

Somalia

**Agriculture in the
Winds of Change**

Peter Conze / Thomas Labahn

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Foreword

The German Agency for Technical Cooperation (GTZ) is conducting one of its largest programmes world-wide in Somalia. At present there are approximately 50 GTZ-financed specialists working in the country. Altogether the GTZ is involved with the execution of 22 projects, one of which is being carried out by order of the Saudi Arabian government and the others by order of the German Ministry for Economic Cooperation (BMZ).

Aid from the Federal Republic of Germany for Somalia began with independence in 1960, but was considerably reduced during the seventies. Following an intensification of the programme at the end of the seventies, it was initially concentrated on improvements to infrastructure and the modern sector. Running parallel with the liberalization of the Somali agricultural policy, German assistance shifted more and more towards agriculture. All the larger projects which have been tackled since 1982 within the scope of technical cooperation, make a contribution to the promotion of agriculture.

This book presents an initial review of cooperation in the agricultural sphere since the above mentioned intensification took place. Its aim is to refurbish experiences gathered, primarily in the course of GTZ-work, so that they may be of use for the future promotion of agriculture, whether undertaken by German assisted projects or by other donor's schemes.

It is intended to give an overview of the political, social and development frame which directly influences the activities of rural producers. In this context, topics are taken up which, unfortunately, within the scope of quite a number of development projects are faded out.

Most of the authors of this volume work for the GTZ as advisors in Somali ministries. Two of the remaining four authors have been employed by the GTZ as consultants in Somalia.

The book begins with an introductory article by P. Conze (advisor in the Ministry of National Planning) and T. Labahn (advisor in the Ministry of Culture and Higher Education), the intention of which is to show the background for the development of agriculture in Somalia. Next M. v. Boguslawski (advisor in the Ministry of Agriculture) and K. Hübl (advisor in the Ministry of Livestock, Forestry and Range) describe possibilities for and limits to the development of the two sub-sectors agriculture and livestock. J. Janzen (Free University of Berlin), B. Helander (University of Uppsala), T. Labahn and P. Conze illustrate socio-cultural and socio-economic as well as anthropological and institutional aspects which must be taken into consideration when promoting agriculture in Somalia. The articles by Ahmed Abdullahi and N. Seger (both Free University of Berlin)

show the problems of traditional forms of crop production, using the example of villages in the Lower Shabelle region. The volume finishes with an article on the most important agricultural development scheme in the history of Somalia, the development of the Juba Valley. The two authors, H. Brunken and W. Haupt, work in the Ministry of Juba Valley Development and are directly involved in the planning activities.

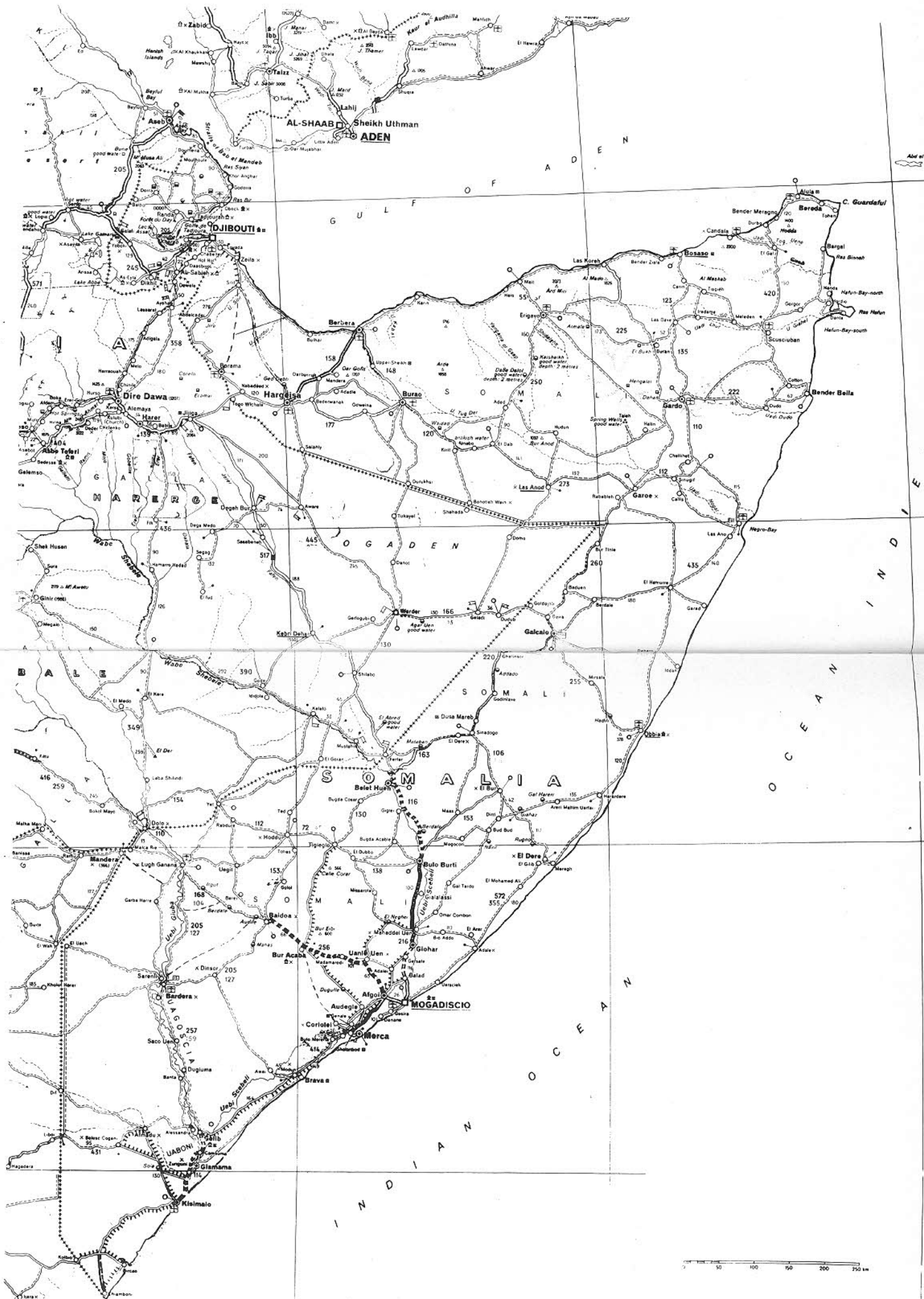
One remark has to be made in respect to the names of Somalis and Somali place names mentioned in this book. All of them are written in an anglicized form, according to the convention used by Somalis when they write in English. In contrary, ordinary words are written in the Somali orthography introduced in 1972.

Mogadishu / Eschborn, May 1986

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List of abbreviations

ADC	Agricultural Development Corporation
MJVD	Ministry of Juba Valley Development
MLFR	Ministry of Livestock, Forestry and Range
MoA	Ministry of Agriculture
NGO	Non-governmental Organization
ONAT	Organizazione Nazionale Alteresi Trattore
Afmet	Agricultural Farm Management and Extension Training

Explanations

Der season	The 'small' rainy season (October - November)
Gu season	The main rainy season (March - May)
jibaa	Land unit corresponding to approximately 25 m x 25 m or about 1/16 ha
Jilaal	The long dry season (December - March)
quintal	100 kg
Xagaa	A dry season characterized by intermittent showers along the coastal areas in the south

Peter Conze / Thomas Labahn:

From a socialistic system to a mixed economy: The changing framework for Somali agriculture

1. The role of agriculture in African economies

Africa, long neglected in discussions on development policy, now occupies a central position of interest for development experts. A drought lasting for several years, famine, and millions of refugees have drawn attention to the situation on the continent in a most spectacular way. The ensuing results have been innumerable relief actions and a flow of donations of previously unknown proportions.

Even with the termination of the actual state of emergency due to heavy rainfalls in most of the countries concerned in spring 1985, the basic underlying problems were not solved. The economic situation of the African population has not only failed to improve during the last twenty years, but has on average become even worse. While an annual growth of 1.7% in the gross national product per capita took place during the sixties in the 21 poorest African states, World Bank figures for 1981 and 1982 are estimated at -2%. Up to now there has been no indication of a reversal of the long-term trends. Reliable observers prophesy a catastrophe on the African continent at the end of the millenium.

The agricultural sector plays a speical role here. Its importance for the developing countries stems in particular from the fact that in nearly all of them 50 - 80% of the population is part of this sector. However, it is especially disquieting that the Third World has, since the Second World War, changed from a pure exporter of foodstuffs into a food importer, what is more, in ever-increasing proportions. According to Elsenhans, in 1930 the developing countries exported 14 million tons of grain, in 1938 the figure was still at 11 million; however by 1967, 20 million tons were being imported, in 1972, 30 million tons and in 1974 already, 52 million tons (Elsenhans 1979: 506). Whereas in some Asian countries this tendency has been reversed it is still continuing in Africa.

The good harvests of the last year in Africa may have ensured supply for the coming year, but the overall perspectives are still gloomy. It is to be assumed that food deficiency will pose an even greater problem in the future.

All the pessimistic prognoses for Africa are based mainly on the estimation of the development in food production. According to World Bank figures, agricultural production in Africa was still increasing in the seventies by an average of 1.3%. However, the per capita production of

foodstuffs has decreased by 25% since 1960. The reduction of child mortality, as well as increased life-expectancy due to modern medical progress together will lead to a population explosion if the birth rate remains the same. This average annual growth of around 3% eliminates any progress and any increase in per capita production. While the population of sub-Saharan Africa was estimated at 385 million in the year 1982, 690 million are reckoned for the year 2000. The gap between population figures and food production is thus becoming ever wider, with the result that the amount of food produced per capita is continually diminishing. 'If all Africans are to be fed, Africa will have to import 200 million tons of food in 20 years' time, if the present birthrate remains unchanged — this would mean importing ten times the amount brought in in the famine year of 1985.' (Der Spiegel 3/1986: 124)

The causes of economic decline in Africa south of the Sahara are of an external as well as an internal nature. Both oil-price shocks, the deterioration of the terms of trade and the recession in the industrial states during the seventies have drastically affected the net export profits of the African countries. The resulting debts were further aggravated by the rise of the American dollar. Internal causes to be named for the majority of African countries are an unsuccessful industrialisation policy, largely supported by foreign aid, as well as measures undertaken in the agricultural sector. Enormous state deficits have been run up with the help of foreign loans. But production has not been increased, nor has the infrastructure been extended sufficiently. Instead, the money was to a great extent used for subventions, which were necessary to keep prices for oil, as well as for imported foodstuffs, at a low level. A steadily growing number of state employees were also paid off with it. There are now insufficient new tangible fixed assets or newly qualified people whose output could serve to settle the huge debts which the developing countries have accumulated.

If these general trends can be applied with few exceptions to all African countries, there are nevertheless various different causes to be found, at least as far as their degree of importance is concerned, and they must be analysed individually. Also, chances of increasing food production and measures for reducing it depend on a multiplicity of sociological and cultural, economic and ecological conditions. This is particularly true of Somalia, a country which is essentially still very much dominated by the nomadic way-of-life and in which the sociocultural aspects as well as the ecological balance in the arid and semi-arid areas require special analysis.

2. The Somali context

Somalia belongs to the 20 poorest countries of the world: the estimated per capita income amounted to approximately US \$ 300 in the year 1985. Even in view of reduced production potential this is a value which counterchecks national as well as international efforts for development. Especially disquieting is the fact that, while Somalia's per capita income is on a par with India and Tanzania, it has reached this position by two decades of negative per capita economic growth (-0.8% GNP from 1965 to 1983). Relatively speaking, therefore, it has lost ground to other developing countries.

With 5.8 million inhabitants and a surface area of 637,000 km², Somalia is rather a sparsely populated country. The annual population increase is given as 3.1% which leads to the expectation that 8 million Somalis will need to be fed by the year 1995 and 11 million by 2005.

The basis for this will even then still be one founded on pastoral nomadism. Estimations show that at the moment 4.3 million cattle, 6.2 million camels, 18.3 million goats and 11.8 million sheep graze on 45% of Somalia's surface area. Although the livestock herds have reached previously unheard of proportions, the percentage of nomads in the total population has been continuously sinking during the last few decades. Nevertheless, 55% of all Somalis can be described as belonging to this sub-sector, even today.

On the other hand the tendency towards urbanisation is unmistakable. Nearly all towns in Somalia have undergone enormous growth during the last decade. Most conspicuous is the development of Mogadishu. While in 1950 it was still more of a small town with 78,000 inhabitants, its population has now reached ten times that amount.

Similar growth is not recorded in the agriculturally dominated areas. The proportion of the population in this sector has remained relatively constant at 20%. This, together with other indications, would appear to verify the fact that the growth in the towns, as well as being due to high reproduction rates, is supplemented by influx from the nomadic sector.

While about 45% of Somalia's surface area is designated as pastureland, arable areas constitute roughly 13%. Nonetheless, the agricultural situation is very different from that of the pasturelands, which are used extensively and sometimes even excessively, due to the large animal population. Of the total potential of 3 million ha, only 980,000 ha have been cultivated to date. In this respect Somalia clearly differs from many other developing countries, where an acute concentration of land ownership thwarts attempts to increase production.

If, as described, 75% of the population lives in rural areas, then the physical-geographical characteristics of their habitat acquire a specific

significance for the whole economy. There are three distinct main zones. One is the north, which consists of the arid, scorching hot, coastal plain and an adjacent plateau. Here it is only possible to farm at particular spots and this area is therefore used almost exclusively as pastureland for herds of camels, goats and sheep.

Conditions are similar in the wide central plains of Somalia. Here a rise in the proportion of cattle to the total herd population is noted. The most widespread form of vegetation here is thorn-bush savannah.

The northern and central regions are nomad-dominated areas, whereas the southern part of the country is the area where arable farming is carried out more extensively, for it is here that Somalia's two main rivers, the Shabelle and the Juba, the only two which bear water all the year round, intersect the landscape, thereby forming the basis for irrigated agriculture. In addition the rainfalls recorded here are higher than in other areas. Thus, 81% of the area used for rainfed agriculture is also to be found here; comparative figures for the north and central region are 6.5% and 12.5% respectively. Although it can thus be assumed that in total 900,000 hectares are cultivated, only 500,000 to 700,000 ha are cropped per season. In spite of the cropping activities, livestock-keeping, with cattle as the dominant species, is also of considerable importance in the south. The number of nomads and farmers in the Lower Shabelle Region is therefore approximately equal and it is only in the Bay Region that the majority of the population is sedentary.

The Shabelle enters Somalia near Belet Weyn and meanders about 640 km before terminating into a swamp, about 30 km from the Indian Ocean. The annual flow of the Shabelle is estimated at 1,800 million m³, and the monthly flow ranges from a low of 10 - 20 million m³ in January and February to a high of 385 million m³ in September and October. (Agricultural Sector Survey 1986: 21). The flow of the Juba River on an annual basis is three times as high as that of the Shabelle River. However, the flow pattern is similar to that of the Shabelle, with a low of less than 50 million m³ in February and a high of almost 1,200 million m³ in October.

The hot, arid climate is one reason for the slow development of potential farming land. It can generally be maintained that in all three zones livestock-keeping, as well as farming, is conditioned to a large extent according to the climatic characteristics. These are determined by two rainy seasons, the larger of the two (Gu), lasting from April to June (about 44 days and averaging 200 - 300 mm precipitation) and the shorter one (Der) from October to December (about 36 days and averaging about 150 - 200 mm precipitation). Rains are often localised, particularly in the Der season. The bimodal rainfall pattern only just manages to fulfill the requirements for rainfed cropping.

As the duration and also the actual rainfall amounts vary considerably, the uncertainties are just as pronounced for the livestock-keepers as they are for the farmers. As a rule of thumb, farmers assume that one in every five harvests will be a partial failure and one in ten a complete write-off. Although the lack of one rainy season may not permanently threaten the nomads' subsistence, a more sustained lack of rain can lead to catastrophes such as that of the years 1973 - 1975 when, according to estimations, 30% of the total Somali livestock herds died because of lack of water and fodder.

Even irrigation agriculture is affected at times of low rainfall (whereby conditions in the eastern Ethiopian high plateau, where both rivers originate, are important). As farmers often use flooding techniques rather than controlled irrigation, they are dependent on sufficiently high water levels in both rivers.

3. The policy decisions of the seventies and their consequences

In the discussion on an adequate development strategy for the agricultural sector in developing countries, the main question is usually how to achieve an increase in production which will ensure a sufficient and steady food supply for the population. Adherence to old production techniques is regularly interpreted as the main impediment to progress in this respect. However, the causes of the — supposed or real — retarded development are manifold. Thus, strategies to overcome them must be equally multifarious and flexible. Bergmann's opinion (1979: 102) must be endorsed, when he states that 'development . . . is a comprehensive process of change, in which economic growth (increase in production), technical modernisation, social change and cultural development combine as inseparable and interdependent parts of the whole'. Nevertheless, when a transformation of existing production methods takes place, it is not a seldom occurrence that new methods are introduced with no consideration of the formerly existing basic conditions.

This also happened in Somalia one and a half decades ago. Since the revolution in 1969, Somalia has experienced major changes in its institutional and policy framework. In pursuit of its goal of establishing socialism, the government greatly extended public sector ownership of and control over the economy. Nationalisation of foreign enterprises after the revolution led to total public sector control of banking, insurance, wholesale trade, agricultural marketing and agricultural input supply. In medium- and large-scale manufacturing, the public sector accounted for 88 percent of value added and 56 percent of employment. The public sector also accounted for the major share in transportation and tourism in a system where pervasive direct economic controls replaced the market

mechanism. Livestock, however, and most of the crop production remained in the private sector.

The extension of public sector ownership and control over the economy went well beyond the government's resources and managerial capacity, tended to erode incentives to effort and productivity in both the public and private sectors, and contributed to the stagnation in commodity production during the 1970s.

The sharply rising government budget deficit and the extremely low allocations to production services assumed alarming proportions.

For a government attempting to operate and manage most economic activities, the rising deficits and declining expenditures on economic sectors — less than 20% in 1975 to less than 7% in 1984 — made it virtually impossible to seriously consider improvements in public sector activities.

Just how little the state has lived up to its own demands and claims during the past decade can be clearly demonstrated by looking at the agricultural sector.

Agricultural performance in Somalia from 1970 to 1984 was extremely poor. Over the fifteen years ending in 1984, sectoral output (54% of total GDP) grew by only 0.4% per year, slightly more rapidly in the livestock sector (35% of GDP) and considerably slower in the crop sector (11% of GDP). Per capita food production declined during these years by nearly 3% per year, and the country's dependence on imported grain and cereal aid rose from 40,000 to 350,000 tons. With nearly \$ 600 million invested in the sector during these years, agriculture's poor performance contributed directly to Somalia's present external debt of \$ 1,500 million, about equal to total GDP. This debt has resulted in an extreme balance of payments/foreign exchange shortage during 1980 - 1985.

4. The policy of liberalisation

When the crisis became more evident at the end of the seventies, the government recognised the need for corrective measures and made a major shift in policy. It slowly moved away from state control and ownership towards a more market-oriented economy. It embarked on a major stabilisation programme under two consecutive IMF stand-by arrangements to curtail demand expansion and to provide incentives to the production sectors. This was followed in 1983 by the preparation of a medium-term recovery programme with a focus on improving economic management, reform of public enterprises and policies to encourage private sector initiatives and investment.

If one examines the individual periods of agricultural production more closely, it becomes evident that the negative trend was halted in 1981.

From this point in time various major economic policy changes were introduced which significantly improved the performance of the sector. Crop production, particularly cereals, has increased by 40 - 50% since then. Equally important is the fact that agriculture has gained more interest — the interest of producers (smallholders and medium-scale farmers) and of the owners of capital.

This interest was aroused by new government directives. A series of economic measures signalled the government's willingness for a more liberalised structure. Such measures included the disbandment of the livestock marketing organisation, the considerable reduction of marketing organisations for agricultural products as well as and more particularly, the release of control over agricultural prices.

The trend towards a mixed, more private economy combined with a liberalisation of the marketing of locally produced crops, particularly cereals, and also a reduced role for public sector institutions has proved successful.

Thus, the very fact that the change in state-stipulated basic conditions led to the production increases mentioned, proves again that it was not — as is a common complaint — exclusively a lack of mechanisation or agricultural inputs which was responsible for the too-low harvest yields of the seventies. That would have indeed been remarkable, as it can be assumed that nearly \$ 600 million have been invested in the agricultural sector over the past decade. Thus, it can be stated that scarcity of capital was not the constraint.

So it seems that on the one hand a decline in production figures was recorded in spite of the eminently high influx of capital during earlier years, and that on the other hand the positive tendencies of recent years were only minimally due to this influx.

The increasing yields, mainly produced by smallholders, led to a situation whereby 'overall dependency on food imports went down from 47% of total domestic consumption in 1980 to 31% in 1983'. (Ministry of Agriculture 1984: 28) Total grain imports for 1985 are valued at 60,000 - 80,000 tons (cf. Ministry of Agriculture 1984: 28) (To this can be added the amounts which have been distributed by the World Food Programme and UNHCR in rural settlement programmes and in refugee camps). The astonishing thing about this development is the fact that it does not reflect any success of the state agricultural policy (emphasis on large-scheme cultivation: state farms with a high influx of means for mechanisation utilising elaborate irrigation practices), but appears to be a reflex (by smallholders) to a change in the basic setting (release of producer prices), as the amounts marketed can be attributed without exception to the supposedly backward smallholder sector.

5. The relationship between farmers and state:

Some general reflections

Although the discussion on the relationship between farmers and state is by no means new in developing countries, it never really got underway in Somalia. This may be due to the fact that state involvement in the agricultural sector is a rather recent development. Another recent development is the increased interlacing of the various regions of Somalia, whereby rural areas are not omitted.

Parallel to this, there has not only been a gradual process of differentiation between the various social functions, but because of the engagement of an increasing number of people as production and distribution officials during the transition of a product from the producer to the consumer, there has been a general process of stabilisation and consolidation of state structures. This has given rise to a new social force in rural areas. It is the 'agent of the state.' Their connections with the administrative centres in the district capitals or in Mogadishu, and their chance to largely monopolise these, provide them with advantages over the remaining social groups when it comes to processes of change and attempts to re-organise the rural areas.

Opposed to them are the traditional inhabitants. Here a distinction must be made between:

1. the nomadic groups with their flocks of camels, cattle, sheep and goats,
2. the sedentary farmers of nomadic origin, of whom a number still own considerable amounts of livestock and who still have close bonds with the group first mentioned,
3. the traditionally sedentary farmers, of whom some may have cows and/or goats for household milk consumption,
4. the sedentary trading and craftsmen families, who quite often also possess farmland and/or cattle,
5. the rural wage workers, who own no land at all.

All have already been affected by basic structural changes. But the present period of transition will involve them to an even greater extent during the next few years in a complete regrouping process.

It is no longer sufficient to produce commodities satisfying only local needs. The extension of the responsibilities of the state also has the effect in rural regions of incorporating the individual, whether he be nomad or sedentary farmer, into a structurally superior network. Thus the present period of transition will very soon create a state of affairs

which is irreversible. Even if the state has to give up some of the functions it usurped during the seventies, it will substantially rule further development in the agricultural sector. This applies to crop production as well as to the livestock subsector, but also to the sub-sectors not dealt with in this volume, namely fisheries and forestry. The decisions of the central government will play a role in influencing whether there will be a distinct and rapid extension of cultivated areas, whether the tendency to overgrazing can be stopped and whether nomads become sedentary farmers. Its policy will also be responsible for future conditions of ownership in the countryside. It will establish the framework of reference, the background against which current development is to take place. A retreat is impossible. A sector which generates 50% of the GDP and 90% of export earnings, as well as providing 70% of employment is much too important for this. Thus, success of government policy in agriculture is crucial for development in the agricultural sector and thus for economic growth in Somalia.

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The crop production of Somalia

1. Introduction

The administration of the agricultural sector of Somalia is divided into

- Livestock, Forestry and Range
- Fisheries
- Crop Production

Crop production refers to annual and perennial crops including fruits trees. As some typical cash crops were, and still are, almost entirely produced on estates which are combined with processing industries, sugar cane and cotton production administration was transferred to the Ministry of Industry and Commerce. Nevertheless, as these are agricultural crops, they will be mentioned in this paper.

In order to understand the ups and downs of agricultural production in Somalia, some notes on the historical background were found necessary before trying to outline the present stage of crop production. In the following an attempt will be made to pinpoint the basic condition for crop production as given by all kinds of infrastructure and services. Finally, some basic policy changes will be discussed in order to open up — and consequently use — the agricultural potential in a more effective way. As the constraints of the existing crop production sector are manifold and of a very complex character, the length of this paper will only allow some basic remarks.

Although the author believes that any change and improvement depends to a large extent on human behaviour, social aspects of the existing crop production structure will only be touched where necessary, as they will be considered more extensively in another part of this publication.

Finally, it needs to be mentioned that the views discussed do not represent the official opinion of the Ministry of Agriculture, nor the opinion of any donor agency.

2. Historical background

Although always considered to be of minor importance compared to animal husbandry, the crop production sector of Somali agriculture may well have a very old tradition in the country. In particular in the Shabelle area, where the availability of perennial water and of fertile soils always provided favourable conditions for sorghum, millet and much later sesame cultivation and where surplus production found its outlets through the ancient settlements of Braawa and Merka.

On the other hand the production and trade of incense and aromatic woods is famous and often referred to in early sources.

Oral records of the 16th century mentioned sorghum and coffee as tribute from cultivation of the Shabelle region to the Ajuraan dynasty. These records also indicate that irrigation canals were dug in order to allow flood irrigation — a practice which is still in common use today.

While the impact of international trade increased during the 18th and 19th centuries, mainly through Arabic and later European traders, Shabelle agriculture contributed an increasing share to the entire exports. Cassanelli (1982) argues that due to a shortage of farmers, the increasing agricultural potential of the Shabelle area and the growing demand from coastal settlements and traders caused an inflow of slave labour which was employed on small-scale plantations and flood irrigated farms. Typical cash crops like cotton and orchelle (a natural dye crop) were introduced, as well as maize which increasingly replaced sorghum on flood irrigated land.

Consequently, the Shabelle farming region presented itself as a wealthy society based on livestock exports and a relatively highly commercialized agriculture at the end of the 19th century, thus attracting European colonial powers.

The history of the colonial period in Somalia has been comprehensively recorded by Lewis (1980). It took about one generation (1908 to roughly 1926 before the colonial agriculture took shape, characterized by new cash crops for the Italian (and European) markets with bananas, cotton and sugarcane produced on estates and large-scale farms and the development of a controlled irrigation system in the Middle and Lower Shabelle and part of Lower Juba Region.

While the Italian farmers had to recruit their labour force mostly from other regions, the traditional farmers who were partly displaced from their developed land returned to animal husbandry, while their crop production lost importance and gradually degraded towards subsistence level, a development which still hampers crop production in the South. The British influence in the North had much less impact on the traditional crop production.

While the sole export crops incense and myrrh continued to be mainly traded to the Arabic Peninsula, subsistence crops (millet and some sorghum) were only completed by vegetables newly introduced to the area.

The Italian Trusteeship period initiated a growing cash crop production and some larger projects for irrigation development. Weirs, canals and off-stream reservoirs were initiated up to the early 1960s when flooding caused major damages to the crop production potential in general and to irrigation infrastructure in particular.

With the political changes of 1969 and the implementation of scientific socialism in agricultural policy, wide-reaching changes were initiated in the existing system.

While the majority of national grain production had always been produced by small-scale farmers in mostly rainfed areas and some on flood irrigation fields, major government policy emphasis was diverted towards large-scale state farming, nationalization of export crop production, centralization and control of marketing (Agricultural Development Corporation, ADC) and state control of input supply (mechanization = ONAT, fertilizer distribution (ADC), plant protection (MoA).

While this policy coincided with the 1973 -75 widespread drought, national production of grains, oilcrops, and export crops stagnated, thus leading the country into an increasing dependency on food aid and concessional (as well as commercial) food imports.

By keeping the producer prices at an artificially low level (thus favouring urbanization processes), small-scale farmers returned — for a second time — to self-sufficiency production levels, while the national demand for grains increased rapidly due to a fast growing population and urbanization.

This resulted in an increasing dependency on food imports until 1982/83 when, unexpectedly, the foreign exchange earnings dropped drastically due to the Saudi Arabian import ban on Somali cattle.

From 1980 onwards some rather timid steps towards a liberalization of agricultural policy were taken, while a real change of policy was only decided in 1984 and is presently still under implementation.

3. Actual land use and present crop production

Due to the climatological conditions of Somalia and specifically influenced by the low, unreliable and scattered precipitations received in two seasons, only about 8 million hectares have been classified as arable land, representing 13% of the whole of Somalia.

'Arable land' means only those areas which receive above 400 mm of annual precipitation, with a maximum in the south (Interriverine area) of up to 600 mm on average. Everywhere, monthly precipitation is below evaporation.

Rainfalls occur mainly in two seasons; the 'Gu-seson' (April -June) with higher and more reliable precipitations and the 'Der-season' (October - December). In some years 'Haggai' rains may appear (July - September) while the 'Jilaal' season (January -March) is dry.

Relative humidity varies between 60 - 80% in the major crop production areas at fairly uniform temperatures with monthly means ranging from 25 to 30°C.

Although figures with regard to actually cropped land are only rough estimates it becomes obvious from table 1 that only a minor part of potential land is actually used for agricultural crop production.

The soils of the country are derived from various geological materials such as:

- crystalline and metamorphic materials of the basement complex;
- jurassic limestone sediments;
- marly sandstones, marly limesands and marly clays;
- alluvial fills in coastal sedimentary basins;
- alluvial flood plain sediments.

Apart from the northern mountain range and some out-cropped rocks from areas of erosion and from recent alluvial deposits of sand dunes, deep layers of weathered material form the top-soil. The dominant types of soil are known as 'vertisols'. Old alluvial flood deposits consist of more clayey materials and are less favourable for plant growth than semi-recent and recent deposits (Draft, Task Force 1 Report, 1985).

Table 1: **Potential and actual land use in Somalia**

Area	Potential land use (cultivable land)		Cultivated land in 1983 (crop production)	
	1000 ha	%	1000 ha	% of potential land
Non-agricultural land	26,765	42	—	—
Range - land	28,850	45	—	—
Land for crop production:				
Total controlled irrigation	250	0.1	50	20
— Shabelle River	86	—	35	41
— Juba River	160	—	14	9
— NW - region	4	—	1	25
Flood irrigation	—	—	110	—
Rainfed	7,900	12.6	540	7
Total arable land	8,150	13.13	700	9
Total land	63,765	100	—	—

Soil surveys and analyses indicate that for major crop production areas only some limited amount of highly suitable soils can be found while the majority is moderately suitable to suitable.

Especially in the river basin areas on frequently flooded stretches the soil salinity is rather high while some trace element deficiencies have been recorded.

Water resources for crop production are limited to two major rivers in the south and a few temporary streams (togs) in the north. Underground water is generally limited to human and livestock use and often of low quality.

Only a few banana plantations in the vicinity of Genale operate tube wells for supplementary irrigation during the dry periods of the year. The only perennial rivers are the Shabelle and the Juba rivers. While the present stage of agriculture development and the development prospects of the Juba river will be discussed in a separate contribution to this publication, this paper will mainly concentrate on the Shabelle irrigation potential and rainfed farming development.

The Shabelle river originates from a high plateau in Eastern Ethiopia. Over 90% of her flow is derived from the Ethiopian plateau runoff and very little from her lower reaches within Somalia. The discharge of the river decreases substantially as it flows from Belet Weyn towards the south, before the last significant traces of it disappear in swamps near the Juba river. This is caused by seepage losses, river banks breaching and flooding, and irrigation abstraction.

Riverflow occurs in the Gu and Der seasons which correspond to the two main rainy seasons of the year. In the Gu season the flood is less and lasts for a period of 1 1/2 month only, whereas the Der season flood lasts much longer and is more reliable. In some years the river can dry up completely during the period of low flows in December to March. The mean annual discharge of the river at Belet Weyn is 68,3 m³/s, and this decreases further downstream.

The river normally has a high concentration of sediments which tends to silt up the irrigation canals. The sediments consist of clay, silt and fine sand. During the Gu season, up to 17 kg per m³ transported in the river water and this can drop to 50 g per m³ in periods of low discharge i.e. January to March.

The salinity of the river water is medium to high while the sodium hazard is almost low. Conductivities of more than 2,000 micromhos/cm occur frequently in the low flow month and during the first few days of the Gu flood (Draft, Task Force 1 Report, 1985).

Present crop production takes place under rainfed conditions and — to a lesser extent — under different forms of irrigation. Rainfed agriculture is the main form of settled crop production in which some 14% of the entire population earn their livelihood and there is still some opportunity of absorbing more people in the future. Besides that, about 77% of the total cultivated land is rainfed.

Rainfed farming is practiced in eleven of fifteen regions. Main cropping zones are the interriverine area, above all the Bay Region, and areas in the North/West.

The common rainfed crops grown in Somalia are: sorghum, millet, groundnuts, maize cow peas, mung beans and some other minor crops. Sorghum is by far the most important one counting for almost 90% of the total rainfed production.

Yields are generally low, i.e. 2-6 q/ha and more susceptible to crop failure by drought. The highest yields, however, are recorded for Bay Region where normal rainfall exceeds 600 mm per annum. The main planting time is the Gu season.

Where conditions are favourable a second crop will be planted in Der season, sorghum quite often being ratoon cropped only.

In some sorghum growing areas farmers still practice shifting cultivation which is the old method of clearing the bush, planting for several years and then moving to new lands until the plot is re-cultivated in rotation.

The average farmer cultivates not more than 5 ha annually. A simple short hoe and some wooden sticks are the only implements used in crop husbandry. Additional income derived from livestock is essential to assuring the minimum of existence for a family. Average livestock is 10-12 units. Some animals are kept near the homestead and the remainder on the rangelands. Uncultivated crop areas are used for grazing and crop residues fed to livestock as well (Draft, Task Force 1 Report, 1985).

With the exception of some small and seasonal streams (togs) irrigated agriculture is concentrated along the middle and lower stretch of the Shabelle river and some areas (mainly down streams) of the Juba river. About 50,000 ha are presently irrigated under semi-controlled or controlled conditions.

This area is restricted to former large scale plantations initiated by the construction of barrages and gravity distribution systems during the 1920s, and later by the introduction of diesel pumps, lifting water from the river. The largest area under irrigation is found around Genale where 30,000 ha had been developed by 1926. The original plantation crops were sugar cane and cotton.

At a later stage due to pest problems cotton was successfully replaced by bananas which extended further along the lower parts of Shabelle and Juba rivers.

Finally citrus fruits (grapefruit and lemon), maize, rice and vegetables have been introduced.

Some areas with formally controlled irrigation systems are presently unused or only flooded, mainly due to a break-down of infrastructure and negligence (Genale, Bullo Marerta).

The small farmer's traditional method of irrigation is restricted to one or — if possible — up to four floodings of his land which is based on gravity but only possible if the river reaches a high level and drives water into the canal system. Branches are frequently cut into the banks of the river to increase the quantity of inflow. Due to a lack of water control and insufficient land levelling the inundation is often irregular with some parts of the land water-logged while others remain dry. Thus, yields will never reach the level of controlled irrigated land whereas the irrigation costs are much less.

Typical smallholder crops are maize (in Gu), sesame (in Der), beans, peas and vegetables.

In some areas where soils have low percolations, paddy rice has proved successful.

Table 2 indicates the areas under various crops while table 3 gives the total production of crops in Somalia during the last decade.

Although these statistics are rather based on estimates, they clearly indicate that the national grain production has increased at a fast rate since 1981 while the banana production and export quantity has just reached about 1975 level.

