REPUBLIC OF BOTSWANA

THE CHOBE ENCLAVE

Non-agricultural activities

Floor

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Non-agricultural activities

An analysis

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CHAPTER 1 INTRODUCTION

1.1 Background of the study

Botswana is a thinly populated, landlocked country located between the Republic of South Africa, Namibia and Zimbabwe with the size of Kenya or France. It has a population slightly exceeding 1 million. The Republic of Botswana is a multiparty parliamentary democracy and is ruled by the Botswana Democratic Party since Independence (1966). The GDP rate of economic growth over the last two decades was about 10 percent per annum. This high growth rate was accompanied by a transformation (i.e. modernisation) of the economy which is manifested by: the emergence of a mineral sector now representing almost 30 percent of the countries GDP; the strong expansion and the commercialization of the livestock sector bringing about an increase in cattle sales and beef exports; the growth of formal employment, especially in the public service and with newly established parastatals; and by the increasing importance of transactions in cash, among all segments of the population.

In 1987 the Government of Botswana (Ministry of Local Government and Lands - Applied Research Unit, in cooperation with the Ministry of Finance and Development Planning - Rural Development Unit) requested the assistance of the University of Utrecht, The Netherlands, in the implementation of a rural development research project. The objective of the research project was formulated as follows:

"To provide necessary research and land use planning support to facilitate the implementation of the Communal First Development Area (CFDA) strategy in Botswana by means of conducting bio-physical, land use and socio-economic baseline and feasibility studies whereby special emphasis is directed towards agricultural production and off-farm employment with the ultimate aim of producing CFDA Integrated Land Use and Development Plans and formulating plan specific implementation proposals." (Project Memorandum, 1987).

Three district CFDAs were selected for this research project: Chobe, North-East and Kweneng. Each CFDA would be provided with two teams of research assistants from the University of Utrecht, consisting of social and physical geographers. The Chobe Applied Research Teams (ART) were stationed in the area from July 1987 till August 1988 during which time data collection for this thesis was carried out. This study may best be seen in coherence with the First and Second Technical Report on the Chobe CFDA field survey, and The Chobe Enclave development profile and land evaluation (Jansen, 1988, a, b and c), as an in-depth study of one aspect of this survey, viz. non-agricultural activities.

1.2 Justification, objective and research questions

Since the beginning of the eighties, more and more attention has been paid to employment and income situations in rural areas of developing countries. The role of non-agricultural activities receives special emphasis by international organizations, national governments, research agencies and donor organizations. This increased attention may be explained by several factors of which the most important are:

- several desillusions from strategies aiming at rapid economic growth in the agricultural sector, caused to draw the conclusion that rural development means more than agricultural development only;
- the failure of urban based industry to absorb all available rural surplus labour;
- the growing attention for the basic-needs strategy, and for questions of distribution of the fruits of development efforts.

Liedholm (1981, p.61) mentions five reasons to justify the inclusion of non-agricultural activities in rural development strategies:

1. they can provide a source of productive employment for underutilized farm labour, particularly during the agricultural slack-season;
2. they can assist in stabilizing total rural household income by off setting some of the cyclical fluctuations associated with agricultural income;
3. they can often provide the crucial margin of income for the poorest of the rural households, particularly those with little or no land;
4. they can generate an additional source of household liquidity to finance agricultural production expenses, investments and consumption; and
5. they can reduce the need to migrate in order to reach desired income levels and thus reduce pressures on the urban areas of the economy.

The themes in the literature on non-agricultural activities are: the employment generating character, the income generating character, the special importance for certain socio-economic groups and their role in rural development strategies.

Because of this international focus on the subject, the lack of knowledge of this subject at local level and the potentially practical value of such knowledge (in order to improve rural development efforts), the subject of non-agricultural activities was chosen for this thesis. As the title indicates, the analysis applies to the Chobe Enclave in northern Botswana.

The objective of the study is as follows:
"To describe and analyse the non-agricultural activities undertaken by the Chobe Enclave residents in the context of the area's rural and spatial economy in general and the agricultural sector in particular, and to indicate possible efforts to improve this sector".

In order to fulfil the objective of the study, a number of research questions were formulated. They may be divided in two main themes, namely the description and analysis of non-agricultural activities

(question 1 to 4), and a discussion on policies which places the role of these activities in a broader perspective (question 5 and 6). The questions are:

1. Which non-agricultural activities are performed by the members of the rural households?
2. What is the importance of these activities in terms of employment, generated income and linkages with other economic sectors?
3. Is there a relationship between income from non-agricultural activities and agricultural performance of the household?
4. Is there a relation between income from non-agricultural activities and other socio-economic features of the household?
   As socio-economic features have been chosen:
   - number of draught animals available
   - sex of the head of household
   - size and composition of the household
   - total household income
5. How can the evolution of rural development policies in general and in Botswana in particular be characterised?
6. Which policies and programmes to stimulate non-agricultural activities are provided by the government of Botswana, and how are they implemented in the Chobe Enclave?

1.3 Definitions on non-agricultural activities

In this study non-agricultural activities are defined as:
"all activities performed within manufacturing, construction, commerce, transport, services and the primary activities fishing, hunting and gathering, and forestry".
The latter is included as a non-agricultural activity because people involved in forestry are either working for a private company or are gathering forest products for their own consumption. Consequently, agricultural activities are defined as the activities relating to arable agriculture, horticulture and livestock rearing.

The literature identifies many different concepts and definitions in this particular field. Concepts used are:

1. farm versus non-farm;
2. agricultural versus non-agricultural;
3. formal versus informal; and
4. on-farm versus off-farm (see figure 1.1).

The first two dichotomies are used synonymously and a distinction is made on the basis of differences in kind of activities. Non-agricultural activities are divided in manufacturing, construction, commerce, transport and services. Because of the different concepts, different authors tend to accentuate different activities. For instance, the study of the UNDP "Development of small industrial enterprises" (1988) highlights the manufacturing sector only. Figure 1.1 shows the different concepts and activities as described in literature in a schematic way, and how they are used in this study.

Figure 1.1 Schematic illustration of agricultural and non-agricultural activities in the locational and legislation spectrum

Location \ Activ.		Agricultural	Non-agricultural						Legislation
		agric	hunt.	fish.	manu.	cons.	comm.	trans	serv	
rural farm	on	*			(*)		(*)			informal
	off	*	(*)	(*)	(*)	(*)		(*)	(*)	
urban		*			*	*	*	*	*	formal

(*) activities included in the definition of non-agricultural activities as used in this study
Source: modified after World Bank; 1978, p.14

Agricultural activities are usually divided in agriculture, hunting and fishing. Most authors and organisations, such as the ILO, include the primary activities fishing and hunting under agricultural activities. Van Dijk explains that although these activities can be seen as non-agricultural activities, they are generally not defined as such because they resort under a governmental department (for instance fishing under Fisheries Department), whilst small scale non-agricultural activities usually do not (Van Dijk, 1981). In a study in Kenya, fishing and hunting were defined as non-farm activities (Livingstone, 1986). This too supports the choice to include these activities in this study as non-agricultural activities. This choice was made as such because of the important role these activities play in the Chobe Enclave economy.

