has not been introduced in the area.

The irrigation method has been explained above. Irrigation does not involve considerable financial costs apart from the small fees paid to the canal operations. It is impossible to "buy" allocations of water. Farmers cultivating larger areas do not necessarily get a larger share of the water.

Harvesting is divided into several sub-operations allowing for a certain flexibility in labour demand. The stems are cut, collected in the center of the field, and made into stooks. After drying, the cobs are picked and transported to the village.

Table I provides a summary of the different production cost items for maize. No variable costs other than machine hire and labour are included, because chemicals are not widely used, and no machines or capital items (fixed cost) are in the hand of farmers.

Table I. Production costs / ha for maize, Gu season 1983

Activity	Average cost/ha (SoSh)
Land preparation: hired tractor 4 1/4 hrs at 140 to 160 SoSh/hr	640
Planting: 15 to 20 SoSh/jibaal	280
Weeding: First - 50 to 70 SoSh/jibaal	960
Second - 30 to 50 SoSh/jibaal	640
Third - 25 to 30 SoSh/jibaal	440
Cutting: 10 SoSh/jibaal	160
Collecting: 10 SoSh/jibaal	160
Making stooks: 5 SoSh/jibaal	80
Transport to village: 10 SoSh/qt cobs at 20 qt cobs/ha (2 qt cobs = 1 qt grain)	200
Picking cobs	200
Shelling (machine): 5 SoSh/qt X 10 qt/ha	50
Miscellaneous (seeds, irrigation fee, taxes, guarding)	400
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1 ha	= 16 jibaal
Yield 1 ha	= 10 qt grain = 20 qt cobs
1 qt	= 100 kg = 1 quintal

source: field interviews

Roughly 80% of all costs are labour costs. Casual labour is generally hired on a contract system, a fixed sum being paid for the performance of a certain operation on a fixed

piece of land. The price depends, of course, on how strenuous the work is. Men, women, and children are being paid the same rate for the same contract. Any person can perform several contracts per day, if he or she wishes so. For example, when sowing a person will usually achieve 4 to 5 contracts per day, thus earning between 60 and 100 shillings. One person can weed two contracts per day, making 100 to 140 shillings. These are considerable earning opportunities for casual labour in a rural area, taking into account that a trained worker in the capital will not get more, and that university graduates employed by the government earn rather less.

Although not all facts could be established during the interviews it seems that only a small minority of the casual labourers are landless villagers but that in fact most of them are farmers themselves. There used to be a seasonal migration of workers from the Bay region to the agricultural areas along the river, but the people interviewed stated that this phenomenon has ceased to be of importance.

The high price of labour on one hand seems to be a reflection of the outmigration of a number of especially younger men to the cities and even abroad to the Gulf, on the other hand it has to be seen in the context of the nomadic background of the Somali society which usually does not involve strenuous labour on the land. In former times, labourers used to be imported from abroad to work on the fields. Today, with livestock raising still being the economically most promising activity in the country, there is no pool of cheap agricultural labour available to the farming areas on the river. There are no indications of the existence of a landless rural proletariat.

Considering the high price of labour, one might bring forward the notion that the main aim of farming is the maximization of leisure time to be devoted to social activities

under the condition that the family's basic food and cash requirements have been met. A lot more research into the rural labour economy would be necessary, however, to test this hypotheses and fully study its implications. The cost, yield, and marketing data of the previous chapters show that a normal maize crop will not warrant full use of hired labour.

Table 2 contains a tentative simplified crop budget. Situation I with full use of hired labour and normal yields and minimum crop values results in a considerable deficit. The farmer will have to reduce employment of paid labour or send family members to work on other people's farms. In situation 2 cost is reduced by 50% and the crop just breaks even. In situation 3 above average yields and a good market lead to considerably raised gross output, leaving a profit even when labour is fully contracted.

On average, it must be assumed that maize growing will not yield financial profits, but will rather serve to fulfill subsistence exigencies.

The situation is definitely different for sesame (situation 4). The growing costs in table 2 have somewhat arbitrarily been assumed to be identical to maize costs, because most cultivating operations are similar and because earlier studies have found sesame costs to be in similar magnitudes.<sup>8</sup> Although sesame was not analyzed in detail during the research for this paper, the information gathered is sufficient to indicate a strong profitability of the oilseed, and one is safe to say that sesame profits may partly serve to make up for losses from maize.

The family income, of course, depends not only on the farming returns. Many families keep considerable herds of cattle in a semi-nomadic economic system. Others may have a good additional income from family members working abroad, or from non-agricultural activities, for example transport.