Table 2:

AREA: Grains, beans and oilseeds
(1000 Hectares)

Years	Grains			Wheat	All Grain	Beans	Sesame Seed	Oilseeds			Total Grains & Oilseeds
	Sorghua	Maize	Rice, Milled					Ground Nuts	Cotton Seed	Oil Seeds	
1970	290.0	133.0	1.3	0.9	425.2	21.9	73.0	3.3	12.0	88.3	535.4
1971	280.0	102.0	1.4	0.6	384.0	17.8	44.0	2.6	15.0	61.6	463.4
1972	390.0	117.0	1.2	0.8	509.0	20.8	57.0	3.3	9.0	69.3	599.1
1973	345.0	101.0	1.2	3.5	450.7	17.9	77.0	2.9	5.0	84.9	553.5
1974	330.0	99.0	1.4	3.5	433.9	17.6	84.0	2.8	4.0	90.8	542.3
1975	400.0	106.0	1.6	3.5	511.1	18.8	57.0	3.3	12.0	72.3	602.2
1976	490.0	119.0	1.8	3.5	614.3	19.7	45.0	3.2	12.0	60.2	694.2
1977	458.3	150.6	4.4	3.5	616.8	18.8	75.0	2.5	12.0	89.5	725.1
1978	420.1	148.7	9.0	3.5	581.3	21.8	75.0	1.9	12.0	88.9	692.0
1979	460.8	147.5	4.8	3.5	616.6	16.6	80.0	2.4	12.0	94.4	727.6
1980	456.8	109.0	5.9	3.5	575.2	18.5	83.0	2.5	12.0	97.5	691.2
1981	517.0	197.0	5.7	3.5	723.2	25.9	90.0	2.6	12.0	104.6	853.7
1982	540.0	209.0	6.0	3.5	758.5	27.0	90.0	3.0	12.0	105.0	890.5
1983	475.0	300.0	1.0	3.6	779.6	27.0	91.0	3.0	12.0	106.0	912.6
1984	445.0	350.0	1.3	3.6	799.9	27.0	92.0	3.0	12.0	107.0	933.9
1985E	520.0	350.0	5.0	3.6	878.6	27.0	92.0	3.2	12.0	107.2	1012.8

Table 2:

AREA: Sugar, fruits and vegetables
(1000 Hectares)

Year	Sugar (Raw)	Other Veg.	Roots & Tubers	Sugar Veg & Roots	Grapefrt.			Lemon Lime	Oranges	Total Citrus	Dates	Other Fruits	Total Veg. & Fruits
					Bananas	Pomelo							
1970	3.7	5.0	2.6	11.3	4.9	0.7	0.3	0.3	0.9	1.9	1.1	17.0	36.2
1971	3.5	4.5	2.7	10.7	5.7	0.7	0.3	0.3	1.0	2.0	1.1	17.3	36.7
1972	3.2	5.0	2.7	10.9	7.1	0.7	0.3	0.3	1.0	2.0	1.1	17.6	38.7
1973	3.0	4.4	2.7	10.2	7.1	0.7	0.3	0.3	1.0	2.1	1.1	17.8	38.2
1974	3.1	4.6	2.8	10.5	6.7	0.7	0.3	0.3	1.0	2.1	1.1	17.9	38.3
1975	3.6	4.7	2.9	11.2	6.2	0.8	0.4	0.4	1.0	2.2	1.1	18.0	38.6
1976	4.1	4.7	3.0	11.8	5.3	0.8	0.4	0.4	1.0	2.2	1.4	18.3	39.0
1977	3.6	4.8	3.0	11.4	5.2	0.8	0.4	0.4	1.1	2.2	1.6	18.6	39.0
1978	3.5	3.6	3.0	10.1	5.1	0.8	0.4	0.4	1.1	2.2	1.4	18.8	37.7
1979	3.0	3.7	3.1	9.8	4.8	0.8	0.4	0.4	1.1	2.3	1.8	18.9	37.6
1980	6.6	3.8	3.2	13.6	2.6	0.8	0.4	0.4	1.1	2.3	1.8	19.0	39.3
1981	8.2	4.2	3.4	15.8	2.9	0.8	0.4	0.4	1.1	2.3	1.8	19.3	42.1
1982	8.5	4.3	3.5	16.3	2.8	0.8	0.4	0.4	1.1	2.4	1.8	19.6	42.8
1983	9.3	4.5	3.6	17.3	4.7	0.8	0.4	0.4	1.2	2.4	1.8	19.8	46.1
1984	9.8	4.6	3.7	18.1	5.5	0.8	0.5	0.5	1.2	2.5	1.9	20.0	48.0
1985E	9.8	4.6	3.7	18.1	5.5	0.9	0.5	0.5	1.2	2.5	1.9	20.0	48.0

Table 3: **PRODUCTION: Grains, beans and oilseeds**
(1000 Metric Tons)

Years	Sorghua	Maize	Grains Rice, Milled	Wheat	All Grain	Beans	Sesame Seed	Oilseeds			Oil Seeds	Total Grains & Oilseeds
								Ground Nuts	Cotton Seed			
1970	158.1	122.1	2.0	0.7	282.9	10.9	43.4	3.0	2.3		48.8	342.6
1971	128.7	99.4	1.6	0.3	230.0	8.9	35.3	2.5	1.9		39.7	278.6
1972	149.1	114.9	2.3	0.6	266.9	10.3	41.0	2.9	2.2		46.1	323.4
1973	128.4	98.9	2.3	1.0	230.6	8.9	35.4	2.5	1.9		39.8	279.3
1974	125.7	96.8	2.7	1.2	226.4	8.8	34.7	2.4	1.9		39.0	274.2
1975	134.7	103.8	3.3	1.2	243.0	9.4	37.3	2.6	2.0		41.9	294.3
1976	139.9	107.6	3.6	1.2	252.3	9.8	38.8	2.7	2.1		43.6	305.7
1977	145.1	111.3	5.6	1.2	263.2	10.2	40.6	2.8	2.2		45.6	319.0
1978	141.1	107.7	8.0	1.2	258.0	10.1	40.0	2.8	2.2		45.0	313.1
1979	140.0	108.2	8.7	1.2	258.1	8.2	40.6	2.8	2.7		46.1	312.3
1980	140.0	110.0	11.3	1.2	262.5	9.3	38.4	3.0	2.7		44.1	315.9
1981	222.0	142.0	12.7	1.0	377.7	12.6	53.0	4.0	2.0		59.0	449.3
1982	235.0	150.0	13.3	1.2	399.5	15.0	57.0	3.2	3.3		63.5	478.1
1983	120.0	235.0	2.0	1.3	358.3	20.8	60.0	3.0	2.7		65.7	444.8
1984	221.2	270.0	2.8	1.3	495.3	15.0	46.0	4.7	2.7		53.4	563.7
1985E	260.0	280.0	10.0	1.3	551.3	15.0	60.0	5.0	2.7		67.7	634.0

Table 3: **PRODUCTION: Sugar, fruits and vegetables**
(1000 Metric Tons)

Year	Sugar (Raw)	Other Veg.	Roots & Tubers	Sugar Veg & Roots	Bananas	Pomelo	Lemon Lime	Oranges	Total Citrus	Dates	Other Fruits	Total Veg. & Fruits
1970	50.0	28.8	28.0	106.8	145.5	6.8	1.6	6.5	14.9	5.4	104.0	376.6
1971	45.7	23.4	29.0	98.1	150.8	7.0	1.6	6.7	15.3	5.5	106.0	375.7
1972	41.3	27.2	29.0	97.5	150.8	7.0	1.7	6.8	15.5	5.5	108.0	377.3
1973	37.0	23.4	29.1	89.5	168.3	7.1	1.7	7.0	15.8	5.6	111.0	390.2
1974	32.9	23.0	30.1	86.0	157.5	7.3	1.7	7.1	16.1	5.6	114.0	379.2
1975	33.3	24.7	31.2	89.2	106.0	7.5	1.8	7.3	16.6	5.6	116.0	333.4
1976	36.1	25.7	33.2	95.0	96.6	7.5	1.8	7.3	16.6	7.0	118.0	333.2
1977	41.3	26.9	34.2	102.4	71.7	7.6	1.9	7.5	17.0	8.0	121.0	320.1
1978	32.6	26.5	33.3	92.4	87.3	7.7	1.9	7.5	17.1	7.0	124.0	327.8
1979	26.1	26.5	34.3	86.9	72.7	7.8	1.9	7.7	17.4	9.0	126.0	312.0
1980	39.9	26.5	35.4	101.8	60.4	7.8	2.0	7.8	17.6	9.0	128.0	316.8
1981	47.5	27.0	36.5	111.0	69.0	8.0	2.0	8.0	18.0	9.0	131.0	338.0
1982	50.8	28.0	37.6	116.4	72.0	8.0	2.0	8.0	18.0	9.0	134.0	349.4
1983	47.5	29.0	38.7	115.2	85.0	8.2	2.2	8.2	18.6	9.2	136.0	364.0
1984	52.2	30.0	39.8	122.0	106.0	8.4	2.3	8.3	19.0	9.4	138.0	394.4
1985E	52.0	30.0	40.0	122.0	110.0	8.5	2.4	8.5	19.4	9.5	138.0	398.9

The production structure of Somalia is characterized by a small group of large-scale farms, (above 50 ha), which are either state farms (10) or registered private companies, and a large majority of mostly unregistered smallholders. Additionally, 281 cooperatives have been registered (see table 4).

Table 4: **The structure of crop production (1984)**

Type of holding	No. of holdings	Total area(ha)	%age of total area cultivated
State farms	10	21,600	3
Registered cooperatives	24	67,560	10
Registered private companies	148	23,273	3
Registered small. holders ¹⁾	4,683	57,149	8
Unregistered smallholders ²⁾	180,000	500,000	76

¹⁾ mainly flood irrigation farms

²⁾ mainly rainfed farms

State farms include two sugar estates (at Jowhar and Mareere), the Somaltex cotton-project at Balad and ten large scale irrigation projects, two of which aim at the rehabilitation of irrigation infrastructure. Also included are the resettlement projects of the Settlement Development Agency (SDA) for drought — hidden former nomads at Kurtuun Waare and Sablaale. The figures given for the state farm areas are gross figures, actual production takes place on only a fraction of the allocated land.

At present, a tenant system has been introduced on two state farms while the land of the 'Crash Programme' has mostly been distributed to settlers.

The registered cooperatives with an average land holding of 240 ha are in the majority 'group farms' (83%). They have mostly been formed by smallholders on irrigable land in order to organize field irrigation, for instance by operating a pump. The remaining 17% are of multi-purpose character with presently limited activities. Cooperatives in rainfed areas have larger farms (365 ha) than those on irrigated land (191 ha).

The registered private companies (mostly 50 - 200 ha of irrigable land) are predominantly banana plantations. They are equally distributed in the Lower Shabelle region (centre: Genale) and the Lower Juba region (centre: Jamaame).

These are the most productive farms as they are supported by the Somal-fruit organization which provides all necessary inputs for banana production. Thus, they form an exclusive group of farms with very little spillover effect to the small farmers' community. During the last two years,

after crop production became attractive again due to the liberalization of producer prices an unexpectedly huge number of farming companies applied for registration. They have purchased irrigable land and might conflict with already established smallholdings along the rivers, which are not yet registered.

The overwhelming majority of Somalia's food crop production originates from the smallholder farms, on which roughly 25% of the entire population depend. There are about 180,000 unregistered smallholdings mostly involved in rainfed agriculture with holdings of about 6 ha. They normally apply a land use system which includes a fallow period over 5 years. As in many other African countries the traditional land tenure system is based on land use rights of a larger social unit, such as tribe or clan. Individuals of that group could attain holding rights by developing the land i.e. by clearing. This right could be inherited on a patrimonial system. Conflicts with pastoralists were rare as field crop residuals produce more fodder than natural pasture and herdsman were always allowed to graze their livestock on harvested fields.

Only after farmers have started to collect and sell these residuals or graze their own animals on these fields, the nomadic herdsman will be affected.

Since the land reform of 1975 the traditional land tenure system is replaced — step by step — by state regulations. At present these modern laws have only become operational in the irrigation areas and the rainfed land close to Mogadishu.

Maximum size for private holdings is 30 ha of irrigated land or 60 ha of rainfed land. Registered enterprises may acquire up to 100 ha.

Moreover, the Ministry of Agriculture (MoA) has the discretion to allocate any area of land to state farms, private enterprises or cooperatives. The holdings are granted on a 50 — year leasehold which can be extended. Private holdings can be inherited. The leaseholder must develop the land within 2 years.

All land should be registered and leaseholds need approval by MoA. It can be anticipated that a number of conflicts will arise (and there is already some evidence) with traditional small-scale farmers. The major problem is the absence of a functioning land-register.

4. The present scope of crop production

4.1. The input supply system

The entire input supply system is presently in a rather dormant stage, with the exception of the banana sector requirements. The regular supply of fuel for the operation of agricultural machinery (tractors, water

pumps, transport) is generally felt to be the most important improvement necessary for crop production. Although the quantities involved are rather small — the sector's demand has been assessed at about 25,000 tons of diesel fuel — only fractions of it are available and often only at black market prices, although fuel prices are officially highly subsidised. Thus, land preparation, irrigation water supply and transport of agricultural inputs and produce are severely hampered. With regard to seeds, there are only very limited quantities of improved maize seed of a composite type available which is mostly distributed to large scale projects.

For all other crops the farmers depend entirely on own reproduction of planting materials, which are generally low yielding and inhomogeneous. The use of fertilizer in crop production is very marginal. Only some nitrogen is presently available from the national factory, which in 1985 produced only about 4,000 tons or 10% of its annual capacity due to a lack of energy supply. This fertilizer has mostly been sold to the sugar cane estate and state farms thus leaving the grain producing farmers without any fertilizer. Only the banana sector imported the required fertilizer through Somalfruit.

Pest control activities are almost entirely limited to stored grain control measures and Quelea bird control activities. Only marginal (and late) campaigns have been initiated in order to control the outbreak of army worm in 1985. The farmers (and project managers) were not able to purchase and apply plant protection materials as these are not available on the market. Again, only the banana farmers were sufficiently supplied through Somalfruit.

4.2. Mechanization

Due to the heavy soils in the two river basins and due to the relatively large farm units, Somalia's crop production depends on the availability

Table 5: **Tractor distribution and operation costs (1984)**

Owner	Number of tractors	in operation	Annual working hrs ¹⁾	Official operation costs (shs)	Real charges ²⁾ (Shs)
ONAT	530	373	900	246	400–500
Somalfruit			?	—	—
Projects	550	75%	?	—	—
Private			?	—	about 600
Total	1080	± 780	—	—	—

¹⁾ depends very much on availability of fuel

²⁾ without providing own fuel

of tractors and soil cultivation implements. Tractors are partly private, partly owned by projects including Somalfruit and partly owned by the National Tractor Hire Agency ONAT. Table 5 gives some further information.

The ONAT tractor fleet is composed of various different makes. A chronic lack of spare-parts often forces cannibalizing from broken-down units. Maintenance facilities are poor and underequipped. Thus, ONAT depends on permanent government subsidies. Official tractor operators are poorly paid. Only the fact that higher than official prices are paid by the farmers provided the necessary incentive to keep the tractors in operating condition.

Project assigned tractors suffer from almost the same working conditions. Only projects with financial assistance are in a position to purchase spare-parts and maintain the fleet properly.

Private tractor owners give priority to own field operations and provide services only if excess capacities exist.

Rainfed agriculture depends mostly on hand cultivation thus limiting the cultivated area to the availability of family labour force. Only in some areas ox-cultivation is practiced allowing a 25-30% increase of farm size. This low rate of animal traction is partly due to cultural impediments but most probably also caused by the fact that the animals are weakest during the period of land cultivation due to lack of fodder.

Moreover, suitable implements have not yet been introduced as major emphasis was always put on tractorization.

With regard to irrigation pumps the general situation is not much different. There exist a total number of about 100 large pumps mostly owned by projects and some cooperatives.

There are about 600 small pumps owned by private farmers. Spare parts are rare and consequently pumps often fail to operate when needed.

4.3. Research and extension

Agricultural research before independence concentrated on cash crops like cotton, sugar cane, bananas and citrus.

Only in 1965 were research activities in food crops initiated and the Afgoy research station with its outposts in Bonka and Abureyn was established under the Ministry of Agriculture. Since 1976 UNDP/FAO continued to assist in the conducting of research programmes. Most of the present researchers are Bachelor of Science holders from the National University, Faculty of Agriculture, with some short term training overseas. At present, there are 31 Bachelors of various disciplines, 7MSc. and 1PhD. holder employed.

Research activities are concentrated on various aspects of the crops such as breeding, plant population, response to fertilizer and plant protection. Other, possibly more important fields such as crop rotation and intercropping, soil cultivation, weed control and irrigation have not yet been considered or have only been touched.

Thus, the most important messages for the farmers refer to plant population on maize, and the introduction of two maize composite varieties.

This certainly has an important impact on the newly set up extension service (AFMET), which was started in 1980 with the assistance of IBRD, USAID and other donor organizations.

With the support of about 9 expatriates in various functions, AFMET has built-up a hierarchical system of extension officers with more than 220 staff members in 1985, spread over 26 districts in 8 regions. The project applies the 'training and visiting system' which is characterized by intensive extension workers training and a regular visiting of farmer groups.

The major problems for the extension service are

- lack of adequate messages for the farmers;
- lack of availability of proper inputs in time (see 5.1);
- lack of knowledge of the farmers' problems;
- lack of proper staff supervision and reporting system.

Consequently, farmers response to extension workers' recommendations is poor with possibly some exception (for instance rice farmers in Jowhar area).

4.4. *Agricultural credits*

The availability of credits for the private farmers is very limited. There exists no rural banking infrastructure and the responsibility for credits is split between the Somali Commercial and Savings Bank (SCSB) and the Somali Development Bank (SDB). While the SCSB provides a small number of seasonal credits under a pilot project assisted by FAO, the SDB provides medium to long term credits mostly to large scale farmers for mechanization purposes.

The problem is that seasonal credits can only be of significance if agricultural inputs are available in time.

On the other hand medium term credits for small and medium size farmers for the purpose of land and irrigation system development as well as various forms of mechanization are needed. So far, no solutions to overcome the problem of collaterals have been developed, as valid land certificates are rare and land titles are only issued on leasehold basis.

4.5. *Irrigation water management*

At present, there exists no clearly defined responsibility for irrigation water management and irrigation infrastructure maintenance. The existing infrastructure especially at the Shabelle river is in very poor condition with regard to weirs, water-intakes and canals. No regular maintenance is carried out and consequently most of the mechanical installations are out of operation. Canal desilting is not controlled and water losses are high.

So far, no water charges are collected. Whosoever has access to irrigation water can derive whatever he can manage, often in excess.

Only the traditional small-scale farmers have established water user groups at distribution canal level. They have committees which try to realize a just distribution among those farmers using water from the same canal. In some cases these farmers are organized into cooperatives, but mostly the traditional social structure prevails.

There are no records on the number of these organizations and their memberships.

4.6. *Marketing*

The liberalization of producer prices which became effective during 1983/84 has attracted a great number of wholesalers and retailers to enter the market. ADC as the previous sole agent for purchasing national grain production immediately lost all its functions. Grain prices in 1984 reached about ten times those of the previous government fixed prices as paid by ADC. After about 10 years of a low price system which favoured urban population, the new prices encouraged existing farmers to considerably increase production and attracted new farmers — often businessmen — to commence farming.

Only the excessive imports of concessional grain in 1985 caused a drop in prices which are presently slightly below import parity prices. ADC's previous obligation was to store and distribute grain from production areas to the remaining part of the country. ADC owns 35 warehouses with a total capacity of 160,000 tons, mostly located in the production areas, Mogadishu and Hargeysa. Since 1979 these warehouses have been used very little because of the low quantity of grains sold to ADC.

Small scale farmers in rainfed and flood irrigated areas commonly use to store their grain in ground-pits, a practice which has a long tradition in Somalia. Due to the climatic conditions and to the highly developed techniques storage losses are estimated at below 5% for average storage period of 1.5 years. Because of the high risk of production failure the traditional farmer always aims at a stored capacity of at least one

year requirements. Pits are therefore rather large with up to 10 tons of unthreshed grains stored. If the pit is openend, the grain must be taken out. Often farmers distribute therefore the contents of one pit among neighbours and relatives while they will receive the 'pay-back' in kind at another time. There are only rough estimates available on the entire amount of grains normally stored in pits.

O'Rourke (1983) assumes that it will be well above 100,000 tons of grain.

Since 1985 the functions of ADC have been redefined. ADC started to purchase grain after harvesting at government fixed minimum prices. It is proposed to sell these grains during the period of low supply, thus some price stabilization effects may emerge.

In December 1985, ADC had about 25.000 tons of grains at hand. This is supposed to become the basis for a flexible national grain reserve, which is presently under discussion.

5. Some remarks on the development potential of crop production

5.1. Development aspects of the natural potential

5.1.1. The natural potential of rainfed land

The figures discussed in chapter 3 clearly indicate that there exists abundant land which theoretically could be transformed into rainfed agriculture. It is presently used for livestock grazing and obviously provides the best grazing area of the country. There are three major factors which caused the present situation of land use:

a) The ecological characteristics of the land suitable for rainfed cultivation

Generally, the entire potential area for rainfed cultivation has a distinctly marginal and fragile environment in which food production and settlement have developed traditional land use systems which have not yet been properly studied and understood. Consequently, any project-type rapid colonization of these areas bears a high risk of ending up with irrevocable damages to the land or economic failures.

Obviously, there exists no technology to remove the occurrence of drought, which might be only seasonal but possibly of longer duration. Thus the risk of production will always be high.

b) The economics of rainfed agriculture

So far, rainfed agriculture has been based on hoe cultivation limited to almost none other than labour investments. The risk of loss of capital investments was always minimized. Historically, sedentary cultivators of rainfed agricultural areas have developed a deep understanding of their local environment and have always been closely linked to animal

husbandry while the sales of a good cropping season provided some cash income which was-and still is — mostly invested in livestock, i.e. the animals were the only source of overcoming droughts. Thus, the presently available strategy to increase rainfed cultivation would be the step-by-step transfer of nomadic pastoralists to agro-pastoralists and finally to sedentary integrated livestock/crop farmers.

In such a system crop production from an average of 4 - 6 ha of land under low yielding (but drought tolerant) sorghum will not be economically sufficient to attract additional farmers unless they own livestock. Consequently, the real limitation for an extension of the rainfed crop production is the existing grazing potential. Unless new technologies are developed which include an increased availability of fodder, no substantial number of previously nomadic or semi-nomadic parstoralists from that area will be converted into crop producing settlers.

c) The production technology

So far, research has almost completely neglected the technologies applied by rainfed agriculture but has concentrated on commercial crops during the colonial period and on irrigated food crops after independence (see 4.3.). Consequently the farmers have never been assisted in solving/improving their production system. While Spooner (1984) and Hannover/Waffenschmidt (1984) have strongly recommended a reserarch — based pilot project for the improvement of rainfed agriculture which concentrates on ox — cultivation and the introduction of more suitable seeds (sorghum, millet), methods of intercropping and the understanding of the practiced fallow system, the World Bank (IDA) has propagated — and financed — a so-called 'semi-mechanized rainfed farming system' on a pilot project level, implemented by a private Australian consultant company. All farm opertions except weeding, harvesting, threshing and marketing are centrally organized. The tenant is allocated three blocks of 3 ha each, plus one additional block of natural vegetation. While one block is under crops the other two are kept in a weed free fallow, in order to conserve moisture.

All decision making is centralized, as well as farm operations. One central farm serves about 100 tenants.

Although heavily propagated, the system has not yet proved successful. The consultant admits that, contrary to earlier trials, Der season crops have completely failed, while the Gu-crops were only slightly better than in traditional farming. The Task Force No. 1 Report of the Agricultural Sector Survey states that 'it seems to be rather doubtful whether the crop-fallow-rotation system is really economic. The soil moisture conservation for three consecutive seasons without any crop return can be paid from only one crop out of four seasons. A storage of more than 100

mm plant available water stored by the soils cannot be expected'. Even if the returns — after some necessary improvements — might economically justify this system it remains extremely doubtful whether the tenants will be able — and even willing — to manage the centralized services on their own at a later stage. The experience of state and cooperative farming in the past seems to justify scepticism. Euro-Action-Acord (1985) which has done one of the few available studies trying to understand the human component of development for the target group of that area also makes a rather critical judgment of the 'semimechanized' approach.

As this farming system is still in the phase of trial and error it seems to be premature for any large scale project implementation. Instead, alternative development approaches should be developed which are based on a more decisive integration of crop and livestock production, the introduction of animal traction and results from target-group oriented research which to a certain extent was recently started under the Bay Region development project. It is the non-reversible effect of environmental damage which must be carefully studied before initiating any large scale development activity in the rainfed areas.

5.1.2. The natural potential of irrigated land

The following chapter refers mainly to the Shabelle valley as the potential of the Juba river will be discussed separately. The natural potential of the Shabelle valley with reference to irrigated agriculture is limited by the availability of the irrigation water. Irrigation water requirements for the existing schemes have roughly been estimated at 760 million m³ and at 1,180 million m³ for existing and proposed schemes based on an irrigation efficiency of 45%. Compared to the mean annual flow of 1,854 million m³ and the 75% reliability flow of 1,400 million m³, the water requirement could apparently be satisfied. However, the month-to-month comparison of flows and requirements show, that deficits already occur at 75% reliability from January to April and in June and July (Task Force 1 Report). Although the Jowhar off-stream reservoir with about 1 million m³ storage capacity has been in operation since 1980, the situation has not much improved.

Thus irrigated farming along the Shabelle valley remains risky. Often water shortages hamper the crops and result in low yields or crop failure. Perennial crops are especially exposed to long periods of stress, mainly in the lower stretches of the river. Obviously, water is already the limiting factor while land of good to fair quality is not in short supply.

In order to understand and improve the present line of development, the following factors have to be taken into account:

a) The present rush into land

Due to the liberalization of producer and consumer prices, agricultural production has become profitable, especially in 1984. Existing farmers have tried to extend their production and an unknown number of businessmen and government employees have bought farms and started production mostly under absentee conditions.

Understanding the production system these farms have mainly been established along the upper stretches of the river. Un-registered land of smallholders has been taken and is still in danger. Conflicts about land ownership must be expected.

On the other hand, large rehabilitation projects — mainly financed by international agencies — are under implementation or in the planning stage. These projects generally rehabilitate or construct new irrigation infrastructure without any consideration of the later land use structure and cropping pattern. The human component is rarely considered. It must be feared that some of these projects, mainly at the lower part of the river, will only receive sufficient water in years with an exceptionally high water flow of the river.

b) The present irrigation technology

Although water is already the limiting factor, there exists huge waste and misuse of water. The irrigation technologies generally applied are of an extremely low efficiency, at present not more than 20%. Crop productivity is low as indicated by the low hectare-yields.

Crop water requirements have been calculated by various studies. The Task Force 1 Report estimated the following requirements, as given in table 6.

Table 6: Irrigation water requirement for Shabelle River areas

Crop		Crop Season Period*	Irrigation Water Requirement mm/crop
Maize	Gu	4 – 8	411 – 530**
	Der	9 – 12	559
Sesame	Der	9 – 12	388 – 484
Pulses	Gu	4 – 7	290 – 399
Cotton		8 – 1	1033 – 1086
Paddy	Gu	4 – 8	480 – 670
	Der	8 – 12	828 – 1057
Citrus		1 – 12	1040 – 1379
Bananas		1 – 12	2779
Sugar Cane		1 – 12	3039

* 1 = Jan; 12 = Dec

** Variation depends on location; at 60% irrigation efficiency

Obviously, the perennial crops require the highest amount of water, while pulses and sesame are lowest in demand. Cropping pattern have to be based on labour/management capacities, and crop rotation aspects as well as yields — and finally returns — with regard to the amount of water derived. This last aspect will only be considered if noticeable water charges are introduced. Similarly, land taxes may contribute to an increase in production intensity thus reducing the present waste of water.

c) The present water management

As already indicated above, there is no overall water management for the entire Shabelle system. Without coordination, projects (and farms) are established and derive from the river whatever quantity of water is accessible. The physical infrastructure at weirs and main gates is generally not operational and totally neglected. Even the Jowhar off-stream reservoir operates at low efficiency.

Unless an efficient water management system which is built-up from the water users' level becomes operational, there will be no improvement with regard to water use. This system must be based on an adequate water law. Only then, will additional off-stream reservoirs (one is presently planned near Duduble) make sense. This organization can be easily financed from water charges to be collected.

The entire irrigation development of the Shabelle system needs to be coordinated. A water master plan is the necessary precondition. Moreover, all existing irrigation farms and projects need to be registered. Instead of opening up new projects the rehabilitation of the existing infrastructure (weirs, canals, gates etc) should gain highest priority.

5.2. Agricultural policy issues

5.2.1. National grain policy

The National Five Year Development Plan 1982-86 as well as the three year Public Investment Programme 1983-85 and the 1986-88 National Development Strategy and Programme clearly indicate that policy priority should be given to self-sufficiency in basic food crop production. Since 1975 an increasing dependency on food imports, specifically grains has been experienced which swallowed an increasing share of the scarce foreign exchange earnings. Grain imports are composed of food aid mostly earmarked for drought ridden people and refugees, concessional imports on loan basis and commercial imports from private traders. Although statistical data are scarce and contradictory, table 7 demonstrates the high dependency of the national grain supply on imports. On the other hand it also shows the increasing consumption of the Somali population, which grew by almost 80% within one decade.

Table 7: Grain production, imports and food use in Somalia
— in 1,000 metric tons —

Year	National Production	Imports ¹⁾ (incl. aid)	Food ²⁾ use	Per capita ³⁾ in kg
1975	243	165	338	83
1976	252	148	358	85
1977	263	174	378	88
1978	258	87	332	75
1979	258	209	447	99
1980	262	301	449	97
1981	378	387	531	111
1982	399	301	685	139
1983	358	377	808	159
1984	495	359	807	155
1985 E	551	325	793	147

(Compiled from various sources)

¹⁾ rough estimates

²⁾ Considering stock changes, seed use, feed and waste

³⁾ based on MNP population figures, refugees not considered.

The assessment of the national grain requirement is difficult, as many factors (such as total populations, purchasing power, regional prices etc) are not known. Even the total national production is only guessed.

There is very little known about grain storage in the country. Storage is usually practised by farmers (pit storage), ADC, and private traders.

Nevertheless, there is already some indication that at least under the present grain distribution system the most important Mogadishu grain market is overflowed with mostly imported grains. During the period of 1984/85 a clear drop of local grain prices has occurred due to the high imports of grains which were mainly concessional. From above 45 shs/kg for maize in May/June 1984 the price has dropped to 17 Shs/kg in August/Sept. 1985; which is well below import parity prices (30 shs/kg), see figure 1.

Thus it becomes obvious that a considerable saturation of the Mogadishu market has been experienced during one year. Only the ADC purchases of about 25.000 tons of grain have prevented further drops of consumer/producer prices.

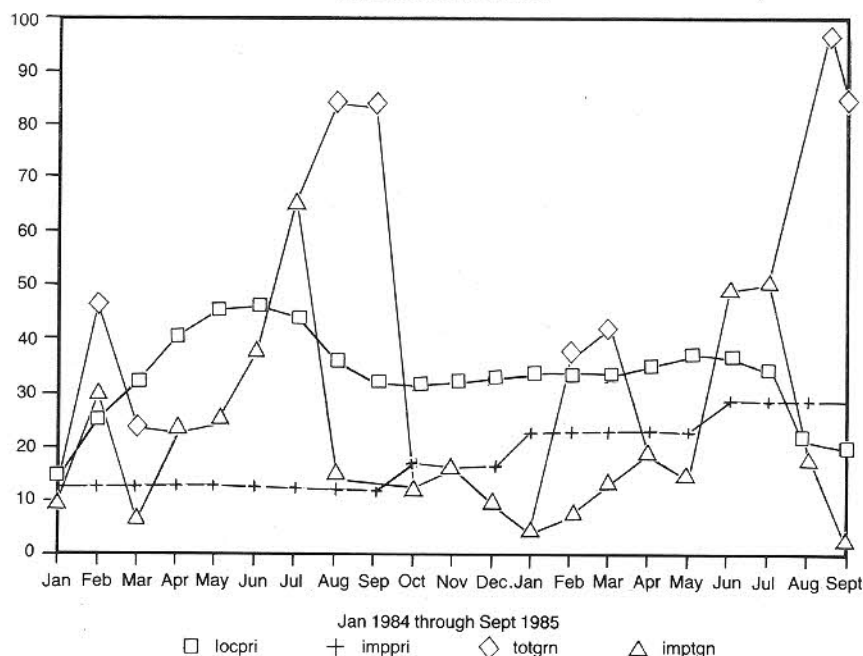
Consequently, it can be assumed that the total grain requirements might be about 750,000 tons per year, with an annual growth rate of about 5%. Under fair to favourable production conditions (mainly sufficient and equally distributed rains, high river water tables and availability of

Figure 1:

Soshi/kg and 000 t

Maize prices vs grain market

Maize prices for Mogadishu



inputs) national grain production might reach 650,000 tons in the near future. There is therefore no room for more than 100 - 150,000 tons of grain imports. Looking at the composition of grains, the basic local crops are maize and sorghum. Due to the foreign influence and the large amount of previous grain imports, consumers have turned increasingly towards wheat products (pasta, bread) and rice. Although there is very little known on cross-price elasticities and substitutability, it seems that the major potential for future development lies in the increased production of rice and much less — of maize, while a good sorghum year might already meet the limits of demand especially under the present distribution constraints. Obviously, a national grain policy is highly required. This should take into consideration:

- the national production, its composition and its early assessment,
- the immediate reduction of concessional food imports on loan basis,
- the transfer of imports to commercial (private) traders thus keeping the local price above import parity prices,

- the establishment of a flexible national grain reserve with price — stabilization effects, distribution obligation and emergency supply for about 3 months of national requirements in case of drought effects,
- the regular assessment of traditionally stored grains,
- a proper reporting system of grain imports, possibly linked with an increasing taxation on imports,
- and the increasing differentiation of locally produced grain prices and imported grains (mainly wheat) in order to shift consumption habits gradually back to locally produced grains.

5.2.2. Production projects versus services development

The period since 1979 is characterized by high investments into production projects, which are partly rehabilitation projects and partly newly initiated projects. Table 8 gives a break-down of all projects. It is obvious, that abundant land has been allocated to these projects which are almost entirely located in the irrigable parts of the country. In total, about 46,000 ha are given to state farms of which only 13,000 ha or 26% are presently cultivated. With the exception of the Juba Sugar Estate, Afgoy-Mordinle and Mogambo all other projects are far behind time schedule and most probably will never come into full production.

A new land use system has been introduced only for Afgoy-Mordinle, Balad and Mogambo by distributing some land to tenants. These projects have absorbed a high portion of the entire development budget and for the future this portion will increase even further according to the new Public Investment Programme (PIP):

In 1986 these projects will absorb about 33% of the core PIP budget, in 1987 about 42% and in 1988 about 48%.

Certainly they will also contribute substantially to the recurrent cost burden of the Somali economy where according to PIP extraordinary increases are expected:

From 1985 with 20 million Shs to 1988 with an expected 602 million Shs burden (which reflects a 3,000% increase) against a total growth rate of 'only' 458%.

Table 8: **Crop production projects in Somalia**

PROJECT	ALLOCATED LAND CULTIVABLE HA	CROPPED LAND 1984
A. State Farms		
Afgoy-Mordinle Project, Phase I, (Libsoma)	3000	1787
Balad Irrigation Project,	2000	270
Barro Uen (Rice Production)	431	180
CARS - Farm	250	56
Fanole Irrigation Project	7750	747
Genale-Bulo Marerta, Phase I	2300	
Grapefruit Plantation & Nursery, Phase I	230	128
Jowhar Sugar Estate	8070	6275
Juba Sugar Project	7719	6435
Mogambo Irrigation Project, Phase I	2215	Start in 1985
Nursery Projects (42 Nurseries)		120
Oilseeds & Beans Production Project	2000	225
Production Rehabilitation Projects (Mainly bananas)		270
Saakow Farm (to be developed)	500	
Seed Production Farm, Afgoy	200	76
AFMET - Farm	400	282
ADC - Farms (not yet transferred)	500	20
Other Government Agencies*	8000	

* Police, Militia, Military, Prisonfarms etc.

Table 8:

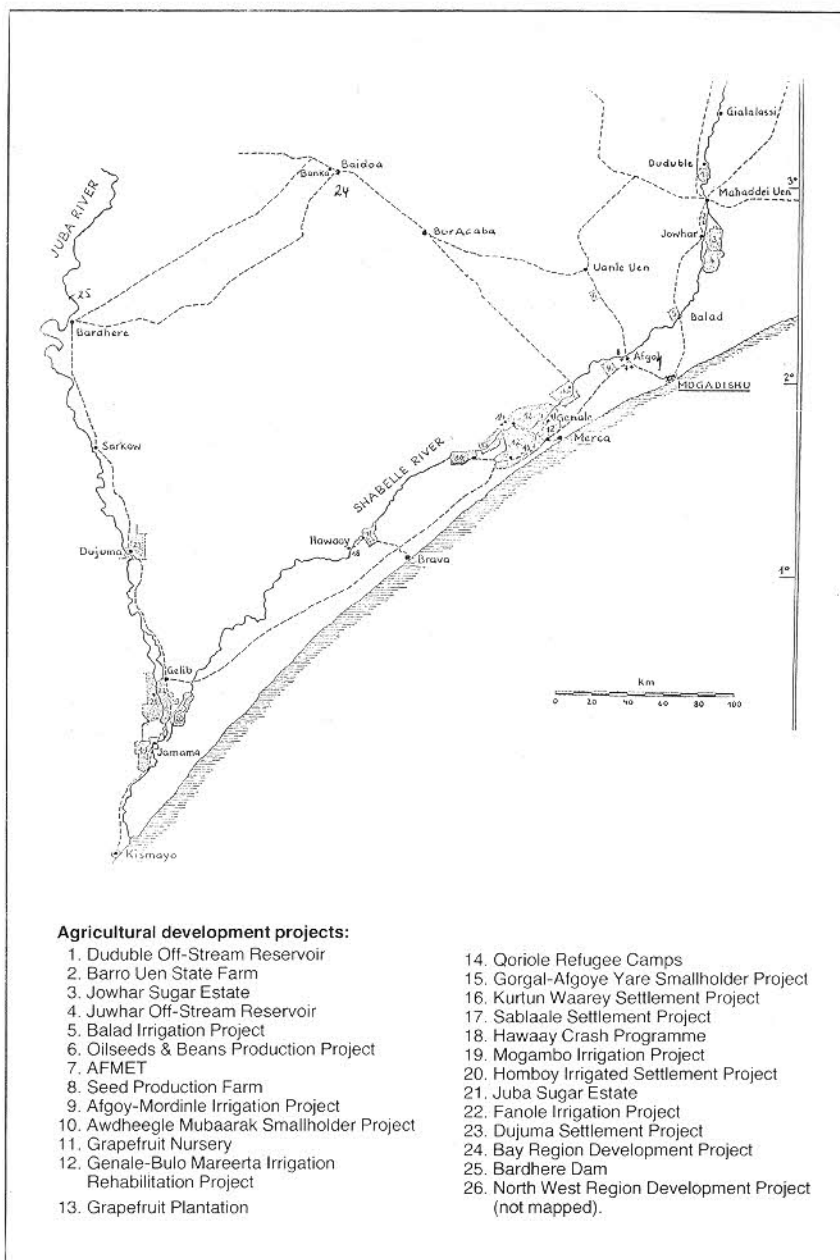
PROJECT	ALLOCATED LAND CULTIVABLE HA	CROPPED LAND 1984
B. Settlement Farms		
Kurtun Waarey – irrigated:	3000	1500
– rainfed:	3000	250
Sablaale – irrigated:	3000	1200
– rainfed:	3000	250
Dujuma – irrigated:	abandoned	
– rainfed:	6000	250
Hombay Irrigation Project	(4000 proposed)	
C. Crash Programme Farms		
Belet Uen*	700	
Jowhar*	340	
Genale*	650	
Shalambod*	1500	
Gelib*	300	
Hawaay	1100	700
Tugwajaale	8000	

* Already transferred to individual holdings

Tenants involved in state farms (1985)

STATE FARMS	NO OF TENANTS
Afgoy Mordinle	1000
Balad	1000
Mogambo	300 (+ 700 planned)
Crash Programme	2000–3000
ADC Farms	50

For Project Location see map 1



And finally they will also contribute to the balance of payments which predicts a high increase (51%) of the overall financing requirements (deficits) according to the PIP projections. On the other hand the total output of these state farms (with the exception of Juba Sugar Project) is rather marginal. Neither do they contribute to the food crop market nor to the export market as could possibly be expected.

The major reasons given for this poor performance are the lack of inputs, poor maintenance of infrastructure and machinery and lack of spare-parts, but it seems to be primarily a management problem. It is therefore striking that the first timid steps by the government in order to overcome the heavy burden to be expected from some of these projects have not been willingly accepted by the financing agencies. The step-by-step transfer of state responsibility towards private individuals seems to be the only solution to

- put the investments into value
- reach at self-financing performance
- recover at least some of the investments.

On the other hand, the entire service structure of the government is in bad shape, i.e. the services provided to the private farming society are poor with the exception of the banana sub-sector.

There are virtually no inputs available to the farmers thus keeping their level of technology low. Consequently, any efforts by the extension service are very limited with regard to success and credits — even if available — would be difficult to use.

Other services like land registration and water distribution are entirely out of function.

For the future development of the crop production sector the substantial improvement of these basic conditions for agricultural production must be considered as a *conditio sine qua non*. Unless these services are considerably improved large scale investment projects will be condemned to failure and smallholder production will primarily care for self-sufficiency.

This reorganization should therefore deserve financial assistance possibly to be deducted from project investments. It should take the following solutions into account:

- the privatization of services wherever possible, with or without government participation (in the form of joint ventures where suitable).

This refers to seed production, plant protection, fertilizer supply, mechanization, and — as already successfully implemented — to marketing;

— the immediate strengthening of those government services which can not be privatized.

This includes agricultural research and extension, human resource development, the agricultural credit system and the national grain reserve as well as some components of plant protection and market information.

— the immediate establishment of those services which are not yet functioning, like land registration and irrigation water management.