Formal activities are, in contrast to informal activities, officially registered. In this study the term informal is used because major emphasis is put on not officially registered non-agricultural activities. So, in the analysis (chapter 5) they get more attention than formal activities, and indications for improvement are formulated for this kind of activities mainly (chapter 6).

The terms on-farm versus off-farm have nothing to do with the formal legislation or kind of activities but rather with the location, namely on and outside the farm. For the division of rural/urban activities the UNDP definition is used: all locations with up to 20,000 people, so all the non-agricultural activities in the Enclave, may be defined as rural (UNDP, 1988).

1.4 Research methodology

Preparations (i.e. study of secondary sources) and the drafting of the research outline were done in the Netherlands. For practical reasons the study area was divided in a northern and a southern part (see basemap of the Chobe CFDA). The methods used for data collection were:
- inventory surveys during the first phase of the research in both areas, and;

- in-depth survey during the second phase, also in both areas, and;
- conversations with key informants such as the Rural Industrial Officer, the CFDA Coordinator, the District Officer Development, Agricultural Demonstrators and local politicians and businessmen.

As the unit of research the household was chosen and defined as: all the people who eat and reside together in the same compound (locally called "lolwapa"). To draw from a correct sample frame, all individual households in each village were mapped by means of airphoto interpretation and field checks. The households were selected randomly by interviewing each second (south) / third (north) household. In the area roughly 900 households were counted, almost equally divided over the two areas.

The survey was conducted in two phases, an inventory phase and an in-depth phase. During the inventory phase, data were gathered on the demographic and socio-economic characteristics of the households. An extensive amount of information was gathered during this phase, as in total 50 percent of all households in the study area cooperated. The questionnaire contained also a number of general questions on non-agricultural activities.

During the in-depth phase of the survey more insight was gained in problems the households face in operating their farms, when health care and extension services are concerned, etc. In this phase, special attention was paid to the non-agricultural activities of the households. The selection of lolwapas for the in-depth phase was done by taking a stratified sample from the households which participated in the inventory phase. The households were typified and classified in four draught power classes (see chapter 3). These classes were used as the sample frame, and an equal number of households was included from each draught power class as represented in the inventory. In total 120 households participated in the second phase (in-depth) survey, equally distributed over the southern and northern area.

In order to get a better insight in th non-agricultural sector, an extra 152 households were visited for a short questionnaire on non-agricultural activities only. All of them had participated in the first phase inventory survey too, which made it possible to link both sources of information.

Extensive information on non-agricultural activities was thus obtained from 272 households in total (see table 1.1). By combining the inventory and in-depth survey information of each household, it was possible to relate information on non-agricultural activities to other socio-economic characteristics.

In order to calculate the figures for the total area, a weight factor (see table 1.1) was used. This weight factor compensates for the difference in coverage percentage of the sample size in the two areas. By multiplying the area figures with their weight factors, the figures for the total area were calculated.

Table 1.1 Sample sizes Chobe CFDA field survey, 1987-88

	Number of households N.	Inventory survey N1.	coverage	w.f.	In-depth survey + non-agric. survey N2.	coverage	w.f.
Northern area	473	189	40%	2.5	131	28%	3.6
Southern area	444	271	61%	1.6	141	32%	3.2
CFDA-area	917	460	50%		272	30%	

w.f. = weight factor
Source: CFDA field survey, 1987-88

See annex 1 for the reliability and validity of the data. For the analysis of the data several characteristic figures were calculated like chi-squares and Gini coefficients.

1.5 Report outline

In chapter 2 the literature regarding non-agricultural activities within the rural economy and rural development (strategies) in developing countries is reviewed and analysed, with special reference to the Botswana context. It ends with a review of literature on policies of non-agricultural development in general and of Botswana in particular. Chapter 3 gives a profile of the study area. The natural, socio-economic and cultural characteristics are described in the context of the study object. Chapter 4 deals with the non-agricultural sector in the Chobe Enclave. Here the relation of the sector to other sectors of the household economy and the rural economy in general is the central issue. Chapter 5 also deals with non-agricultural activities in the Chobe Enclave, but here the activities themselves are central. Furthermore, the impacts of implemented programmes regarding promotion of these activities are analysed in this section. In the first section of chapter 6 the results of the study will be summarized and discussed in the light of the broader conceptual framework as described in chapter 2. The second section draws the attention to the possibilities and constraints regarding the promotion of non-agricultural activities in the Chobe Enclave, and attempts to identify future feasible fields of attention for this sector.

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CHAPTER 2 CONCEPTUAL FRAMEWORK

2.1 Rural development strategies and non-agricultural activities

2.1.1 Literature review on rural development, in relation to non-agricultural activities

Rural development became a major topic of development planners during the sixties. Before, the development question was mainly tackled by large-scale industrialisation programmes within urban areas. Reluctantly the conclusion was reached that this unilinear approach (as were Rostow's stages of development) did not bring about the "great leap foreward", or even the "take-off stage". For long, agriculture was not taken into consideration. In the sixties a multi-linear approach was established, in which it was recognized that, in order to pursue development, one should not put all eggs in one basket. Beside industrialisation, the development of the agricultural sector was taken up. An appropriate description of the different kinds of rural development strategies is provided by Sterkenburg's typology of "views on rural development" (1988, p.13-17). Comparing the different strategies facilitates a framework for the description and analysis of the characteristics of a country's rural development policy.

Sterkenburg distinguishes between rural development seen as:
1. synonymous to agricultural production increases;
2. a welfare improvement of the rural community;
3. the satisfaction of basic needs on the part of the rural population;
4. a structural transformation of rural society; and
5. an integrated process of achieving higher living standards in the rural areas.

The agricultural production view
In this view, the main concern of developing the countryside is to improve agricultural output. Schultz (1964) is mentioned here as an exponent of this positivist stream of the sixties. He argued that if traditional farmers were offered economic incentives and the right package of techniques, they would handle in a rational and efficient way, and thus improve the output of their holdings. In that period a number of well equiped research stations were opened, in order to develop this appropriate package. Remarkable results like the High Yielding Varieties (HYVs) were booked. Within this view, with much emphasis on agricultural output increase, no attention was paid to other sectors of the rural economy. Another point of criticism is that, because HYVs need a lot of inputs such as fertilizers, pesticides and machines which increase production costs, the poorer / smaller farmers were not able to benefit from these new opportunities.