Table 2. Tentative crop budget for maize and sesame, 1983

	<u>Maize</u>		<u>Sesame</u>	<u>Unit</u>	
	(1)	(2)	(3)	(4)	
Yield	10	10	15	5	qt/ha
Price	200	200	300	1250	SoSh/qt
Gross output	2000	2000	4500	6250	SoSh/qt
Cost	3770	1805	3770	3770	SoSh/qt
Loss/Profit	-1770	125	730	2480	SoSh/qt

source: field interviews

Pick-ups and lorries used in rural areas are owned by village people, as a rule, to give an example.

In this context, farming for many families just constitutes one of several economic activities, helping to reduce overall risks, securing the supply of staple foods, and in good years contributing to a cash surplus.

### 3. Scope for Improvement

#### 3.I. The Role of Small-holder in Agricultural Development

According to the Five Year Development Plan 1982 - 1986, "priority will be accorded to the development of small private farms", and "no new state farms will be established".<sup>9</sup>

This reflects a clear shift in policy objectives away from state and group farms, the priority development of which was stipulated in earlier plans.

It seems that a number of considerations have led the government to reevaluate somewhat the role to be assigned to independent small-holders:

- the problem of how to make the large state farms more productive has not been solved yet;
- the country must develop its immense irrigation potential in the Juba river valley, and it is not conceivable how the investment cost of \$ 10.000 to 20.000 per hectare needed for modern large scale farms could possibly be raised. Thus, self-financing small-holders will have to move in, using simple and inexpensive technologies;
- although the commercial farms are expanding it is clear that widespread agricultural development cannot be based on this subsector, because export markets are limited, and because the spread of this type of farm might not be socially desirable in long run;
- the government is now about to implement a programme of settling refugees who will not be able to return to their homeland, and many of these have an agricultural background and could possibly find a new home in the less intensively used farming areas as small-holders;
- it is imperative for the country to tap the resource of the accumulated knowledge and experience of small farmers for national development.

There are three major fields of government action in view to the promotion of small-holder agricultural production. Measures will become fully effective only if simultaneous steps are taken in all three.

There are:

- support services;
- improvement in infrastructure;
- general agricultural and economic policy.

### 3.2. Improvement of Supporting Services

The field extension service is still in its inception phase, and it will definitely be very helpful if it continues to test and improve its "message" to the farms, because there is a wide scope for improvements in farming techniques. The advice given to farmers centers on increasing plant population and row planting, timely planting and weeding, the introduction of chemicals like fungicides, insecticides and fertilizers which are given free of charge to contact farmers for trials, and cultural practices like crop rotation and intercropping.

This service's main problem will be that an effective extension service requires a rather sophisticated and well-managed public sector organizational framework. Experiences in Somalia and comparable countries show that it is very difficult to maintain such a service operational without continuous heavy technical assistance from abroad. Technical assistance, however, tend to be shortlived.

The banking system in Somalia is rather weak, comprising the Commercial and Saving Bank and the Somali Development Bank (SDB) only. There is no Agricultural or Rural Development Bank, and the SDB is therefore the only source of medium or long term loans in the country. As it does not maintain branch offices in rural areas, its effect on agricultural development has been limited in the past. Both banks will need more funds earmarked for agriculture, and more specially trained personnel. The installation of a private bank in Somalia might also help alleviate credit shortages.

The existence and functions of the banking system are well known to the small-holders. The concepts of both loan financed investment and seasonal credit is not alien to the socio-economic surroundings in the partly commercialized study area.

The public machine-hire service has had limited impact on small-holder agricultural areas. Possibly, a stronger involvement of the private sector or economically run co-operatives in the villages could help to put more tractors and other equipment at the disposal of farms. This point is of particular importance as the analysis above shows that labour seems to be the limiting factor for an increase in agricultural production. Animal traction cannot be employed in the study area mainly because of the heavy clay texture of the soil, but also due to tse-tse infestation.

Careful planning is needed for an input supply system to provide fertilizers, pesticides and improved seeds, if farmers become interested in this types of inputs in the future.

### 3.3. Investment in Infrastructure

One of the most important problems for the small-holders is the scarcity of water or better the lack of access to sufficient amounts of irrigation water when it is most needed. The canals are too small to bring enough water quickly to supply all those in need. Irrigation efficiency is usually quite low, and high seepage losses could be observed.

Inefficiency could also be observed concerning the distribution of water in the field due to imperfect levelling. A major problem concerning water control is flood protection. Many farmers visited could not cultivate because the river had inundated their plots.

Investment in "hard" infrastructure will have to be one of the government main areas of spending in the years to come.

This field includes both measures to regulate water flow in the rivers, controlling floods and bridging periods of low flow, and to increase infield irrigation efficiency.