5.2.3. *Future design of development projects*

The large scale investment projects as outlined above have not yet contributed substantially towards the development of the crop production sector. On the other hand, the potential of the sector is heavily under-utilized and it is the only sector which provides sufficient absorption capacities for the growing population.

Although there are presently only a few examples at hand, it is obvious that the most successful projects are those which concentrate on a specified target population and start to overcome and solve existing bottlenecks. This has been experienced in the North West development project as well as — on a smaller scale — with the Jowhar smallholder rice development project, both under technical assistance. These projects are also in a position to effectively consider the already practised integration of crop production and animal husbandry which has a long tradition in the southern parts of the country.

This proposal for district based regional development projects has been suggested for a long time (Noor 1981), but has found only little support from large-scale investment-oriented financing agencies. Nevertheless, it seems to be the only approach which could keep the burden on the recurrent budget low. Looking at the most important parameters for the successful implementation of regional development projects (Boguslawski 1980) the following conditions are given:

- a) The central government gives priority to rural development. It has tried and still supports rural formation process with the cooperation movement. But the degree of decentralized administration is low.
- b) Due to the existing price system the small and medium scale farmers are highly motivated to increase production. At least in the irrigable areas farmers are open for new technologies (innovations) if these are promising. They generally have access to potential land (irrigable with limitations), but always to rainfed land and range. Most of them have sufficient income and probably some savings.

The other living conditions (social services, infrastructure) are generally poor.

In connection with the proposed development of services (chapter 5.2.2.) rural development projects on district level will provide the necessary inputs for a self-sustaining development process. Thus, it will also be possible to integrate surplus population from the semi-nomadic section of the population. The few new technical assistance projects of this type will hopefully prove this opinion.

6. **Conclusions**

Even under the consideration of the fragile farming environment in Somalia, the existing potential for crop production is under-utilized and provides sufficient prospects for further development.

The major objective of agricultural policy is self-sufficiency in food grains.

This target might be reached within the near future. In the long run perennial crops as well as some other industrial/export crops should deserve increasing attention. This refers also to the integration of crop production and animal husbandry. While rainfed agriculture presently has no proved technology for improved production at its disposal, (possibly with the exception of animal traction) and thus depends heavily on applied research, substantial improvements within irrigation agriculture are possible and will produce good results if implemented.

For almost one decade the backbone of the Somali farming society — the small-and medium-scale private farmer — has been neglected. Instead, development of crop production was expected to mainly emerge from large-scale farming of the state farm type. With the implementation of this strategy, the government has established some centrally organized services which have increasingly failed to function, and in some cases have even prevented development (ADC). Although the government has taken first steps to overcome this situation and is now paying growing attention to the farming society, the monetary oriented international donor agencies have so far done very little to support and strengthen this strategy. From the 1986-88 Consultative Group document it is obvious that the mobilization of financial support has priority compared to strategy and other qualitative changes and improvements. It will remain with the technical assistance projects to follow-up the most urgently needed programmes:

- a) the complete reorganization of the entire service sector in order to make available urgently needed inputs and strengthen the entire framework of agricultural production.

- b) the implementation of target-group oriented rural development programmes which take into consideration the entire production condition of the farm as a decision-making enterprise, and
- c) the absorption of additional population which might turn from semi-nomadism to sedentary settlement.

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Klaus Hübl:

The nomadic livestock production system of Somalia

1. Introduction

Due to their geographical pattern the Somali rangelands have attracted pastoral societies for hundreds of years.

Even nowadays, more than half of the country's population is living on the nomadic or semi-nomadic range-livestock production system.

In the following, crucial issues and major problems of the sector will be described under the headings:

- Rangeland vegetation and resources
- Livestock numbers and distribution
- Nomadic and semi-nomadic production system
- Animal health problems
- Livestock marketing
- Development outlook and limits.

As far as sectoral figures and data are concerned, it has to be clearly stated, that most of the basic livestock data are estimated or adapted from professional reports and findings. In some cases precise research data are available but only from individual projects reflecting the situation of a given, limited area.

It is generally recognized that the area of agricultural statistics has to be completely reorganized and promoted in the future.

2. Rangeland vegetation and resources

Rangeland can be defined as "land carrying natural or semi-natural vegetation which provides a habitat suitable for herds of wild or domestic ungulates" (PRATT/GWYNNE 1977: 1).

Generally, pastoral systems have developed within the arid and semi-arid zones of Africa. However, some pastoralists have migrated to sub-humid and humid zones because of drought or other hardships.

Nevertheless, there is a clear relationship between annual rainfall, range vegetation and availability of animal fodder, resulting in the carrying capacity of a given area unit.

Within the Sahel zone it is generally admitted that 1 mm of rainfall produces 2.5 kg of dry matter (DM) in form of herbaceous growth. As only

about 30% of this plant production is usually eaten up by animals, one can estimate by simplifying the rule of thumb that 1 mm of annual rain produces 1 kg of ruminant forage (DM base) under arid or semi-arid conditions.

In a recently presented report by the National Range Agency (CRDP, MASCOTT report, 1985) the following rainfall data are given for Somalia:

Table 1:

REGIONS	ANNUAL RAINFALL	
	RANGE mm	MEAN mm
W Galbeed	25 – 710	252
Togdheer	90 – 710	280
Sanag	25 – 1100	333
Bari	25 – 1100	143
Nugaal	50 – 250	180
Mudug	125 – 425	182
Galgadud	85 – 410	210
Hiran	200 – 600	343
Bakool	200 – 470	354
Gedo	230 – 505	377
Bay	400 – 630	527
Middle Shabelle	400 – 680	550
Mogadishu	400 – 510	470
Lower Shabelle	400 – 630	460
Middle Juba	350 – 750	576
Lower Juba	380 – 850	561

The application of the above rule of thumb would mean that 1 ha rangeland in the driest region in Somalia (Bari) would produce 143 kg (DM) of ruminant forage per year.

The respective value for Middle Juba, the most humid region of the country, would then be 576 kg of eatable (DM) fodder per annum and ha.

In order to understand the given fodder estimation of an area and its meaning for the carrying capacity of the rangelands, we must recognize that adult cattle have a daily dry matter feed intake of around 2.5% of their body weight.

Using the standard reference animal of 250 kg, also called Tropical Livestock Unit (TLU), its normal feed consumption would therefore be 6.25 kg per diem or 2,280 kg per annum.

Sticking to our two reference regions, one can estimate that an adult cow needs about 12 to 13 ha in Bari region and about 4 ha in Middle Shabelle region in order to meet its feed requirement for one year.

Of course, it has to be noted, that this rule of thumb calculation does not take into consideration

- the soil fertility of the rangeland
- the geographical height of an area
- the proximity to permanent surface water, etc.

Another important factor is the existence and the density of woody vegetation and its competition to grass growth.

In fact, the typical Somali rangeland vegetation varies from sparse short grassland through scattered and dense bushland to different forms of woodland and especially forest along the Juba and Shabelle river banks.

Describing Somali pastoral production, special emphasis must be given to browsing. Whereas the feed intake activity by animals which eat grass and other plants growing close to the soil is called grazing, the consumption of foliage, shoots and fruits of woody plants is known under the name of browsing. Apart from wild animals such as giraffes, elephants and rhinoceroses, camels and goats have to be mentioned as domestic browsing ruminants.

According to seasonal changes in food requirements and preferences and the constraints caused by drought conditions, Somali camels and goats (to a less extent also sheep) draw a considerable amount of their nutritive needs from browse species such as *Acacia tortilis*, *A. seyal* and *A. nilotica* (for example).

Browsed parts of legume trees may show a fairly high content of protein. LAMPREY, HERLOCKER and FIELD reported (IPAL, Nairobi, 1980) that twigs and leaves of *Acacia tortilis* contained 5.92 to 6.46% (DM) of crude protein, whereas top branches and leaves of *Acacia nilotica* showed 11.92% of C.P.

Latest research at the International Livestock Centre for Africa (ILCA) lead to the interesting result that tannin (tannic acid) seems to play a decisive role in limiting browse intake of small ruminants.

Future research should focus on feeding behaviour of browsing animals, assessing the availability and nutritive value of browse forage to browsing animals.

In addition to grazing and browsing pasture, a third important source of animal feed is available in Somalia namely, the crop residues from cereal production.

Unlike natural grass cultivated grain crop produces much more forage following the rule of thumb: for one kg of grain yield twice as much straw or stalks (DM basis) are left behind. On average some 620 kg of harvested grain per ha (source: MOA) generate 1,240 kg of eatable forage per ha (in Somalia).

On the occasion of the last Agricultural Sector Survey (ASS), the total cereal production for the year 1984 was given as 495.3 thousand tons cultivated on 799.9 thousand ha land.

The dry matter forage production of this crop production exercise can be estimated at 990 thousand tons of eatable ruminant fodder, offering subsistence to 440,000 cattle (annual basis) which is about 10% of the country's cattle stock.¹ If we admit that these crop residues are mostly fed during the long dry season period (Jillal: 15. 12. - 15. 4. = 4 months), one can imagine that the whole Somali crop production residues enable about 30% of the national cattle herd to subsist during the dry season.

3. Livestock numbers and distribution

The last livestock census in Somalia was carried out in 1975. Although this census is not unanimously recognized it is one of the rare available sources of livestock statistics.

In 1975, the following numbers of domestic animals were counted:

Cattle	3 951 000
Camels	5 428 000
Goats	14 997 000
Sheep	9 452 000

According to MLFR and ASS 1985 estimates and calculations livestock numbers might have developed as follows:

Table 2:

Year	Cattle (000 head)	Camels (000 head)	Goats (000 head)	Sheep (000 head)	
1970	4 050	5 200	14 800	9 200	10 960
1971	3 958	5 218	14 500	9 000	11 778
1972	4 138	5 419	14 700	9 300	12 213
1973	4 042	5 426	15 000	9 300	12 175
1974	3 734	5 304	14 000	8 700	11 622
1975	3 880	5 324	15 000	9 000	11 892
1976	3 625	5 364	15 000	8 900	11 727
1977	4 040*	5 579**	16 000	9 800***	12 507
1978	4 532*	5 820**	17 200	10 700***	13 400
1979	4 479	5 834	16 800	10 300	13 294
1980	4 358	5 800	17 000	10 300	13 176
1981	4 473	6 014	18 000	10 800	13 675
1982	4 578	6 239	19 000	11 580	14 207
1983	4 201	6 131	18 000	11 200	13 638
1984	4 296	6 162	18 300	11 800	13 841

* = plus 300,000 cattle from refugee influx per year

** = plus 30,000 camels from refugee influx per year

*** = plus 530,000 sheep from refugee influx per year

These figures, reflecting the (numerical development of livestock) over the last 15 years, take into account

- the 1974/75 severe drought period
- a less severe drought in 1983
- the import of domestic animals during the years 1977 and 1978 through refugee influx.

Comparing the total number of ruminants converted into Tropical Livestock Units (TLU = 250 kg) of 1984 and 1970, the annual growth rate is very moderate, around 1.5% per year.

It seems also that the longer-run growth trend for cattle is around 1% and for goats and sheep 2% per annum.

In adding up all domestic animals, we have to state that the Somali rangelands have to carry more than 40 Million ruminants (1985), on average about 8 head of livestock per Somali inhabitant.

This rate is one of the highest in Africa and in the world.

As far as the effects of drought are concerned, there seems to be evidence that drought is a major factor in regulating off-takes and livestock populations.

Different livestock species have different susceptibility to drought. Cattle are the most susceptible, followed by sheep and goats, whereas camels are the least susceptible.

But cattle (also) have the highest potential for recovery from drought when the water returns to normal.

According to relevant studies carried out by the Land Use Survey team of the National Tsetse and Trypanosomiasis Control Project, it can be assumed that cattle birth rates will decline to 85 and 50% of normal birth rates during the first and the second year of a severe drought. But in the first year of drought recovery, birth rates increase to 140% of normal also, thereby compensating for a great deal of the previous losses in population.

During the 1975 livestock census the following livestock distribution per region was given:

Table 3:

Regions	Camels (1000 head)	Cattle (1000 head)	Sheep (1000 head)	Goats (1000 head)
Northern				
West Galbeed	606	145	2 242	2 161
Toghder	320	44	917	852
Sanag	205	74	1 521	664
Nugal	105	12	223	611
Bari	240	15	1 388	2 095
Sub-total	1 526	290	6 291	6 383
Central				
Mudug	751	340	1 136	2 744
Galgadud	395	218	588	1 734
Hiran	461	170	287	1 159
Sub-total	1 607	728	2 011	5 637
Southern				
Middle Shabelle	205	382	325	720
Lower Shabelle	293	419	90	200
Benadir	1	22	6	19
Bakool	192	100	79	274
Bay	362	255	55	192
Sub-total	1 053	1 178	555	1 405
Trans-Juba				
Gedo	784	528	500	725
Middle Juba	236	366	25	720
Lower Juba	222	861	70	127
Sub-total	1 242	1 755	595	1 572
National Total	5 428	3 951	9 452	14 997

The above table can be interpreted as follows:

- The more than 5 million camels are almost equally distributed over the main areas of Somalia.
- About 75% of the cattle are gathered within the 8 regions south of the Central Rangelands.
- 80% of the goats and 88% of the Somali sheep population is kept in the 8 Central and Northern Rangeland regions.
- Small ruminants seem better able to withstand the more arid climate conditions in the north with an average rainfall of 150 to 350 mm per annum.

— Cattle prefer the more humid conditions of the Southern Rangelands with average rainfalls of 350 to 600 mm per year.

Unfortunately, this livestock distribution which was estimated and compiled in 1975 was not followed up and carried on in the past years. Due to economic development and social changes one has to assume that an updated livestock population break down would give a considerably changed picture for the year 1985.

4. Nomadic and semi-nomadic livestock production system

The pastoral production system is "based on the use of natural and semi-natural vegetation via domestic animals, in particular ruminants" (H.E. JAHNKE 1982: 66). The main economic activity of the nomadic pastoralists is the raising of livestock, making use of the rangelands by a variety of opportunistic nomadic and transhumant strategies. Generally, four livestock species are reared: cattle, camels, sheep and goats.

In spite of purely private animal ownership, land tenure is usually communal. Very few or no attempts are made to regulate range use.

Under these circumstances pasture or range management measures become very difficult or even impossible.

While a more or less ecological use of the range resources is practised (in the remote rural areas), most of the space around towns, villages and water points is commonly overgrazed, causing degradation of the natural flora. The condition of the periurban vegetation is often aggravated by the practice of unscrupulous cutting of trees and shrubs to be used as firewood and building material.

Compared with intensive livestock production in the First World, the nomadic livestock productivity seems to be very low, as demonstrated in the following table:

Parameters	European dual-purpose cattle	Nomadic Zebu cattle
Birthweight (kg)	50	25
Adult weight (kg)	600 – 800	350
Milk yield (kg/lactation)	5 000	900
Offtake rate (%)	30	10
Meat production per animal (kg/yr)	75	10 – 15

The relatively low productivity of nomadic cattle is, of course, a result of numerous constraints prevailing in the hostile and arid habitat of Tropical Africa.

Firstly, there is a serious nutritional problem. The pastoral system does not allow a regular, balanced food intake because of great seasonal variation of the vegetation resources, in terms of availability and nutritive value. Whereas, during the rainy season, a surplus offer of fodder occurs there is usually shortage of feed during the dry season causing malnutrition and its negative consequences with respect to health and fertility.

Secondly, the supply of stock water is problematical. While in the rainy season drinking water can be found almost everywhere, serious problems arise during the hot, dry season period. Animals have to cover big distances between the overgrazed areas around water points (often deep wells) and the remaining grazing grounds. At the end of the dry season, most of the scarce feed intake will be consumed by this exercise.

Thirdly, the nomadic livestock rearing system does not allow efficient husbandry measures and control, and this is not because of lack of knowledge by the pastoralists.

The suckling calves have to share what is vitally necessary milk with the people. The genetic renewal and improvement of the stock is sometimes hindered by the lack of good sires (bulls) and the presence of immature males of low genetic value. The keeping of sterile cows and the culling of sometimes pregnant females in the herd lowers the reproduction rate.

Normal herd off-take in accordance with biological herd increase is frequently disturbed because of insufficient marketing facilities.

Drought periods cause excessive herd size reductions due to emergency sales, mortality and reduced fertility rates.

At best, the nomadic livestock system must face a great number of health problems which are treated in the next chapter.

However, after making allowance for all these obstacles and environmental hardships, the nomadic livestock system proves in fact to be quite efficient and productive.

The International Livestock Centre for Africa (Annual Report 1983) has compared an East African pastoral production system, the Borana system, with a modern cattle ranching system in Kenya (Laikipia) and ranches in the northern territory of Australia. The surprising result of the comparison was that

- the pastoral system seeks to optimise the number of people supported per unit area of land and to offer these people a maximum food supply security;
- the nomadic tradition is a multiple goal system where production and consumption of milk are far more important than consumption and sale of meat;

- compared with ranchers, pastoralists are poor people, not because of low productivity, but because their numbers per unit area are high;
- pastoralists try to optimise the number of people supported per unit area, ranchers aim at optimum economic returns;
- the Borana system (similar to Somali conditions) directly supports 6 to 7 people per km² of rangeland, Kenya ranches no more than 0.5 people/km², and the Australian ranches 0.002 people/km².

These findings and the awareness that the pastoralists have perfect knowledge of their production system including pasture and water management, animal health care and the like has induced H.E. JAHNKE (1982: 103) to state:

"Human development in the arid zones does not mean teaching pastoralists better methods of stock raising, but making them fit for occupations in other zones and sectors, so that the arid zone can be used within its capacities and continue to be a valuable resource for the African economy."

5. Animal health problems

Because of their mobility and frequent contacts with other animals, different soils and watering facilities, nomadic livestock is exposed to various animal diseases.

Outbreaks of epizootical diseases remain inevitable, unless an efficient vaccination cover protects domestic animals in the range.

A wide range of parasites threatens the stock, endoparasites strike in particular young animals, contamination is facilitated in big herds and in humid areas.

Ectoparasites weaken the organism and they also serve as vectors for the transmission of certain diseases.

Blood parasites develop through the occurrence of biting and sucking insects, tsetse flies transmit the animal trypanosomiasis (especially along the main river valleys).

Numerous pathological incidences (wounds, fractures etc.) are traditionally treated by the nomadic livestock owners themselves.

At present, the main animal health constraints in Somalia can be summarized as follows:

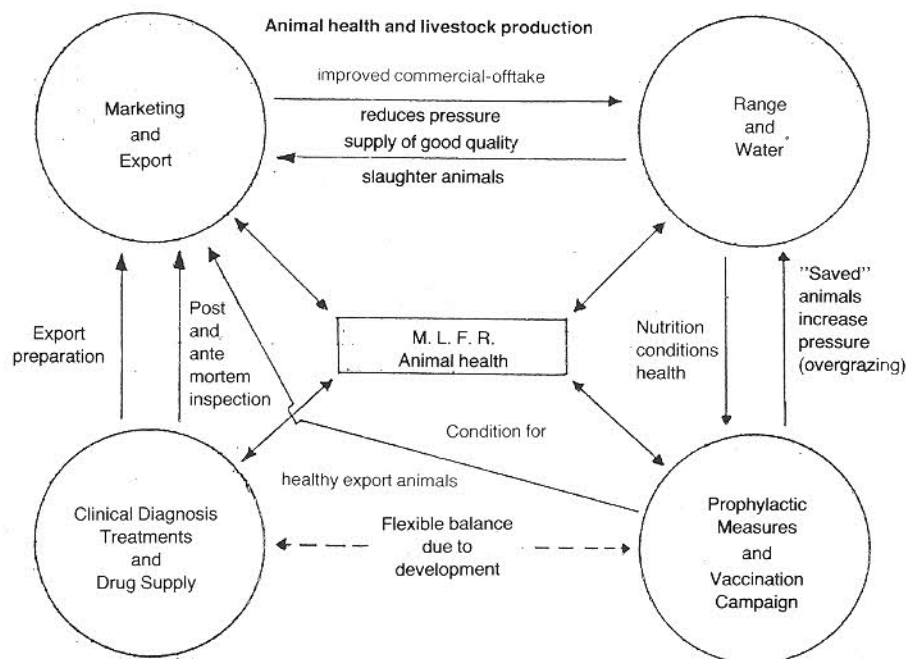
- insufficient vaccination cover;
- difficult drug supply in remote areas;
- insufficient control of vector-borne diseases;
- insufficient marketing health control.

Improvement measures to solve the above problems are mostly in preparation, some are ready for implementation:

- to increase prophylactic measures, nation-wide;
- to reinforce vaccination campaigns;
- to allow private involvement in veterinary drug importation and distribution;
- to increase diagnostic investigations and applied animal health research activities;
- to launch "primary animal health care" models in order to reduce government expenditure in the future;
- to emphasize vector-borne diseases;
- to improve marketing health control.

The interrelationship of animal health measures with range and marketing is schematized in the following chart:

Figure 1:



6. Livestock marketing

All pastoralists have to sell some of their livestock for cash now and again. Until 1980 almost 100% of the African livestock and meat supplies originated from mostly nomadic range production.

A number of prejudices in commenting and judging the marketing situation still prevail in Africa and also in Somalia:

- Nomads are said to hoard up livestock, being reluctant to normal herd off-take;
- they keep more animals than the family needs to live on;
- traditional marketing systems are believed to be inefficient, traders making excessive profits, cheating the livestock owners etc.

Most of these incriminations are unjustified, people misunderstand the reality which can be described as follows:

- Looking at the prevailing composition of nomadic livestock herds where female animals highly predominate, one can easily conclude that male animals have been previously taken off;
- according to relevant experience and knowledge, recently confirmed by ILCA (Annual Report 1984), there is no known pastoral system in East Africa in which the number of livestock units kept per person exceeds the minimum required for subsistence;
- as far as livestock traders are concerned, the private marketing sector has performed well during the past 30 years (due to skilled manpower, long experience and inherited knowledge).

The sometimes maligned 'jilali' (intermediary) are found to provide useful services to owners and traders.

Regional price differentials and traders' margins are mostly reasonable and consistent with transportation and transaction costs.

With respect to live animal transport from the often remote producer area to the wholesale markets, key assembly and selection centres and export ports, trekking of livestock is more efficient and less costly than commonly assumed. Critical investigations have found that cattle driving "on the hoof" during the main trekking season (cooler part of the dry season) is no strain, mortality hardly occurs and the condition in many cases improves rather than deteriorates.

However, a great number of problems can be observed in the area of export marketing:

- Lack of a market intelligence system in order to evaluate trends, to anticipate supply, demand or price changes etc.;
- weak communication linkage;

- lack of appropriate quarantine facilities and services near to the major ports;
- poor port and port-related facilities;
- the short supply of livestock fodder;
- transport problems between quarantine stations and ports;
- too many individual traders with weak management and financial capability;
- concentration on only one market in the past (Saudi Arabia);
- the failure to gain a presence in other rapidly growing markets.

Some of these issues will be addressed as physical targets in planned and ongoing development projects.

The USAID supported Livestock Marketing and Health Project intends to improve the export facilities at and behind the three ports of Berbera, Mogadishu and Kismayo. The programme includes measures with respect to holding grounds, quarantine stations, marshalling yards, livestock feeding, stock transport, animal health etc.

As far as decreasing numbers of exported animals since mid 1983 are concerned, the situation has now somewhat recovered. According to a recent evaluation during the Agricultural Sector Survey (ASS), preliminary 1985 trade statistics (January - June 85) suggest that 1985 will be an excellent year for livestock exports. Small ruminant exports have already exceeded the total 1984 level before the peak of the Hadj period.

The above mentioned survey also states that cattle exports have partially recovered through a combination of official sales to North Yemen and Egypt and unrecorded sales in Kenya and Djibouti.

In a recently signed contract, Egypt has committed herself to buy 20,000 Somali cattle within the first six months of 1986.

The registered partial recovery should however, not lead to the false conclusion that the problems of Somalia's vitally needed export marketing of livestock have been resolved for ever.

It is highly recommended that the country should explore alternative markets for livestock and livestock products.

Some marketing experts believe that

- additional potential markets for live animals include Iraq, Jordan, Oman, South Yemen and Kuwait;
- potential markets for quality cuts of beef and lamb could be found in Egypt, Saudi Arabia, Kuwait and UAE;
- lower grade tinned meat could possibly be sold in Western and Eastern Europe and in some places in Asia such as Hong Kong, Singapore and Thailand.

7. Development outlook and limits

The relative weakness of available baseline data of the Somali livestock sector has been mentioned already.

Under these conditions, the recognition of development trends must also be a difficult and risky venture.

The Ministry of Livestock, Forestry & Range (with the support of the author) has tried to compare livestock data from Somalia with relevant figures from other east-african countries.

In some cases, cross-checking of production off-take from the nomadic livestock system and marketing figures have helped to confirm or modify available data.

During the Agricultural Sector Survey 1985, all available data and estimates were treated in a computer model by the TASK FORCE IV experts.

Because of the clear description and scientific analysis performance the following "Livestock Production Prospects" of the Agricultural Sector Survey are presented verbally.

Livestock analyses

The analyses for livestock are mainly trend assessments with variations in assumptions for birth rates, death rates and livestock numbers under alternatives A and B:

1. Alternative A

Assumes continued growth in human population and trend changes for livestock population, birth rates and death rates.

2. Alternative B

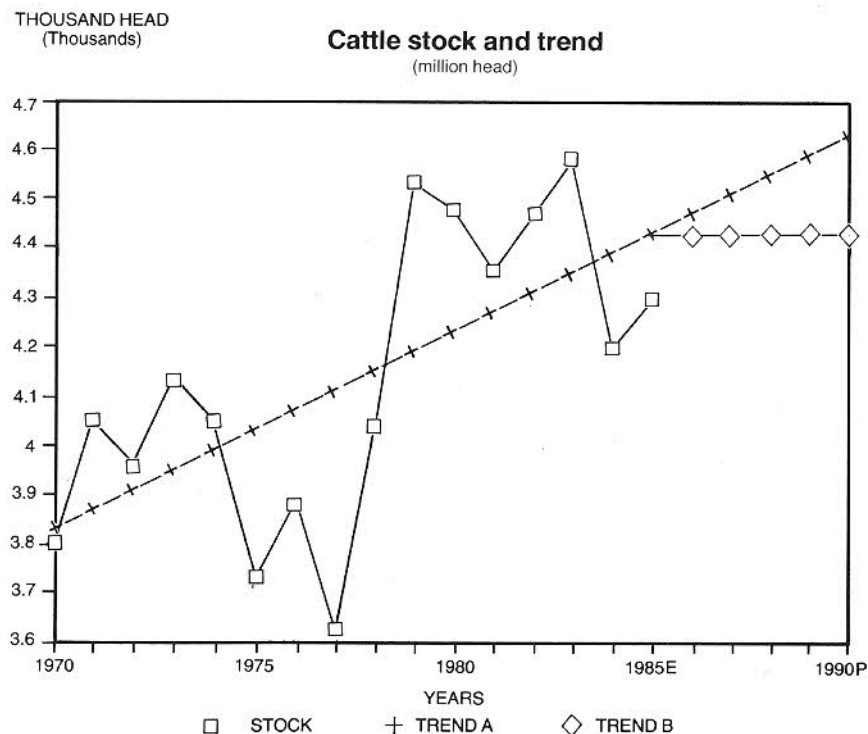
This alternative includes the more favourable set of assumptions with:

- Population holding around 6.5 million;
- Livestock populations leveling off due to direct policy measures to limit stocking, or to physical limitations now underway on the range;
- Birth rate trends are assumed to accelerate about a tenth due to better inputs for control of diseases and insects as well as better feed and cultural practices. For the same reasons mortality rates trend down by around 15 percent.

Major impacts

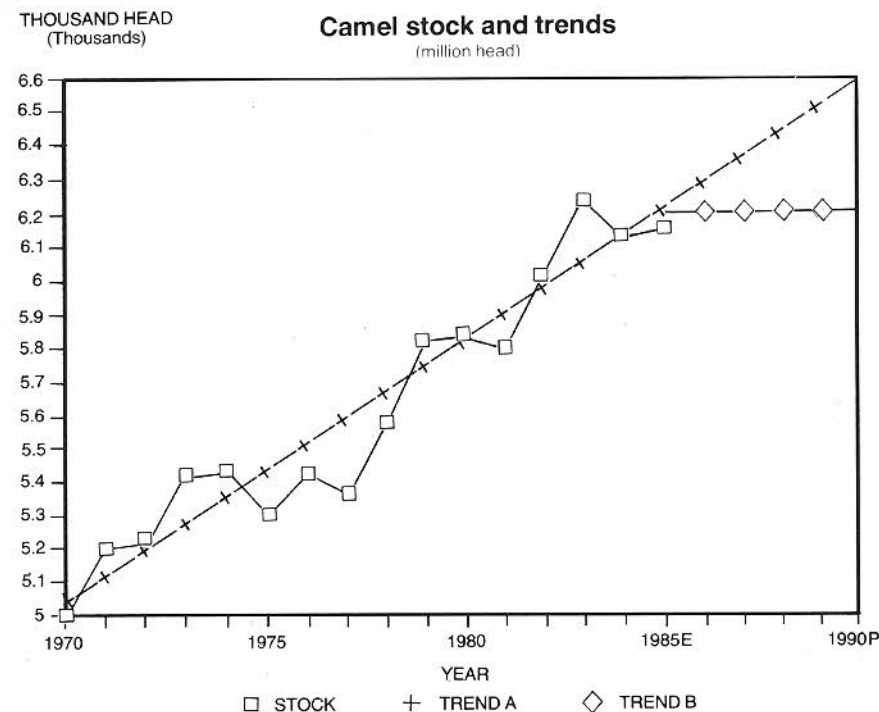
- Even under the 'trend appraisal' for Alternative A, larger export availability is indicated with slow annual increases in domestic demand for meats and milk. This suggests that export markets may continue a problem, especially in the next 5 years.

2. Limiting livestock numbers on the ranges along with more investment in health controls, better management of the ranges would substantially increase members available for off-take for the domestic market and export.
3. Introduction of new technology to increase output and improve ranges may actually improve off-take even with restricted use of the range.



These interesting ASS findings may be commented on and concluded in the following way:

- The development feature of the last six months, since the completion of the above ASS report, does not indicate that the so-called “more favourable set of assumptions” (Alternative B) will probably happen.
- The observed increase of domestic use of livestock being less than population increase could be a result of the present juncture in Somalia's economic recovery,



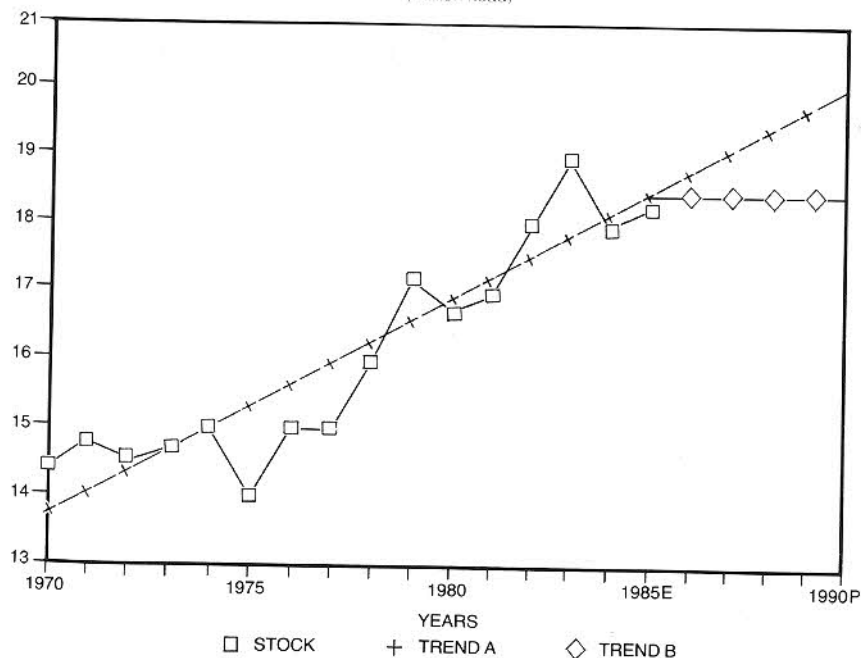
Domestic consumption may become more consistent with population growth if the expected economic recovery takes place.

- In all probability there will be an increasing gap between moderately growing livestock production from the range and distinctly higher population growth if things are left unchanged.
- Therefore part of the expected increase in demand for livestock products must be produced outside the range system, through integration of crop and livestock production in the fertile crop production areas of Somalia. Under these conditions, livestock productivity is expected to increase considerably, reaching about 50% of the above-mentioned European performance level.
- With all due respect to the remarkably well functioning traditional nomadic sector, there is no reason to believe that it will be able to generate these improvement measures spontaneously, of its own accord in the near future.

THOUSAND HEAD
(Thousands)

Goat stocks and trends

(million head)



In order to face the crucial issues of the above-mentioned outlook, the Ministry of Livestock, Forestry & Range has drafted the following strategy concept for the future development of livestock and range:

A. Measures to reduce pressure on the range:

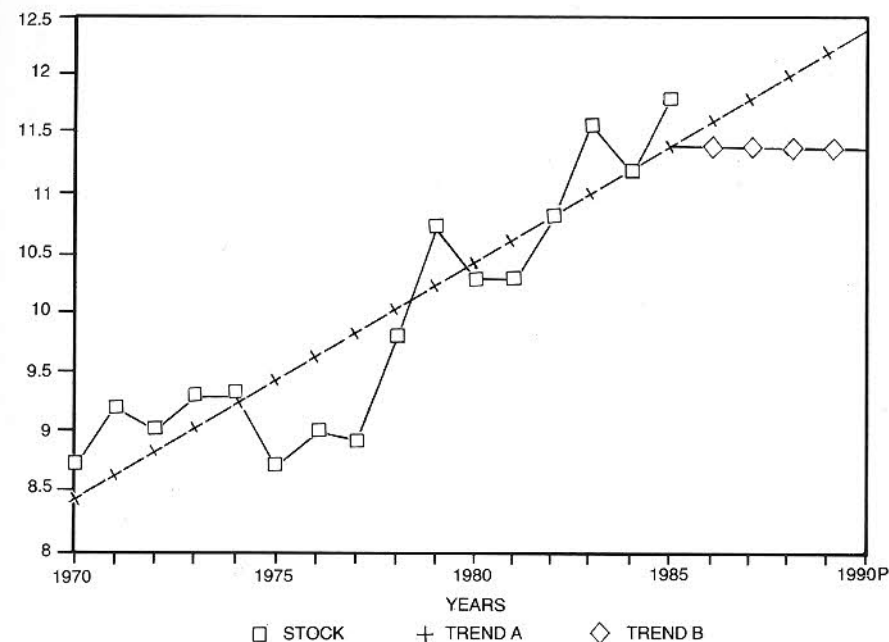
1. Existing crop production farms along the two rivers should be encouraged for integrated crop/livestock production systems
 - a) in irrigated agriculture
 - b) in rainfed areas
2. Settlement schemes for pastoralists within the riverine areas (Juba), especially after the tsetse flies have been eradicated;
3. Improvement of the marketing system towards increased exports;
4. Livestock production stratification:
 - a) emphasis on reproduction (multiplication) in semi-arid and arid, relatively healthy rangelands,
 - b) emphasis on fattening and finishing systems in more humid and more fertile areas;

Fig 2:

Sheep numbers and trends

(million head)

THOUSAND
(Thousands)



5. To open or create job opportunities outside rangelands for pastoralists (plus family planning programmes).

B. Support measures to pastoralists within the rangelands:

1. To avoid any further deterioration of the range ecology;
 - a) to encourage any sensible soil conservation measures,
 - b) to improve and develop the knowledge of the resource base through collection of baseline data,
 - c) additional stock water points need to be scrutinized and adapted to the existing and potential carrying capacity of the range.
2. Animal health measures are important but must be of prophylactic nature and market oriented in order to avoid epidemic losses of livestock and to instil confidence in potential buyers;
3. Privatisation of import, distribution and sale of non-dispensable veterinary drugs, as a first step, and introduction and promotion of primary animal health care among the livestock owners.

8. Epilogue

The nomadic and semi-nomadic livestock system of Somalia has proven its efficiency and steadiness under normal climatic and drought conditions over many years.

Production methods and traditional rearing practices are almost perfectly adapted to the prevailing arid and semi-arid climate conditions.

At present, however, the system is challenged by shrinking resources and narrowing space for livestock rearing.

If we succeed in providing the necessary moderate support (i.e. water, animal health, marketing), the system will probably continue, generating a great deal of the country's protein and foreign currency requirements until the end of this century.

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Jörg Janzen:

The process of Nomadic sedentarisation distinguishing features, problems and consequences for Somali development policy

1. Introduction and statement of problem

With an estimated 50-60% of the population leading a nomadic or semi-nomadic life-style, in figures approximately 2.5-3 million inhabitants, Somalia is one of the 'Nomadic Countries' with the highest proportion of nomads amongst the total population. Unlike neighbouring states in the Arab peninsula, nomadism¹ forms the economic basis of the country. In spite of the great 'Dabadheer drought' in 1974-75 and numerous minor droughts which were restricted to particular regions, livestock numbers have steadily increased. Largely responsible for this have been a great many new wells and improved medical care for livestock in various parts of the country. The steadily increasing requirement for meat in the main export market of Saudi Arabia and in the domestic urban markets of Somalia has vigorously promoted commercialisation of the nomadic pastoral system in many parts of the country, most particularly in northern Somalia.

The large numbers of livestock have already caused a severe degeneration of pastureland in some areas. This process is not so far advanced everywhere as for example in many parts of central North Somalia.

Excessive damage to vegetation and soil inevitably occurs in the immediate vicinity of wells and in the areas surrounding nomadic settlements, which are inhabited for several months at a time during the dry seasons. An intensified process of nomadic sedentarisation² set in parallel to the development described, above all in market — oriented areas, the employment of nomads in the towns and the custom of working in the oil states of the Arabian peninsula further support the tendency towards sedentarisation. In spite of the great ecological problems which arise when larger nomadic groups remain in one place for longer periods of time with their livestock herds, it is still the main aim of Somali Nomadic Policy to make the greatest number of nomads possible sedentary. The problems involved and the resulting need for some kind of solutions to them will be discussed here in their complexity.

An attempt is thereby made to provide answers to the following complex of questions:

1. What problems does nomadism in 'Nomadic Countries' encounter and what is the background for sedentarisation?

2. How has the process of sedentarisation taken place to date in Somalia and what general rules have been established?
3. How is the declared aim of the Somali government, to forcibly settle a majority of the nomads, to be evaluated?
4. What future prospects await both, nomadism in general and the sedentary?
5. What activities could/should the Somali government initiate, supported by states and institutions providing development aid, in order to improve the chances for an increased, positive participation by the nomads and their previously settled compatriots in the whole process of economic and social development?

To enable a better understanding of the whole set of problems, a general study of the problem cycle sedentarisation and of the experience made in other countries, precedes the consideration of specifically Somali circumstances.