The community welfare view
Whereas the latter view is preoccupied with quantitative aspects of rural development, rural development within the welfare view is defined in qualitative terms. The aim is not the improvement of agricultural output per se, but the strengthening of local institutions / community amenities such as cooperatives, clinics, schools and transport

networks. They have to function as instruments for communities to mobilize their own recources. In this way agricultural output improvement is pursued on a local / independent basis. Non-agricultural activities do not play a specific role within this view.

The basic needs view

In the basic needs view two themes are put in the fore. The first is the combatting of rural poverty through the satisfaction of basic needs. Improvement of the nutritional status, clothing, health and education (the basic needs) would be achieved through productive employment and higher incomes. The emphasis on productive employment can be traced back to the ILO report "Employment, growth and basic needs, a one world problem" (1976). This productivity idea contrasts with the community welfare view, where non-productive factors were seen as the sole motor for development. The second theme is the target-group orientation. In projects which were carried out under the banner of the two views mentioned earlier, it soon became clear that certain groups benefitted a great deal less than expected or not at all. Authors like Soetjatmoko (1978), therefore, argue for structural changes regarding the supposed role of an elite dominated government machinery. Only when efforts are explicitely targetted to the poor, it will be sure that they will benefit from programmes and projects. During a seminar on off farm employment in Delft, The Netherlands (1981), it was concluded that off farm activities could play a significant role to achieve the goal of productive employment. So it is in this basic needs view that for the first time non-agricultural activities are taken seriously.

The structural transformation of rural society view

In this view rural poverty is seen as the result of an unequal distribution of political power. Thus, a fundamental change in power structures is thought a necessary first step to rural development. This radical theory was formulated in the early seventies in order to explain the disappointing results of decades of development efforts, and became widely known as the Dependencia theory. The explanation is almost entirely sought in detrimental external relations (which made this theory liable to critics). De-linking (inter-)national dependency relations, land reform and collective production units are key issues in this view. Non-agricultural activities do not play a significant role here.

The integrated rural development view

As Sterkenburg puts it: "The integrated rural development view emphasises the required attention for the interrelationship between individual activities, sectors, areas and institutions in the development process" (Sterkenburg, 1988 p. 13). Here, the best parts of the other views are brought together, i.e. production increase (in both the agricultural and non-agricultural sector), employment and income generation, distribution of welfare and satisfaction of basic needs. Exemplary for this view is the following quotation: "There is now a widespread recognition of the need for more integrated policies of rural development, that also includes the promotion of non-agricultural activities generating incomes and employment" (UN Asian Development

Institute paper, 1976; in: UN-CAP, 1979). For the first time this view explicitly states that non-agricultural activities play a role in the development of rural areas.

In reality these different views on rural development can be seen operating next to each other in different countries or even within countries depicting a multi-linear approach of development. Different roads to development may be used simultanously. In a chronological sequence a number of shifts and trends in (rural-) development strategies with regard to non-agricultural activities can be observed. The three shifts discussed here may be frequently observed in a country's evolution of its rural development policy.

First there is a shift in attention from almost exclusive preoccupation with (large-scale) industrialization to a broader development view which includes the agricultural sector. In most countries, this shift took place in the sixties. Subsequently, the coming into existence of a two-tiered policy can be observed: one for industrialization and one for agricultural-output improvement. The latter carries a technocratic character, because sophisticated systems using HYVs are propagated. Thus, rural development is seen here mainly in the light of agricultural production. Sometimes it can be observed that governments put efforts in the improvement of communities (as discussed under the second view on rural development).

The second major shift in attention is from big to small(er), which can be dated in the early seventies. Industrialization efforts are descending the urban hierarchy whereby rural centres are incorporated in the range of vision of development planners. The large scale approach for agricultural output improvement however, has not diminished the poverty-problem as expected. Therefore, emphasis is being put into efforts to reach the small-scale farmers. At this point, several countries are holding a basic needs view, others a structural transformation view to rural development.

A third shift from a project / sectoral approach to an integrated approach took place in the late seventies / early eighties. It coincides with the last perspective in Sterkenburg's typology. However, not every country formulated an integrated rural development policy and in most cases an integrated approach is upheld in addition to and / or supplementing other sectoral programmes. Usually, integrated rural development programmes are drawn up for geographically defined areas, in which various sectoral programmes are integrated into one regional interrelated development planning effort. This is achieved by putting emphasis on horizontal planning (with various sectors in one region) and vertical planning (between the local and national level) of a broad spectrum of activities. One of these activities is the improvement of non-agricultural activities (quality, output, marketing, etcetera).

2.1.2 Rural development strategies in Botswana

In order to describe the rural development strategies followed by the Government of Botswana it is necessary to describe the most important programmes. The leading principles of Botswana's rural development policy are (National Development Plan VI, 1985 p.56):
1. rapid economic growth;
2. social justice;
3. economic independence; and
4. sustained development.

In order to understand the evolution of Botswana's rural development policy better, Picard (1987) makes two points which need to be mentioned here as he sees them as important supplements of the leading principles of GOB's rural development policy. Firstly, the fact that the development of the Botswana growth economy is based on mining and large scale cattle exportation and, secondly, that political acquiescence, particularly in the rural areas, has been a major motivation for decentralisation.

In the 1968 - 73 National Development Plan, little was said about rural development and the major part of the development budget (42%) was spent on the mining sector. After Independence the state tried to develop its own financial basis and development in the countryside took place in the form of large scale industrial projects. This corresponds with the idea presented in section 2.1.1, which explained that, initially, development questions were tackled with industrialization programmes only.

In 1973 the Accelerated Rural Development Programme (ARDP) was launched in order to let the rural population have its share of the fruits of the successfull mining sector. This programme spent roughly 11 million Pula on four infrastructural areas: water reticulation, primary schools, rural health buildings and road improvement (Picard, 1987). The execution of this programme may be interpreted as a shift in development attention towards the weaker sectors of the economy, whereby the welfare improvement of the rural community view was held.