The first type includes the construction of barrages across rivers, of flood relief channels, of embankments, of off-stream reservoirs, and if feasible, of high-dam storage reservoirs. About seven to eight weirs exist on the Shabelle river, enabling the farmers in their vicinity to use gravity irrigation during most of the year because of a constant high water level. In addition, an off-stream reservoir is operational near Jowhar, collecting surplus water during flood periods and releasing it in the dry season. More installations of these two types are needed.

As the Shabelle is a small river the irrigation capacity of which might soon be overused, provisions for better water management are essential. At present, huge amounts of water are lost every year due to a very low irrigation efficiency in the existing agricultural projects. The Ministry of Agriculture's irrigation operation and maintenance service is very weak. The government is considering to set up a Shabelle river authority to take care of water management and water use coordination.

On the Juba river, the huge Bardheere dam project is under preparation. It is expected to solve all water management problems for the river at one blow.

Equally important is investment in farmer's irrigation facilities. The canals used by small-holders are well managed and maintained, but they are technically inadequate to provide full water control. Programmes to give technical advice and credit finance to the farmers could, if well implemented, greatly improve small-holder's productive capacities. Such programmes would have the advantage that investment costs would, at least partially, be met by the farmers themselves, thereby reducing the government's spending burden.

Other major infrastructure fields warranting public investment include rural telecommunications and roads. Of all

irrigation districts, only a minority is served by all weather access roads so far. Even main roads are still missing on most stretches of the Juba river. Some road construction has been going on in the Lower Shabelle region lately.

#### 3.4. Policy Issues

Very much will depend for the small-holders on the country's overall foreign trade policy. The present situation is unfavourable because most imported inputs are brought in by traders through parallel market foreign exchange and therefore at exaggerated prices, whereas the food stuffs are imported under foreign food grants at no cost. Prices for local products are still high because food aid items are a poor substitute for them in terms of quality, but prices could go down considerably if production increased. At the same time, an increase in production can be achieved only through a greater use of imported inputs, so that the present foreign trade regime would harm agriculture more than it does presently if agriculture became more productive. Clearly, it would be more fair to agriculture if all imports were treated similarly.

Much has been said and written about pricing and marketing policy lately. As we have seen above, at the moment farmers are allowed to purchase and sell on the free market. The government tolerates private traders rather than actively encouraging them, and there is no legal basis for private marketing yet. The insecurity for investors and traders connected to such a situation tends to raise marketing costs, enlarging the gap between farm gate and consumer prices. A more secure and stable system of private marketing backed by the law would probably curb speculation and provide for fairer prices.

While this is written, Somalia goes through a slow process

of change in economic policy aimed at increasing the share and the responsibility of the private sector in development, and at letting more economic decisions be taken by the market forces. It can be safely assumed that the small-holder farmers would profit if the government continued to act in this direction.

#### FOOTNOTES

<sup>1</sup> These and most of the following figures, unless otherwise stated, derive from interpolations of published and unpublished data. Reliable, consistent, and comprehensive statistics do not exist, so that authors of consultancy reports and government offices are forced to arrive at figures by "educated guesses". All figures in this paper, unless expressly assumed to be reliable, have therefore to be taken rather cautiously.

Documents used include:

- IBRD: Somalia Agricultural Sector Review, Nairobi 1981
- Somali Democratic Republic, Ministry of National Planning: Five Year Development Plan 1982 - 1986, Mogadishu 1982
- unpublished internal working papers of the Ministry of National Planning and the Ministry of Agriculture
- Central Bank of Somalia: Annual Report 1981

<sup>2</sup> Five Year Development Plan 1982 - 1986, p. 141 ff.

<sup>3</sup> The only large scale agricultural enterprise established earlier is the SNAI sugar complex at Jowhar, launched in the 1920s.

<sup>4</sup> Five Year Development Plan 1982 - 1986, p. 130

- <sup>5</sup> a) Somali Democratic Republic, Ministry of Agriculture: Genale Bulo Mererta Project, Annex III (Human Resources and Institutions) and Annex IV (Existing Agriculture), Mogadishu 1978
- b) German Agency for Technical Cooperation (GTZ): Evaluation of the Agricultural Settlement Projects Kurtun-Waarey and Sablaale and Proposals for Future Development, Eschborn 1982
- c) Farm Management Data Book, prepared by FAO-Project NECP/SOM/503, Mogadishu 1982
- <sup>6</sup> Lewis, I. M.: Land Tenure conditions, in: FAO, Somalia. Agricultural and Water Surveys, vol VI (Social and Economic Aspects of Developments), Rome 1968
- <sup>7</sup> I SoSh = 0.067 US \$  
 I US \$ = 15 SoSh, in mid 1983 (official rate)  
 The black market rate is about twice as high.  
 I qt = I quintal = 100 kg
- <sup>8</sup> see footnote 5 (a) above.
- <sup>9</sup> Five Year Development Plan 1982 - 1986, p. 130