2. Background and problems of nomadic sedentarisation

A general review

The phenomenon of nomads settling down in small or larger groups³ is just as old as the nomadic economic system and lifestyle itself. This process can take place in a series of various, distinct phases of a semi-nomadic life-style.

Impetus or pressures responsible for the transition to a stationary life-style are usually — as can for example presently be observed in many parts of the Sahel Zone — calamities which threaten livelihood (for example droughts, resulting from missing rainfalls or human exploitation of the environment; cattle — plague etc.) and/or insight into the possibilities of economic improvement and diversification (for example better supply and marketing possibilities to new infrastructural facilities, such as roads, wells, government station etc. as well as the integration of extrapastoral activities such as farming, retail trade, transportation, catering etc). Further, sedentarisation can be forcibly realised by means of massive military pressure as a result of militant, political conflicts between tribes and the supra-tribal, central regime in power in a country (for example colonial power or national government which is dominated by a tribal oriented, predominantly urban elite).

In contrast to this is the largely voluntary sedentarisation following the donation of generous, material gifts to ensure the livelihood of the receiver and other privileges coming from a ruler or government (for example in the Gulf States which are rich in oil and have a bedouin tradition, where because of a numerically small, autochthonous population, a large number profit directly from the blessings of the welfare state).

Or — as used to occur quite frequently — nomads subjugated other, often sedentary groups which were militaristically and/or economically and socially weaker to their domination, made them carry out agricultural labour on their behalf under a system very similar to feudal dependency, while they themselves frequently became sedentary landowners living in towns. Extensive, state — controlled campaigns for the enforced sedentarisation of nomads have been a relatively recent development during the last few decades. This development must be seen in close connection with colonial penetration into further parts of the North African and Asian dry belt and with the later establishment of national governments. The ensuring division of the habitat of many nomadic tribes and the introduction of new legislation also applicable to nomadic areas was not acknowledged by the nomads. The result was that the governments of the young states regarded the nomadic population groups as trouble makers and a security risk. As the nomads could usually manage to successfully escape state control, thanks to their mobile life-style, it was, and still is, a main concern of central governments to forcibly sedentarise the mobile population groups of these states as quickly as possible, thereby achieving greater control over them. This tendency is still further supported by the fact that nomadism is regarded by the ruling urban elites nearly everywhere as an outdated way of life which stands in the way of modern development aims.

The change in nomadism is taking place at a previously unknown speed of development, bringing it into a completely new dimension. This is due to state interventions of many kinds, above all as a result of the realization of development aid and enforced sedentarisation programmes, also to the rapidly increasing commercialisation and export orientation of nomadic livestock rearing, the great population growth, especially in the already densely populated farming areas and, because of this, the expansion of the sedentary farming population into the geographical areas which are favourable for a nomadic life-style, a phenomenon which then gives rise not only to ecological but also to socio-economic and political problems.

Sedentarisation often means a deterioration in life-style and financial standing for the nomads. Those who completely give up their livestock and move to the urban centres often become dropouts from society after a short space of time. As they are generally illiterate and therefore the majority of them cannot carry out any of the better paid occupations to be found in towns, they swell the ranks of the unskilled workers and odd-jobbers who, if they work at all, mainly have poorly paid jobs in the construction, transport and trade sectors. Failure to maintain contact with the nomadic world can lead in only a few years to a disruption of traditio-

nal ties within the single, ethnic groups, whereby the chances for a return migration are automatically worsened.

The economic position and life-style of those nomadic families who make the transition to semi-nomadism, or who settle as agriculturalists while retaining a portion of their livestock, are as a rule far more favourable than for the erstwhile nomads who move to towns. They are not only in a position to provide their own food and market any small surpluses, but they also retain strong group ties, thereby ensuring social contacts which guarantee their survival in times of emergency.

The transition to semi-nomadism or sedentarisation while retaining a minimal amount of livestock requiring a relatively small area of land for grazing, inevitably leads to higher concentration of pasture areas surrounding new settlements and wells. Considerable damage to plant growth and soil can follow after a few years, thereby causing long-term damage to living conditions for the population of complete areas of the countryside. The background and problems of sedentarisation of nomads in other countries presented in this section are for the most part also valid, in modified form, in Somalia.

Although the study of the process of sedentarisation of nomads in Somalia has not yet been finalized, some important characteristic traits can already be outlined.

3. Cause and traits characteristic of nomadic sedentarisation in Somalia

The sedentarisation of Somali nomads is a process which has been going on for centuries, but which has recently undergone a great change and taken on a new dimension in terms of both numbers and form. It must be differentiated between two distinct forms of sedentarisation which can be separated both chronologically and geographically:

- A. The traditional form of sedentarisation, which still takes place today, by means of nomads taking up arable farming or — what was and presumably still is even more frequently the case — the transition to a less mobile, semi-nomadic economic system and life-style in the geographically favourable areas of southern Somalia, where they come into contact with sedentary population groups.
- B. The more recently developed type, which started during colonial times but has become increasingly common in the last couple of decades, namely the transition to a sedentary, commercialised and market-oriented economic system and life-style within the nomadic area itself, whereby arable farming plays only a minimal role, in the dry parts of central and northern Somalia.

The pre-colonial and early colonial time is characterised by numerous waves of immigrants of Somali nomadic tribes from northern and central parts of the Somali peninsular coming to present-day southern Somalia (c.f.e.g. Lewis 1969 and 1975). The aim of the invasion from the more arid north into the less dry south was domination of the areas in southern Somalia which are better off climatically, hydrologically and from the point of view of vegetation. Control over the fertile pasture lands around the Juba and Shabelle Rivers as well as the inter-riverine area, led in the course of time to many nomads beginning to take advantage of the basically good physical conditions to carry out arable farming and other extrapastoral activities as well. This led to a hierarchical superimposition of the autochthonous population of partly negroid origin, which also to some extent caused an ethnic interbreeding. Elements of the social, political and economic structures of the nomadic and sedentary groups gradually mingled together.

There exists today a confusing multiplicity of semi-nomadic or similarly structured economic systems and life-styles somewhere between the two extremes of complete nomadism and a totally stationary existence.

The example of southern Somalia shows that, under certain conditions, nomads are quite prepared to become sedentary or at least to drastically restrict the extent of their wanderings and take up arable farming, in order to widen their economic basis and provide more security against the continual threat of drought.

The more recent form of sedentarisation coincides for the most part with the external effect of the colonial authorities and the administrative penetration of nomadic living space by Somali governments after independence. The newly established government posts and watering places, as well as other infrastructural facilities, were usually the points of departure for the formation of new stationary nomadic settlements. Even the much publicized rural literacy campaign of 1974/75 was in the last analysis, intended to serve the purpose of mentally preparing young nomads for a sedentary way of life, by means of contact with civilisation. But in particular the great drought of 1974/75 seems to have speeded up the sedentarisation process in the vicinity of watering places and along the traffic routes of nomadic living space in central and northern Somalia. Moreover, there is much to indicate that commercialisation and market-orientation of a part of the nomadic livestock sector has persistently promoted the trend towards the settling-up of permanent settlements along the streets and tracks. Traffic routes clearly form the guide-lines for the development of settlements in the nomadic living space, whereby the new tarmac road running

through central and northern Somalia boasts a particularly high density of new settlements.

The development of a settlement almost always takes place according to a set pattern. A single hut, usually made of branches and shrubs, will appear in a favourable spot, often at cross-roads and junctions of side roads onto main streets or at places where surface water can be easily collected. In this hut, a nomadic family offers tea and milk, later also hot meals for sale.

If business goes well, further 'bush restaurants' soon follow. Where there is a large amount of traffic, other facilities are soon added, such as small shops selling daily requirements, work-shops for minor repairs etc. After a short while a police-station and mosque are often included.

As the extension of the settlement is, as a rule, concentrated on the street, mainly street villages are formed. While the buildings used for commercial purposes line up along the street, the houses and huts are usually situated away from the traffic route. To provide water for the settlement and the livestock herds, which usually remain in the vicinity of the village during dry periods, wells, open troughs for collecting water and/or concrete made cisterns are constructed (cf. Janzen 1984: 156-158). The method used to obtain water depends very much on the existing physical surroundings as well as on the financial means available to the inhabitants. Building materials are above all to be found in the form of objects which are generally available such as tree trunks and branches, clay and quarry stones. While the traditional, stationary house-types, namely the round 'muudul' and the rectangular 'cariish', serve as models for the nomads in southern and central Somalia, the rectangular house made of quarry stone is very popular amongst the new buildings in the parts of northern Somalia which are poor in vegetation. The roofs of the rectangular dwellings are now nearly all covered with sheets of corrugated iron.

Many of the newly formed settlements are, however, not permanently inhabited, at least not by all members of the family simultaneously. On the contrary, many of the settlements are only fully occupied on a seasonal basis, above all during the dry periods. During the wet seasons of the year, the men and younger family members in particular follow a nomadic life-style along with the larger livestock (camels and cattle), at greater distance from the fixed settlement sites. The usually quite considerable numbers of smaller livestock are often tended by the women, children and older people in the immediate vicinity of the settlement.

A further characteristic of recent changes in nomadic living space is the trend for many nomads to migrate and take up work in the overcrowded urban centres of Somalia or even in the Arab Oil States on the Gulf. Better transport facilities, due to increased motorisation in the nomadic living space, have no doubt greatly speeded up the tendency towards migration from the country to the towns. The result of this exodus from the country is a rapid growth of the cities surface areas.

The sedentarisation process can be most clearly seen in the large towns, particularly in Mogadishu, Hargeysa, Kismayo and Burao. The increasing population burden in the nomadic living space, economic subsistence problems as a result of droughts and the attractions of an urban life-style have, in recent years, lead to tens of thousands of younger nomads in particular, migrating to the urban centres. The areas preferred are the peripheral outer districts of towns.

As the settlements of huts develop at random without any kind of organisation and all kinds of building materials are used — from packing cases to corrugated iron — these districts frequently create a bad impression. As a rule the nomads begin by living in the traditional circular huts (Aqals). However, often after a few months it can be observed that houses are constructed from wood and sheet metal.

Many families keep a few goats to provide their personal milk supply and these are kept in small pens. The newly formed settlements do not receive water or electricity from the towns nearby. Nor is rubbish collection guaranteed. Due to hygienic deficiencies there is increased risk of disease.

A few general characteristics of these young nomadic settlements may be briefly summarised.

Settlements on town perimeters with inhabitants of nomadic origin vary greatly in population density according to the seasons. There is a clear increase in population in particular during the dry periods when living conditions in the savannah are very unfavourable.

So there is still considerable mobility between the town and the nomadic living-space. It can be further observed that there is a tendency to settle in such a way that groups of the same ethnic origin remain close to one another. This cohabitation of related families has the great advantage that people can provide each other with support and assistance in their new and unfamiliar surroundings.

There is very little information available on the economic and occupational activities of former nomads. Most of the families still possess to some extent considerable numbers of livestock which are cared for

by relatives or friends in the savannah. Frequently a few cows are also kept in the immediate vicinity of the town, in order to obtain an additional cash income by selling fresh milk on the town market. The male members of the family work — as far as they are able to find steady employment — mainly as unskilled or semi-skilled workers in the construction and services sector. The job of watchman is very popular.

An interesting observation is the fact that many former nomadic families hope, that if they illegally occupy a piece of land, the municipality will later on grant them long-term rights to this building site which they have then obtained for free.

As far as the socio-economic situation of the former nomads is concerned, it can be definitely stated that they are clearly at a disadvantage when compared with the urban population or with those who have been leading a sedentary life-style for some time.

As only a proportion of former nomads' children attend school regularly and their parents are almost without exception illiterate, their chances of competing for the better paid jobs in towns are not very good. The former nomads' lack of equal opportunity to participate in the economic life of the towns enhances the development of economically and socially under privileged groups.

A large proportion of the population of nomadic origin living on the outskirts of towns is thus in the process of degenerating into a new marginalised social group.

Following the description of the present sedentarisation process which is taking place largely without influence or pressure 'from the top', there is finally a short survey of a third type of sedentarisation, not mentioned in this section:

the large-scale state enforced sedentarisation into special settlements of nomads returning as victims of war or drought.

4. Intentions and actual reality of the Somali nomadic settlement projects

Until today the majority of Somali government representatives takes the view that the sedentarisation of a largest possible number of the Somali nomadic population is an important pre-requisite for their integration into the economic and social development of the country. This view dates back to Soviet influence on Somali development policy at the beginning of the seventies.

In 1974 a disastrous drought, the Dabadheer drought, was responsible for the economic ruin of approximately a quarter of a million nomads in northern and central parts of Somalia. As a resumption of livestock keep-

ing was at the time impossible for most of the nomads, Somalia's socialist government jumped at the chance of forcibly re-settling a large proportion of the drought victims.

Based on experiences made by the Soviet Union when carrying out the enforced re-settlement of nomads in its southern republics, the Somali government launched a spectacular programme for the enforced sedentarisation of nomads. There are several extensive articles on the aims and consequences of the Somali programme of enforced settlement for nomads and its related problems (of. e.g. Haakonsen 1979; Labahn 1982; Osman 1982; Somali Democratic Republic 1977). For this reason, only a brief summary of the results will be given here.

In 1975, more than 110.000 nomads were forcibly settled in initially three agricultural and three fishery projects, far away from their traditional living space. In accordance with socialist aims, the projects were assigned the status of (production) co-operatives with a rigidly organised political and administrative structure.

The nomads settled in this way were in fact hardly involved in decision making within the co-operatives. The main economic aim of the settlement projects was the creation of self-supporting economic units.

However, these ambitious aims could not be even partly realised. On the contrary, the population had to be supplied with large amounts of food from the 'World Food Programme', well after the initial phases of the project and up to the beginning of the eighties. Even at the beginning of 1986, food aid from the 'Food for Work' Programme was still being distributed.

A large number of nomads turned their backs on the enforced settlement projects even during the first few years. The main reason why many of the newly settled nomads deserted the projects was the complete change in life-style to that of a fisherman or farmer in an environment which was also totally different, both physically and politically.

While women and children often remained in the settlements, so that they could continue to enjoy the free food rations as well as the education system and medical care, the majority of the men migrated to the capital Mogadishu or even to the Gulf States and a small number returned to nomadic livestock-keeping.

The course of the enforced sedentarisation programme has shown that this type of project is doomed to failure if it is badly planned and does not satisfactorily take into consideration the specific needs of the former nomads. Thus, the example of the Somali enforced settlement projects should act as a warning to those responsible not to carry out this type of large-scale, state-controlled, enforced sedentarisation programme in the future.

The numerous refugee camps, which were set up after the Ogaden War of 1977/78 in the north-west and in various parts of southern Somalia, must also be regarded as another form of state-controlled sedentarisation. (February 1986: 36 camps with approx. 700,000 refugees/of which roughly 90% are women and children). The camp inhabitants are for the most part nomads, who have grown so accustomed to a sedentary life-style following their several-year-long, enforced residence in the camps, that the majority of them would almost certainly not resume a nomadic life-style should the camps be closed.

The solution of the refugee problem will represent one of the main problems facing the Somali government in the next few years. It can only be hoped that the initial political reconciliation between Somalia and Ethiopia which took place in January 1986, will also bring some promise of a solution for the refugee problem in its wake.

Although the best solution would be the re-settlement of most of the Ogaden refugees in their traditional tribal areas, the Somali government must make a serious effort to find possibilities for integration within Somalia itself. Potentially there are several different possibilities, for example the employment of refugees as settlers and agricultural labourers in the Shabelle and above all Juba valleys. The author is critical of agricultural settlement project for refugees in the Fudjo area (Lower Shabelle Region near Sablaale; total project area = 16,000 hectares, which approx. 11,500 ha potential cultivation area for irrigated agriculture; maximum number of refugee families = 1,000), as the negative experiences made in the proceeding large-scale projects will almost certainly be repeated.

5. Uncontrolled sedentarisation versus state-controlled enforced sedentarisation: Thoughts and suggestions for future development policy in Somalia

The brief survey of the recent changes in nomadic living space in Somalia has shown, that one of the characteristics of this process takes the form of a general trend, albeit to a varying degree in different regions, towards a restriction of regional mobility to the point of sedentarisation. An attempt will be made in this chapter to provide answers to questions 3-5, posed at the beginning. The following comments are merely intended to provide a basis for discussion and make no claim whatsoever to being complete. Moreover, the author is well aware, that in practice obstacles of a financial, political and ethnic nature will stand in the way of a well-balanced, national development which is applicable in equal measure to all nomadic population groups.

The question of how the declared aim of the Somali government, namely to forcibly sedentarise the largest possible number of nomads, is to be evaluated, must clearly be answered negatively, for the following reasons:

- A. If the enforced sedentarisation of the nomads was regarded earlier by many experts as the only discussible alternative to the integration of this population group in the modern development of the country, then it could be said that a change of opinion has taken place in the course of the last decades, following new research results. This is not surprising, since the manifold, negative, socio-economic and ecological effects of sedentarisation have only become apparent during the last ten years. The rapid onset of the desertification process in the Sahel Zone is largely attributable to the greatly restricted mobility of numerous groups of livestock keepers.
- B. Nearly all the large and costly nomadic programmes carried out by national and international development institutions have proved to be more or less failures, because as a rule too little interest was shown in the real needs of the nomads, while their special economic and ecological know-how and skills were either disregarded or paid too little attention to in planning.

The same holds true for the large-scale projects which have been carried out to date in Somalia's nomadic living space (Northern and Central Rangeland Projects; nomadic resettlement projects).

- C. As a transition to arable farming is either not possible or is highly uneconomical for most of the nomads in the North African and Asian dry belt due to climate, hydrology and lack of suitability of the soil, the nomadic pastoral economy represents the only alternative for an economically efficient use of the natural resources in large areas.

In fact, with the exception of the two particularly favoured areas at the Juba and Shabelle rivers, this holds true for the largest part of Somalia.

A state-controlled enforced sedentarisation of the majority of the nomadic population in large settlement projects must therefore be regarded as unwise, and even as harmful to the nomadic population concerned, as well as to the economic efficiency of Somalia. Evidence of this can be seen in the failure in their planned form of Somalia's nomadic resettlement project which can only be maintained in the future if they receive extensive help both from the state and abroad.

If representatives of the Somali government refer to the Soviet model, which today presents the enforced sedentarisation in a very favourable light, then it must be emphasized that the Soviet Union of 50 years ago

had a different situation and background to that of a present-day, developing African country such as Somalia. Further, it should not be forgotten that the enforced sedentarisation of nomads in the Soviet Union did not take place peacefully and has only been achieved at the cost of great sacrifice of human life and livestock and the loss of cultural identity for the nomadic peoples concerned.

The Soviet model does not appear to be practicable as — apart from during times of emergency — a state organized, comprehensive resettlement programme would probably also be likely to encounter strong resistance from the majority of the nomadic population and its execution would only be possible at the cost of unjustifiable sacrifices for the nomads. Moreover, a state-organized, very expensive resettlement of a large part of the nomadic population of Somalia would be financially impossible, both, now and in the future.

What future prospects do nomadism and sedentary nomads in Somalia have? It is not easy to give a clear answer to this question, as possible changes in the economic framework could strongly influence the process of change which is presently taking place. Comments in the previous chapters have illustrated the radical process of change to which large parts of the Somali nomadic population are presently being subjected. It is evident that nomadism cannot remain in existence anywhere in its traditional form because of the external influences which are constantly becoming stronger. Nomadism will however, retain its great significance in Somalia even in the future, but in modified form as an economic system (rather than as a way of life).

Retention of the extensive seasonal migrations with the livestock herds will be of crucial importance for ecological balance and thereby for the long-term conservation of the natural bases for nomadic livestock keeping. As more and more nomads will take up extrapastoral activities with a more sedentary life-style, the need for a division of labour will also inevitably cause more large families to be split up in the future. The tendency for surplus population to migrate from the nomadic living space to the towns will certainly increase. As the large-scale expansion of irrigated agriculture in the Juba and Shabelle River valleys means that the nomads of southern Somalia will lose important parts of their traditional pasture lands which are vital for the survival of livestock herds during dry seasons and droughts, the sedentarisation process in the river valley areas and migration to the towns will presumably be even more speeded up in future. Here there is a danger of even stronger segregation according to age and sex taking place, again to the disadvantage of the nomadic regions, as it is mainly young, male members of the labour force who migrate to the towns. In this way the Somali government will achieve sedentarisation of a part of the nomadic population of southern Somalia,

not directly by means of settlement schemes, but indirectly through the extension of large-scale irrigated agriculture.

The development shown conceals the danger, at least for nomads who have settled in the urban centres, that their standard of living will worsen in future when compared with the farming and urban populations.

What activities could/should be initiated by the Somali government, supported by states and institutions providing development aid, in order to improve the chances for an increased positive participation by nomads and their sedentary compatriots in the whole process of economic and social development in Somalia?

In the author's opinion the following basic requirements should as far as possible, be taken into consideration:

A. As a general principle, it is to be recommended that any state development policy in the nomadic living space should restrict itself to a minimum of direct interference in the traditionally sound economic system.

Direct state intervention in the traditionally proven grazing patterns of the nomads would only appear to be justified in cases where the ecological balance is endangered due to overgrazing.

It is not the large, expensive projects, such as for example the 'Northern and Central Rangelands Project' and ranch management systems imported from other cultural spheres which stand the best chance of helping the largest possible number of nomads, but rather a greater number of small projects, which could take into consideration the specific needs of the nomads in the various, different regions of Somalia.

The government should, at the earliest possible opportunity, introduce measures to improve the living and economic conditions in nomadic settlements, both in rural areas and in towns.

B. The complete spectrum of existing, different, regional forms of nomadic livestock-keeping must be much more intensively considered than was previously the case within the scope of agricultural development planning and thereby possibly form the main component of future, integrated development planning for the whole of Somalia. To this must be added the incorporation of the nomads' specific knowledge on their natural environment and on breeding, keeping and tending their livestock, as well as the consideration of special ethnic, social and cultural features.

C. An important pre-requisite for a suitable development policy for the nomadic living space is a more intensive and complete investigation of the prevailing economic and living conditions and of the process of

change which is presently taking place. In order to carry out this extensive task, it would be advisable to create a 'Somali Nomadic Research Institute' which would be well-equipped financially and also well-staffed.

One of the main tasks of this institution would be the compilation of basic material for development planning and its execution. Above all, it is proposed that detailed, thematic, distribution maps be drawn up. These should give information about: seasonal migration routes; permanent and seasonally used settlements; different types of watering places; the quantity and quality of the water at different times of the year; vegetation maps with plant types, and details on total production volumes at different times of the year; livestock types and seasonal herd sizes; landownership situation; marketing outlets; education and healthy facilities; epidemic diseases etc. It is imperative that large-scale surveys which are already in existence be supplemented by detailed, small-scale studies on specific regions.

D. A basic pre-requisite for the nomads acceptance of state development schemes is the necessity to create a basis for trust amongst the nomadic population. It is not control, intimidation, threats, clan discrimination and constant legal insecurity — here one need only mention the continuous loss of the nomads' best pasturelands to irrigated agriculture and the common practice of cheating the nomads at water buying — which should characterize the relationship between many nomadic groups and the supra-tribal ruling power, but support and understanding on behalf of the state for the nomadic population's interests.

If the government wishes to at least somewhat curb the large migration of nomads to the towns, then it must introduce measures to render life in the countryside more attractive. In this respect it is just as important to improve general living conditions as it is to create new income possibilities by means of extrapastoral activities.

In development planning for the nomadic living space, particular attention must be paid to the areas of water supply, transport, veterinary care, health care, education, ecology, the sedentarisation process/the development of settlements and the development of trade.

The quality and, if necessary also the quantity, of water supplied by the present network of watering places should be improved while taking into consideration the traditional, nomadic trekking routes and seasonal resting places. Inexpensive, shallow wells and open troughs for collecting surface water, which the nomads can erect themselves should be given preference over expensive, power-driven, deep wells.

The improvement of the transport system is also significant for the development of supply and marketing facilities in the nomadic areas. Here it is proposed to construct or extend tracks which would be usable all the year round, improve the fuel supply and repair or build new landing-stages in the small-livestock export docks.

Continuous veterinary care for the nomadic livestock herds is of vital importance, as it is only possible to achieve a high marketing and above all export rate with healthy animals. In order to realize this aim, hundreds of small, mobile field teams would have to seek out the nomads, chiefly during the dry season, in the vicinity of their watering places. Another state service which is almost completely missing in the nomadic living space is health care for the nomads themselves. In the hundreds of newly erected nomadic settlements there should be at least first-aid stations and in the larger places small clinics. During their travels the nomads are completely dependent on their traditional medical remedies. Here a mobile health service, equipped with a cross-country vehicle could not only provide medical help, but also, to a certain extent, help to inspire confidence due to its function as a facility provided by the state.

The education service is in a similarly underdeveloped state. An attempt should be made, at least during the dry seasons every year, in those areas where the nomadic population is particularly concentrated, to offer the nomads' children a primary school education. Only in this way can the chances of the nomads to compete against their sedentary compatriots for jobs be improved on a long-term basis. The nomadic children should also be given some insight into the ecological problems they will have to face in the future, as far as conservation of their physical environment is concerned.

The state must pay special attention to the preservation of an ecological balance. Here it is necessary to take practicable steps in areas which are especially endangered, in order to combat danger of erosion and overgrazing.

The process of sedentarisation while simultaneously retaining a pastoral economy, constitutes a great danger to the ecological balance. Apart from measures undertaken by the state for the protection of the environment, it is above all important to effect a positive influence on the sedentarisation process in nomadic territory by introducing the above-mentioned basic infrastructural facilities and services.

In the larger settlements in the nomadic areas the state should encourage the foundation of businesses dealing with regional trades and products by granting them financial concessions. Here one has in mind the small and medium-sized firms for processing animal pro-

ducts (milk, skins, hides, wool) and also vegetable products (myrrh, resins for incense). If this type of measure were to have even limited success, there would be at least a small chance of checking the ever-increasing migration to the large towns.

The growing number of nomadic families seeking employment will pose more and more problems for the towns' administrative councils. Although on the one hand there is great unemployment, there can for example be difficulty in finding sufficient workers for irrigated agriculture. The reason for this situation is that former nomads prefer to look for employment in the towns which is likely to be less strenuous than agricultural labour and which moreover does not incur any loss of prestige. The state should therefore, in spite of this, attempt to induce the largest possible number of nomads to take up agricultural employment, by means of special material incentives and offers to provide paid training. In particular former nomads with experience in rainfed agriculture could possibly be won over as new settlers or as well-paid, agricultural labourers. Within the scope of the agricultural development of the Juba valley following the construction of the Bardheere Dam for example, former nomads could make a considerable contribution to the reduction of the labour force deficit there.

Irrespective of these possibilities, the living conditions of former nomads on the outskirts of the large Somali towns should in any case be improved, although this could possibly result in making the towns even more attractive.

Improvement of hygienic conditions is of prime importance in order to at least call a halt to outbreaks of dangerous diseases such as for example cholera.

In this respect the development of an efficient water supply is above all an important pre-requisite. There is also still a great deal to be done in the spheres of education and health services. It can only be hoped that the Somali government will become aware of these tasks and gradually begin to take steps to direct into new channels the process that has already started, namely that of marginalisation of the former nomadic population living on the outskirts of towns.

Although the largely uncontrolled sedentarisation process which has taken place up to now creates numerous problems, it is nevertheless, in the author's opinion, preferable to a comprehensive, state-controlled, enforced programme of sedentarisation. However, the natural process of sedentarisation presently taking place has now reached a stage where the state should intervene in a supportive role more so than it has done previously in specific areas to ensure the well-being of those affected and also the socio-economic development of the country.

Footnotes:

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Mr. Janzen's article has been translated from German to English by Ms. Angela Perry.

- ¹ The term 'nomadism' is taken as meaning a life-style and economic system whereby the groups concerned (tribe, tribe-section, extended family etc.) carry out episodic and/or periodic migrations, together with their main source of income, livestock, in order to ensure their livelihood and on the basis of special physical-economic and/or even socio-political conditions in specific areas. They usually carry their housing accommodation with them on their travels and possibly also carry out other extrapastoral activities on a temporary basis (arable farming, trade, transport services, wood/resin collection, fishing, employment as agricultural labourers, etc.) (modified according to Sehölz/Janzen 1982:6).

The above definition is above all valid in German and French speaking areas. In the English speaking world, other mobile life-style groups such as gypsies, hunters and collectors etc. are also described as 'nomads'. The real, livestock-keeping nomads are, as a rule, distinguished by means of the additional word 'pastoral'.

The term 'semi-nomadism' is used to describe those life-styles and economic systems for which migration and livestock are still the most important economic factors, but where extrapastoral activities — in particular arable farming — are also of great significance. Further typical characteristics of semi-nomadism are shorter migration distances with greater frequency of small livestock-keeping and, apart from portable housing accommodation, the possession of permanently fixed huts/houses in long-term settlements around cultivated areas or other places of employment, where the groups or parts of them remain stationary for a large part of the year.

During the transitional phase from complete nomadism to a sedentary life-style, numerous types of semi-nomadic economic systems can be found, according to the respective backgrounds and prevailing conditions.

- ² The expressions 'sedentarisation', 'enforced/forcible sedentarisation', 'settlement/re-settlement' are used to describe the process presently taking place, namely that of a transition from a mobile to a sedentary life-style.

Transitional phases are described as semi-nomadic life-styles and economic forms. While, in the author's opinion, the expressions 'sedentarisation' or 'settlement' are neutral and refer to a process whereby there is no need for direct pressure 'from the top', the modified terms 'enforced sedentarisation', 'forcible settlement' or 're-settlement by force' designate a direct action, i.e. the exercise of force/pressure by means of a stronger group/institution, as a rule the state, against the economically and politically/militarily weaker nomads. The expressions are used accordingly in the article submitted.

- ³ The term 'group' is understood to mean any plural number of persons. Thus it can also be used to describe a family or a tribe/clan.

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The social dynamics of Southern Somali agro-pastoralism: A regional approach

Introduction

Southern Somali agro-pastoralists have a social system characterised by extreme mobility and flexibility. This paper discusses these features in relation to the stereotyped segmentary lineage model through which the social system is expressed. A major divide in the social system is that between the segmentary lineages and clans on the one hand, and the informal associations and networks on the other. By critically applying a comparative theoretical perspective, it is shown that these two principles operate on different levels of social action but that they are mutually supportive, creating an overall integrated system for resource control, resource extraction, cooperation and conflict-solving. However, the two levels of organisation do have strong contextual links: although they may combine in determining the outcome of specific actions, there are domains where the segmentary model and informal associations respectively dominate. An attempt is made to link this to the varying conditions in different contexts of agro-pastoral subsistence. It is argued that the social requirements of pastoralism and agriculture are strikingly dissimilar. In the corresponding adjustments to this, the segmentary model stands out as an 'index' to spatially dispersed resources, crucial, above all to the needs of herders. The informal networks, on the other hand, are restricted to villages and operate to provide the necessary labour and other relations central to agriculture. The picture that emerges from these considerations is that of a regionally integrated social system with an immense capacity for rapid adaptation when required. The implications of such a perspective for rural development efforts are discussed in a concluding section.

* * *

The concept of agro-pastoralism seems to have emerged in response to the attempts of the 60's and 70's towards classification and identification of types of pastoralism in East Africa and elsewhere (see e.g. Jacobs 1965, Spooner 1971, cf. Rigby 1978). Definitions of the concept focus on the integrated character of sedentary agriculture and animal husbandry in agropastoral societies (Brandström, Hultin & Lindström 1979:8). It has also been shown that a large number of previously 'nomadic pastoral' societies actually feature tendencies towards sedentarisation or to a considerable extent already rely on agriculture (Meyn 1970:10, Bonte et al. 1973:74, Lewis 1975, Monod 1975: passim, Baxter

1975). As Meyn (1970:25) points out, 70 per cent of the total East African herd of cattle is kept by sedentary agro-pastoralists.

On the Somali scene, there has been little or no linkage to these developments. Stereotyped views of 'Somali nomads' have long constituted the frame of reference for policy-making and action extended to rural areas. Despite Lewis early recognition of differences between the north and the south (1955, 1961, 1969), it is only recently that some authors have systematically applied the concept of agro-pastoralism in their research (notably Haakonsen 1983, Massey et al. 1984, Putman 1982, 1984). Otherwise much development research in Somalia today is informed by a sector approach that singles out an artificial 'sector' and treats it by averages nationwide. An explicit bias of this paper is that a sector approach more often than not will obscure systemic relations on the ground, and that the only way to get around that problem is a gradual build-up of knowledge of regional and local conditions (cf. Long 1977, Pitt 1976). There are a series of propositions that stem from such a view (cf. Salisbury 1976, Arhem 1985) and I return to some of them in the concluding section.

In this paper I will briefly describe some central features of the social organisation of agro-pastoralism among the Maay-maay speaking groups of the interriver area. The exposition is based on material collected among a self-defined group of the area, a clan that belongs to a group of clans known as Raxanweeyn, meaning 'big crowd'. Raxanweeyn divide themselves into two larger subsections known as 'the eight' and 'the nine' and the clan we will be primarily concerned with belongs to the latter.

Like all other Somali groups of clans, Raxanweeyn strongly emphasizes the ideology of patrilineal descent (tol). On the ground, however, they organise according to principles we may term accumulated confederation. Through time-honoured processes of refuge, migration and adoption, social aggregates on all levels have moved, confederated and reconfederated (cf. Lewis 1969).

1. A macroview of Southern Somalia

1.1. Territorial links through time

The clan we are considering has naturally also been implicated in many social reconfigurations and its members are today living in large numbers in several different localities. In at least one of these they are subjugated to other clans, whereas elsewhere they have maintained political independence. Our main concern here is one of these latter localities, an area locally known as Ooflaawe.

It is possible to trace the origin of the present population of Ooflaawe some 200 years back through local history. At that time they were living in the vicinity of what is today Beled Weeyne. Then, as now, their economy was based on a combination of livestock breeding and rainfed cultivation of sorghum. Seasonal grazing patterns brought herders into the fertile area along the escarpment west of present-day Baydhabo. We need not go into the different versions of the events that followed, it is sufficient to say that migration brought large portions of the the clan from Beled Weeyne to this new area. Subsequently the area became known as Ooflaawe, which means 'without effort' and allegedly alludes to the ease by which a man can get rich in the area.

One of the earliest written references to the clan is a letter written from Lugh by the Italian explorer and government negotiator Ugo Ferrandi (Trevis 1931). The letter, dated 5th November 1895, relates an incident of fighting with the inhabitants of a locality referred to as 'Of lau'. The group now inhabiting the area is mentioned, along with their neighbours, and it is clear that they, together with many other clans of the area, constituted a serious threat to the caravans trafficking the hinterland between Lugh and the coast (cf. Trevis 1932, Ferrandi 1903).

However, Italian traders were not the only ones to fear movement through these areas. The territorial links that exist today are the outcome of conflicts and disputes over land, and this must, at times, have created an unstable situation. There are several, partly mythological, versions of such conflicts during the last 100 years which involve clashes between seven different clans. There are also literary sources confirming this, for instance the map provided in Scassellati-Sforzolini (1913). Although it suffers from considerable inaccuracies in the disproportional representation of distances, it is nevertheless well-informed and gives a different picture of the distribution of many of the groups of the area than that of today.

However, shifts of territorial control appear to have been a rather slow process. The present associations that exist between a group and their territory are therefore both well-known and thoroughly defended.

1.2. Ethno-ecological zones

The land conquered or taken by the clan from Beled Weeyne is called adaaable.² This is conceived of as excellent farming land, and it has a high density of settled population. Both grazing and water facilities are also satisfactory in this area but the threat livestock constitutes to farms makes it necessary to bring them out of the area when crops begin to sprout. In the west, the adaaable weeyn (big adaaable) extends to the Jubba river. In the northeast and east Ooflaawe borders on the duste area,

principally consisting of adaable type of soils except for the rocky shabeelo (literally leopards) area that intersects it. To the north of Ooflaawe is the harqaan soil³ There are practically no fields on that soil but it is regarded as good grazing land with a fair supply of water, at least through part of the dry season. The part of harqaan known as geel-geel (many camels) is especially attractive for camels during the end of the rainy season, as fodder there still contains enough moisture to make watering redundant. Still further north are the areas called baay or bakool (literally white soil), said to be as good as the adaable in terms of agriculture, though with considerably less rainfall. These latter areas extend into Hiraan region and cover the best part of the Bakool region. Most dry season migrants into Ooflaawe originate there. Pastoralists from Ooflaawe occasionally bring livestock to some well-known wells in these areas, which contain a much needed salty water. South of the escarpment are the wide wet season pastures known as dooy.⁴ It is by far the most attractive grazing area, although the limited supply of water may terminate grazing there long before the supplies of pasture run out. It borders on the buur area in the east, and beyond that is a larger zone known as jiir which contains many wells, but is also densely populated. The area south of dooy is called dhobbey (literally 'muddy') which refers to the zone along the Shabeele river. This area is favoured for long-term grazing movements and is conceived of as having a comparably good water supply and relatively secure grazing. South of this area are only the sterile sanddunes (bacaadka) and the kafar or seashore. In the west, dhoobey joins with jilib, the name of a township but extended to mean a larger area in between the Shabeele and Jubba rivers and to the west of Jubba river. It extends in the west as far as Af Madoow. (See map.)

The areas I have described above are ethno-ecological zones, i.e. they represent what Brookfield (1969) refers to as 'perceived environment' (cf. Ellen 1982:204-235). Ecologists proper may certainly take a different view on how to delimit and define man-land relations in the area we are discussing (see Hunting 1982, Watson & Nimmo 1985, cf. Brown 1983). However, to the people of Ooflaawe along with their neighbours, it is the zones we have mentioned that define different resource potentials and utilization patterns. Within the boundaries of this rhomboid territory, nomadic movements of the people of Ooflaawe may theoretically, although not seasonally, take place. One must note the enormous size of the territory we are dealing with: the distance between its far angles exceeds that between Paris and London!

The way movements take place within and between these zones is determined not only by the seasonal availability of pasture and water, but also by the relations to the sedentary population there. Many families have places they more or less regularly return to on a yearly basis, known as

hiil. If scouts (sahan) report that the hiil is not crowded (shiimo) with other livestock, the family herd will be taken there. In general, people tend to prefer places that are dubud, empty or unoccupied, but even in the vast zone of dooy there is a kind of division of territory between the different clans with livestock grazing there. Thus the part of dooy bordering on Ooflaawe is called dooyka ooflaawe and is considered to be their territory. The presence of farms imposes an obvious constraint on the movement of herds. Although it would be possible for people from Ooflaawe to graze in the jiir zone, this is rarely done as access to that area would be dependent on movement through the farms in the buur area. Likewise, the shabeelo area has good pasture but is difficult to reach through the duste zone where the fields of another clan lie.