As mentioned by Picard, the livestock sector was one of the pillars for developing the growth economy. Several livestock development projects (LDP) were carried out since 1973, mainly aiming at livestock improvement measures of large cattle ranches. With the Tribal Grazing Land Policy (TGLP), initiated in 1975, the government policy regarding the livestock sector broadened remarkably. The main objectives of TGLP are: 1) to improve private and communal land use whereby all socio-economic groups of rural society would benefit, 2) to increase output and 3) to save the environment from over-exploitation by improved management and proper stocking densities (NDP VI, 1985 p.183). But it soon turned out that none of the goals would be reached as envisioned and especially large cattle holders benefitted from the policy (Sterkenburg, 1987). Thus, when the agricultural sector was first recognized as a subject for rural development efforts, it was as narrowly defined as the commercial livestock sector. Rural development was viewed as synonymous to agricultural (livestock) production

increase. However, a few years later more attention was paid to smaller livestock owners in the TGLP policy (i.e group farms), a trend which continued with the Services to Livestock Owners in Communal Areas (SLOCA) programme. The latter compromises a series of measures including the strenghtening of the livestock support infrastructure by the construction of Livestock Advisory Centres and the improvement of the livestock marketing infrastructure (NDP VI,1985).

The beginning of the eighties was marked by the launching of several programmes on arable agriculture in the communal areas. This emphasis on arable agriculture was inspired by the leading principle of independent development and self-sufficiency. In addition, the basic needs view gained terrain (Picard, 1987). Thus, by improving the production in the small-scale arable sector, a decreasing dependency on food imports is pursued. The Arable Lands Development Programme (ALDEP) was designed as the corner stone of the development and improvement of traditional farming by small-scale arable farmers, operating on holdings less than 10 ha. and owning less than 40 head of cattle.

The objectives of the Arable Lands Development Programme are:
- to increase rural employment (and indirectly reduce rural - urban migration);
- to increase rural income;
- to improve income distribution; and
- to increase food sufficiency at the household level.

These aimes were designed to be reached by the provision of several subsidized packages (draught power, implements, fencing and water tanks) and the improvement of extension services, input distribution, marketing and storage of crops (NDP VI, 1985).

The Accelerated Rainfed Arable Programme (ARAP) is meant, among others, to help farmers in their efforts to recover from the severe setbacks caused by several years of drought and can be seen as a short-term counterpart of ALDEP (which is designed to achieve permanent improvements) (NDP VI, 1985). In practice, ARAP subsidizes the ploughing, weeding, row planting, destumping and fencing of arable land, up to ten hectares (regardless of the actual size of the holding). The Drought Relief Programme can be characterized even more as an ad hoc programme to cope with the serious problems caused by the recurrent droughts. Because under the Drought Relief Programme only the supply of seeds affects the agricultural sector directly, the programme will be dealt with as dealing with non-agricultural activities only. The same applies to the Financial Assistance Programme (see 2.3.2).

In addition to these sectoral programmes, the Government of Botswana launched two programmes which reveal the notion of the need for more comprehensive planning of development efforts. The first was the Village Area Development Programme (VADP). With the launching of the Communal First Development Area (CFDA) strategy in 1981, the Botswana government formulated its own kind of integrated rural development programme. As worded in the sixth National Development Plan: "The CFDA strategy is based on the recognition that it is not practical to implement all programmes in all communal areas simultaneously. The CFDA

approach is not a distinctly financied programme in itself but primarily a planning and coordination exercise in which all relevant parties join" (NDP VI, 1985). Within well defined geographical areas, existing programmes (like ALDEP, FAP, SLOCA and many others, including horticulture, fishery, forestry, soil conservation, etc.) would be integrated generate greater development momentum.
Other characteristics of the CFDA strategy are:
- it aims at employment generating activities;
- it pursues linkages of development activities in the livestock sector, arable farming sector and non-agricultural sector;
- the inhabitants of the CFDAs are encouraged to formulate their felt needs in order to take these ideas into consideration in drawing up a land use and development plan;
- it contributes to the improvement of the planning and administrative capacity at the local level.

To conlude, the rural development strategy of the Government of Botswana may be characterized as follows:
- in the agricultural sector major emphasis is put on the livestock rearing activities;
- in the arable farming sector, self-sufficiency (on the household level, and on the national level as well) is an important goal;
- in the non-agricultural sector, employment generation is the main objective;
- governmental subsidisation of programmes is frequently used to reach the various development goals; and
- the general path of rural development evolution (described as consisting of three shifts: from industrialisation to agricultural improvement, from large scale to small scale, and from a sectoral to an integrated perspective) applies for the Botswana situation. Viz., after rural areas were taken into considertion for development efforts, activities in this field shifted from large scale cattle ranching to small scale arable farming and, finally, an integrated programme was established in addition to several already existing sectoral programmes.

2.2 Views on the role of non-agricultural activities in the rural economy

2.2.1 Composition and development of non-agricultural activities

In the report entitled "Women entrepeneurs" (NDC, 1988) it is stated that the specific situation of non-agricultural activities in Asia and Africa differs so much that in this study only sub-Sahara cases are used to put the Chobe Enclave situation in perspective, apart from some general observations.

The composition of non-agricultural activities seems related to different stages of development of these sector. The World Bank distinguishes, within the category of "non-farm rural activities", between:
- "agricultural processing, marketing and related service activities"; and

- "other non-agricultural activities".

These "other non-agricultural activities" can be divided into the following categories:

- manufacturing (20-30%)
- construction (5-15%); i.e. building (1/2) and public roads (1/2)
- commerce (15-30%); i.e. retail trade (3/4) and trade and finance (1/4)
- transport (5%)
- services (20-35%); i.e. government (1/2) and business, repair, recreation (1/2)
- utilities and miscellaneous (0-35%) (World Bank, 1978).

Between brackets percentages are shown [1]) which give an indication of the global compositional built-up of the non-agricultural sector. Within manufacturing, four broad groups of activities can be distinghuised: (a) food processing, (b) textiles and wearing apparel, (c) wood, including saw milling, furniture making and general carpentry, and, (d) metal including blacksmithing, welding, fabrication and construction of tools and equipment.

The distribution of employment of the different non-agricultural activities may vary from country to country. This variation can be explained by:

1. the demand for a different range and for different qualities of products, and
2. the supply which is dependent on labour costs, availability of capital, level of infrastructure and the degree of competition from large scale industries (World Bank, 1978).

According to the World Bank (1978) the employment generating capacity of non-agricultural activities in the rural areas goes through three stages as development takes place.

Stage one: in both the agricultural and non-agricultural activities sector employment increases in absolute terms.

Stage two: increase in agricultural employment falls below the increase in the rural labour force. In this stage non-agricultural activities gain in importance a source of employment.

Stage three: (rural) towns will syphone off the growing rural labour force. Non-agricultural (informal) activities will expand within these towns, not in the countryside (World Bank, 1978).

The UNDP concludes, on the basis of comparing the manufacturing sector in different developing countries that:

- the activities differ for each country by size, scope and type;
- the structure of these activities seems to be related to different

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Footnote: [1])= Although the margins are so wide that their meaning looks superficial and arbitrary, they are shown here in order to serve as a point of reference when describing the Chobe Enclave situation in this respect.

development stages, from micro enterprises (1 labourer), to small enterprises (2-5 labourers) and medium scale enterprises (6-25 labourers);
- there is a shift from food processing and agro-based intermediates to furniture, clothing, building materials, metals and engeneering.

Table 2.1 Proportion of rural population involved in different non-farm activities in percentages; Kenya, 1977

Type of activity	Involved in each activity	
	people	households
Total, resource extraction	13.0	12.1
of which: - fisherman	5.2	2.2
- woodcutters	2.7	3.7
- gatherers	1.8	2.5
- hunters	1.3	2.6
Total, manufacturing	45.1	56.1
of which: - pombe brewing	7.7	13.4
- mats, baskets, etc	5.1	5.7
- tailoring	2.4	1.2
- weaving, etc	2.2	3.1
- charcoal making	4.0	6.1
- gourds, calabashes	2.2	2.7
- furniture	1.6	1.5
- building poles	1.4	1.3
- pottery	1.1	1.7
- cement blocks, building materials	3.0	2.8
- building, construction	2.2	1.9
Total, wholesale/retail	10.9	9.3
of which: - dukas	5.1	3.7
- butchers	1.6	1.9
- hawkers	1.1	1.0
Total, repairing	7.8	5.4
of which: - clothing repair	2.2	1.4
- furniture repair	1.2	1.2
Total, services	22.8	17.8
of which: - dancers, entertainers	5.4	1.0
- hotels, lodging, bars, restaurants	4.1	2.6
- traditional healers	2.5	2.1
- food kiosks, meat roasters, etc.	1.6	1.6
- matatu taxi operators	1.1	1.0
Total	100.0	100.0

Source: Livingstone, 1986, p.74,75

Table 2.1 summarizes some results of the Kenya study (see 1.3). It includes hunting and fishing and is presented here to give a more specific example of sub-Sahara non-agricultural activities. With the help of this figures, it is possible to put the Enclave figures in a wider perspective.

2.2.2 The role of non-agricultural activities in the rural economy

The role of non-agricultural activities in the rural economy will be assesed in terms of employment and income generating capacity.

Employment

Most of the already quoted publications stress the role of rural non-agricultural activities in terms of employment. One fifth or more of the rural labour force is primarily engaged in these activities. If non-agricultural activities are taken into consideration as a secondary occupation, some thirty to fourty percent of the rural labour force is involved (Liedholm, 1981). In Kenya, 28% of the rural labour force in 1970 was employed in the non-farm sector (Livingstone, 1986).

Non-agricultural activities as a secondary activity are especially important in the agricultural slack-season.

Table 2.2 Members of households in the labour force by economic activity and sex, 1985

Type of activity	No. of males	% of males	No. of females	% of females	No. total	% total
Wage employment	171	26.8	95	8.4	266	15.1
Self employed	378	59.2	885	78.8	1263	71.7
Business employed	6	0.9	5	0.4	11	0.6
Others	83	13.0	138	12.3	221	12.5
Total	558	100.0	1123	100.0	1761	100,0

Source: Bank of Botswana; Report on the rural economic survey, Gaborone 1987, p.17.

Table 2.2 gives an overview of the rural employment situation in Botswana. Labour force is defined as those persons who are 12 years and above, and not attending school. Of the total population, 43.6 percent belongs to the labour force (note that 64% is female). Wage employment is defined as formal sector employment (including Drought Labour Based Relief Project). The category "others" stands for a combination of agricultural activities ("self employed") and informal non-agricultural activities ("business"). In total 15.7 percent of the labour force is primarily involved in non-agricultural activities (wage employment and business employment). In comparison with what is stated in the literature on non-agricultural activity employment figures, this figure is extremely low. Especially the informal non-agricultural activities (like traditional beer brewing, running a small general dealers, pottery, carpentry and construction activities) score very low

(0.6%). When non-agricultural activities as a combined activity are taken into consideration, 28.3 percent of the labour force is involved. This figure is still on the low side compared with the general figures of 30 to 40 percent which are mentioned in the literature.

Income

In connection with what is said about employment in non-agricultural activities, it is not surprising that a substantial proportion of the cash income of rural households comes from these activities. In Kenya a average household receives 41 percent of its income from non-agricultural activities; ranging from 26 to 73 percent, caused by differences in local recourse endowments, demand for products and levels of development. Some 10 percent comes from remittances, 15 percent from formal activities and 16 percent from informal activities (Chuta and Sethuraman, 1984, p.12).

It seems that it is very well possible that non-agricultural activities account for a bigger share in household income than agricultural activities do (Liedholm, 1981). A more reserved estimate takes 25 percent of the household income from these activities (Van Dijk, 1981).

Table 2.3 Household cash-income by source, Botswana 1985

Source	Average income in Pula	% of total income
Wage employment	535	40.8
Crop farming	50	3.8
Livestock rearing	313	23.9
Remittances	207	15.8
Other activities	207	15.8
Total	1312	100.0

Source: Bank of Botswana; Report on the rural economic survey, Gaborone, 1987

Table 2.3 gives an overview of the cash-income sources of rural households in Botswana. Of all households 8 percent had no cash-income at all. In total 72.4 percent of the household cash income is generated by non-agricultural activities. These figures confirm Liedholm's hypothesis that non-agricultural activities account for a bigger share in household cash income than agricultural activities [2]). This does not mean that agriculture is not important, because agricultural production is very often not capitalized as cash income in a society which is

Footnote: [2])= One should keep in mind that 1985 was a year of drought. This might cause greater activity in the non-agricultural sector, because opportunities in the agricultural sector are perceived as low.

primarily involved in subsistance production. Therefore, in a self-sufficient oriented society, cash income is almost by definition from other sources than agriculture. The main share of these incomes come from formal sector activities (including the Drought Relief Labour Based programme). Incomes from informal sources account for only 15.8 percent. Quite significant as a source of cash-income are the remittances.

Tables 2.2 and 2.3 compared show that non-agricultural activities play a smaller role than expected in terms of employment, but in terms of cash income they are the most important source. The share of informal non-agricultural activities in terms of employment and income is more or less equal (13.1% and 15.8% respectively), which indicates an equal distribution of income from this source over the households involved.