It is important to note that the space covered by these zones also represents social space. The zones are identified with the clans that inhabit them. The fit is not one-to-one, but in principle the geographically most far-away places are inhabited by the genealogically most distant groups. When the people of Ooflaawe move into the dhoobeey zone, for instance, they are among the Digil group of clans that, although adjacent to the Raxanweeyn areas, are conceived of as a grouping distinct from them. If they go further towards the southwest into the jilib zone, they are further removed in social space as they are then among Daarood and Hawiye groups, being both genealogically and linguistically distant. Should they, however, decide to just cross the border of Ooflaawe into the harqaan they then find themselves on the territory of an allegedly close clan with whom they frequently intermarry, share history, style of clothing and mythical origin.

The zones present a degree of overlap of perceived social and natural resources and this increases the number of choices available in decision making. For example, one such choice is that between the harqaan and the dooy as wet season grazing area. Whereas the harqaan makes it possible to abstain from watering (camels), the types of vegetation found there necessitate addition of salt. In the dooy area, on the other hand, watering is necessary but the addition of salt is not. In the same way, the herders who remain in the uncultivated part of adaable find an abundant supply of pasture but have to think about both additions of salt and watering. These zones then, may be described by the concept of 'polythetic classes' (Needham 1975). I.e. zone A represent resource 1, 2, 3,; zone B comprises resource 2, 3, 4, etc. This is a simplified picture but it comes very close to local people's own way of discussing the respective 'benefits' (faa'ido) of the different areas. Therefore, it is important to stress that grazing movements take place according to the perception of areas defined as such both in relation to natural and social resources.

1.3. *The lineage system*

In this section I narrow the focus to a single unit — Ooflaawe — within the overall system of environmental and social classification described above. As has been shown, Ooflaawe is a social unit that covers a good part of the adaable zone. The clan inhabiting it, is divided into four subsections that in turn are segmented into 12 or 13 major lineages. Within the clan, lineages constitute the lowest level of appointed leadership; above that is only the clan chief. Lineage and clan leaders are nowadays termed samadoon and nabad-doan, respectively. Traditionally, no terminological distinction was made between their offices as both were, and sometimes still are, termed malaq.

Lineages are foci of territorial and political interests. Within Ooflaawe they control separate (if not entirely discrete) areas where their members have their fields (beero) and have constructed waterponds (waro). There is no immediate correspondence between the segmentary lineage structure of the clan and the territorial claims of its lineages; in some places there is a comparably good fit whereas elsewhere there is no correlation whatsoever. This is also related to the settlement pattern in villages that is described in a later section. Members of the same lineage also have common interests in the payment and reception of bloodwealth and compensation (mag).

There is a good deal of migration (keenayn) into and through the Ooflaawe area. Most of the migrants are regarded as 'unrelated' or 'unknown' (shisheeye), and talked about as marti (guests) or socoto (bypassers). These terms imply a polite degree of distance, as migrants are often seen as a threat to the grazing. The peak of the immigration is during the dry season (jilaal) and the lowest numbers of immigrants are reached during the spring rains (gu') that follow. It is unlikely that anyone would settle for a prolonged period within the Ooflaawe unless he had some previous relation to people there. Most dry season immigrants and settlers do in fact have some people in the area that they regard as qa-raabo, relatives in a general sense.

In the same way, people of Ooflaawe will during their own migrations, seek their 'relatives' in the areas where they settle. It is often made explicit that when moving outside the confines of Ooflaawe to other territories, the clan-members living there are the first that should be visited. A proverb states that when they are 'migrating they don't fail to stop in Haakow' — Haakow being another locality densely populated with members of the same clan.

The lineages we have considered contain also numerous groups and individuals of alien clan origin. So many that, in fact, they appear to outnumber the 'real' members of some lineages. When newcomers arrive

and seek adoption, they generally turn to the lineage where most of the previously adopted kinsmen from their own clan are found. Various names exist to distinguish those of pure clan descent from adopted members. Persons who claim a pure ancestry will be referred to as dhalad, by birth. Adopted members are generally called dhaqan, by culture. Within this latter category a distinction is sometimes made between those joined through marriage-links, called dhareer (lit. the cartilage in joints), and those joined by 'contract', dhuxul (lit. charcoal). These different categories of people hold the same rights as those born within the clan. For instance, nothing stops a dhaqan member from competing for the office of lineage-chief; several lineages have leaders not of pure clan origin.

1.4. *Nobles and commoners*

In addition to these categories there exist also a variety of groups that only partly fit into the clan-framework. Although they form part of the lineages of the clan, their membership is sometimes referred to as sheegad ('what is only said, but not true'). Various pejoratives set this category off from the others we have described, and theoretically they do not hold the same rights in the political life of the clans of these areas. In the Ooflaawe area they are known as boon and in relation to them, all the above categories are bilis.

Luling has recently suggested the term 'occupational castes' for these groups (Luling 1984). I prefer to use the word 'commoners' as they are larger in numbers here than in the cases Luling discusses, and traditional occupational groups, such as black-smiths, are only one of the many groups lumped together in this category. Consequently I use the word 'noble' for all other categories.

In principle there are two factors that contribute to the separation of commoners from nobles. The first is a concept of lineal purity by which all nobles, regardless of actual clan-membership, claim to have a common origin at a mythical level of ancestry, although actual genealogical links are rarely accounted for. Secondly, a strongly enforced marriage prohibition between nobles and commoners reproduces them as distinct units in the social classification. Probably linked with the marriage prohibition (due to symbolic associations of agricultural production and human reproduction, see Helander & Duaale 1984) is the fact that nobles and commoners cannot exchange agricultural labour on a reciprocal basis. It is only as wagelabourers that they enter each other's fields.

1.5. *The unity of the clan and adoption of new members*

Outwardly the different elements of a clan display a high degree of unity. It took me four months to discover that one of the largest villages in the

Ooflaawe area only had four persons of dhalad origin among the permanent settlers.

A strong branch within a clan is sometimes referred to as *laan dheer*, the long branch, meaning that it has a long common genealogy which is generally thought to be equated with numerical strength. It is clear that within the clan, the larger a segment is numerically, the easier it becomes for it to act politically independent. Both born and adopted members contribute to this strength of a lineage. Thus one lineage in Ooflaawe, often, though not unanimously, declared to be the largest in the clan, has been able to secure a rather influential position within the political life of the clan, despite the fact that large portions of the lineage consist of adopted members. Likewise, immigrating members of a clan from Bakool Region, have lately grown so strong in numbers that newcomers now neglect to seek adoption with the people of Ooflaawe.

The kind of relationship which exists between members of the same lineage, whether adopted or not, is described by the concept *tol*. In its strict sense this word means 'agnation' or 'agnatic relatives' (cf. Lewis 1961). It is included in the category of 'general relatives' (*qaraabo*) discussed above, but is regarded as a relationship of a higher order and of a more binding character. A mother's brother just visiting the area will thus be *qaraabo* of his sister's son and regarded as *shisheeye* ('unrelated/unknown') by most other people. Should he, however, decide to settle with his niece and 'apply' for membership in his niece's lineage, he will also become a member of his niece's *tol* and 'related' or 'known', *sokeeye*, to most other people of the area. He will retain links with his clan of origin and both he and his children born after the adoption of clan identity will admit that they are 'really of clan X'. However, over time, the clan of origin will more and more be regarded as just *qaraabo*.

Looking briefly at the Raxanweeyn group of clans as a whole, we find a similar pattern of alliances also expressed in a largely fictitious segmentary model. In the myth of origin of the 'eight' and the 'nine' it is explicitly stated that 'two groups of men sat down for a meeting under two trees. They decided to join together in one group. Under one of the trees nine men were sitting, they became *sagaale*, the nine. Under the other tree sat eight men who became *sideedle*, the eight.' Now, by a very common misunderstanding other Somali groups often refer to the Raxanweeyn as 'Eelaay'. This is one of the clans within the 'eight' and the misunderstanding is well-known among the people of Ooflaawe. The explanation they give is that the Eelaay are the 'first-born' (*curad*) within the Raxanweeyn, and that they therefore are better known among others. Thus, although the conception of Raxanweeyn includes the notion that they are related by confederation rather than by kinship, they tend to

emphasize the kinship model for its organisation when confronted with outsiders.

The key point in what has been said above is that there is a discrepancy between how the clan is internally organised on the ground and the agnatic or segmentary model used to describe that organisation. This fact, however, does not disrupt the firm position that the segmentary model has ideologically. In disputes and conflicts for instance, one will always seek to describe what is happening with reference to the highest possible genealogical level; e.g. by saying that 'lineage X was fighting lineage Y,' when actually only two men were fighting without support from their kinsmen. In the same way, any kind of personal conflict between members of different clans will be related as a conflict between these clans.

There is a wide comparative literature on this subject, and it is beyond the scope of this paper to do more than acknowledge its existence. In a later section, I return to the question of the segmentary model and discuss its relation to the contrasting on-the-ground patterns of social action.

2. Social action on the ground

2.1. The framework of individual interaction

In everyday affairs the macro-pattern of categorisations dealt with above is but one of many principles that determine the outcome and form of interaction. An ordinary villager of the area has a bundle of obligations and responsibilities towards a variety of non-agnates. It is through these other people — friends, neighbours, shopkeepers, district and party officials to mention but a few — that vital short-term goals can be reached.

The factors that influence a man's possibilities on this level have very little to do with the ascribed status he has within the segmentary lineage system. In fact, the very word used for talking about prestige or honour in these circumstances is different from the word used to refer to the honour that is related to genealogical prestige. In terms of clanship, honour is called *magac* (lit. 'name'), whereas in individual interaction it is usually referred to by the word *sharaf*. The latter term implies a more reciprocal kind of honour based on mutual respect. Interestingly, informants often confuse it with the terms *daacad* or *lilleh* which mean to honour an agreement.

On this level one may distinguish between several types of social relations of varying degrees of formalisation and durability. Although many of the networks may take a very definite non-agnatic character, nothing precludes that kinsmen be included in them. To be sure, it would be strange to think of a man venturing to do something that requires the as-

sistance of others, yet not attempting to mobilize some of his relatives for the purpose. However, relatives that in this way form a part of the network of relations of a man, will mostly be thought of as 'general relatives' (qaraabo) whether or not they are also members of the same agnatic grouping (tol). This ego-focused, kin-set way of forming associations and networks (cf. Gulliver 1971:17), must be seen in contrast to the values of ancestry and lineal purity that dominate segmentary ideology.

In the following sections I give examples of the shaping and contexts of the associations and networks on the ground. The organisational framework for such relations is provided by the village organisation. Settlement in defined units referred to as 'villages' (sing. tuulo, pl. tuuloyiin) has always been an important trait of the social organisation of the inter-river area, and it was remarked upon already by the early explorers (e.g. Citerni 1913:187, Colucci 1924:60). Villages seem to have grown up in response to several important factors, but informants often point to the need of protection as the single most important one. As we will see in this section, there is a particular affinity between this level of organisation and agriculture. Labour scarcity may be regarded as a potent factor in this context, and to tackle that specific problem is certainly the explicit aim of many of the informal associations described here.

Many villages are founded around big-men, as is evident from the many village-names that are personal names proper. It is interesting to note that many of the villages regarded as more important are found in the vicinity of the borders between the ethno-ecological zones described. Lineagewise, many larger villages present a mixed pattern, and today they are theoretically run by an elected committee (guddi) of party-members. These committees have some authority over an administrative area known as a beel, comprising several villages, and they are subordinated to the district authorities. The committee is centered around its chairman (the guddoomiye), and it is he alone who for all practical purposes is the committee. Therefore, the actual authority exercised by a guddi will, unless supported by district officials, be a function of the strength of the chairman and his ability to master his personal relations. Conflicts between 'traditional' leaders of lineages and clans and the committees and district authorities are rare. The more important decisions taken will be prepared by consulting with all the parties involved. It is important to stress that many villages had a leadership structure also prior to the 1969 coup d'état. One major difference is that those leaders did not, as today, have a police force and militia at their disposal. Despite the addition of these two organisations, in practice leaders on the village level often remain subordinated to the clan and lineage leaders.

For the sedentary population, and during sedentary phases for the nomadic population, it is this kind of village environment that is the immediate

social space. There are also expressions of notions of identity associated with settlement and provenance, rather than clanship; the first answer to the standard question 'of which (group) are you?' will often be a town or village name. This strong attachment to the village organisation in these areas has led Lewis to point out that the inhabitants inadvertently conform to the government policy of replacing 'tribal' identification with settlement links (Lewis 1981).

2.2. *Networks and associations*

Perhaps the most basic kind of networks at this level are the non-formalised neighbourhood relations. By a 'neighbour' (deris or jiiraan) is understood not only a person living in the vicinity, but also those whose fields border on one another. The sharing of labour and cooking-utensils is common, as is the borrowing of things like money and food. It is clear, however that both expectations and obligations are low in neighbourhood relations, and one may find cases with no interaction of any kind between neighbours.

Friendship relations differ in this latter respect. To be friends (saxiib or waday) implies a certain degree of obligation that may even extend to property relations. An often quoted proverb has it that: maal waday, sir gadaan, 'the wealth of your friend is like something you secretly bought for yourself'. Although completely free access to a friend's property does not obtain, one can observe how even valuable items like livestock change owners among friends.

Friendship relations exist between members of all the social categories we have considered, and they can be utilized for a variety of purposes. In one case, when a young man of commoner descent had eloped with and married a girl of noble descent from another area, it was only through the mediation of one of the man's noble friends that his own father could be persuaded to accept this fact and pay the bridewealth.

There are several types of networks that involve women in particular. One of these, very common in larger villages, has the form of an agreement between a group of women to all contribute a sum of money each day for a week or so, and that then each one of them in turn take this money. This device is, Italian-styled, referred to as 'ayutow' and is considered to be of invaluable help in saving.

Another association involving only women is the abay-abay or isniinow. This is a weekly meeting of women of a neighbourhood for the sake of chanting religious hymns. It is evident that this also is envisaged as something which preserves the relations between the women. There was, for instance, a period in one village when the women in charge (qaadim) of the isniinow was absent. Some of the younger women continued

as before to get together, but the religious hymns were replaced by traditional games.

There is also a number of more stable and institutionalised associations that are based on non-agnatic networks. One of these is the traditional 'water-cooperative' i.e. a group of families holding rights in, and executing common maintenance of a waterpond, war. The construction of and continuing responsibility for a war is very much a project dependent on a single 'big-man'. This man has the title aaw ('father', also a respectful term of address) and he delegates some of the responsibility to a group of assistants. The war is, however, associated with its aaw and considerable prestige, also outside the affairs of the war, may go with this position. It is, however, not automatically so but is related to the personality and interests of the particular aaw. Although the ultimate defense of water resources often is regarded as a lineage affair, membership in a war is not based on agnation, and both nobles and commoners hold rights in the same waro.

Another example of the more stable voluntary associations are the barbaar. These are arrangements for sharing agricultural labour and, like the water cooperatives, they have a leadership structure centered around a big-man titled aaw. Barbaar literally means 'youth', and the average age of members is usually around twenty. Membership is individual and both men and women may join. In Ooflaawe barbaar memberships crosscut lineage-ties, but they are exclusively either noble or commoner associations. The barbaar pass through alternating stages, each usually lasting for about a year, known as beereed, farming, and dheeleed, playing. It is only during the beereed phase that they engage in agricultural activities, during the other period relations in the barbaar are maintained by playing traditional games together.

Something of a test-case for an ordinary villager's ability to master his relations on this level of daily social action, is the recruitment of agricultural labour.⁵ Apart from the barbaar, there are a several other types of temporary arrangements for reciprocal labour sharing. The goob or working-party is the largest of these. This is a one-day assignment of as many people as possible to work on one's field in exchange for food and a promise of future assistance. It requires considerable planning activity in advance. Potential members of the working-party must be visited personally by members of the family concerned. Provision must be made for the food to be served. If wage-labour is carried out simultaneously on the field, demarcations between this and the work area for the goob must be made. There is naturally a good deal of prestige invested during the recruitment process itself. To be turned down when requesting this kind of assistance would be ruinous for the future relations between the two persons. Therefore, more common than to directly refuse is to just

abstain from participating, even if one has agreed to be present. In that way, both the relation and 'face' can be preserved. Incidentally, migrants are particularly welcome participants in these working-parties. As they mostly lack farms of their own, their work-force is available when most other people are busy with their own farms.

A similar common way of recruiting extra-labour is the requesting of 'help' (kalmo). The requirements for reciprocating are much less pronounced in this case, but the investment of prestige is also higher. For instance, a too frequently repeated request for kalmo, rather than goob, easily runs the risk of being interpreted as a display of stinginess. Alternatively, it may be seen as related to a mystical misfortune that has struck the person, manifested by the fact that he does not have children to help him. These factors must certainly be at least part of the reason why kalmo working-parties are always much smaller than the goob ones are. Like the goob, requests for kalmo put high demands on the perception of one's network, and miscalculations, or misuse, could prove detrimental.

There are also ways of providing someone with a hand on his field that are regarded as more inherently degrading. One of these is the galabey, 'afternooning'. This is the name for help extended to a man who, working in the late afternoon on his field, calls upon bypassers returning from their own fields to work with him for a while. This is usually done in a joking manner and the expectations for reciprocity are low. However, there is a double risk in requesting this form of help; like with the kalmo it can easily be regarded as parsimonious, but it may also be seen as a misuse, or absence, of network and acquaintances.

3. Analysis and discussion

How then, shall we understand this contrast between the segmentary model and the patterns of real interaction on the ground? And what are the possible general implications of it for rural development efforts?

The first problem is not new, and there is a wide range of proposed solutions.⁶ I will here limit myself to consideration of two influential positions and try to apply them to the material presented.

Galaty (1982) has argued that we may view segmentary models as metaphors of identity on different levels. As such they may symbolise different things, interests and persons; '... the symbolism of one domain is reformulated to express the content of another domain' (ibid:88). They are structures that 'define the interplay between cultural ends and social means' (ibid:84). It is wrong, however, to hold that their emergence can 'be explained by the functional adaption of any one component' (ibid:90n), nor should we see them as 'the only factor determining... political action' (ibid:88), or resource control for that matter.

I believe Galaty's point has an important applicability to the southern Somali case. It directs attention to the persistent nature of the segmentary model. The domains of clanship are expressed through a macro-genealogical framework that, although largely fictitious, provides an enduring social categorisation of both the natural and human environment. Its persistence through time must certainly be related with its effectiveness to that end: the way in which it may be manipulated to, for instance, grant access to resources spread out over huge areas. However, we must not overlook that it also provides a means of thinking about these resources; genealogical relations between the clans of different zones, seasonal resources and personal relations, end up as different 'benefits' in the calculations of family decision-making concerning questions of migration and herding. The segmentary model may be regarded as an 'index' in these circumstances, providing a condensed summary of complex information.

As in Galaty's case we are left with the fact that the segmentary model 'invariably combines with other relevant systems in determining specific events' (ibid:88). There is also an awareness of this fact, and there are rarely any attempts on behalf of the actors to explain away or rationalise the abundance of situations where behaviour does not correspond to the segmentary model. Rather, we have seen a host of examples of associations and networks where relations and behaviour is related to another set of values; where individual virtue and reciprocity, rather than ancestry and genealogy, form a coherent frame of reference. H. S. Lewis (1974) has described a similar pattern as relevant for the larger cultural area.

To address the question of these 'other relevant systems' it is instructive to briefly consider another approach to the question of segmentary models, that of Salzman (1978). In his view the segmentary model has the character of a dormant abstract principle; it is

not a mirror of actual practice, or even a model for guiding behavior under present conditions. Rather it is a kind of conceptual insurance, a social structure in reserve (ibid:68).

There is a diachronic dimension linked to his argument: the segmentary model is thought of as 'available for application in the future when current conditions disappear' (ibid:68). However, we are inclined to regard this part of his argument from a slightly different angle. Would not the coexistence of sedentary agriculture and nomadic pastoralism provide sufficiently different conditions for a differing articulation of social models in these two contexts to occur? Indeed, the southern Somali case seem to indicate something to that effect. The structure of village level organisations is definitely different from the clan level of organisation. Not only are the explicit concerns of the goob and barbaar different

from those that preoccupy the same individuals as members of their different lineages, but the very character of personal relations, and the norms guiding these, are different in these two contexts. I am suggesting then, that the two levels of organisation may be seen in a perspective of contextual dominance. It is not that they have emerged as a result of agro-pastoral adaptation, but rather that their capacity for multi-function organisation in pastoralism and agriculture, respectively, are different. We have seen this reflected on several levels; one explicit aim in herding strategies, for instance, seems to be to seek maximal avail of resources while staying clear of contact with other herds and herders. This is made possible through the system of macro-categorisations and entails a specific set of values focused on clanship. Within clan-territories, on the other hand, different rationales are prevailing. With resources (farms) controlled and stable in the vicinity of the village, strategies are to maintain and strengthen one's position within that community. Informalism, and values centered on individuals, guide these endeavours.

To conclude we return to the question of the implications for rural development efforts of the tentative findings presented in this paper. By way of introduction, it was argued that a focus on regional and local systems, rather than a 'sector' approach, carries a promise of generating fruitful knowledge. Well aware that this paper may raise more questions than it answers, I maintain that it is only by considering southern Somali agro-pastoralists in terms of 'emic' organisation of social relations, information and environment, that something like a working knowledge of regional and local problems can be generated. Ample illustrations of this are provided e.g. in Hussein (1984).

Looking briefly at the particular issues addressed in this paper, one can say that the two levels of organisation discerned and discussed provide both maximum overall integration of resources, and possibilities for the local manipulation of these. Depending on ecology, social situation and the perception of what particular resources that are at stake for the moment, we will expect different configurations of the social models to appear. This puts an extra demand on careful research into local conditions for particular projects. At the same time the two levels of organisation discussed may provide a general enough frame for the definition of variables involved in, for instance, the emergence of local power structures. It should also be clear that what is perceived as resources within one level organisation, not automatically is regarded as beneficial to the other level. For instance, we have seen that migrants and temporary settlers in a village are a welcome potential workforce, but their herds are also conceived of as a threat to the grazinglands.

However, it is important to stress that focus on regional systems not necessarily imply that actual development projects are better off when

attempting to address a multitude of regional issues simultaneously. On the contrary, poignant lessons from Bay Region⁷ and elsewhere tell us that it is the small scale approach to rural development that, building on a sound perception of local needs and problems, can produce solutions that are both efficient and locally supported. This type of approach may also prove more cost-efficient; one of the most successful measures in agricultural development lately, was the simple reformulation of the role of ADC (Agricultural Development Corporation). While this step may have created a temporary inflation of grain prices (up to the level of producer costs), it has certainly also had an immense impact on the volume of national production.

Although the notion that a regional approach in development research promotes a successful implementation of the development projects would seem truistic to some, it is often defied in practice. It must not be disregarded that the opposed view, the 'sector' approach, may represent an articulation of very different, and stronger, interests than those of the local people; the focus on national quantity of production rather than on local conditions of production, reflects a primary preoccupation with increase of GNP and export earnings rather than improvement of producer conditions (Aronson 1981, cf. Dahl & Hjort 1985). The perspective advocated here is linked to another type of notions of development, that 'starts from local resources, capacities and needs, and sees the local community as primary beneficiary of development' (Arhem 1985:109).

Footnotes:

¹ Fieldwork in the Somali Democratic Republic was carried out in 1983, 1984 and 1985, supported by grants from The Swedish Council for Research in the Humanities and Social Sciences, The Swedish Agency for Research Cooperation with Developing Countries, and The Ax: son Johnson Foundation. I am grateful to Per Brandström, Anders Hjort, Enid Nelson, Jan Ovesen, Bjarke Paarup-Laursen and Paul Sinclair for their constructive comments on a draft of this paper.

² Adaable seems to correspond to soils of the BA or UA type in the Hunting classification (Hunting 1982).

³ Harqaan consists mostly of Regosoils according to the Hunting classes (ibid.).

⁴ The area known as dooy seems mostly made up of what Hunting (ibid.) calls Din-sor soil.

⁵ There is one particular source of agricultural labour that is not discussed in this paper. That is the existence of wagelabourers that, increasingly common, provide an alternative to the high investments of prestige involved in the other labour arrangements. A majority of wage-labourers are of commoner descent.

⁶ Two critical reviews of this debate are provided by Kuper (1982) and Karp & Maynard (1983).

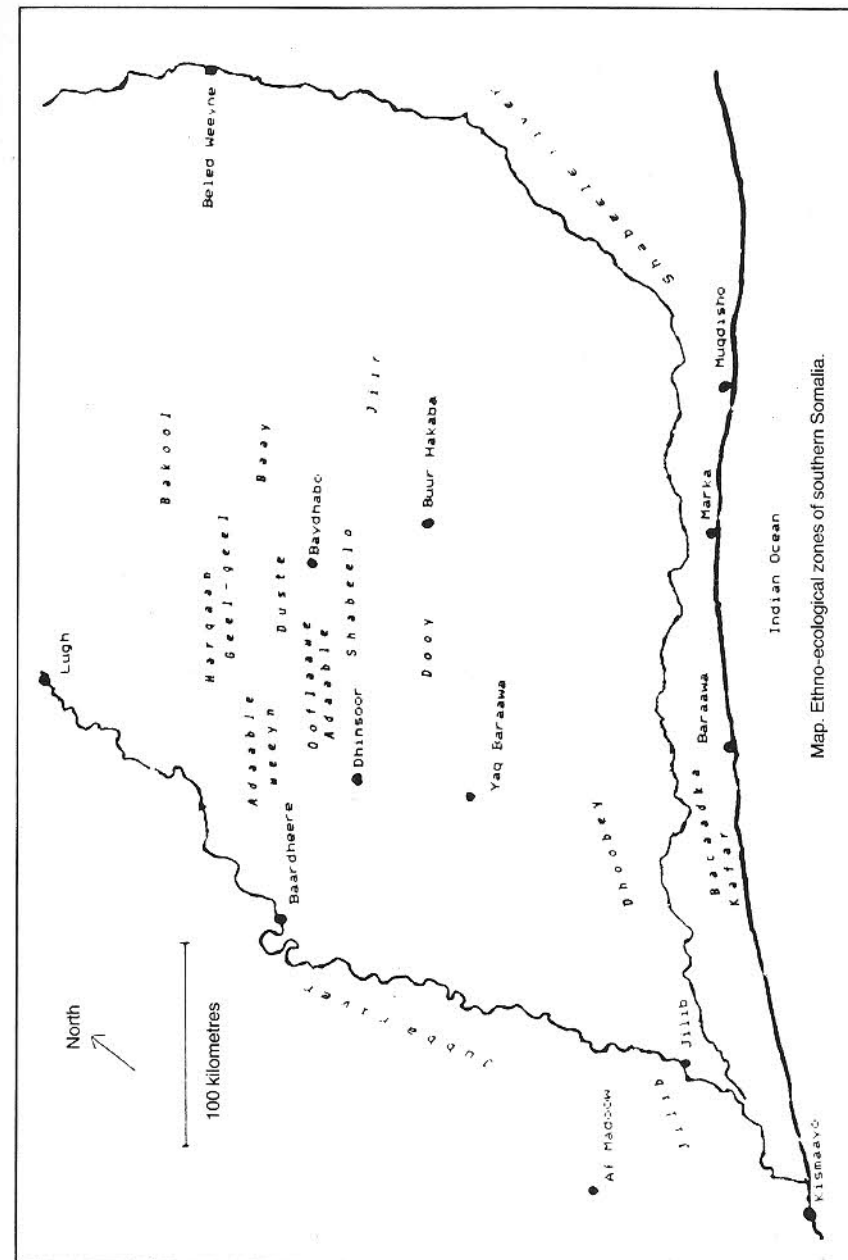
⁷ One task within the BRADP (Bay Region Agricultural Development Project) was the construction of roads. This task, however, came in conflict with the overall aims of BRADP as cultivated area was actually reduced as a result of the techniques employed. Needless to add, this created temporary repugnance against the project as a whole among local people.

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Map. Ethno-ecological zones of southern Somalia.

Institutional aspects of rural development

1. Introduction

The role of the state in the development process has been a major subject of discussion since the sixties. Whereas the possibilities of the state may have been overestimated in the first two development decades privatization and private sector promotion are now the new catchwords. However, there is general agreement that there are core functions in the development process which can only be fulfilled by the state.

In a country like Somalia where investment is financed to a very high proportion by foreign sources, the performance of the state is important under another aspect. Most of the foreign assistance is given on a government to government basis. In many cases the goal of the assistance is to strengthen public institutions. But also in those cases where the aim of assistance is to reach the private sector, the state is the immediate partner for foreign governments and international institutions and the link between donor and target group. The effectiveness of any assistance therefore depends on the functioning of government institutions.

This article looks at the structure of government and relates it to the problem of development of the rural areas. How does a structure which, according to common knowledge is considered to be highly centralized and weak at local level, influence the government's policy of developing the hinterland? This question will be approached by looking at the agricultural sector as the most important area for rural development. The article begins with a description of the existing local structures, that means those below national level¹ and then it looks at the design of agricultural projects under their institutional aspects. In the third chapter an analysis will be made of the interlinkages between the existing structure and project design including some perspectives for future project planning.

2. Description of the local structure

The constitution of 1961 stated that administrative functions were to be decentralized wherever possible. Provisions were made for elected units in the towns and at district level. However, one of the first decisions of the Supreme Revolutionary Council in 1969 was the abolition of the existing local government structure.

A new structure was introduced in August 1972 by Law No. 52. It is based on the principle of democratic centralism and derives its power from the

central government. A hierarchical structure of regions, districts and village levels was introduced. Although some changes were made later, basically the existing structure is based on Law No. 52 of 1972.

There are three different structures under the ministerial level, that of the Ministry of Interior, that of the sectoral ministries and the party structures. Since the last one does not play a major role under the aspects investigated here the article concentrates on the first two.

2.1. The structure of the Ministry of the Interior

2.1.1. In May 1984 the Ministry of the Interior was established in its present form. In addition to its traditional functions of administrative control and maintenance of peace and security within the country the ministry explicitly has the mandate to promote rural development².

Nevertheless, it is still first of all considered to be the police ministry.

2.1.2. On the regional level, central government is represented by the 'Governor'. Till May 1984 he used to be the chairman of the party for the region at the same time. Now these positions are separated and the governor is officially called 'Chairman of the Regional Administration'; — however generally he is still referred to as the Governor. He executes the orders and directives of the Ministry of the Interior and supervises and coordinates government activities in the region. He is directly responsible to the Minister of the Interior and has no direct administrative link to the sectoral ministries, for instance the Ministry of Agriculture.

The governors of all regions are military officers, they are appointed directly by the President.

2.1.3. On the district level the Ministry is represented by the district commissioner. Here also government and party functions were separated in 1984. The Chairman of the District Administration — how he is officially called — comes under the governor and has the same functions for the district.

An important body, however, on the district level is the Local People's Assembly (LPA). They were created by Law No. 60 of 1980 which transferred the main tasks of local administration from the regional to the district level. Depending on the size of the district the LPA consists of 13 or 21 elected members. They again elect a 'Standing Committee' of three or five members plus a chairman, or five members plus a chairman and a vice-chairman in the case of 21 members.

The chairman is commonly called 'Mayor'. He is the highest authority in the district. He and the members of the standing committee who each have a special sectoral responsibility are the 'government' of the district.

The LPA has the power to collect taxes, fees and other contributions. It has the right to incur expenditures and inspects and controls all government activities in the district. The LPA, with the help of an executive officer and an accountant prepares the budget for the district including development projects as well as current expenditures.

Claxton (1983:70-75) gives an overview on development projects in the district budgets in three regions. It shows that in 1982 55% of the funds in the districts in Lower Shabelle were used for development projects — 36% and 38% being the figures for Gedo and North West. As can be seen from table 1, the percentage of development expenditure varies very much from district to district. According to the investigations of the author in the district of Merca, one of the most prosperous in the country, around 40% of the budget of SoSh 9.5 Mio were spent on development projects in 1985. These included the construction of water catchments for SoSh 600.000 and other projects such as a palm project, as well as investments in the local hospital.

2.1.4. On the village level there is a mixed system — traditional elders through heritage system and a village committee consisting of seven persons appointed by the district authorities. The village committee is responsible for security in the village, organises the water supply with the Water Development Agency and also carries out the implementation of government orders and directives at village level.

Table 1: Micro-project expenditures in 3 sample regions – 1982

Regions/Districts	Regular Budget (So. Shs.)							Self-Help (So. Shs.)	
	Budgeted	Actual Income	Actual Expenditure	Project Expenditure	No. Projects	Average Cost	Project Exp. as % of total	Income 1982 plus Surplus 1981	Expenditure
Lower Shabelle	20,308,500	18,120,538	14,702,142	8,205,840	27	303,920	55%	2,190,687	1,699,154
Merca + qoroley	5,000,000	4,390,185	2,338,213	1,622,000	6	270,333	69%	N/A	N/A
Wanle Weyne	5,330,500	5,004,142	4,982,817	2,380,000	5	476,000	47%	633,356	575,769
Barawe*	2,170,000	2,261,800	2,061,608	696,920	6	116,153	33%	419,064	339,923
Algoi*	1,808,000	1,702,045	1,105,323	264,000	4	66,000	23%	448,000	108,859
	6,000,000	4,762,366	4,214,181	3,610,000	6	601,662	85%	690,267	674,603
Gedo	10,762,000	11,035,312	9,668,164	3,557,731	24	148,238	36%	4,443,323	3,331,294
Garbe Hare	906,000	810,585	799,427	-0-	0	-0-	-	249,680	223,237
El Waq	710,000	708,994	677,635	133,999	2	6,699	19%	79,123	80,894
Lugh	2,133,000	2,171,293	2,030,020	655,000	6	109,166	32%	652,505	550,285
Dolow*	716,000	678,955	542,070	48,352	2	24,176	9%	113,522	61,596
Beled Hawa	3,612,000	3,826,052	3,461,125	1,992,066	7	284,580	57%	N/A	N/A
Bardera	2,685,000	2,839,433	2,157,887	728,314	7	104,044	33%	3,348,493	2,415,282
North West	43,351,000	39,055,039	37,212,227	14,141,745	27	523,768	38%		
Hargeisa	25,000,000	20,837,605	22,208,809	8,227,053	5	1,028,380	37%		4,209,900
Berbera	5,220,000	5,420,000	5,260,639	1,221,660	4	305,415	23%	130,307	107,000
Borama	2,726,000	2,731,500	2,300,539	621,931	4	155,482	27%	4,117,590	4,067,115
Gablay	9,675,000	9,779,655	9,477,781	3,962,445	10	396,244	41%		84,000
Zeila	N/A	N/A	N/A	N/A	N/A	N/A	N/A		21,000
Lughaye	730,000	286,279	398,496	108,656	4	27,164	27%		

* Through November 1982
Source: Claxton (1983: 76)

2.2. The structure of the sectoral ministries

Parallel to the Ministry of Interior five sectoral ministries (Agriculture; Livestock, Forestry and Range; Health; Education; Water and Mineral Resources) have their structure at regional and district level. The structure of the Ministry of Agriculture (MoA) may be taken as an example.

2.2.1. MoA has coordinators in all regions (except Mogadishu). In general terms their function is to take care of implementing the ministry's policy in the region. The coordinator has an office in the regional capital and some administrative staff. According to the Director General responsible in MoA, the regional coordinator has especially the following functions:

- to evaluate the quantity and quality of product and report it to the ministry;
- to report to the ministry all obstacles to and problems for agricultural production;
- official distribution and registration of land.

This last function has become more important since agricultural land is becoming a scarce commodity and registration is becoming more and more common. However, the regional coordinator acts only as a channel of communication and as an implementing organ since the decisions on all requests are made in Mogadishu.

In addition to the coordinator, different departments of MoA have their officers at regional level. Depending on the regions this can be a plant protection officer, a production officer or an officer of the land and water department. They all come under the responsibility of their respective departments. The regional coordinator has the coordination function.

2.2.2. At district level is the same set-up. However, district coordinators exist only in those districts where agricultural activities take place. The district coordinator comes under the regional coordinator and has a coordinating function for the other district officers who come under the regional officer of their field.

2.3. Autonomous agencies

In addition to the structure of the ministry itself there are public enterprises with special tasks. They come under the responsibility of the ministry and have a regional structure themselves.

The most important is ONAT (Organizzazione Nazionale Altressi Trattore). The organisation was first established in 1955. Since that time it has performed different types of activities. At present its main activity is tractor hire service for bush clearing, land levelling, ploughing and harrowing for

private farmers as well as for government projects. ONAT has workshops and stores on regional and district level in all agricultural areas.

ONAT is considered a rather weak institution. Its future does not seem to be clear at the moment.³ Also the other autonomous agencies under the ministry do not perform well and are subject to various recommendations.

2.4. Coordinating institutions

The structure of the Ministry of Interior and that of the sectoral ministries are independent of each other. Each gets its instructions from its ministry in Mogadishu. However there are coordinating units at all levels.

2.4.1. The regional development council is headed by the governor. It consists of the first and second assistant to the governor, of the regional commanders of the military, police and security forces, of the regional coordinators of the sector ministries, chairmen of the social organisations, the district commissioners and the chairmen and executive officers of the region.

According to the law the 'Regional Development Council' has a coordinating function for all government institutions at regional level. It has to approve district plans and budgets before transmitting them to central government and coordinates the plans of different districts. It has the role of a mediator between central government and the district level if required.

In practice the role of the 'Regional Development Council' is rather limited. It meets quarterly. In the meantime its functions are carried out by the governor. He coordinates the works of the regional coordinators of the ministries. Most government functions are carried out by the regional coordinators or other officers on request or for the sectoral ministries. That means that horizontal links at regional level are weak. If there is any coordination it is safeguarded by the governor.

2.4.2. At district level there is no formal coordinating institution. However, in fact a certain amount of coordination is guaranteed through the Local People's Assembly.

3. Institutional aspects of project design

3.1. Sectoral versus regional responsibility

The implementing ministries for all major projects in the field of agriculture are the sectoral ministries or their autonomous agencies. Since the sector agriculture is split into three ministries, projects are implemented by the responsible government institution under sub-sectoral aspects. This means that the structure does not favour an integrated approach.

According to the experience of project appraisal missions known to the author it is even difficult to include a livestock component in a project of the Ministry of Agriculture or vice versa.

The result is that there is no major large project in Somalia with a multi-sectoral approach⁴ and only a few with a concept that includes livestock and crop production at the same time.

Were those projects which are financed by official foreign agencies come under the responsibility of the sector ministries, the Ministry of Interior has become more and more the ministry for non-governmental organisations. Non-governmental organisations try to use the structure of that ministry to implement a more target-group oriented and integrated approach. The ministry, on the other hand, sees a chance to get assistance for smaller projects, mainly at district level.

A cooperation between official foreign aid organisations and the Ministry of Interior in the form of projects does not exist so far. However, there is a growing awareness that the involvement of the Ministry of Interior might help to achieve a more participatory approach in rural development.

3.2. Central versus local responsibility

A survey of all agricultural projects in the Ministry of Livestock, Forestry and Range and the Ministry of Agriculture shows that the responsibility for projects lies directly with the ministry and then with the relevant department. Most of the large projects under the Ministry of Agriculture, however, — for instance the North Western Regional Development Project (NWRDP), the Agricultural Extension and Farm Management Training Project (AFMET), or the Bay Region Agricultural Development Project (BRADP) — come directly under the responsibility of the Vice-Minister, or the Permanent Secretary in the Ministry of Agriculture. The same is true for the Ministry of Livestock or the National Range Agency — an autonomous agency under the Ministry of Livestock. The two biggest projects in this field, the Northern Rangeland Development Project (NRDP) and the Central Rangeland Development Project (CRDP), come directly under the General Manager of the NRA who, in the case of CRDP, had also been the project manager till the mid-term review of the project in March 1984. There is no project which comes under the responsibility of the local institutions.