Table 2.4 Distribution of sources of cash-income for Southern District households, 1982

Source	most important source	second source
None	3%	26%
Arable agriculture	16%	9%
Livestock	9%	10%
Remittances	34%	23%
Formal employment	15%	3%
Informal employment	23%	29%
Total	100%	100%

Source: Deepa Narayan-Parker; Factors affecting small scale production in rural Botswana; Kanye / Gaborone, 1982

The figures from table 2.4 are taken from a research conducted in the Southern District, Botswana. In this study too, it is observed that non-agricultural activities play a more important role in the built-up of the household cash income than agricultural activities. Informal non-agricultural activities represent a source of cash income which should not to be underestimated, especially when the second source of cash income is taken into consideration.

The distribution of total income is highly skewed (Gini coefficient of 0.73); more than 70 percent of the population share about 17 percent of the total income, while 20 percent enjoy about 70 percent of rural income.

Section 2.1.2 was concluded with the observation that one of the characteristics of rural development strategies of Botswana is the importance of subsidies. Table 2.5 gives an idea of the effect of these subsidies on the rural households. Of all households, 61 percent did not receive any assistance through one of these programmes. ALDEP is the most widespread programme geographically but ARAP accounts for the largest amount of money received by the households. The figures for the Drought Programme are rather low because the most important part of this programme (i.e. Labour Based Relief Project) was accounted for as

a formal non-agricultural activity (see table 2.3). The total amount of cash income for the mean rural household is Pula 1391 (Pula 1312 + Pula 79), government assistance programmes provide 5.7 percent of this income.

Table 2.5 Household assistance under government schemes, Botswana

Form of assis-tance	(Pula)	% of total	No. of house-holds	Average assistance (Pula)	Average assis-tance all househ. (Pula)
FAP	1000	2.0	1	1000	2
ALDEP	21201	40.6	128	166	32
ARAP	27420	52.6	116	236	41
DROUGHT	2541	4.8	39	65	4
Total	52162	100.0		184	79

Source: Bank of Botswana; Report on the rural economy survey, Gaborone, 1987

Compared with the Gross Domestic Product per head of Pula 2013 in 1985 / 86, rural households receive some 30 percent less (The Economist Intelligence Unit, 1988 / 89).

In certain areas of Botswana (i.e. Ngamiland and Chobe) traditional handicrafts are important for barter within the rural community as well as for cash income through selling to the tourism sector. No specific figures on handicrafts (as a source of employment or income) are available.

To conclude it can be said that:
- different studies on the rural economy of Botswana present different figures concerning the importance of the non-agricultural sector in that economy (in absolute terms),
- Liedholm's opinion that income from non-agricultural activities is of greater importance (in relative terms) for rural households than income from agricultural activities, seems to be relevant for the Botswana situation.

2.2.3 Socio-economic groups involved in non-agricultural activities

In this section, the performance of different socio-economic groups in non-agricultural activities is assessed.

Differentiation on basis of agricultural characteristics

Colclough and Fallon (1983) concluded that Botswana households with larger herds of cattle received both a higher absolute and proportional amount of their total income from formal non-agricultural activities than those with few cattle (op cit. 1983, p.147). Households with more cattle receive, in absolute terms, more remittances per head, than those with less cattle. The relative importance of remittances is four

times greater for the poorer sections than for the richer groups (op cit. 1983, p.149). In general, it is recognized that non-agricultural activities are of greater relative importance for smaller farmers than bigger farmers (World Bank, 1978; Van Dijk, 1986). To quote Liedholm: "As farms become smaller, the share of non-farm income in total household income becomes larger." (Liedholm 1981).

Male and female headed households

According to the UNDP study (1988), fourty to fifty percent of the women in rural households get a supplementary income from "rural small scale industrial enterprises" and they predominate the food, garment and craft activities. Table 2.6 shows the built-up of the cash income of the male and female headed rural households in Botswana.

In the study of Kossoudji and Mueller (1983) on the economic and demographic status of female headed households in rural Botswana, it is observed that male headed households receive some 125 percent more income than female headed households from agricultural pursuits. From trading and vending, and wage employment the differential is some 35 percent. For services and construction the ratio is 150 percent. For hunting and fishing the differential is as high as 230 percent. Only as far as transfers are concerned, female headed households receive more income (-35%) than male headed households. The relative importance however, is quite similiar for both types of households. Although women may be more involved in non-agricultural activities than men, the latter benefit most in terms of absolute income (op cit. 1983).

Table 2.6 Distribution of sources of income by type of household

Income source	Type of household				
	male headed		female headed		all
	Pula	%	Pula	%	%
Crops	122	10	49	6	10.8
Animal husbandry	469	37	217	28	44.4
Wage labour	316	25	243	31	19.2
Manufacturing	40	3	38	5	3.5
Trading and vending	88	7	62	8	1.2
Services and construction	42	3	17	2	2.0
Hunting and fishing	77	6	23	3	1.3
Gathering	44	4	38	5	5.2
Transfers	64	5	100	13	11.9
Property	-	-	-	-	-
All sources, total	1262	100	787	100	100.0

Source: Rural Income Distribution Survey, conducted in 1974-'75 by the Central Statistical Office of Botswana; as quoted in Kossoudji & Mueller; 1983, p.840

Income groups

To illustrate the importance of non-agricultural activities as a source of cash income for various income groups, Colclough and Fallon write about the Botswana situation: (see table 2.7) ".... as we move from poorer to richer households, while the portion of income received from both animals and wages rises, there is a decline in income received from manufacturing (predominantly traditional beer brewing), transfers (mostly income received from family members working in South Africa) and gathering (a simple subsistence activity). Proportions of income received from crops, trading, hunting and other sources are not strongly related to income level" (1983, p.138).

Table 2.7 Income profiles for the rural population of Botswana

Percentile income groups	Cr.	An.	Wa.	Ma.	Tr.	Se.	Hu.	Ga.	Ho.	Tr.	Ot.	Total
Poorest 10%	9	14	9	10	-	2	9	22	11	19	-5	100
10-30%	10	13	17	6	1	3	1	16	10	19	4	100
30-50%	10	19	21	5	2	2	1	12	9	14	5	100
50-70%	11	31	17	6	1	2	1	7	6	11	7	100
70-90%	8	39	20	4	1	1	3	5	5	8	6	100
Richest 10%	5	40	38	1	1	2	4	3	2	5	-1	100
Total	9	27	20	5	1	2	3	10	7	13	4	100

Source: Colclough & Fallon; 1983, p.139

To summarize it can be concluded that:

- Remittances of larger cattle holders are of greater importance, in absolute terms, than for households with less cattle; however, in relative terms, the opposite applies.
- Non-agricultural activities account for a, relatively speaking, larger share in cash income for smaller farmers (in terms of size of the holding) than for bigger farmers.
- Female headed households are more involved in informal non-agricultural activities than male headed households. In terms of income from these activities however, male headed households benefit most.
- Informal non-agricultural activities (together with remittances and gathering) are of greater relative importance, as a source of cash income, for poorer than for richer households.
- Formal non-agricultural activities are of greater relative importance for richer than for poorer households. The same applies to households with larger herds of cattle, in contrast to households with smaller herds (in relative and absolute terms).

2.2.4 Production linkages between the agricultural and non-agricultural sector

Production linkages are specified, firstly, in forward linkages from the non-agricultural sector where outputs serve as inputs for other sectors and, secondly, in backward linkages from the non-agriculural sector where this sector provides a demand for the output of other sectors. Forward and backward production linkages are essential for the functioning of non-agricultural activities. Regular supply of raw materials and other inputs as well as a good marketing system for sale of outputs are conditions for an efficient production.

Final demand linkages through consumer demand provide the most important linkage between agricultural and non-agricultural activities. The demand for non-agricultural activities depends on the level of income, the growth of income and the income elasticity. Chuta and Liedholm (1976) argue that the income elasticity always exeeds one, which means that an increase in income implies a more than proportional increase in demand for these non-agricultural products and services. Where subsistence farming is important and agricultural growth slow, the demand for products other than food is low. In such a case, non-agricultural activities are mainly involved in forward linkages like grain and oil milling, wood processing and backward linkages like blacksmithing, rather than in the manufacturing of a range of consumer goods. Liedholm and Chuta note (1979) that rural artisans play a crucial role in providing inputs for traditional agriculture in Africa. For instance, Karsten in his study on rural blacksmithing in Ethiopia concludes that approximately one dollar of rural blacksmithing output (particularly in the form of hoes, knives and axes) is demanded for every one hunderd dollars of agricultural output. With developing agriculture the local market for non-agricultural activities grows and diversifies. In the case of region-specific articrafts, national and international demand, marketing and physical infrastructural linkages are decisive for the survival of these activities.

Linkages with large urban based industries are most frequently discussed in terms of sub-contracting relations. Because sub-contracting and the forward linkages from small non-agricultural enterprises to large enterprises are rare in sub-Sahara Africa and more common in Asia (UNDP, 1988), they will not be dealt with in this study.

Generally it can be concluded that:
- the more developed an economy, the more important the linkages;
- when subsistence agriculture is significant forward linkages are the most important linkages and food processing is the main non-agricultural activity;
- when commercialization of agriculture develops, backward linkages become more important and non-agricultural activities diversify and increase in number.

2.3 Policies of promotion of non-agricultural activities

2.3.1 Supply and demand-side policy

Policies on development of non-agricultural activities can be divided in a demand-side and a supply-side approach. Because of the linkages mentioned in section 2.2.4 between agricultural and non-agricultural activities, a favourable policy towards agriculture is one way to stimulate the development of these activities indirectly.

Demand-side policy

According to Chuta and Liedholm (1979), increase of the rural income through agricultural growth leads to a rise of the effective demand for products produced by the non-agricultural sector. This statement is confirmed by Ho (1986) who found out that, in Indonesia, production growth and demand of food, clothing, furniture, wood for construction, bricks and tiles increased significantly because of a 45% increase in agricultural output over the past decade. Teszler (1988) points out that purchasing power of demand is the driving force for development of this sector and policy primarily directed to stimulate rural income growth is the most crucial step in this direction. Literature shows that these policies focus on increasing demand in two different ways:

1) Strengthening of the purchasing power of the rural population through measures and programmes which (in-)directly influence the purchasing power; such as agricultural investments stimulating output increase and good agricultural price policies for the farmers and public-work programmess. Van Dijk (1986) argues in favour of the latter kind of programmes because they utilize available labour in an intensive way and thus stimulate productive employment.

2) Measures which shorten the relative distance between rural producer and urban consumer must be implemented; such as development of physical infrastructure and improvement of the marketing of products. As the question "Where is the market, what is the size, and can it be made accessible for the local producer?" arises, policy makers assert a rising demand when accessibility of the "far-away" market will be improved. Especially, because purchasing power in towns is usually stronger than in rural settlements.

Supply-side policy

Supply-side policy is the most common approach for developing the non-agricultural sector. Through the years a large number of institutions and services has been set up to stimulate and support non-agricultural activities by different types of assistance, like credit, technical/ production, management and marketing assistance (Chuta and Liedholm, 1979). The following institutions and services were developed in different countries to provide this assistance: general purpose small industrial development agencies; marketing or raw-material supply schemes; rural production centres; production-, and marketing cooperatives; financial services or programmes (commercial-, development banks and loans associations or credit unions); business advice extension services; technical service facilities, technical extension services and mobile or on-location technical training; formal

vocational training centres; technology development and diffusion centres; area authorities and development programmes for special target groups; small industry or trade associations; non-governmental and private voluntary organizations (UNDP, 1988).

Generally, the effect of these institutions in promoting non-agricultural activities is rather low. The causes of bad functioning are different in each case and it goes beyond the context of this study to discuss them in detail. The UNDP (1988) however, concludes that the functioning may be improved through:
- strong representation at the local level, in persueing more autonomy and self responsibility;
- local community motivation and concern with the assistance given.

The central question is whether it works. There is a slight difference between the more developed non-agricultural activities / industries, usually employing between 5 and 25 people and the household-based micro enterprises of 1 to 4 labourers. According to the UNDP report (1988) the smallest activities are most effectively stimulated by sale programmes, save and credit associations, technical assistance, and education and information in the labour place. The larger enterprises/ activities may in addition also benefit from services of formal banks and industrial development agencies.

The literature indicates that, though many countries developed supply-side policies, the expected development of the non-agricultural sector has not taken place. Policies focused mainly on supply-side measures whilst the demand-side was neglected. Especially the links between the introduction of agricultural programmes (aiming on output increase) and programmes which were set up to stimulate non-agricultural activities, were under-estimated. Both supply-side and demand-side approaches are necessary for a balanced growth of the non-agricultural sector. According to the UNDP report, demand-side measures need to be followed by a supply-side policy, as: "... in the absence of increasing demand for rural non-farm products, supply-side measures fall flat on their face" (op cit. 1988, p.39). Nowadays this two-sided strategy, also persued as an integrated rural development strategy, is put in the fore by many authors, governments and development agencies. Within this strategy non-agricultural activities are seen as one aspect of the rural economy and attention is given to the relation with agriculture (see section 1.1). The strategy seems logical, but in practice there are problems with executing such a two-sided policy. Because policy is mainly sectorally structured and coordination between the responsible ministeries at national and local level is lacking in most of the cases, it remains difficult for planners to understand the non-agricultural sector and a good national price policy and an effective input servicing of this sector are two sides of the same coin.