3.3. Integrated versus autonomous projects

All the projects mentioned, as well as almost all other major projects in the agricultural sector, are organized as separate projects with their own administration, own offices and own budgets. This is partly the consequence of the state-farm concept of the seventies, however, also new

projects are set up along the same lines. The offices are almost all in Mogadishu. The following projects may serve as examples: Genale Bulo Mareerta Project; Fanoole Irrigation Project; Mogambo Project; Balad Irrigation Project; Tsetse Survey and Control Project — none of them has the main office in the project area or in the regional capital.⁵ In the case of CRDP the initial study had proposed to have the project management unit in Belet Weyn, one of the regional capitals of the three project regions. However, this plan was already abandoned during the World Bank appraisal. In December 1985 consultants who were asked to evaluate the first phase of CRDP proposed to shift the headquarters to the field again.

As more or less independent projects they tend to weaken the ministries. Salaries in the public sector in Somalia have not been increased significantly since the early seventies. They are so low that it is impossible for a family to live on the official salary of a civil servant. This also applies to the minister. Salaries in the autonomous projects, however, are much higher — either because of the autonomous status, or because of donor contributions. Therefore, the best people, or those with the best connections, try to leave the ministries and find jobs in projects. This tendency can be seen in all ministries, but especially in the Ministry of Agriculture.

3.4. *Cooperation with local structures*

At regional or district level, projects work partly independently of the structures of the sector ministries, and partly substitution for them. Only a few try to strengthen those structures. AFMET for instance took over the extension service from the Ministry of Agriculture in 1981. Formally there is still a Department of Production and Extension. However, it has nothing to do with extension any more. AFMET set up a 'National Extension Service' (NES) which substituted the existing — at least formally existing — service. This service has no formal links with the agricultural coordinators at different levels. The Bay Region Agricultural Development Project (BRADP) took over all functions of the Ministry of Agriculture for the Region except the Extension Service which remains the task of AFMET, under the overall responsibility of BRADP. In the North Western Region the NWRADP has taken over all functions of MOA including the extension service. AFMET does not work in this region. These large projects may serve as examples. Others could be sighted. The structure is always similar. There is no project in the field of agriculture which has the goal of strengthening regional, or district functions of sector ministries. To the best knowledge of the author, no expatriate expert has a regional coordinator as his counterpart, or any other person from the government structure at local level. Nor are there any other formal links. Cooperation with the local government, as well as with the structure of the sector ministries, is purely on an unofficial basis. Very often neither

the regional coordinator, nor the governor, nor the Local People's Assembly are informed about the project in the implementation phase, nor have they been involved in the planning.

4. **Conclusions, perspectives**

The description of the existing government structures under the national level shows that there is an elaborate network of institutions, especially at regional and district level. Basically, the system is vertically structured under different ministries with central decision-making at the top, using the structure for implementing these decisions. Horizontal links between institutions of the different ministries are weak at all levels. It seems that the coordinating bodies have no major importance in practice. However, at regional level the governor has a very strong position. Despite the regional coordinators of the sector ministries, he has in fact the overall responsibility for the region. He could, therefore, play a much stronger role in the development process.

The Local People's Assembly plays a special role within the structure of the local government at district level. It is the only elected body. As an institution close to the people and its problems, it could develop into the nucleus of local self-administration and might open up possibilities for a greater participation in the solution of problems by the people themselves.

However, it seems that no advantage is taken of these chances. Responsibility for all large projects is with the sector ministries without any involvement of the structure of the Ministry of Interior. The structure of the sector ministries themselves, however, is very limited. Regional and district coordinators have a basically liaison function, but are not involved in planning, or in implementation. This means that those ministries which are in charge of the large development projects do not offer a strong structure for decentralized target-group oriented planning or implementation. They plan and implement projects from a bureaucratic position in Mogadishu.

Most donor organisations verbally favour decentralisation and a target-group oriented approach. However, in practice almost all foreign financed projects are Mogadishu based, come directly under the responsible sector ministry and have some kind of autonomous status. Contrary to their verbally proclaimed approach, donors thereby strengthen a centralised system instead of slowly trying to improve local structures. They strengthen the sector ministries and a sectoral approach to development. Finally, by setting up parallel structures at national and local level, they weaken the existing structures instead of strengthening them.

Chances of promoting a decentralised participatory development process may be increased through an involvement of the structures of the Ministry of Interior in the project design. Often considered to be a police ministry, it is now trying more and more to focus on rural development. The importance of the ministry in the development process has been increasing in the last few years. The organisation of a seminar on rural development in August 85 underlined the intention of the ministry. Here might be a chance to continue the tradition of the self-help projects of the seventies by concentrating on small and medium-sized projects, which are planned and implemented mainly at district level.

Also in the Ministry of Agriculture some change has taken place. There seems to be growing awareness that the 'classical' Mogadishu based autonomous project with a sub-sectoral approach will not create a broad self-sustained growth in the rural areas. Several smaller projects which are under preparation, or under discussion, favour a decentralised and integrated approach, and work first of all with local structures trying to strengthen them.⁶

However, at the moment there are still two basically different structures. On the one hand the Ministry of Interior, partly with the assistance of NGOs uses its regional and district structure to get involved in small and medium-sized projects with local participation in planning and implementation. On the other hand, the sectoral ministries are entrusted with the large externally financed projects implemented from Mogadishu without local participation. Between these two areas almost no coordination takes place. This means that there is no link between small projects on the basis and large Mogadishu based sectoral projects.

Thus, the essence of Claxton's study (1983:1,3 and 76) is still relevant. There is a tradition of self-help projects in Somalia and a chance for decentralised participatory development. Unfortunately, these chances are constrained by basically vertically structured ministries, a lack of coordination between the Ministry of Interior and the sector ministries and over-emphasis on a sectoral approach. However, since 1982 there has been some change. The strengthening of the district level, the stronger involvement of the Ministry of Interior and the growing awareness of integrated, decentralised, rural development are steps which might lead to a shift from a purely sector, or sub-sector orientated and centralised development concept to a decentralised and participatory approach.

Footnotes

- ¹ In Somalia the term 'local' or 'local government' is used for the whole structure and the ministries, i. e. as a generic term for regional, district and village structures. The terms 'local' and 'local government' are used with this meaning in this article.
- ² For a detailed description of the then Ministry of Local Government see: Ann E. Claxton (1983).
- ³ For a detailed discussion cf. World Bank (1986) where privatisation is mentioned as the best solution.
- ⁴ Some might consider the North-Western Region Development Project, or the Bay Region Agricultural Development Project as multi-sector projects. However, they are basically agricultural projects.
- ⁵ Some of them have only a liaison office in Mogadishu and the project office formally in the field. In all cases, however, in practice the main office is in Mogadishu.
- ⁶ A project which promotes smallholder rainfall and irrigated agriculture in the Lower Shabelle Region is scheduled to start in the first half of 1986. Three other projects for Togdhere, Middle Juba and Middle Shabelle are under preparation. All projects will be implemented by GTZ.

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Thomas Labahn:

The development of the cultivated areas of the Shabelle River and the relationship between smallholders and state

1. Introduction

Economic growth through the mobilization of all population groups, including the poorer ones has, since 1973, become a political postulate for countries of the Third World that has met with world-wide approval. Here, particular attention should be paid to the rural poverty groups. In the last analysis, discussions always focus on the question of whether the integration of this extensive group comprising 50 - 80% of the total population in nearly all developing countries will be possible, or whether complete marginalization will be their ultimate destiny.

However, assessments and concepts have revealed that modernization strategies and agricultural development programmes in Third World countries often diverge from the political structures and social frames of reference which determine the life-style in rural regions. The historical relativity of rural existence and the survival strategies which have subsequently developed from it remain largely unobserved in the course of such considerations. Instead, low hectare yields, inadequate cultivation methods, uncertain harvests and an inimical attitude on behalf of most of the farming population towards innovation are regarded as the primary problems.

Thus 'agriculture' is, as a rule, assumed by development plans to be a coherent unity, ignoring the fact that very specific interests exist in a whole variety of different forms. The representation of the village as a uniform community in a permanent state of equilibrium is still very widespread.

A romanticized picture is usually evoked by means of the label 'traditional', depicting a self-sufficient community which continually reproduces itself according to the same basic pattern. But usually the real situation is much more complex; clear socio-economic differentiations can be found nearly everywhere. This hypothetical picture does not reflect the forces of development inherent in the individual communities and in the final instance handicaps or even prevents any prospects which an externally initiated development process may have for success.

Mohammed Ali Isse cultivates his total of 3.6 hectares of fields as he has learned from his father. He has modified a few of the methods. The yields secure the survival of both himself and his family, even providing

him with the chance to market parts of the harvest. He could be taken as the model of a small-scale farmer in Somalia. He has been promised, at least verbally, assistance from the state and from the international development institutions.

He also has the sympathy of this article. Even if much of what occupies and affects both (i.e. Mohammed and all the other small-scale farmers) has been considered in this article, it would be presumptuous to claim to be able to represent and analyze the complex structures existing in rural Somalia.

It is gratifying that the number of detailed studies has recently increased; what is now missing is a realization of the ideas they present as solutions. It is time to do away with the misconception that provision of biological-technical goods (seeds, means of plant protection and fertilizers) or mechanical-technical goods (tractors, machinery) is a sufficient pre-requisite to get a process of growth underway in rural regions of the Third World. This mechanistic concept has proved only minimally successful in many countries, as 'social development is and remains the central issue. This succeeds when the people themselves acquire confidence in their abilities and self-esteem. If we want to help tap these activities, then we must know the sources from which the way of life, value system and cultural identity of these people emanate.' (Weizsäcker 1986:44)

2. Agriculture in Somalia

20% of the Somali population earn their livelihood through agricultural production, the majority of them producing at a subsistence level, as is common belief. The validity of this assumption will be checked later on.

Production, generally as rainfed farming, takes place in eleven of the sixteen regions of the country. The Middle and Lower Shabelle Regions as well as the Lower Juba Region have a special status within this group as they are the only zones where irrigated agriculture is practised and as they are classified as 'typical surplus areas'. Whereas the yields of most regions were never more than sufficient to satisfy the limited local markets, the river regions, especially those of the Shabelle River, soon gained another function.

In this region an extension of agricultural production occurred in the middle of the last century. It not only sufficed to meet local demands, but it also implied connections with and involvement in the network of world trade. Because of this, monetary penetration of the local economy quickly took place in contrast to the other rural areas of Somalia. Therefore, the transformation process along this 300 km long section of the river over the last 130 years has been different to events in other areas of

Somalia. Hence, the following sketchy notes refer mainly to this region. The region is an area where the landscape is flat and monotonous. This, coupled with an almost total absence of stones and rocks, is very favourable for cultivation. The most serious constraints are the droughts which occur every three to five years with varying degrees of severity.

2.1. History of agricultural production along the Shabelle River

Only vague indications exist on the use of the agricultural resources along the Shabelle River, for the time prior to the 19th century. However, it can be assumed that the settlements of this area always fulfilled a supplier function for the coastal towns in respect of agricultural produce. They also played an important role in providing supplies to caravans which crossed this region in considerable numbers in order to transship their goods to the nearby towns on the coast.

The production of agricultural goods must have been lucrative. It is said that already at the beginning of the last century nomads had given up their pastoral way of living and settled near Merca. The fact that this was not an arbitrary, but a systematic process, can be proved by the patterns of land use in that respective region.

In many other cases tenant-like relations (collective), not individual existed between nomadic and sedentary groups. This social constellation, which implied the lack of an independent farming stratum, can be held responsible for the fact that the potential of the Shabelle Valley was not used more extensively.

Various factors were responsible for the structural changes which have occurred since the middle of the last century, inducing a short blossoming of the river region. The increased demand for agricultural produce on the world market boosted the production figures of the Shabelle River. The towns along the Benadir coast (Mogadishu, Merca, Braawa) had always been important places of transshipment for ivory, aromatic gums and myrrh, but the importance of these goods was then replaced by the export of grain. Christopher (1844: 87, 97) noted that the Benadir region had become the 'grain coast for supply of south Arabia'. Moreover, the cultivation of orchella weed, ideal for colouring silks, began to be a worthwhile business. More than 100 tons were exported yearly to Europe. Mention must also be made of the increased local demand for cotton caused by the fact that the weaving mills of the coastal towns had to look for cheaper inputs than the imported Indian cotton in order to compete on the world market.

This overall inclusion into a capitalistic world system inevitably led to a social transformation within the areas of production. Indeed, the tenant-like relation continued but this alone would not have enabled the requi-

red degree of expansion to take place. The fact that the expansion could take place is explained by Cassanelli (1982: 168) as follows: 'The production of items like durra, sesame, orchella, and cotton in quantities sufficient to meet the needs of the local market and, to an increasing extent, those of the foreign, was made possible by the importation into the Benadir of a new supply of agricultural labor: black slaves from the Swahili coast to the south'.

The consequences are described by Cassanelli (1982: 170): 'Slaveholders could turn to commercial agriculture without threatening subsistence production and without disrupting the social fabric that bound patron clans to their client-cultivators'.

With the introduction of wage employment another essential change occurred. Even though different statements can be found in the literature, it seems evident, at least for the most part, that the land which always used to belong to the community as a whole was from then on owned by individuals. Furthermore, land use rights were transferred automatically to the heirs upon the death of the owner. The fact that the Community as a whole determined who should receive new plots limited the opportunities for individual expansion although land was available in abundance. Generally, land possession rarely exceeded 40 ha (cf. Cassanelli 1982: 173). It is however, especially those farmers with relatively large amounts of land, upon which Cassanelli (1982: 180) reflects: 'The nineteenth-century growth of plantation agriculture can thus be seen as an early manifestation of embryonic capitalist enterprise in Somalia, however limited in scale and duration'.

Several factors were responsible for the blossoming lasting only a short period of time. The main setback was induced by the efforts of the colonial powers to abolish slave trade. The ultimate enforcement of this claim deprived many farmers in the region of their work force. 'While subsistence farming continued among the older communities of client-cultivators and, increasingly, within newly founded religious settlements, large-scale commercial production declined almost everywhere in the Benadir'. (Cassanelli 1982: 193) This statement is only partly correct, as not all farms had to suffer a shortage of labour. That group which had held on to old tenant relationships was able to withstand the new situation much better. However, an unlimited base for growth was not even available to the better-off farmers as this coincided with the establishment of the Italian colonial power. Thus, the formation of a local capitalist class of agriculturalists was disrupted. Italian farmers followed in their footsteps, particularly after 1920.

It seems unnecessary to reflect on the effects of the colonial period on agriculture in detail. Because the colonial settlers were exclusively inter-

ested in areas with irrigation facilities, only villagers in the direct vicinity of the Shabelle River (and the Juba River) lost their land. However, traditional agricultural production also declined in the other villages again because during the 1920s and 1930s, most of their able-bodied men and women had 'to do forced labour in the plantations, while others were ordered into the army' (Haakonsen 1983: 71). However, in spite of all the repressions against the rural population, the colonial state remained solely an administrative body without sufficient means of intervention at its disposal to break the traditional structures once and for all and thereby make the people subordinate in a modified manner within the colonial system.

New laws were passed (e. g. law no. 82 of June 8th, 1911, which stated that concessions within the range of 250 - 2000 ha could be granted by the colonial administration; with law no. 226 of June 24th 1929, the maximum size of these concessions was increased to 10,000 ha), but these were still a long way from automatically creating new conditions. Only a small number of really large plantations were established, e. g. in Jowhar, where sugar cane was planted in order to supply the nearby plant, the largest enterprise in Somalia at that time. Furthermore, considerable areas were cultivated in the vicinity of villages like Golweyn, Genale, Shalambood, and Qorioley, as well as downstream of the Juba River. Nevertheless, taken altogether, neither the foreign settlers nor the concession companies annexed so much land that small-scale farmers had to be expelled from their plots. The majority of the population in this area continued to be independent small-scale farmers without being transformed into wage employees. To a certain degree this was influenced by the fact that, unlike the situation in West Africa, large regions were not made mono-cultural planted with just one cash crop and entirely dependent on foreign markets. In Somalia, the then founded banana plantations remained modern enclaves of production within a traditionally engraved setting.

2.2. *Agricultural development after independence*

If the imuluses of the colonial state were on the whole rather insignificant for agriculture, one has to ask: What development has taken place since independence? According to the literature, the state has been regarded for some time as an agency fostering modernization and development. This approach has been proven wrong by many case studies. Elwert (1983: 19) comes to the conclusion that 'the bureaucratic apparatus (...) cannot, or at least not solely, be interpreted as a service-oriented public institution, but that it has to be regarded as a well-constituted pressure group with a specific mode of appropriation'. Who belongs to the pool of resources from whom the state or the 'Staats-

kasse' (Eisenhaus) appropriates? Several case studies have demonstrated that it is specifically the rural areas, where the majority of the population generally lives in developing countries, which are used as this potential. Thus it comes as no surprise that farmers, especially smallholders, react to state institutions with distrust. For them the state exists primarily as an external pressure force which manifests itself by appropriating resources (taxes, land, etc.).

Before we turn our attention to the actual situation in Somalia today, it seems appropriate to make a few comments on the structure of agriculture in general, and to elucidate the situation of smallholders in particular.

It seems to be a common fallacy of surveys to classify people into exclusive categories; they are regarded as either 'nomads' or 'sedentary farmers'. This distinction reflects the sources of income for livelihood. However, it has become clear that in reality, things are quite different and much more complex. A striking example is a study of the North West Region which concludes that less than 10% of the regional population relies solely on nomadic livestock breeding for its livelihood, while more than 2/3 of those who are engaged in this activity pursue various other activities as well (Haakonsen 1983: 54). It can be assumed that a similar situation exists elsewhere in the country. If so, it would have a direct influence on poverty studies undertaken so far, as these generally take only the main source of income into consideration. Thus, it has been stated that southern farmers are the most deprived sector of Somali society. However, as Haakonsen (1983: 7) also mentions, 'there is some reason to question the data base and reliability of the figures'.

It is clear that the smallholders do not constitute a wealthy segment of Somali society, but it is doubtful that they live below the poverty line. At a later point, we will discuss their income generating strategies, but at this moment we should describe their habitat. Reference can be made here to Haakonsen (1983: 25) who describes huts, which may be either the round 'mundul' or the rectangular 'cariish' types as being, 'for the most part poorly furnished. In every compound, one will find at least a little wooden table in addition to several stools . . . which are locally made and covered with hide'. Some households do have the traditional types of beds, but many 'are now equipped with modern iron beds with mattresses, though they are usually reserved for adults. Children often sleep on straw mats on the floor.

The only other types of furniture found in the average huts are crude shelves, wooden storage boxes or boxes of other materials, though wealthier families may have cupboards or chests of drawers. Clothes are otherwise hung on hooks on the walls or laid over ropes . . .

Sophisticated furniture such as armchairs or sofas are found only in the houses of a very small and exclusive group of well-to-do individuals'.

If, however, one considers development in recent years, obvious changes can be identified. Most conspicuous is that in quite a number of cases the materials used for house construction are not longer wattle and daub, but bricks, and the old thatched roofs have given way to corrugated iron. Haakonsen (1983: 65) has also observed that 'the villagers have become dependent on a number of household necessities which they cannot produce themselves'. The fairly obvious conclusion is that 'they are very much part of the cash-economy'. (Haakonsen 1983: 65) This is apparently contradictory to the assumption that the majority of smallholders live on a subsistence level. However, the villages in the Lower Shabelle region, particularly the Afgoy and Genale areas, have obviously become part of the cash-economy. One main reason for this is the improvement of the road network, which has reduced the isolation of these villages. Equally important is the fast growth of the nearby market town of Mogadishu. Research carried out by Jaffee (cf. 1984: VI) has shown that no less than 30 tons of vegetables and fruit are marketed there daily. An additional 7 tons are sent to Belet Weyn and Hargeysa.

2.2.1. *Smallholders' orientation*

The data base for the 1960s is rather meagre and thus gives little chance for any detailed considerations on the development of agriculture in Somalia. The development plans of that era indicate that priority was given — as was usually the case in that decade — to investment in infrastructure and industries. However, the agricultural sector also experienced 'significant growth . . . by a considerable expansion of cultivated area . . . when the recruitment of land labourers from the villages for work on the Italian banana plantations was stopped and this workforce became available for small-scale farming'. (Munzinger et al. 1984: 33/34) The process was also induced by the steady population growth in the villages. The economic base of both of these groups was one of subsistence, coupled with the production of goods.

Research in various countries has indicated that 'the maintenance of subsistence production which seems to be irrational under normal conditions . . . is justified by the relationship between yield and price during a crisis'. (Elwert 1982: 62) In Somalia 'traditional producers operate a farming system which ensures family survival under all but the most extreme conditions. Sufficient food is ensured through planting low yielding but drought resistant varieties of crops'. (Mohamed Said Samatar et al. 1984/16) This survival can be guaranteed by cropping an area which averages c. 3 ha, a figure that has been ascertained by several locally restricted studies and through personal interviews. Moham-

med Said Samatar et al. (1984: 15) mention a sample of 123 farmers, of whom 50% possessed fields of 2-6 ha each. According to Munzinger et al. (cf. 1984:42) the average size is 2.5 ha. In a study by the Ministry of National Planning (1983: 7), it is stated that 'in the northern and less productive part, holdings are generally large, and a possession of about ten hectares could be considered normal. In the southern part holdings are generally smaller, with most farms not exceeding 2 - 3 ha'. Schückler/Mahamoud M. Mahamoud (1984: 6, 9) also list different sizes for holdings depending on whether they are situated in irrigation or rainfed areas. For the former the average size is given as 3.7 ha, whereas the latter run up to 5.5 ha, usually spilt into several plots.¹ In this respect, Mohamed Said Samatar et al. (1984: 16) have observed four plots, all scattered around the village.

These overall figures of land owned might be misleading as one must take into account the fact that not all the land is cultivated during each season. Margins of 20 - 40% laying fallow seem to be the average. However, a period of just one season is not sufficient for the soils to ameliorate, especially as no fertilizers are used. Not even manure from the crop farmers' own cattle, if they possess any, is used in the fields.

According to various surveys, the farmer can rely on 6 to 8 family members for the work to be done, though even this number is too small. Thus, a major constraint to agricultural production is the high amount of labour required, which considerably limits families' opportunities to cultivate exclusively with their own labour. In terms of dry-land farming for example, the FAO estimates 0.8 ha per household member to be the maximum area that can be adequately cultivated.

As described by Schückler/Mahamoud M. Mahamoud (cf. 1984) and Haakonsen (cf. 1983), the continuously repeated sequence of field work is as follows: The plots are cultivated twice a year, in the Gu and Der seasons. A third harvest of sesame is sometimes possible in Xagaa. 'Before the rains start, the land is tilled for the most part with the traditional short-handled hoe (yambo), a very strenuous and time-consuming practice'. (Haakonsen 1983: 36) The hiring of tractors for this work has become more and more common due to their greater availability during the last years. 'The next step in land preparation is invariably done by hand, namely the preparation of the 'moos', an operation conducted exclusively by men working in pairs. The work consists of flattening the tilled soil and building small earth ridges around the square 'moos' in order to keep in as much water as possible when it rains. A special wooden implement called 'kewaawa' is used'. (Haakonsen 1983: 36/37) Generally sowing is then done entirely by family members. On the other hand as herbicides are not used, the family members alone do not suffice for the weeding, especially as it requires much work within a limited period. For this work

the smallholder engages labourers on a daily basis. As harvesting lasts longer than the other chores, it is usually a family job, only rarely including hired workers. In all, Schückler/Mahamoud M. Mahamoud (1984: 16) estimate that 'the farm family works 72 man-days . . . per season per hectare . . .

Out of these 72 man-days, about 15 are hired, on the average'. As the wage level is fairly high, Munzinger et al. (1984: 57) come to the following conclusion: 'Those farmers who can cultivate their plots only with family labour are far better off and earn a higher income per ha'.

At present, the high wage level for agricultural labour is correlated to the expansion of banana plantations since 1980, thus requiring larger numbers of hired workers. Another main reason for the wage level seems to be the high prices paid to producers which allow them to pay higher wages. Haakonsen (1983: 27) stresses another aspect of this phenomenon when mentioning that these wages 'allow for reasonably adequate incomes, even in those households which cannot generate enough agricultural surplus to be able to sell it for cash, due to limited land holdings'.

But let us come back to the individual smallholder. Since the target of production — as mentioned above — is not a short-term income rise but rather a minimization of risks in the medium term, it is not surprising that the importance of purchased inputs is rather small, i. e. monetary expenditure is low because the minimization of risk implies production without debt.

Application of pesticides, herbicides and fertilizers is not practiced, quite apart from the fact that it is seldom possible to obtain them. Hence, hired tractor services, handtools and hired labour are the only items of cash expenditure. This attitude leaves the smallholder outside a sphere which is dominated by terms like credit, amortization or investment. Thus, the credit lines of the Somali Development Bank and the Commercial and Savings Bank are only taken up by medium-scale farmers and plantations (cf. Ministry of Agriculture 1984: 26/27).

For the smallholder it is the extended family or the solvent neighbour who will be contacted if cash is needed. What once again might look preposterous does not lack a basic logic. If the smallholder buys inputs on credit, the uncertainties for him are magnified as he has no financial security. A single harvest failure could be the preliminary step towards complete loss of land.

This general concept leads to a persistent split into 'two spheres, namely subsistence and marketing, both of which serve different purposes with regard to consumption or utilization of income'. (Buntzel 1979: 332) Cropping patterns are determined accordingly, resulting in the fact that

decisions concerning subsistence production predetermine the form and content of the lower ranking production of commodities.

In spite of this traditionally fixed system the farmers are able to produce commodities for the market most of the time. Mohammed Ibrahim Presser et al. (1984: 11, 13) explain: 'People familiar with Somali grain markets report 'somali farm families market about one fourth of their grain production', and continue 'but at present, 40 percent appears to be a reasonable estimate of the portion marketed'. The latter figure is doubted by Brunken/ Haupt (personal communication), but they regard a 20% marketed share as realistic for the conditions in the Juba Valley.

A notion in a survey of the Ministry of National Planning (1983: 29) is similar: 'The farmers produce considerable marketable surpluses, especially of sesame, but also of other crops'. An identical conclusion is drawn by Schückler/Mahamoud M. Mahamoud (1984: 12) providing an answer to the question posed initially on how the smallholders gain the necessary cash: 'It can be assumed that farmers . . . cover their cash needs largely out of crop sales'.

The above-mentioned production and behavior patterns, which had proven themselves over generations, have in the meanwhile been consolidated into a socio-cultural norm and value system. This system undermines those theories which assume that the partially commercialized family enterprise can automatically be transformed into an enterprise subjected to market conditions (and concomitant dynamic production technologies).

In the above-mentioned region in Somalia these facts have until very recently been backed up at a macro level by the fact that there appeared to be no concentration of land ownership and that no dynamic property markets had developed.

In this context the study of the Ministry of National Planning (1983: 8) concludes that, 'As a whole, there were no indications that land scarcity constitutes a major problem for any of the farmers interviewed'.

2.2.2. *Statal action and traditionalism*

Structural changes have occurred since the military government began to influence the countryside as a result of changed interpretations of the role of the state. The partial nationalization of the banana plantations was one consequence, but the most striking factor was the establishment of state farms. These were to meet the requirements for bridging the slowly widening gap between production and consumption in basic foodstuffs. However, the results were (and remain) unconvincing. "Despite the use of modern capital inputs (mainly mechanization) in the coo-

peratives and state farms, yields and production have been disappointing. . . . according to Ministry of Agriculture estimates, yields of the cooperatives and state farms are far below the national average". (Mohamed Said Samatar et al. 1984: 24)

In the context of strengthening bureaucratic institutions, the setting up of a national input and marketing organization soon took place. According to low no. 51 of July 22, 1971 "the purchase . . . sale and distribution of maize and sorghum by private persons for commercial purposes" was forbidden. Each producer was only 'authorized to store for domestic use up to 100 kg of maize or sorghum per season for each member of his family'. Marketing and distribution were undertaken from then onwards by the Agricultural Development Corporation (ADC). However, this did not prosper into a 'smallholder focussed marketing organization'. More likely, it regarded itself as a 'grain procurement agency and seller of imported grain in urban areas'. (Mohamud Ibrahim Asser et al. 1984: 18) Part of its policy was to keep the price level in the towns low by fixing low producer prices. A study conducted in the second half of the seventies states that „the average cost of production of sorghum on six farms in the Bay region was 85 - 92 SoSh per quintal, while the official producer price at the time was 75 Sh/q'. (Mohamud Ibrahim Asser et al. 1984: 45). The fact that ADC-prices must have been discouraging for the small-scale farmers can be seen clearly in Haakonsen's (1983: 52) findings of 1982 which are reported in table 1.

Table 1: **Agricultural wholesale prices, 1982 (SoSh/q)**

Product	ADC-prices	open market
maize, 1. quality	180	420
maize, 2. quality	180	360
sorghum	110	310
sesame	260	1100

Source: Haakonsen (1983: 52)

Understandably in such a situation, the smallholders reintroduced the split between subsistence and market oriented production and reduced their efforts and work volume to a level which simply guaranteed subsistence. It is difficult to prove this hypothesis, but the fact that the primary commodity share of the production was omitted in the seventies can be seen by the data in table 2. With regard to the data, consideration has to be taken of the fact that the production figures at the end of the decade have been achieved by a greater amount of producers on an enlarged cultivated area.

Table 2: **Production of sorghum, maize and sesame, 1970 - 1980**
(1000 metric tons)

	sorghum	maize	sesame
1970	158.1	122.1	43.4
1971	128.7	99.4	35.3
1972	149.1	114.9	41.0
1973	128.4	98.9	35.4
1974	125.7	96.8	34.7
1975	134.7	103.8	37.3
1976	139.9	107.6	38.8
1977	145.1	111.3	40.6
1978	141.1	107.7	40.0
1979	140.0	108.2	40.6
1980	140.0	110.0	38.4

Source: Agricultural Sector Task Forces (1985)

Nevertheless, the smallholders did not merely react by halting production and withdrawing from the market. Additional income could be gained in several ways. Instead of cultivating non-profitable goods such as maize and sorghum, vegetables and fruits were planted. This was more lucrative as the marketing did not fall under the auspices of the ADC. Development such as this could be observed especially in the area along the Shabelle River where good transport facilities existed and where Mogadishu served as the main market. Producers could normally obtain 40-60% of the price paid by the final consumer (cf. Jaffee 1984: 32). However, opportunities did exist to obtain the cash in other ways. Munzinger et al. (cf. 1984: 53) mention that farmers could allow nomads to graze their livestock on the crop residues; a sum of up to 4000 SoSh per hectare could be obtained. Cash was, however also acquired from side-activities such as artisanal work or agricultural labour for others. This aspect, as well as the rather high wage level for such work has been mentioned previously. Some reasons have already been listed. One other should be added now. One can assume that the work on the farmers' own plots does not take up more than 60-70% of the days of a year. As the work schedule of smallholders in a certain area are most likely to be identical, one would imagine that there would be a surplus of labour offered at certain times, thus resulting in a rather low wage level. However, as we have seen, the opposite is the case. As this is not caused by any agricultural trade union, a different explanation must be sought. It seems that as their own living is guaranteed by their own production, smallholders can negotiate from a position of strength. If there is no guarantee of adequate payment, farmers are not willing to work elsewhere. This attitude may also have led to a steady rise in the wage level.

Finally, another argument might be considered for the previous evidence that, generally, sufficient opportunities exist for the smallholders and their families to maintain a livelihood above the poverty line. If the differences in real income between rural and urban areas are sufficiently large, there is always a migration towards the towns. This situation also holds true for Somalia. However, an unproportionally large share of the new town dwellers originates from the nomadic sector; the number of former smallholders does not appear to be large. Migration to the Arabian peninsula takes place along similar lines. In this respect Munzinger et al. (1984: 67) state: 'In area A (Lower Shabelle, T. L.) it was possible to determine that so far relatively few men work as transient labourers'. The underlying cause is illustrated by the following quote, which the author received several times as the answer to the question of whether farmers were interested in working in Saudi Arabia: 'Only a poor man goes Saudi.' This may be somewhat exaggerated though, it can be assumed that it reflects a certain attitude and tendency amongst smallholders.

The high degree to which small-scale farmers react to market conditions has been apparent since 1982. After the abolishment of the enforced sale of produce to ADC, free marketing became possible and annual yields have increased considerably (cf. table 3), once again evidence for the market orientation of smallholders.

Table 3: **Production of sorghum, maize and sesame, 1981 - 1985**
(1000 metric tons)

	sorghum	maize	sesame
1981	222.0	142.0	53.0
1982	235.0	150.0	57.0
1983	120.0	235.0	60.0
1984	221.2	270.0	46.0
1985*	260.0	280.0	60.0

* The figures for 1985 are estimations.

Source: Agricultural Sector Task Forces (1985)

2.2.3 How the state gains influence

What was represented in the previous chapter as being the result of unbiased development could, however, be interpreted in a different light. The state is primarily characterized by its bureaucratic nature in Somalia. The statal structures have in the meanwhile reached the far corners of the country, though the physical range of the statal apparatus is by no means in direct proportion to its effect and efficiency.

Once again, one has to ask where the main resources for such a huge bureaucracy come from, as the statal apparatus does not possess a mate-

rial base of its own. Statal appropriation has been already been mentioned. Nevertheless, it should be stated here that the income of the state need not necessarily be interpreted as deriving from the exploitation of certain groups or regions. Assuming that a proportional redistribution exists, no reason for complaint exists. However, exploiting meagre resources at a time when the bureaucracy is not willing or able to fulfill its tasks whether the obstacles be weaknesses in planning, lack of management capacities or simply administrative bottlenecks, is always a sensitive matter.

It would be an exaggeration to regard agricultural production as the sole entity financing the non-productive bureaucracy in Somalia. There are far more important sources of income. Of significance for the local administrative bodies are however those taxes and fees imposed by law no. 52 of 1972:

1. farm tax (per ha);
2. land tax (per m²);
3. fees for building permits;
4. house taxes with different rates for towns and villages and for stone and wattle;
5. tax for livestock on the hoof at the point of sale;
6. tax for the sale of wood, charcoal and milk.

As these financial obligations are moderate, they appear to be justified and consequently offer little opportunity for exploitation. In order to increase the rate of exploitation, the state was interested in dominating the whole marketing process, which it did through the ADC.³

Law no. 73 of October 1975 might serve as another case for the extension of the statal role to overall regulation. This law declares the state as the sole owner of all land, with the claim that individual property rights have to be registered by the community or the Ministry of Agriculture. Nothing seems more natural: it creates the basis for correct levying of taxes, cultivated areas can be ascertained at regional or nationwide levels, and a chance to make central crop predictions is provided. All in all, the law provides better chances to fulfill the function of the state in a meaningful manner. It must, however, be stated that 'up to now only a small part of the cultivated land has been registered and concessioned. While a higher percentage of irrigated land is registered, the number of registrations in the rainfed areas is rather low. The low registration rate is due to the fact that farmers try to avoid land taxation. Normally, 10 SoSh have to be paid per annum for one hectare of irrigated and 5 SoSh for one hectare of rainfed land'. (Munzinger et al. 1984: 41). The aforementioned motives were also stated by various smallholders with whom the

author held interviews. Another reason is given by Mohamud Ibrahim Asser et al. (1984: 137): 'One obstacle they are avoiding is the provision that the Ministry of Agriculture never issues a leasing certificate unless the authority concerned (the district representative of the Ministry of Agriculture, or the District Police Department and the District Commissioner) proves that the land in question belongs to nobody else. This proof imposes time and money costs on the prospective lessor'.

Thus, it is not astonishing that Mohamud Ibrahim Asser et al. (1984: 136) only list the following figures for 1984, nine years after the law was imposed:

irrigated land	99,156 ha
rainfed land	39,896 ha

A regional breakdown reveals the following structure:

Table 4: Registrations of land

Region	irrigated land	rainfed land	total
North West	4,771	18,153	22,924
Togdher	508	14,007	14,515
Sanag	116	1,183	1,299
Hiraan	3,792	36	3,828
Middle Shabelle	19,277	1,002	20,279
Lower Shabelle	58,278	1,038	59,316
Gedo	3,808	—	3,808
Lower Juba	1,730	329	2,059
Middle Juba	6,878	4,148	11,026
Bay	n.a.	n.a.	n.a.
Bakol	n.a.	n.a.	n.a.

Source: Mohamud Ibrahim Asser (1984: 138)

What is demonstrated by this example? On the one hand it shows clearly that the state formally claims more and more rights, but on the other hand it does not make use of its ability to act as the sole legitimate authority for land and water rights. However, a change may occur fairly soon. Recent examples verify the fact, that former and present state officials, as well as a growing number of businessmen, have started to invest in agriculture following the release of prices and that 'sizeable tracts of land' (Jaffee) have been registered in their names. Munzinger et al. (1984: 43) elucidate this context: 'In both project areas (both are small villages located near the Shabelle, T. L.) the number of absentee landlords has increased considerably during recent years. . . . Many of those landlords are traders in Qorioley who invest their profits to a large extent in farm-land'.⁴

As there is only a restricted area of attractive soils, i. e. areas with irrigation facilities and good transport connections, the run for land will lead to a situation in which those smallholders who did not register their plots in time will lose the land. The fact that a 'lack of knowledge about the law or their inability to understand it' exists in the case of the smallholders will be irrelevant as stated by Mohamed Said Samatar et al (1984: 25). In all probability, statal institutions will not favour small-scale farmers in case of conflict and confrontation. Hence, a situation might evolve in Somalia which is widely known to exist in other developing countries and which is characterized by a steadily growing group of landless, marginalized persons.

The rural areas are being covered by administrative networks more and more. Yet the state is not the Moloch that many presentations hold it to be, at least with respect to industrialized countries, as its intrinsic nature is still too ambiguous. The new political structures, including the ruling party with all its sections, nonetheless stabilize their given control by means of a universal network of influence and information. The whole system secures itself by a supporting layer of state officials. In this respect, it was Aronson who expanded on an analysis of the socially relevant groups in the rural areas of Somalia by the 'agents of the state' as early as the end of the seventies.

2.2.4 *Smallholders and state*

As mentioned somewhere else, within the scope of the evolution of the state, the monopoly of power was increasingly concentrated within the hands of the state apparatus. A whole system of subtle means of intervention came into being alongside open repression which the colonial administration had made use of. So, since independence the traditional political organization has been replaced by a centrally organized administrative structure which, since 1976, has been built around the Somali Revolutionary Socialist Party. How does the state manifest itself in the rural regions? The following resume is not truly representative, as it only reflects certain individual conversations.

However, in the author's opinion they allow conclusions to be made on the activities how the State has become implanted in the small-scale farmer's mind. There are probably different attitudes and patterns of behaviour in those regions of the country which have only recently been opened up, i. e. the nomadic areas.

The question of 'How does the state manifest itself' has been answered unanimously: through taxes and fees; by regulating the marketing of crops (formerly); by the rationing of fuel; by the establishment of co-operatives and state farms, and by direct support and assistance, i. e.

through the extension service Afmet (Agricultural Farm Management and Extension Training) (cf. Ministry of National Planning 1983: 24). The last point mentioned can be stressed by results reported by Schückler-Mahamoud M. Mahamoud (1984: 40) in respect to two villages in the Lower Shabelle area. In one, the extension agent was known by 70% of the population, in the other by 40%. 'In general, the farmers . . . put high expectations on extension and other governmental agencies assisting farmers. They are accepting advice eagerly and are willing to experiment with innovative technology'.

'As only a tiny minority of the villagers are members of the party, seldom more than three or four individuals' (Haakonsen 1983: 79), questions concerning the function and the programme of SRSP, the sole party of the country, as well as those concerning the work of the 'Local People's Assemblies' have mostly remained unanswered. The shift in emphasis from regional to district level which took place in 1980 by the establishment of these assemblies intended to be at the grass-roots level changed things for the better. This is clear because the function of the above-mentioned gremium (if known) was generally positively evaluated. As only a small number of interviewees stated that they had participated in these generally public meetings, this positive assumption seemed to be conditioned by the fact that personal acquaintance with some of the members of the assembly existed. Although the aforementioned shift in emphasis to district level has definitely produced a number of positive effects, certain aggravating reservations could nevertheless not be cleared: 'Formal development planning however has been centralized at the top of a vertically structured system of technical ministries with few horizontal links at any level, and few if any of the large planned projects have directly benefitted the rural masses'. (Claxton 1983: 1)

3. Conclusion

Finally, we should raise the question of which development is foreseeable for the agricultural sector in Somalia for the near future. Even though sketchy, this article may have indicated that the production and existential basis of the smallholders comes under severe pressure from certain developments. One protagonist in this one-sided parallelogram is the state.⁵ There is a certain indication that within the next years in Somalia, processes will take place which have been observed under multifarious aspects in various countries. As the smallholders understanding of production is one of short-term periods this does not conform with the 'quantitative expansionist logic associated with commodity economics' (Elwert), a concentration of statal efforts towards medium and large-scale farmers will take place.

'While the agricultural techniques are very labour-intensive and require considerable physical efforts, ... they are sadly inefficient. The fields yield far less than their potentials' (Haakonsen 1983: 38). However, the small-scale farmers have at their disposal — as shown — a proven concept for survival. But the ownership of land and capital, specifically in a crisis, will lead rather quickly to a concrete split. In such a case it will definitely be disadvantageous for the smallholders if traditional concepts like reciprocal assistance or norms of redistribution dwindle, a situation which Schückler/Mahamoud M. Mahamoud (1984: 42) explain as follows: 'Aid systems have been substituted by wage labour'.

All this will reinforce the tendency for at least a proportion of the better land to fall into the hands of large-scale farmers. A first step in this direction was made, indirectly, through the rise in food prices and the liberalization of private enterprise, thus encouraging the establishment of large private farms, a tendency which Haakonsen (1983: 48) described as 'sometimes (being) at the expense of the smallholders' in 1983 already.'

The release of small-scale farmers will lead, at least temporarily, to a work-force surplus. Consequently wages would fall, a considerable number of families would be threatened with poverty, and migration towards the cities would be suddenly intensified. A similar conclusion was drawn by Haakonsen (1983: 28): 'In the long term, this new situation may have the effect of concentrating more land into the hands of a few wealthy individuals while creating a new class of agricultural wage-labourers, particularly if these wealthy individuals start introducing farm-machinery, as some already have, thus enabling them to push out other smallholders still using the comparatively inefficient traditional cultivating methods.' The fact that there are structural changes can easily be observed these days. For Beled Aamin, Haakonsen (cf. 1984) describes a situation where 10% of the households are landless, a situation hardly known in the past. Logically, many individuals have to base their livelihood primarily on working for others.

Should this scenario require further elaboration in order to acquire validity as an anticipation of actual processes of evolution in Somalia, a feasibly alternative must at least be outlined. The author pleads for the initiation of state-supported programmes aimed at encouraging and ensuring development through the smallholders. Preliminary services carried out by the state in the agricultural sphere, such as the disbandment of state farms and the distribution of their lands to the smallscale farmers, would form components for such a programme. The state mechanism for price control will also fulfill an important function in the form of guaranteeing minimum prices. As Mohamud Ibrahim Asser et al. (1984: 67) point out in this respect: 'The farmers need an unambiguous signal that not only will prices be raised and the markets liberalized this year, but that

this is a long-term policy on which farmers can build their long-term decisions'.

This plea for a strategy to achieve higher yields and develop the agricultural sector, based on the small-scale farmers, does not imply that other sectors should be neglected, but it should question the validity of concepts which give priority to sectors other than that of the smallholders.

Footnotes

- ¹ The situation in the area of Shalambood as reported by Haakonsen (1983: 29) is somewhat different. He cites a study which reveals that in a 172 household sample, 8.7% had less than 1 ha, whereas on the other hand, 5.8% owned farms of more than 50 ha.
- ² With respect to experience gained through interviews, Schückler/Mahamoud M. Mahamoud (1984: 41) mention: „In rainfall areas, land was not found to be a limiting factor“, whereas the unequal land distribution in irrigated areas, due to the existence of larger farms and state farms occupying the land close to the irrigation canals, led a number of villagers to complain about not having enough land.
- ³ Another form of bureaucratic exploitation should not be disregarded. It is of corruption, though, as has been mentioned by many authors this 'should not be considered as an attitude which deviates from that of a fixed system within a constitutional administration, but, more likely, as a stable and well regulated economic system which is illegal, but — emically — absolutely recognized as being legitimate' (Elwert 1983: 177). Rather therefore, it seems appropriate for the author to define this fact as a 'regulated, oligopoly-controlled administering of services' (Wong 1982: 251) by contributing a respective payment to the official concerned, a fact which was common in the Middle Ages in Europe too.
- ⁴ The fact that a capitalistic approach gains more and more influence is emphasized by the following remark: 'To run these farms, farm managers are employed ... The labour force is mainly recruited from the group of smallholders who own little property' (Munzinger et al. 1984: 43).
- ⁵ The role of international organizations involved in development aid has been omitted from this article, although it influences politics in many of the states of the Third World, at least partly.

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Ahmed M. Abdullahi:

A typical small-scale crop production system in Southern Somalia. The case of Doonburaale village in the Lower Shabelle region

1. Introduction

1.1. Methods of investigation

The following article is not a report on one study with a well defined subject, but rather a summary and an interpretation of research results gathered from a period of four months in the framework of the ASA-programme¹ at Qorioley refugee camps and surrounding villages — Bandar and Farhane — and also as consultant in the village of Doonburaale in the Lower Shabelle region.

The article covers an overview of various aspects of traditional crop production in small-scale farming in southern Somalia particularly in the Lower Shabelle region. Most of the information on traditional management techniques, land use practices, production targets and social aspirations of crop producers were collected by holding informal conversations as well as using formal questionnaires.

1.2. A data presentation of the village survey Doonburaale

A summarized historical and locational survey of the formation of the village as well as a data introduction is as follows: The village is called Doonburaale, in earlier time known as Rowle. The village was first established 150 years ago (due to the village committee), but a full settlement occurred during the last 50 years. The majority of the villagers who migrated to this area have lived here for most of their lives and in some cases for a generation. The village is located in the north of the city of Qorioley (17 km) and the population is estimated to be 3500. The average number of family members living on the sample farms was 7 - 8, the range being 2 - 14 or in some cases even more. Generally the size of the family and the farm seems to be positively correlated. The Lower Shabelle region is one of the best farming areas in the country, therefore the villagers' main source of income is farming. The size and fragmentation of a holding are important determinants of its production potentials. Generally, farms in this village are small in size and highly fragmented, except for a few holdings of 300 ha in total within the same parcels or plots. The average size of farms in different survey wards varies from 3 jibaals (low) to 4.5 ha (high). Possible explanations for this wide range were offered by farmers

interviewed. One is that the size of the cultivated area depends almost entirely on the quantity of rainfall and the location. Another explanation is that the size of the area cultivated is inversely related to the size of the herd kept.

2. Crop production

2.1. Cropping pattern

The cropping pattern in the field survey largely depends on the amount of water availability (either irrigation or rainfall) and the location of the fields. These constraints determine the number of crops in a year and the type of crops on a plot. The three major crops maize, sesame, and cowpeas are normally cultivated in pure state and used to some extent for intercropping ². In Doonburaale village with good irrigation facilities even three crops per year are possible. The most common cropping sequences are shown in the chart below.

Table 1: Present cropping patterns of the survey areas

Month	J	F	M	A	M	J	J	A	S	O	N	D
Season	JILAAL			GU-HAGAI				DER				
Maize				→	→	→	→		→	→		
Sesame									→	→	→	

Intercropping - this can happen either in the Gu or Der-seasons

The above tabulation denotes that crops can only be grown in the Gu- and Der-seasons. No crops are cultivated during the dry Jilaal-season which is between January and March. In the Gu-season most of the acreage is cultivated only with maize. Maize should be planted during the rains in April and May (Gu-crops) and harvested during July and the end of August. Der-crops (sesame) are planted at the end of September, beginning of October and harvested in January and mid-February. Crop production in this area is highly influenced by rather low and fluctuating rainfall causing high risks, crop failure and often very low yields. This area's crop production therefore depends to a great extent on the irrigation system along the Shabelle river. But due to the irregular water flows, inadequate water storage capacity and relatively low irrigation efficiency in the survey areas, the yields of major crops (maize and sesame) are usually low.

2.2. Cropping practices

2.2.1. Irrigation and ploughing

Land preparation as such exists, but sometimes seeding is undertaken wherever there has been sufficient rainfall or sufficient water from river-flows. Irrigation in the village is by gravity using water from small brooks. Most of the hectares are cropped annually (Gu-Hagai- and Der-season) under low technology levels characterized by unsatisfactory techniques of land preparation. Land preparation is carried out by hired tractors either from private hire service or from state farms or agricultural services (ONAT). ONAT charges (from the Der-season 1985) are 600 SoSh/hour for ploughing and private services cost are between 800 and 900 SoSh ³ respectively. Only a few farmers do the primary and the secondary tillage works by hand.

2.2.2. Seeds and sowing

In all wards there are very few farmers — mostly those who are cooperatively established or organized — who buy the new improved seeds ⁴ from the village extension officer. Their number will depend on the degree of extension as well as the availability of these improved seeds. Presently, farmers in this field survey are planting and storing their own seeds from harvested crops. The seed rate is generally estimated at an amount of 15 - 20 kg/ha for maize and sesame respectively. It may be that the seed rate is generally higher on dry land farming in order to compensate for lower germination under dry conditions. Most farmers do not practice row planting but use the traditional method of planting crops by unevenly planting the seeds at varying distances with more seeds per planting hole than recommended. This practice often results in lower plant population per ha than recommended. Where three or more plants per stand occur, only one or two grow well while the other plants are repressed. Maize is sown either by hand or machine behind the plough.

2.2.3. Harvesting and weeding

The number of weedings varies for different crops, ranging between maize and sesame three to one. This is carried out by hand. Mostly farmers employ labour to carry out weeding which proves expensive for the farmers. In this sense, labour is an important constraint to crop production. Weeding is estimated to account for about 80% of the total crop labour (see Keddeman 1985: 853) and, as the period for effective weeding is restricted to 6 - 8 weeks, and a family consists of five to six persons, 3 - 4.5 ha is about the maximum size of area that can be weeded by one family.

Harvesting takes place within the period of July and August during the Gu-Hagai-season and December to February in the Der-season. For maize, the following harvesting-practices exist: Usually the mature crop is cut and stocked in stocks where they are left in the field for further drying. In some cases, maize cobs are removed from the stalks in the fields and put into sacks in order to transport them from field to village. The transport is done usually by donkey-cart.

Generally, most of the harvested crops are kept for home consumption and surplus is sold at the nearest market place.

2.3. Yields of major crops

Maize, sesame (edible oil) and sorghum/millet are important crops in the survey area. There were sometimes difficulties to obtain correct data because a few farmers could not provide the precise yields harvested before. Consequently, sometime unrealistic figures were given⁵. The following tabulation denotes the yields obtained during the village survey by smallholders.

Table 2: **Present crop yields (6) obtained by smallholders in the survey area (yields: quintal per ha)**

	Maize	Sesame	Tomatoes	Sweat potatoes
GU-HAGAI-Season	15-20*	not cultivated	no information	10-15
DER-Season	5-10**	3-4, 5	no information	15-20

* Concerned the last Gu-Season 1985

** Concerned the last Der-Season 1984

It is not always true to assume that the yields from irrigated land are higher than those from non-irrigated land, because it is possible that sometimes the conditions on irrigated land are too wet for maize, especially when irrigation cannot be controlled sufficiently.

2.4. Storage and marketing

Traditional storage methods are used in the survey area. That's to say that traditional ground-pits are commonly used. In a few cases, when there is a bad harvest, maize is mainly stored in farmers houses. In the underground-pit stores cobs are stored in hand-dug holes with a depth of about one meter and lined on the floor and walls with maize stover. After filling, the cobs are covered with a final layer of stover and then covered with earth. If the pits are well prepared and kept closed, infestation and

deterioration is minimal. In most cases the storage losses are estimated at less than 5%.

Marketing facilities of a region play an important role in growing cash crops and stimulating production so as to result in marketable surpluses. In the rural areas, it is an important source of communication among the village people. My survey experience in the interior showed that most of the farmers are not integrated into the market and barter is commonly used between the villagers.

All over the district of Qorioley, there is only one district market, located in Qorioley. This is a well organized primary and secondary together. In the village survey there is a local market, consisting of a multi-purpose store and tea shops, which also serve as meeting places for the villagers. Most farmers in the survey area have a small unit of production. They (i.e. the smallholder) could hardly sell anything to the market, but bartering is quite commonly used between relatives and farmers.

The lack of market transparency which means the farmers are forced to sell their products immediately after the harvest (usually the price in this period is quite low) is something which could be improved in order to give the farmers better chance to sell their produce at higher prices.

Footnotes

¹ The ASA-programme (work and study tours in Africa, Latin America, and Asia) is a scholarship scheme which was an initiative of students in 1960. As the only university level scholarship programme in the development policy sector in Germany, it offers students and graduates the opportunity of combining their theoretical and specialized knowledge of the Third World with practical experience in developing countries. Furthermore, the participants should gather experience of those aspects of development policy, administration and legislation which often play a decisive role in this sensitive sector.

² The term 'intercropping' is used when two crops are on the same field at the same time for a certain period. The most common practice is the intercropping of local maize and sesame (in the Der-season) as well as maize with tomatoes and maize with watermelons.

³ This price does not include the additional incentives for the private driver of the tractor. These take the form of either cash or food. It usually takes a tractor three hours to complete one hectare.

⁴ This will be the white 'Afgoy composite' which matures in about 105 days after planting.

⁵ In such cases where the yields provided were too high or too low, there was a discussion with people who had knowledge and experience of the area; own observations were also included.

⁶ The figures must be treated cautiously, due to the reason that farmers start harvesting small quantities of green maize (in the milk period) for home consumption as early as possible. In some cases farmers also sell green maize.

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Norbert Seger:

Organisation of the irrigated agricultural economy amongst the small farmers of the Mubaarak/Lower Shabelle region

1. Introduction and outline of problem

The submitted article is based on some observations made in the field of agricultural production in the Republic of Somalia, during a field trip to the regions of the Mubaarak/Lower Shabelle.

Emphasis for the country development has been placed on agriculture. In many of the agricultural projects which have been implemented up till now however, thorough research into the prevailing physical, economical as well as socio-ethnic and juristic conditions relevant to the project have been lacking. Knowledge of local conditions in combination with adequate statistical data, would certainly contribute to an improvement in the assessment and carrying out of measures aimed at development.

The Mubaarak settlement scheme (4120 inhabitants), to which this paper refers, lies in a significant Somalian agricultural region on the lower course of the Shabelle river (1°55'N, 44°46'E). It is a religious community with a long tradition in cultivation of the land. This agrarian tradition is centred around the periodic twice-yearly high water level of the river, on which the gravitation-based irrigation system is reliant. By means of this water can be guided along canals through the agricultural plains.

The area is included in a new development project the aim of which is to improve the prevailing way of life and economy of the small farmer (see Munzinger/Janzen/Rothe 1984).

In making its purpose the promotion of irrigated small holdings, it can be distinguished from other development schemes, and in particular those in Somalia, which up till now have tended to be aimed at large agrarian projects. This is a welcome development. There remains however, in (semi-nomadic) and small-farming areas, much as yet untouched production potential. Use of this could have a major impact on Somalian development, and on the significant number of population groups referred to. It is however, precisely in these small irrigated agricultural holdings with traditional organisational and legal structures which are difficult for foreigners to grasp, that improvement schemes introduced from outside have suffered defeat, because they fail to pay adequate attention to the prevailing conditions.

On the other hand there is a danger that general structures, which have been in existence for a long time and are therefore worthy of further preservation, will be distorted or even destroyed.

The investigations made up till now, have shown that the organisational structures and judicial system often differ even from one settlement to the next. This fact can often be traced essentially to the ethnic heterogeneity in the region around the densely populated area along the river. The relations between those in the Mubaarak settlement are not generally valid for those in the whole Lower Shabelle area. There are nonetheless basic structures which are generally evident and which, as a rule, apply in more or less modified forms in other settlements subject to similar conditions.

2. Development of the settlement and its code of law

The Mubaarak settlement was founded in the year 1818 by Sheikh Abdi Dayow. He was recognised as religious and political leader of the village by a large number of followers, all belonging to different tribes. Each of his disciples or individual settlers was obliged to follow the ideas of the Jama'a¹.

This meant a strict observation of the following basic rules: belief in the 'Holy Koran' as God's word, obedience to the laws of the prophets and the recognition of the village chief as final authority on all matters. This meant in practice:

- the village chief could issue directives which were binding governing the people or land;
- he had nominal possession of the land which had been made available for housing their settlers and this he issued amongst them for their use;
- the land provided for cultivation was to be collectively cleared for cultivation and husbanded (after his death, production began to be conducted on an individual basis) and
- looking after the animals was the work of the community and all should profit from them (this too was later to be pursued on an individual basis).

According to the provisions set down in the Jama'a each member taken into the village should receive the share owing to him under Islamic law. This was subject to his following the injunctions laid down by the community, violation of which could result in dispossession and expulsion. With reference to the Koran, the village grounder and leader appointed seven of his pupils to lead one group respectively². These representatives were entrusted not only with matters of religion, but with leader-

ship tasks of a more worldly nature, within the community and were responsible for the solving of internal conflicts. In concurrence with the spirit of Jama'a, it was intended to overcome tribalism and to lead a congenial community life as had been laid down in Islamic thought. The village leader or his successor represented the highest stage of appeal in all conflicts. He was to be advised in this task by a senior council comprised of two representatives from each grouping respectively. The levels of decision-making with regard to internal problems followed an hierarchical graduation i.e. depending on how serious a problem was it would be dealt with on a family, a group or a village level. The leader was assigned the function of mediating. In the event of difficult cases the 'Nabadon' (preserver of the peace) would support him in this task. His decision is binding and is made in keeping with a very strict interpretation of Islamic law and with the rights enshrined in local custom³. For matters of internal concern, procedure has remained largely unchanged up to the present day, although external courts of justice are claiming increasing influence in the administration of justice.

The seven groups in the village organised their community independently of each other, but in keeping with the same rules. Each of these social units was called after a day in the week. This was done with the intention of facilitating intake of newcomers wanting to join despite their tribally heterogeneous composition. By this method newcomers would be assigned to a group corresponding to the day of the week on which they had arrived. With the agreement of the local group leaders, the newcomer could then accept the group to which he had been assigned or he could choose himself another. With this the newcomer would then be entitled to all that being a member of the group entailed.

The 'days' settled in separate quarters in the area. There was no hierarchical system for the distribution of space but rather emphasis was placed on family groups being able to settle near each other. This contributed not only to a feeling of security in the community, but also meant that neighbourly help over peak work periods was readily forthcoming. All work for the cultivation of fields would be carried out by the respective groups collectively but the option of intergroup work was also available when a couple of groups might join forces to clear a piece of land for cultivation, or for the building and maintaining of canals as well as the general provision of mutual support and the preservation of common interests. This system of work groups found spatial expression for example in the separate construction of the canal system. The intergroup relationships structure enabled coalitions which are reflected spatially in the expansion of irrigated land under cultivation. The socio-ethnic group structure is once again manifest in the organisation of the irrigation systems, recognizable in the manner in which the decision-

making hierarchy is constructed, in the collective carrying out of measures of common relevance and in how the individual may dispose of property. As with the settlement areas, so too the cultivated plains are sectioned off under the group structure. The respective strengths of the groups and the inter-village relations have an influence on the extension and length of a canal system i.e. in the event of cooperation for example, family ties between the communities have as a rule given rise to expansion. Added to that is the tendency for newcomers to attach themselves to the 'strong' communities thereby further increasing their number and influence.

3. Organisation and use of cultivated land

Next to natural growth it was above all the arrival of relatives from the homeland areas of the chiefs which contributed to the rise in size of the population. A significant reason for their migration was the relatively secure cultivation possibilities in the region along the river due to the periodic high water level to which they had access through their relations. In return for observing the rules they would be integrated on an equal rights basis into a socially and economically stable group i.e. territorial conflicts could be confronted collectively. Within the framework of Jama'a thought migrants were to be treated thus: areas for cultivation appropriate to the work potential of the family were to be allocated to them, with the help of their neighbours and at the expense of their group they would be provided with a place to live, and unmarried men would be provided with a wife for starting up a family. The individual experienced the support of the community with the starting up of his farming activities. The new areas would be collectively cleared, and the canal for its irrigation planned and constructed. An important feature of this way of producing is that despite the individual working of the land, the individual would also remain an integrated member of the community. In this way the risk to his own production was also reduced:

- in the building, maintaining and securing of the canal system;
- through help in case of a bad harvest;
- through the superintendence by others of his plains during absence;
- through mutual support over peak work periods;
- through assuring the claims of the individual member to water distribution;
- by verifying the course of the boundary line of his cultivated land and;
- through support both in internal and external conflict situations.

Women owning land are, within limits, treated equally before the law. The extent of their production is as a rule generally lower than that of

men. The proceeds however are placed at their personal disposal and aren't automatically allotted to the support of the family, for which the man is primarily responsible.

4. Organisation of the irrigation system

Due to the dam like levee on both sides of the Shabelle in this section and periodic high level of the water, cultivation can be pursued in the area near the river independent of precipitation. Since its establishment, the canal system has been extended progressively. Gravity based irrigation has made it possible to water the fields and has been the indispensable prerequisite for cultivation for the permanently settled local population.

4.1. Canal construction

The work for a canal is adopted according to need and with the agreement of all the group representatives. The individual communities of future beneficiaries are responsible for the construction and their respective leaders establish how it is to proceed with due regard to potential conflicts with a neighbouring canal system over its course. They are incumbent for the later superintendence of all construction measures, for final arbitration on internal conflicts and representing their groups, interests against those of a third party.

For the inspection of the work and regulation of use of the canal, a future user of the canal who is both experienced and respected on all sides is elected to the position of 'Aw Keli' (father of the canal) (see amongst others Munzinger/Janzen/Rothe 1984). He nominates a further three to four assistants to help him. Together they draw up a work plan which is binding for all who will use the canal, committing them to partake in the work. The performance expected from the individual is laid down by the size of the ground to be annexed. Due to the considerable amount of work involved it is usual for owners of large plains to hire wage labour. The actual course taken by the canal is based on the experience of the 'Aw Keli'. In deciding this he is guided by the following considerations:

- The dimensions of the enclosure is settled according to need for the area to be irrigated (estimated largely by experience).
- The line taken is estimated by sight and in setting this they guide it over the highest points along the topography thereby utilising gravity to the maximum in order to cover the greatest possible area on the lower lying plains.
- The length of the canal is determined by the time it takes to reach the field by foot (ca. 1,5 to 2 hours).

The costs of construction which aren't offset by the labour of the individuals themselves (e.g. bridges and the reimbursement of the 'Aw Keli' and his assistants for their contribution) are covered collectively by all those who will profit from the canal. Furthermore, a contribution appropriate to the ability of each member is made towards the traditional sacrifice of animals before the canal flooding.

4.2. Water distribution

The organisation of water distribution is undertaken by the 'Aw Keli' and his assistants. The foundation for their rights is based on rules which have been created as the need arose for decisions to be made. These have been added to since the founding of the settlement and are still recognised today as binding. On the basis of these the same rights can be operated for all members. The 'Aw Keli' is charged with seeing that the rules are adhered to, and in case of conflict, must be able to account for his decisions before the group leaders of a general assembly of the group.

The canal is flooded on request of those attached to it and after the fields have been prepared for the coming season. The opening of the canal follows the astrological calendar⁴ and is accompanied on the eve before the event by the sacrifice of animals and a recitation from the Koran, both of which are seen as indispensable to the success of the harvest.

After the first ceremonial flooding the entrance is closed up again. This is done in order to make the walls of the canal watertight and so that any defects can be corrected. About 24 hours later it is opened properly and directs water as long as is permitted by the high water level of the river. Withdrawal is not regulated according to any spatial sequence. Distribution commences as soon as there is a call for it. The amount varies according to the area to be watered (per 3 ha. ca. 24 hours) and the height of the water mark. Under favourable conditions for example eleven users can draw off water at a time, whereas when the mark is low their number is reduced by the 'Aw Keli'. For secondary branches off the main canal one of the canal users is chosen to take responsibility for the distribution and he too must stick to the regulations.

4.3. Maintenance of the canal system

Before every period of cultivation, the canal system is repaired. The deposits of sediments are cleared, the growth around the edge removed and potential weak spots are repaired. Each person with a share in the enclosure is obliged to partake in these measures, be it with his own labour, or by paying someone to do it. Should this not be complied with,

the guilty party can be refused water or some other punishment may be inflicted. Maintenance work follows a strictly laid out plan. Through his assistants the 'Aw Keli' gives the word when the users of the canal are to begin work. This is begun at the entrance to the canal and everyone involved is assigned a section. All begin together, but each one continues only until his own section has been reached. After that only those whose sections lie further away are obliged to continue the work. Since fewer of those involved in the project take part towards the end, the work for those whose sections lie further along the canal is greater. In other words, the work load increases with the distance from the river.

5. Modern changes of traditional structures

In a qualified sense the traditional relations referred to above still exist today. Change and modifications can be observed in different areas. Under the influence of the Italian colonial power who set up a centralised administration in Somalia, the functions of political and religious leadership have been separated. After the revolution in 1969 the single-party government began to appoint a village chief and it was he and not the local chief who assumed the role of official representative. The internal traditions of decision making are thereby only slightly effected.

The regionally effective social segregation no longer finds the same spatial expression as before with its consistent separation of the groups. Justification for this is that there is no longer any necessity to collectively defend the cultivated enclosure against external attack (theft, claims on land, etc.) and at the same time local subsistence production is taking on an increasing market orientation. The former protective function of the individual groups has decreased to facilitate cooperative work on a village level.

Agricultural production on an individual basis is gaining in significance. Reasons given for this are:

- the shortage of manpower during work peaks (migration, independence of former labourers, strongly decreasing number of seasonal labourers);
- the high wage claims in comparison to machine costs vis a vis the price that can be got on the market;
- The financial compensation required today for collective help cannot be met by the majority of farmers.

The still unused potential of agricultural land is increasingly losing its single function as a locally available reserve. As a result of increasing interest being shown by city dwellers (primarily traders and government officials) and well-to-do locals and their relatives in its acquisition, land

has acquired a market value. The percentage of non-settler landowners of cultivated land and land with potential for cultivation is increasing. In Mubaarak misuses which might have arisen due to the investment activities of strangers to the settlement could be prevented. The organisation of water distribution has been an instrument for the preservation of local interests with desirable interference from individuals being sanctioned by means of general non-cooperation on behalf of the community.

6. Concluding remarks and future prospects

In Mubaarak limitations to the availability of the means of production that the water of the Shabelle and the ground area represent have not as yet been recognised. Local development plans are adapted to this attitude. Within the framework of the existing socio-ethnic and geographical structures the following are the possible consequences of external interference:

- a) The operation of irrigation pumps is based on a different legal foundation to that of the customary local gravitation irrigation. Their usage is organized on an individual level involving withdrawal of water directly from the river. They have not been applied in the region surrounding the canals up till now. Distribution of water has been designed around the gravitation method so that regulations for large withdrawal by individuals haven't yet been decided upon. Such regulations haven't up till now been necessary. Reasons for opposing a widespread introduction of pumps include:
- prohibitive investment costs for the high performance pumps which would be required to pump water over the considerable distances to the cultivation plains;
 - energy prices fluctuate on a high level and availability is uncertain while acquisition on the black market is expensive;
 - a lack of spare parts and high repair costs.

These complications can only be overcome by the large farmers. For the whole area of small-scale production, pumps are at present unprofitable and therefore, despite the possible prospects of a guaranteed provision of water, the old method is preferred. The majority of farmers couldn't even make a contribution towards the investment and running costs involved. They consider too their yield to be too small for such an uncertain investment of input factors, especially as they would expect a short term profit from it. There is therefore good reason to believe that small farmers will be excluded from any development possibilities reliant on the use of installed pumps.

- b) The present system of canals is appropriate to small farmer production. Its expansion would gain in significance with increasing distance

from the river and particularly for plains which have not yet been put to use. The clearing of such lands however, due to the expense involved in hiring labour can only be carried out by machines. These costs also are too high for small farmers using them individually, but access to the heavy machinery could become possible should several consider expanding their lands simultaneously and undertake to pay for the machinery collectively. The completion of an expansion programme with the help of technical installations (e.g. mobile pumps, hydraulic engines etc.) would be of questionable benefit since up till now no regulations have been set down for possible conflicts arising from individuals withdrawing water from the canal. The influential members of the community and economically strong farmers would in this respect have considerable advantages over the small farmers. The organisation of irrigation as it is at present with its guarantee of the equal claims of all would be repressed to favour the small interest groups, especially in instances where the level of high water is insufficient for the needs of all.

- c) The intensification of production by means of innovations must take the following factors into consideration:
- small-scale production is primarily organised around the securing of basic needs;
 - the lack of readiness to take risks given the relatively small production possibilities in the fields under operation (2-3 ha average);
 - the disproportionate relationship between additional financial inputs and possible increase in returns;
 - the pronounced persistence of traditional methods and
 - the frequent lack of an economic basis for making changes amongst the more flexible young farmers (due to the setting up of a family, working on leased land and a lack of access to inputs).

Innovations might more probably be introduced and applied by those farmers who, with a larger area for cultivation, could afford to take a risk without endangering their basic needs in doing so. In conclusion it can be stated that the existing forms of agrarian production in Mubaarak have a direct relationship to and are derived from the traditional socio-ethnic structures. A realisation of innovations and measures taken under these conditions is facilitated by respecting the internal decision making hierarchy and by proper consideration of small farmers in the introduction of new techniques and by making production inputs available on a profitable basis.

Footnotes

- ¹ Jama'a is approximately equivalent to "the community of Muslims united in correct belief". See I.M. Lewis (1984: 136): "The adherents of Sufism belong to the congregations or communities, in many Muslim countries known as zawiya, in Somaliland as *jama'a* of the various ders (tariqa, 'The Way') into which the movement is divided according to the doctrines and services (dhikr) ordained by the founders of Orders."
- ² The reasoning I was given for this was: The division into seven groups followed a way of reading the Koran, whereby the 'Holy Book' can be divided into seven sections. The significance attached to a recitation from the Koran was such that each group would be assigned a section on the occasions requiring it (e.g. the anniversary of the death of the founder of the village etc). See Enders /Schimmel (1984: 163).
- ³ The Islamic interpretation of the law is written down in the Sharia. It embraces the complete instructions of Allah regarding dealings between individuals as they are to be found in the Koran. See Koran 2.1. and Lewis (1984: 136): "The Somali are orthodox Sunnis and adherents of the Shafi'ite rite of the Shari'a — the law of the Islamic community — originated in a theocracy which had transcended the bonds of tribalism, and has in its subsequent elaboration always referred (in theory at least) to a religious state ..."
- ⁴ The first flooding should follow the 2./7./14./22./24./27. or 29. day of the month. Should these days for opening be disregarded, it is believed that the period of cultivation will suffer negative consequences.

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The importance of the Juba Valley for the development of agriculture in Somalia

1. Introduction

Big dams in the Third World have become nightmares for donors and governments. In many cases, positive effects have been largely overestimated and negative impacts have been neglected during the planning process. Millions of people all over the world have lost their homes, their land and their occupation, because they were forced to withdraw from the storage areas of newly built big dams. Losses of huge amounts of cultivable land, extinction of hundreds of species of wild animals and plants, a considerable increase in water-born diseases, fast sedimentation of the reservoirs and erosion of reservoir and river areas are other reasons which make the viability of storage dams questionable.

In spite of the reservations which dominate the present discussion, Somalia is planning to construct a dam and reservoir of considerable size in the Upper Juba Valley. The idea of regulating the Juba, one of the two perennial rivers in the country, was born around 1920 and resumed in the seventies. Plans recommend a structure 40 kilometers upstream of Bardheere, where the river flows through a relatively narrow gorge. The Bardheere Dam Project was found to be technically and economically feasible. The storage capacity would be sufficient to run a power generation unit of 100 MW capacity and to irrigate up to 200,000 hectares of agricultural land. Flood protection would also be secured.

Up to the end of 1985, project preparation has been making promising progress. Engineering design is completed, most of the necessary investment sum has been pledged by different donors. The planning process for downstream development is ongoing, as well as an assessment of ecological and social implications.

Agricultural development of the Juba Valley will mainly depend on the availability of water for irrigation. In the present situation, only a small part of the land is planted under irrigation; rainfed and flood recession agriculture still being the predominant forms of cultivation. By far the largest part of the river water flows unused into the Indian Ocean. Irrigation development has come to a standstill due to the lack of water in the dry season and frequent inundations during the flood periods.

In the following the present situation, potential, constraints and prospects of agricultural development in the Juba Valley will be discussed.

2. Development potential and constraints

2.1. Climate

The major part of the Juba Valley has an arid climate, i.e. throughout the year monthly potential evaporation exceeds monthly rainfall. The average annual rainfall is about 400 mm. In the north of the valley this value is only 300 mm, whereas the area around Jilib can be characterized as semi-arid with an average annual rainfall of 700 mm. Although annual totals over the remainder of the region do not vary much, considerable differences occur in the seasonal distribution.

The two rainy seasons are Gu (April to June) and Der (September to December). The southern part of the valley is influenced by the maritime climate of the Indian Ocean; rains may occur throughout the year. The further upstream, the more accentuated are the seasons. However, significant differences are observed from year to year: dry years without almost any rainfall (e.g. 1983/84) may be followed by abundant rains in the next one (e.g. 1985). In both cases, agriculture suffers severe problems from either drought or inundations. Agricultural production under these conditions is therefore always threatened by uncalculable risks.

2.2. Land resources

According to the existing preliminary information, the Juba Region has a potential of about 225,000 hectares of gross irrigable land. This area includes land of varying suitability for irrigated agriculture. The following land classes and corresponding areas have been identified so far by using the USBR land classification system:

- Land class 1: These are soils of best quality which are deep, free from salts and alkalines, showing a good permeability and which are level. The total area amounts to almost 40,000 hectares, the largest part of which (almost 90%) lies in the lower Juba plain downstream of Fanoole. These soils can be used to cultivate a wide range of crops.
- Land class 2: The quality of these soils is good, they are deep and alkaline-free in the sub-surface horizons and of medium permeability. In the deeper horizons, however, salts and alkalines are found which affect the permeability and need a drainage system. Again, most of this land (76%) is found in the lower reaches of the valley. A wide range of crops can be cultivated on this land also.
- Land class 3: The soils are deep, but they show serious drainage limitations. They constitute the biggest portion of the total irrigable land. Out of the total of 86,000 hectares, about 53,000 hectares (62%) are located in the Bardheere District, nearly 30,000 hectares (46%) are found downstream of Fanoole, while the small remainder lies in the

districts of Saakow and Bu'aale. With a well developed drainage system, these soils can also be used to cultivate various crops.

- Land class 4: These soils are deep, but they suffer from salinity and alkalinity throughout the profiles and show a definite low permeability. 41,000 hectares (62%) of a total of about 62,000 hectares are located in the Saakow and Bu'aale Districts. The rest lies downstream of Fanoole. The soils of this class have been assessed to be suitable for rice cultivation only.

2.3. Water resources

The main catchment area of the Juba is located in the highlands of Ethiopia. Within Somalia, the drainage systems of sub-catchments are generally poorly developed. Although rainfalls in the catchment area are even more variable than in the valley itself, most of the rain falls in Gu and Der. This explains the essentially bimodal flow pattern of the river. Short and pronounced flood peaks occur in April and May and more voluminous floods are observed in October and November. The annual average discharge is around 6.3 billion cubic meters which results in an average discharge of 200 m³/sec.

However, because of the rainfall pattern, actual discharges of between zero and more than 1,500 m³/sec have been measured. At the present level of agricultural development, the minimum irrigation water requirement of the Juba Valley is 15 m³/sec. In the critical period between January and April, the discharge is slightly less than the minimum requirement in one out of two years; in one out of ten years river flow downstream of the Fanoole barrage is close to zero. During low discharge periods, salt water from the ocean intrudes, sometimes up to Kamsuma. As the farmers are not aware of the quality of the water, they pump it onto their perennial crops, thus causing severe damage.

On the other hand, every second year bankfull discharge is exceeded and inundations take place. Twice in ten years floods occur which are of such a great volume (i.e. magnitude and duration) that long-lasting and extended inundations in the Lower and Middle Juba Regions cause serious damage to agriculture and infrastructure.

Water quality for irrigation is relatively good. Saline crests of very short duration do occur at the onset of the Gu-floods, but they hardly reach agriculturally critical values. Although accurate measurements do not yet exist, all observations indicate that the sediment load is quite low. Since the use of chemicals in agriculture is very limited, chemical and organic pollution is no problem.

It can be concluded that from the point of view of quantity and quality, good and sufficient water is available for the irrigation of up to 200,000

hectares of agricultural land, of which less than 10% are presently in use. Because of the irregular discharges a further extension of irrigated land is not possible without river regulation. After construction of the Bardheere Dam and Reservoir, water will no longer be a bottleneck for agricultural development.

2.4 Human resources

No precise population census has been carried out so far in the Juba Valley. The only available figures are those of the nationwide census undertaken in 1975 which was a year of extreme drought, thus a considerable distortion of results must be assumed, due to a high degree of nomadic movement towards the river. Nevertheless estimates in all recent documents are based somehow on the 1975 figures. Different assumptions and analytical methods lead to quite different results about present population figures.

From an analysis of the results and different approaches of a considerable number of documents, together with own estimates from single areas and sectors, it can be assumed that the overall population of the three regions Lower Juba, Middle Juba and Gedo amounts to between 800,000 and 900,000, of which between 55% and 60% live in the core area close to the river. Assuming this range, it has to be borne in mind that there are intense fluctuations from year to year as well as between the seasons due to the migration of nomads. In general, population is higher in dry years and in the dry seasons because of an increased influx of nomads to the riverine areas.

An inventory of all registered farm holdings, carried out in 1983 by the MJVD, showed a result of 19,300. Adding a margin of non-registered farmers and farm workers depending on the existing irrigation schemes, the number of farm families in the Juba Valley is estimated to be around 26,000. It can be assumed that of a farm family of seven members, on average 2.5 can be counted as full labour units. Thus the active agricultural labour force would amount to around 65,000 at present.

This merely quantitative and rough estimate does not allow further conclusions about the work force reserves for future development. It is a fact that labour is a bottleneck at present in the large-scale projects. Although from the mere quantitative point of view there is underemployment in the region, salaries paid are obviously not high enough to attract a sufficient number of labourers.

2.5 Inter- and intra-regional communication

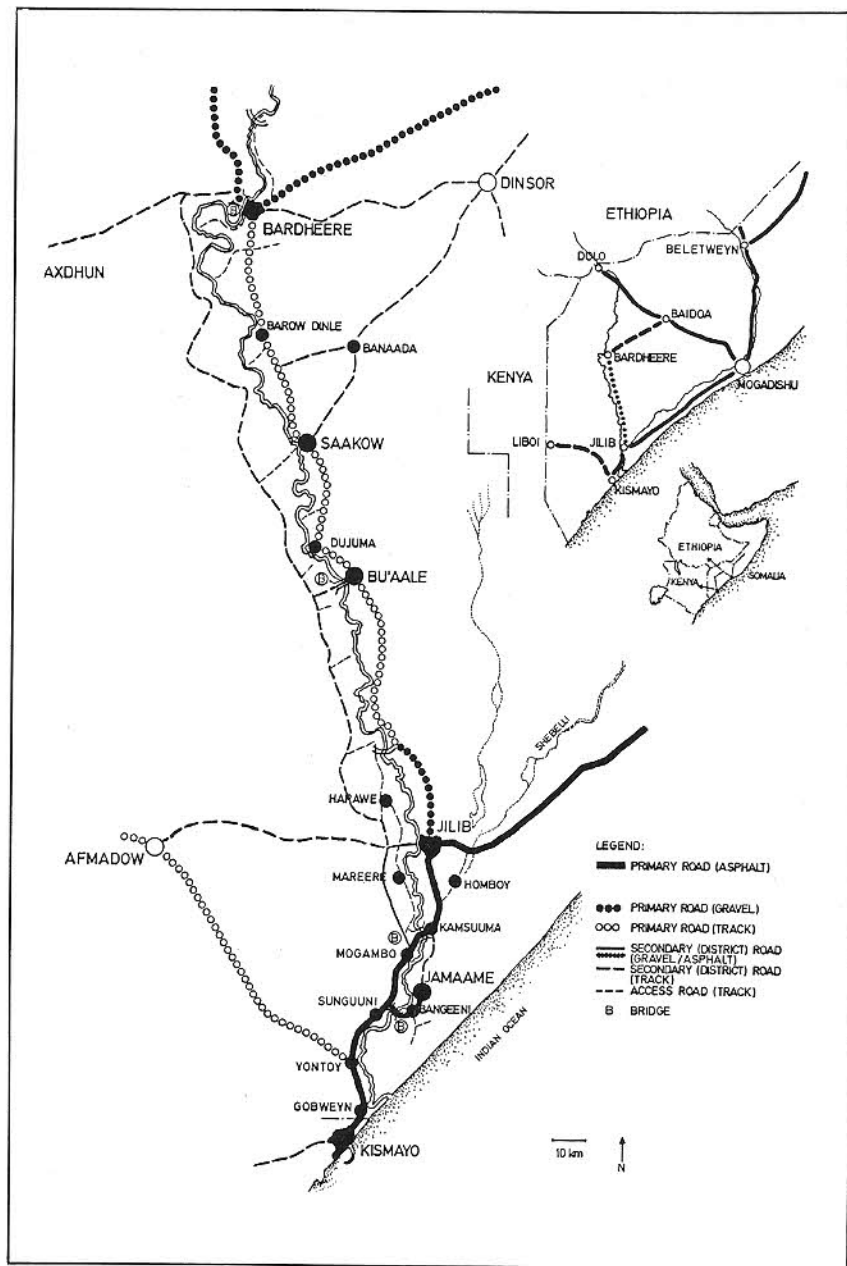
The inter-regional road network, i.e. the road connections between the Juba Valley and Mogadishu, are quite satisfactory. The three links from

Kismayo (via Jilib), Bardheere and Luuq to Mogadishu allow transport throughout the year. But no north-south link exists between Luuq/Bardheere and Jilib. Thus, twice a year, almost the entire middle Juba Valley is inaccessible and all north-south communication is interrupted. The unsurfaced track between Bardheere and Jilib leads through extensive sections of black cotton soil and becomes almost totally destroyed every rainy season.

As soon as rainfall starts, all other secondary and tertiary roads and tracks become unmotorable as well. All of these tracks are in very poor condition and not subject to any maintenance. Thus, marketing of agricultural produce and even access to the fields is seriously hampered; marketing in the middle Juba Valley is restricted to six months during the year. The consequences for agricultural development are obvious and can clearly be observed: by far the major part of the marketed surplus of the region is produced in areas with good road access, whereas subsistence production prevails in the middle Juba Valley.

A very rudimentary telephone and radio-call system exists in the Juba Valley, connecting all regional and district capitals. But it is hardly operable due to lack of maintenance and spare parts.

The road network is shown on the following map.



3. Present stage of agricultural development

3.1. Institutional framework

3.1.1. Land tenure

Since 1975, when the Land Reform Law No. 73 came into force, all land has been state owned and the government is entitled to grant concessions to individuals or groups which give them the right to use land for certain purposes under defined conditions.

It can generally be said that the directions of the law are not strictly followed in the Juba region. However, the law has a certain effect on some of the crop cultivators. In particular, when the large-scale irrigation projects of Fanoole, Juba Sugar and Mogambo were implemented, a reallocation of land was made, partly from smallholders to the projects. Also, after the establishment of the Cooperative Law in 1973, land was allocated and registered for agricultural production by the government. Furthermore, land registration is of some importance in the medium- and small-scale irrigated sectors. All of the roughly 80 medium-scale farmers, mainly banana growers in the Lower Juba, have their land registered at the Ministry of Agriculture. The percentage of small-scale irrigation farms (pumped as well as flood irrigation) which are registered is about 5 to 6 percent (i.e. 500 of a total of approximately 9,000 farmers).

The bulk of the farms in the Juba Valley consists of 10,000 to 12,000 rainfed farms which are in general not registered. In the rainfed areas, land tenure is still based on customary rights rather than on the recently established codified right. That means, farmers are regarded by the local community as private owners with the unlimited right to dispose of their land. They may use it for agricultural and livestock production themselves and pass it on to their children, or they can lease it or even sell it to other persons. Purchasing and selling of private land is controlled by the local authorities such as village headmen and committees or religious leaders (sheiks). They are also responsible for the distribution of unused common land to farmers of the community who want to expand their farm area or who want to build up a new enterprise, or to newcomers from outside who wish to settle.

3.1.2. Agricultural services

Various, mainly governmental institutions (see the articles of v. Boguslawski and Conze) provide services to the agricultural sector in the Juba Valley. With the exception of marketing, the agricultural services sector is weak. In general, the portion of farmers served is low. Taking a look at the different services the percentages of farmers served are as follows: marketing: 90%; machinery hire: 15%; agricultural extension, input

supply and credit supply: 2-3%, promotion of farmers' organizations: zero.

Marketing: Most of the farmers in the smallholder sector in the Juba Valley can market their produce under reasonable conditions. This is due to the extended station network of the Agricultural Development Corporation (ADC) which had the monopoly on grain marketing (mainly sorghum and maize) until 1982 and also to the increasing involvement of private businessmen in marketing who ADC maintains stores in the districts of Bardheere, Saakow, Bu'aale, Jilib, Jamaame and Kismayo with a storage capacity of about 50,000 tons. Marketing of onions and tobacco, mainly to Mogadishu, is well organized privately. Fruits and vegetables as well as sesame are sold and the latter also processed locally. The government still keeps a monopoly on cotton marketing and processing. Bananas are exported and distributed to inland markets through the Somalfruit Company. The large projects market rice through ADC and sugar through the National Trading Corporation (ENE).

Machinery Service: Farm machinery service for small-scale farms is provided by the Farm Machinery and Agricultural Service Organization (ONAT) and Somaltex. The banana growers receive machinery service from Somalfruit, whereas the large-scale projects have their own machinery, equipment and workshop facilities.

ONAT maintains agencies and workshops in Bardheere, Bu'aale, Jilib and Jamaame. The main activities consist of bush clearing, land levelling, ploughing and harvesting for private farmers. Additionally, flood control measures and the construction of irrigation works are carried out.

ONAT is unable by a long way to meet the present demand for machinery services in the Juba region. The main problems consist of lack of equipment, spare parts and fuel, the unavailability of qualified staff and poor administration.

Somaltex and Somalfruit serve a small number of farmers involved in banana and cotton growing only. Their machinery service is functioning well.

Agricultural Extension: Extension work for farmers in the Juba Valley is carried out by the Agricultural Farm Management and Extension Training Project (Afmnet), the Somalfruit Company and Somaltex.

Afmnet initiated its programme in the Juba Valley in 1982. Since then, agencies have been established in Yontooy, Jilib, Bu'aale, Saakow and Bardheere. However, they have only been poorly staffed and equipped so that after an initial phase, during who have been competing with ADC for the past three years since the liberalization of grain marketing. ADC maintains stores which extension work was carried out to a limited

extent, the activities of the extension service stopped almost completely in 1985. Extension work for the small number of cotton and banana farmers is well organized.

Input Supply: The institutions responsible for the provision of agricultural inputs are the Ministry of Agriculture (MoA), Afmet, Somaltex and Somalfruit. The responsibilities of the MoA's Plant Protection and Locust Control Department have temporarily been taken over by Afmet which should also have organized the supply of other farm inputs such as fertilizers, implements, etc. However, due to Afmet's decline in the Juba region and shortcomings in the MoA's organization and funds, the supply of farm inputs is limited to the small groups of banana and cotton growers.

Credit Supply: The existing sources of farm credit for the farmers in the Juba Valley are the Somali Development Bank (SDB), Somalfruit, and Somaltex. SDB has a branch in Kismayo which extends medium-term loans to a very limited number of farmers only. Somalfruit provides credit in kind to the banana growers. Short-term credits for farm inputs as well as medium-term credits for farm machinery and implements are granted. The small group of cotton growers in the Lower Juba receives crop loans free of interest from Somaltex for financing pesticides, farm labour and tractor hire. The majority of farmers in the Juba Valley, however, have no access to institutional credit services.

Promotion of Farmers' Organizations: After the establishment of the Cooperative Law, a large number of agricultural cooperatives were founded in the Juba Valley. Financial, technical and administrative support was given by the Union of Agricultural Cooperatives (UAC). In 1983, a total number of 98 cooperatives with over 10,000 members were registered. However, after an initial boom the support from UAC diminished and finally stopped altogether, with the effect that in 1985 there were no cooperatives operating according to the defined aims.

3.2. Irrigated agriculture

3.2.1. Small- and medium-scale pump irrigation

The total small-scale farm area under pump irrigation is 1,600 hectares, mainly located in the Bardheere District. The number of farmers involved is 500. The main crops grown on these farms are maize as staple food crop and onions, sesame and tobacco as cash crops. Crop production is carried out in all four seasons, thus resulting in a cropping intensity of 330%. During the rainy seasons, maize prevails. Irrigation is used only to overcome water shortages. During the dry seasons, pump irrigation is applied mainly for the cultivation of onions which as a high value crop justifies the costs of pumping.

In general, the farming practices applied are of a low standard. Most of the work is done by hand. Chemicals such as fertilizers, pesticides and herbicides are not used. The average yields are for maize 1.5 tons/ha, for sesame 0.6 tons/ha, for onions 8.6 to/ha and for tobacco 0.5 tons/ha. Surface irrigation is adopted in the small-scale irrigation perimeters. Most of the crops are irrigated in basins with ridges the sizes of which vary between 2 m x 2 m and 6 m x 6 m.

While the importance of maize, sesame and tobacco production of this relatively small group of farmers is of local significance only, the onion yields of around 15,000 tons in total are almost completely marketed in Mogadishu and other towns of the country, where they contribute considerably to satisfying the demand for vegetables and collect high prices.

The second group of pump-irrigated farms in the Juba-Valley consists of the banana plantations in the district of Jamaame. The total area of these medium-sized farms belongs to 76 banana growers and amounts to 8,300 hectares. However, in May 1985, only 1,900 hectares were planted with bananas, of which 1,300 hectares were under production. In addition to bananas, maize and sesame are grown on an area of up to 10% of the cultivated land. The remainder of the area is either abandoned or lying fallow.

Farming practices on the banana farms are of higher standard when compared with the smallholder farms. Soil preparation for bananas as well as for seasonal crops is carried out mechanically and also weeding of the banana plantations. The rest of the crop maintenance and harvesting activities are done by hand. The use of fertilizers and plant protection chemicals is common.

The bananas are grown in furrows, spaced at 2.0 to 2.2 meters and supplied with water by field laterals and a field canal branching from the main canal. The overall irrigation efficiency is estimated to be 50%. In most years, the banana plantations suffer from water shortages in the Juba River during the dry season between December and April, and from time to time parts of the plantations are destroyed by floods caused by rain and river water.

The average yields of the banana plantations are 27 tons/ha and year. With a total production estimated at 30,000 tons in 1984, representing nearly 30% of the national production in that year, the banana growers of the Juba Valley play an important role in the economy of the country. Since the organization of services for the banana sector has been improved during the last years, the cultivation areas are being permanently extended. The total potential land for bananas is estimated to be around 10,000 hectares.

3.2.2. Flood irrigation

Flood irrigation is carried out in the natural depressions, locally called "desheks", in the flood plains of the Juba River which are seasonally flooded by the river and in addition may be flooded by ground water flow from the river and rainfall run-off from adjacent areas. The frequency of flooding varies according to the size of floods, the location of the desheks and to the presence and quality of flood protection systems and breaches in the levees and flood bunds. The frequency increases towards the lower reaches of the river. On average, the return periods of flooding during both Gu and Der seasons amount to 1 - 2 years without flood protection systems and 5 - 6 years with flood protection.

The total cultivated land in the desheks amounts to 12,700 hectares of which 1,100 hectares are located in Saakow, 2,200 hectares in Bu'aale, 1,520 hectares in Jilib and 7,880 hectares in Jamaame and Kismayo districts. The total number of farm families involved in deshek cultivation is about 9,000. The average farm size is 1.4 hectares.

The main crops grown in the desheks are maize as food crop, and sesame and tobacco as cash crops. Interplanting of beans, peas and vegetables amongst maize and sesame is widely practised. Also tree crops such as mangoes, papaya, coconuts and citrus are found. Also of some local importance are water melons and groundnuts in Jilib Districts and sorghum in Saakow District.

Most of the land in the desheks is prepared by hand. No animals and only occasionally tractors are used for soil preparation. This includes the construction of basins with ridges in order to improve water retention of the soils. Sowing, planting, weeding and harvesting are also carried out by hand.

Farm inputs are hardly used for crops grown in desheks, so that farmers face severe problems of diseases and pests which reduce their yields. The following table 1 shows the areas, yields and total production of each crop grown in the desheks at district level.

Table 1: Corps production in desheks per district

District	Crop	Cropped Area in ha	Yields in t/ha	Total Production in t
Saakow	maize	1,380	0.6	828
	sorghum	400	0.5	200
	sesame	430	0.4	172
	tobacco	30	0.3	9
Bu'aale	maize	2,800	0.5	1,400
	sesame	1,610	0.4	644
	tobacco	70	0.4	28
Jilib	maize	1,830	1.0	1,830
	sesame	1,020	0.5	510
	watermelons	180	20.0	3,600
	groundnuts	30	0.8	24
	tobacco	60	0.5	30
Jamaame/ Kismayo	maize	7,250	1.4	10,150
	sesame	8,430	0.4	3,372

The total productions of the main crops of maize and sesame are about 14,000 tons and 4,700 tons, respectively. With regard to maize yields, a great variation can be observed. Taking into consideration the number of 9,000 farm families involved in deshek farming, the conclusion can be drawn that most of the produce is consumed locally and only small quantities from this sub-sector of agricultural production are marketed at national level.

3.2.3. Large-scale irrigation projects

Juba Sugar Project: The project lies on the right bank of the Juba river in the district of Jilib. The project is designed as a state farm and comes under the responsibility of the Ministry of Industries. Implementation of the project started in 1976. Management and supervision functions were provided mainly by expatriate staff. Replacement for all positions by Somali staff was foreseen by the end of the first project phase in 1982. This was, however, not possible so that up to now a large proportion of managers and supervisors are still expatriates.

It was planned to cultivate 7,200 hectares of sugar cane by 1982 and to produce 65,000 tons of sugar p.a. by that stage. In a second phase, it was intended to extend the area under cultivation to 13,500 hectares. The original targets for cane cultivation could not be achieved. At the end of the first project phase, only 70% of the planned area was cultivated. It is expected that in 1986 the planned area will reach its full extent. Also the construction of sprinkler irrigation and drainage works was delayed. By

the end of 1982, only 65% of the total amount of work could be completed.

Since the beginning of the project, various problems have hampered implementation. The most important of them are the lack of skilled, semi-skilled and unskilled labourers and a constant lack of fuel and spare parts for construction and agricultural machinery and irrigation pumps, resulting in recurrent breakdowns.

The sugar factory which could be completed in time (1980) and which could be so far be kept running, is also facing problems of shortage of skilled labour, mainly artisans and engineers, and lack of spare parts for the factory. The production capacity of the factory is 65,000 tons of sugar per year. In a second phase, an extension of the capacity up to 100,000 tons per year is envisaged.

Total sugar production reached 22,000 tons in 1982 und 28,000 tons in 1983. In 1984, production dropped down to 20,000 tons due to the fact that only 3,100 hectares of cane could be harvested.

The contribution of the Juba Sugar Project to sugar production on a national level was 65 percent in 1982, 67 percent in 1983 and 38 percent in 1984.

Fanoole Rice Project: The project was initiated with the assistance of the Russians in 1963 and taken over by the Chinese in 1979. The project consists of two parts. Part one comprises the construction of a barrage on the Juba River at Fanoole, designed as headworks for a main irrigation canal. It contains a power plant with an installed capacity of 4.6 MW. The main canal which is 52 km long, has a capacity off 33 m³/sec. In addition, part one includes the construction of transmission lines, the provision of drinking water and the implementation of a communication system. This part of the project could be completed in 1984.

Part two consists of the development of a rice farm which is designed for an area of about 7,500 hectares of net irrigated land. In 1985, bush clearing had been carried out on an area of about 2,000 hectares. By that time, the main canal was also completed as well as the infrastructure for gravity irrigation and drainage including a road net work for 1,500 hectares.

1984 was the first year of operation of the gravity irrigation system. In two cropping seasons, a total of 750 hectares of rice were planted. The yields reached 4.1 tons/ha, thus total production amounted to 3,100 tons. In 1985, a total of 1,100 hectares were cultivated with yields of 4.5 tons/ha, resulting in a total production of 4,900 tons.

In 1985, the construction of a rice mill was completed. Information is scarce as to the seasons for the altogether slow implementation of the project. With regard to the agricultural development, it is apparent that

the lack of skilled labour as well as the insufficient supply of fuel and spare parts for the machinery are the main obstacles to a more successful project performance.

Mogambo Irrigation Project: The project was designed as a state farm under the responsibility of the Ministry of Agriculture. It is, however, also intended to distribute around 10% of the project area to smallholders for rice cultivation. By the end of 1985, the project was still under construction. It aims in its initial stage at the cultivation of 2,215 hectares of rice and cotton under irrigation. The ultimate size of the project is envisaged to be 6,400 hectares.

The first project phase is planned to be completed in 1986. From that time on, an area of 2,052 hectares will be cultivated with rice under gravity irrigation at a cropping intensity of 150%. 163 hectares will be dedicated to cotton production under sprinkler irrigation.

3.3. Rainfed Agriculture

Crop cultivation under rainfed conditions is still the most common form of agricultural land use in the Juba Region. A total of about 120,000 hectares of farm land are owned by around 12,000 families, the average farm size being 10 hectares. The following table 2 shows the distribution of the rainfed areas amongst the districts of the Juba Valley.

Table 2: **Areas of rainfed agriculture in the Juba Valley**

District	Farm Land in ha	Cultivated Land in ha
Bardheere	58,000	41,000
Saakow	35,000	23,000
Bu'aale	2,000	1,500
Jilib	2,500	500
Jamaame	19,000	3,000
Kismayo	1,500	100
Total	118,000	75,100

As shown in table 2, not all the farm land is used for crop production. On average only 64% of the farm land is cultivated, while the rest is bush land and remains as land reserve. The overall cropping intensity with regard to the cultivated area is about 190%, so that the total area cropped during both rainy seasons amounts to over 140,000 hectares.

By far the most important crop grown in the districts of Bardheere, Saakow and Bu'aale is sorghum. Over 90% of the area cropped in both sea-

sons is cultivated with sorghum while the rest of the area is planted with sesame and beans. In the lower reaches of the river valley, i.e. in the districts of Jilib, Jamaame and Kismayo, maize cultivation dominates due to higher precipitations. About 50% of the cultivated area is dedicated to maize in Gu-season. There is a time lag of about 6 weeks following the sowing of maize. Then, the rest of the area is cultivated mainly with sesame and also with some beans, groundnuts and cotton, the growth period of which reaches into the following Hagaa-season. There is no crop cultivation in the Der-season due to unreliable rainfalls.

Farming practices in rainfed agriculture are rather primitive. All farm work, with the exception of some mechanical field preparation in Lower Juba, is carried out by hand. Farm inputs are normally not available. The following table 3 shows the annually cropped area for each crop, the yields and the total production at district level.

Table 3: **Crop production in rainfed agriculture in the Juba Valley**

District	Crop	Cropped Area in ha	Average yield in t/ha	Total production in t
Bardheere	sorghum	73,000	0.5	36,500
	maize	5,000	0.5	2,500
	sesame	3,000	0.2	600
	beans	1,000	0.2	200
Saakow/ Bu'aale	sorghum	46,000	0.5	23,000
	maize	2,000	0.3	600
	sesame	1,000	0.2	200
	beans	200	0.4	80
Jilib/ Jamaame/ Kismayo	maize	5,000	1.2	6,000
	sesame	4,000	0.6	2,400
	beans	1,000	0.5	500
	groundnuts	300	0.5	150
	cotton	100	0.4	40

3.4. Contribution to crop production at national level

The present contribution of the main products cultivated in the Juba Valley to the national production is shown in table 4. A considerable proportion of total crop production is already contributed by the growers of that region. However, there is still a huge potential of cultivable land and the region is still far from utilizing all its resources.

Table 4: Agricultural production in the Juba Valley compared with total production in Somalia, 1984

Crop	Total Production in Somalia		Production in Juba Valley		Contribution to total production in Somalia in %
	average yield in t/ha	production in '000 t	average yield in t/ha	production in '000 t	
Maize	0.8	270.0	1.0	23.0	9
Sorghum	0.5	221.0	0.5	60.0	27
Sesame	0.5	46.0	0.4	8.0	17
Bananas	19.3	106.0	27.0	30.0	28
Rice	2.1	4.1	4.2	3.1	76
Sugar	53.3 ⁽¹⁾	52.2	68.0 ⁽¹⁾	20.0	38

¹⁾ cane

4. The political framework of Juba Valley development

During the seventies, planning for Juba Valley development was first under the responsibility of the State Planning Commission, then under the Ministry of National Planning. The technical ministries were responsible for the implementation of projects: the Ministry of Industries for the Juba Sugar Project, the Ministry of Agriculture for the Mogambo and Fanoole Projects as well as for banana production, and the Ministry of Livestock for the Trans-Juba Livestock Project. Each project was managed by a project unit in the form of an autonomous agency, i.e. they were bound to the rules of the public sector, but administered a budget on their own.

In 1979, a separate planning, implementation and supervision institution was founded: the Juba Valley Development Authority. In order to create clear lines of responsibility and to concentrate the policy under one entity, the Authority was replaced in 1982 by the Ministry of Juba Valley Development (MJVD) which has since been carrying out planning, coordination, supervision and, to a certain extent, implementation of development projects and programmes in the Juba Valley. The ongoing projects remained under the Ministries of Agriculture and Industries.

The individual tasks of the MJVD are laid down in its Constitutional Law and may be summarized as follows:

- management of the Juba waters,
- acquisition of the necessary funds for studies and projects,
- planning, coordination and implementation of studies relevant to Juba Valley development,
- planning, implementation and management of all projects in the Juba Valley.

Since 1965, the key element of Juba Valley development has been the Bardheere Dam project. The ongoing irrigation projects were planned and implemented under the assumption that dam and reservoir would be functioning at the beginning of their operational phases. After a period with only little progress in the early eighties, efforts have been resumed during the last three years to speed up development. Since the end of 1983, an international committee with the participation of representatives of the Somali government and the committed and potential donors, has been advising on and coordinating all preparatory activities for the implementation of the Bardheere Dam Project and downstream development.

5. Planning programme for Juba Valley development

As far as overall planning for the development of the Juba Valley is concerned, three major attempts have been made to work out comprehensive studies. Although they led to first pledges for the Bardheere Dam Project in 1980, most of their results must be considered outdated. One of the main items which has fundamentally changed the strategic development approach is the reversed emphasis of importance on the purposes of the Bardheere Dam Project. The dam was originally planned mainly for the storage of irrigation water. Due to the steep rise in oil prices on the world market, the project has become much more viable, if power generation is considered as the main purpose.

Planning during the last three years has been carried out under this assumption. Although development of irrigated agriculture is still being considered of equally high priority, the main burden of paying back the investment will have to be attributed to the production of electricity. The engineering design, completed in January 1986, has taken this aim into account.

As to the planning needs for downstream development, mainly for irrigated agriculture, a sound data base has to be established before a definite regional development plan is worked out. The MJVD has therefore concentrated on resource planning in the following fields:

- Collection and processing of all surface water data has been completed.
- Surveys on the present situation in all subsectors of agriculture have been worked out and a monitoring system has been established.
- A comprehensive soil and land classification study is underway, which will show the land potential for irrigated agriculture on reconnaissance level.
- A study is being carried out on the impacts of Juba Valley development on ecological and social environment and it includes a comprehensive survey of human resources.

Further planning steps envisaged are:

- Feasibility studies for priority irrigation areas which should be established before the commissioning of the Bardheere Dam in order to absorb stored water right from the beginning.
- A masterplan for regional development of the entire Juba Valley Region including investment plans for all productive and supporting sectors.

It is envisaged that the planning process will be completed by the end of 1988.

6. Development prospects

6.1. Assumptions

Analysing the present situation and the development potential in the Juba Valley, it becomes obvious that the main precondition for any further development on a significant scale is the regulation of the river. Somali development policy is more and more directed towards a more intensive involvement of private capital. The private sector will, of course, hesitate to invest in agriculture in the Juba Valley as long as droughts and flood hazards persist. It is therefore a concern of highest priority for the Somali government that river regulation works be carried out as soon as possible.

Although a definite decision on the construction of the Bardheere Dam has not yet been made, it appears that all technical and economic indicators justify optimism for the immediate continuation of the fairly well advanced preparations for project implementation. It is therefore assumed that a positive decision will be made by the end of 1986 and that the Bardheere Dam will be operable by 1993.

Another precondition for the development of the core area between Bardheere and Kismayo is the construction of an all-weather road between Jilib and Bardheere. The towns of Kismayo, Jilib and, to a minor extent, Bardheere have already acquired some of the functions of central towns, a process which will be accelerated in the future. The integration of the Middle Juba Region into the development process of the valley axis will only be possible after construction of the above mentioned road. Some progress has been made here as well: Engineering design will be completed by the middle of 1986. Thus it can be expected that the road will be constructed by 1993 too.

Development measures would concentrate on a relatively narrow fringe following the Juba River from Bardheere District down to the Indian Ocean. Three major complexes of land have been identified as offering the most suitable conditions for irrigated agriculture:

- the lower reaches of the valley downstream of Fanoole;
- the area between Bu'aale and Saakow;
- the area around and downstream of Bardheere.

Although irrigated agriculture will be the key sector for future development, the planning approach will be of integrated character. Improved infrastructure and an extension of irrigated agriculture will create incentives for other sectors, mainly agro-industries, services, construction, livestock and fisheries.

6.2. Short- and medium-term development

Consideration of future development prospects distinguishes two time horizons: the short to medium-term period before the completion of river regulation works and long-term development. During the period up to commissioning of the Bardheere Dam and Reservoir development efforts will first of all have to concentrate on the completion of the ongoing projects. The Juba Sugar Project is close to the completion of its first phase, which envisages the establishment of 7,200 hectares of cane plantation. An evaluation of the results achieved will have to show whether an expansion up to 13,500 hectares is suitable. Construction of the Mogambo Irrigation Project was started in 1983 and, although delays have occurred due to different reasons, it can be expected that the first phase of 2,200 hectares can be successfully completed before 1990. A second phase envisaging the construction of another 4,200 hectares will depend on the results of the first phase.

The implementation of the Fanoole Irrigation Project has been affected by serious delays. Considerable progress has been achieved in the construction of engineering works; but preparation of the major irrigation area and cultivation are progressing very slowly. Of an overall area of 7,500 hectares, only about 1,100 were cultivated in 1985. It appears to be rather doubtful that the project can be completed by 1992, if no additional inputs are provided. Reorientation towards a smallholder structure may be a more suitable approach than a state farm structure.

It is difficult to make predictions for future development of the medium irrigated farms' sub-sector (mainly banana cultivation). Prospects will mainly depend on the efficiency of input supply and marketing. Since the system has been functioning quite well during the last few years, it is assumed that the area will be extended by 250 hectares per year. The extension will take place by rehabilitating formerly abandoned plantations rather than by clearing virgin bushland.

The extension of the presently cultivated deshek land and of the small-scale irrigated area will be based on the natural growth rate of the population involved. Making an allowance for people settling in townships our outmigrating, it is assumed that the rate of expansion will be 2% per year.

As far as yields, irrigation efficiency, cropping patterns and cropping intensity are concerned, there are no indications for major changes. Ensurance of production for home consumption will still prevail. Shortages in input supply and water availability as well as insufficient advice offered by agricultural extension services will not allow an increase in yields, irrigation efficiency and cropping intensity. Even if, as envisaged, a project for the support of deshek smallholder farmers is implemented

in 1986, the impacts on the production of this sub-sector will still be of minor importance up to 1993.

The main bottlenecks which will reduce productivity but not the extension of areas up to 1993, will be:

- shortage of water during the dry season for the irrigation of perennial crops downstream of Fanoole;
- shortage of labour on the large-scale schemes and the banana plantations;
- shortage of fuel and other inputs for irrigation pumps;
- lack of agricultural extension and other services.

A comparison between production figures of 1984 and 1992 are given in the following table 5.

Table 5: **Comparison of total irrigated crop production in the Juba Valley in 1984 and 1992**

Crops	Total Production in 1984 in tons	Total Production in 1992 in tons
Maize	17,700	20,700
Sorghum	180	225
Sesame	5,700	6,650
Onions	15,400	18,000
Tobacco	280	300
Water-melons	3,600	4,600
Groundnuts	40	50
Bananas	30,000	77,000
Cotton	70	400
Rice	3,100	20,000
Sugar	28,000	52,000

Source: Own Investigations and Estimates

6.3. Long-term development

The completion of the Bardheere Dam and Reservoir in 1992 would have the following major effects on agricultural development in the Juba Valley:

- Flood damage would not occur any more. It has not been investigated in detail, whether desheks can be artificially flooded or whether they will have to be equipped with pumps.

- There would be enough water available all year round for the irrigation of the existing perimeters and for the development of new schemes with seasonal as well as with perennial crops.
- Power generation at the dam site would allow the installation of electric pumps for irrigation of agriculture.

To assess the prospects of future agricultural development, a time horizon of 25 years (up to 2017) is considered here.

It can be assumed that the presently quite productive small-scale irrigation sector, including the desheks, will continue to expand at an annual rate of 2%. The fields in existence by 1992 should not be included in new large-scale schemes. The coincidental, uncontrolled flooding of the desheks can be converted into a system under controlled irrigation using relatively low inputs. This would not only allow an increase in productivity, but also an expansion of the cultivated area.

Assessments of a possible extension of medium- and large-scale schemes have been made in various reports. They vary between 1,500 and 8,285 hectares per year. A mean extension of 3,000 hectares per year appears to be realistic, assuming that the establishment of infrastructure for river regulation would attract considerable private capital. This would include future extensions of the existing projects up to the maximum areas officially assigned to them (Fanoole 7,500, Mogambo 6,400, Juba Sugar 13,500 hectares). In this way, 75,000 hectares of irrigated land would be added to the existing schemes by 1992. The total net area under irrigation in the year 2017 would thus be around 125,000 hectares.

Comparing this figure with the existing resources, the following conclusions can be drawn:

- According to existing information, sufficient land would be available. Under the assumption that perennial crops would be grown on class 1-land only, about 40,000 hectares could be cultivated with high value crops.
- Even if water releases from the reservoir were determined only by the needs for power generation, sufficient water would be available for the irrigation of 40,000 hectares of perennial and 85,000 hectares of seasonal crops.
- If only the natural growth of population is considered, there would be sufficient labour force only under the assumption that the total agricultural land were cultivated under full mechanization. Since this is certainly not realistic, labour resources will be a bottleneck if it is not possible to attract additional population from other sectors and regions to the Juba Valley.

An estimate of possible production for the time 25 years after completion of the Bardheere Dam Project would be an academic exercise. Too many imponderables make a realistic prediction impossible. But if construction of the dam materializes as envisaged, the following general prospects can be expected:

- Banana production would be several times bigger than at present, i.e. market outlets have to be found or the existing ones extended, since the absorption capacity of the home market is quite limited. The same holds true for other tropical fruits like grapefruits and water melons. The contribution of this sector to the earning of foreign exchange could increase substantially.
- Sugar production should be increased up to the saturation of the national market, thus substituting the presently quite high proportion of imports.
- The potential for grain production (mainly rice and maize) is large enough to reach self-sufficiency and even export a proportion to neighbouring countries, thus again saving and even earning foreign exchange.
- Cotton production should be increased in such a way as to deliver sufficient raw material to the national textile industry.
- Cultivation of oil crops could also be extended up to the achievement of full self-sufficiency and substitute present imports of edible oil.

The possible increase of agricultural production would create secondary effects which would give impulses for the development of other sectors as well. Agro-industries like oil mills, rice mills and cotton ginneries would have to manage the processing of raw materials. The services sector would have to grow substantially just as trade, handicrafts and construction. Agricultural by-products, such as straw, oil cakes and molasse would largely benefit the livestock sector.

On the other hand, it should not be overlooked that the development of the Juba Valley is an immense challenge for a country like Somalia requiring a successful, concerted effort. Investment, follow-up and operating costs will have to be earned by agricultural production. Labour force will have to be increased, skills and management capacity will have to be improved significantly and funds for investment will have to be contributed by the private sector, if the pretentious objectives are to be achieved.

6.4. *Environmental aspects of Juba Valley development*

Many dam and irrigation projects all over the world have failed, because inverse impacts on the ecological and social environment were not taken into due account during planning or were just ignored during imple-

mentation. In the course of the preparation process for the Bardheere Dam Project, comparisons have often been made with the negative experience of the Assuan und Nile development in Egypt. Arguments have been raised to stop all major dam projects, because the negative effects overcompensate the positive ones.

The possible environmental impacts of Juba Valley development have not yet been studied in detail. But as far as can be deduced from the information available, the risk of negative effects is relatively low:

- The area to be flooded is very scarcely populated; there is hardly any agricultural production or any other productive activity.
- Sediment load of the river is low; the risk of sedimentation of the reservoir is negligible for the first 50 years.
- The major parts of the area to be irrigated are either former or present agricultural land, thornbush or fallow land.
- Since the nomads avoid the area adjacent to the river because of tsetsefly infestation, irrigation schemes will hardly occupy any present pasture land. On the other hand, livestock will benefit from agricultural by-products serving as fodder.
- From the very beginning of planning, vast areas have been foreseen for the installation of national parks, game reserves and migration corridors for livestock.
- Erosion in the reservoir area and along the river does not seem to be a problem.
- Fisheries at the river mouth, which in any case is not an intensive activity, will only be marginally affected.

Problems which will certainly accrue will have to be duly considered and measures be taken to avoid or at least mitigate the negative impacts to be expected:

- Salinization of soils may become a problem in some parts of the valley. Proper drainage systems will have to be installed in the irrigation perimeters and, where necessary, leaching carried out periodically.
- Water-borne diseases will inevitably increase, i.e. the health system has to be significantly improved.
- People will have to be moved and resettled, a programme which will have to be carefully planned and executed.
- Natural flooding of the desheks may not be possible any more after regulation of the river flow. The cultivated areas in the flood depressions will have to be converted into agricultural land with controlled irrigation.

As a first step towards a proper conservation of social and ecological environment, a comprehensive study on present situation, probable impacts and measures to be taken is under preparation.

7. Conclusion

Without any doubt, the Juba Valley constitutes the only major potential for an extension of agricultural production in Somalia. Without river regulation, agricultural development is coming to a standstill because of irregular availability of water and frequent inundations. The country is far from self-sufficient in basic food production and is suffering from the heavy burden of insufficient foreign exchange badly needed for the importation of basic commodities, both for investment as well as for consumption.

It is therefore only logical, that the Somali government is trying to speed up the Bardheere Dam Project and subsequently, the development of the Juba Valley. The possible risks, problems and constraints are not being disregarded. The advantage and the big opportunity of the project is that it is a latecomer: Experiences from other similar projects are available and have been taken into account as important information from the very beginning of the planning process. Comparing the present situation in the Juba Valley with other projects, it appears that the conditions are relatively favourable.

Donors have become quite sensitive to the possible negative sideeffects of dam and irrigation projects. They are therefore insisting on clarifying these problems prior to making any binding financial pledge. Several conditions have been laid down in different appraisal reports such as e.g. the submission of a study on environmental effects, including the costs of mitigating measures.

Although a number of donors are assisting the Somali administration and have promised further technical assistance, the main bottleneck of the project is manpower, on the level of management as well as on the level of farmers. It can only be hoped that the period of 7 - 9 years which remains before the Bardheere Dam might come into operation, will be intensively used to improve and upgrade managerial skills and to prepare the farmers of the Juba Valley for the immense tasks which lie ahead of them.