2.3.2 Policies and programmes in Botswana

The governmental policies and programmes which deal with development of non-agricultural activities are mainly sectorally oriented. At the national level the Ministry of Commerce and Industry is responsible for

the promotion of rural industries. Non-agricultural activities are categorized under the secondary industrial sector and the differences between these and industrial activities are mainly seen as a matter of scale. The Botswana Government thinks that industrial growth will continue to be primarily dependent on the initiative and resources of the private sector and that government's role is to provide the right development incentives for such growth.

A wide range of institutions and programmes have been created to promote and assist the development of industry and commerce. Each institution / organization provides different kinds of assistance, i.e. technical, marketing, management and financial assistance (see also figure 2.1).

All organizations listed have in common that 1) they are more or less dependent on the Botswana Government for finances; 2) are not totally private and 3) services are supplied free or have attractive conditions. For each institution / organization listed in the figure the characteristics, conditions and goals are specified in more detail in Annex 2.

Figure 2.1 Institutions and organizations in Botswana providing assistance to non-agricultural activities

Institution/ organization	Type of assistance			
	Technical	Marketing	Management	Financial
FAP				*
RIO			*	
Field service	*	*	*	
BTC	*			
BCU		*		
Botswanacraft		*		
Nat.Development Bank				*

Source: RIO planning handbook, 1982 and NDP VI, 1985.

The focus of industrial promotion is the Financial Assistance Policy (FAP) launched in 1982. The aim of the policy is to assist businesses so that: 1) more employment is created in Botswana and; 2) the economy expands and becomes stronger in areas other than cattle and mining. This programme offers grants to small and large scale enterprises whereby projects are divided into three categories depending on the amount of money offered: up to Pula 20,000.; more than Pula 20,000. and less than Pula 900,000.; and more than Pula 900,000. The following businesses are excluded: shops and wholesalers, transport, construction, entertainment, beerbrewing and beef production.
At the district level the Rural Industrial Officer (RIO) promotes and coordinates rural industries activities (including the local / village level activities). The RIOs have a large number of functions such as facilitating appropriate training programmes for rural entrepreneurs, collecting base line data on the nature and needs of rural industries,

assisting with the implementation of FAP and general coordination of rural industrial activities. For the implementation of these tasks the RIO makes use of a pool of funds. All other institutions / organizations are semi-governmental and are described in Annex 2.

Besides sectoral projects, programmes are executed on a regional basis. These programmes are not primarily created to promote development of non-agricultural activities but indirectly they do. The agricultural programmes have been described in section 2.1.2. Until the eighties the Botswana Government policy did not clearly acknowledge the relation between agricultural programmes stimulating output increase and the rise of non-agricultural activities. In the recently developed CFDA strategy this came about through the joining and integration of the different sectoral programmes in selected communal areas.

The Drought Relief Programme and the CFDA strategy are regional programmes which encourage the development of non-agricultural acivities in a rather indirect way. The Drought Relief Programme, introduced in 1980, has as its main objectives: provide supplementary food supplies; supplement rural income; secure water; and alleviate the effects of drought for cattle holders and arable farmers. The four components of the programme are:
- supply of food to vulnerable population groups and malnourished children;
- agricultural relief projects;
- water supplies and development projects; and
- labour based relief projects (LBRP).

According to the definition of non-agricultural used in this study, the LBRP projects are relevant. The specified goal for LBRP is to replace income lost as a result of drought. In the period 1983 - 85 LBRP had replaced 31 - 38% of income lost by drought (UNICEF, et al.). This programme contains projects like stamping of sorghum and maize at schools (for the daily meals of the pupils); technical assistance; erection of public buildings; and infrastructural works. The latter two activities consume 75 percent of the total LBRP budget. LBRP can be seen as public works programme, the activities are undertaken during the agricultural slack season and the people get paid while the community as a whole benefits of these activities.

Supply versus demand-side policy

If the above mentioned policies and programmes are categorized under supply-side versus demand-side policy (see section 2.3.1), the conclusion would be that the work of the RIO, FAP and all organizations that provide technical, management and / or financial assistance falls under supply-side measures. Through FAP grants and the upgrading of technical skills government tries to increase the quality and quantity of non-agricultural activities. Despite this assistance there is no guarantee that the non-agricultural activities actually increase unless the constraints to be tackled are on the supply-side only. According to the UNDP (1988) this is not the mostcommon situation because supplies satisfy demand mostly. Which means that if a certain demand exists, the supply-side will not be the constraining factor any longer for the development of the non-agricultural sector.

Organizations providing marketing assistance and the LBRP as part of the Drought programme may be seen as part of a demand-side policy. Botswanacraft, for instance, stimulates demand through buying products directly from the producer and the LBRP has strengthened the purchasing power of the rural population which is, according to the literature, essential for increasing demand and rising of non-agricultural activities.

The CFDA strategy has the potential to result in an integrated development of agricultural and non-agricultural activities through measures addressing the supply and demand-sides. In the Ngamiland CFDA agricultural programmes and programmes stimulating non-agricultural activities (especially basketry for the rural poor) were coordinated. This resulted in an increase of baskets produced. The impact of the different supply and demand-side programmes on agricultural and non-agricultural activities in the Chobe CFDA will be assesed in this study.

In summary, it is generally excepted now that, in theory, promotion of rural non-agricultural activities 1) can only be successfull if the right conditions are created at the demand as well as the supply-side and 2) can not be seen seperate from measures resulting in an agricultural output increase. In practice, this strategy can best be executed through integrated development planning (and land use planning as a crucial part of this). This strategy is somehow rather comprehensive and expensive. Therefore, key regions are selected which represent a larger area / district. After plans are executed in such a region, the programme may spread to the rest of the region / district. In Botswana these regions are the Communal First Development Areas which are to be followed by Communal Second Development Areas. The first experiences in Ngamiland promise the best for the structural developent of the non-agricultural sector.

CHAPTER 3 THE CHOBE ENCLAVE: GENERAL DESCRIPTION OF THE STUDY AREA

3.1 Location

The study area is located in the Chobe District which, together with Ngamiland District, covers the northern territories in the Republic of Botswana (see basemap). The area refered to as the Chobe Enclave is situated between the Chobe National Park to the east, south and west and Namibia's Caprivi Strip to the north (the partly undetermined international boundery is formed by the Chobe and Linyanti rivers).

The Enclave area totals 306,800 hectares of which about half is taken up by the decidious forest of the Chobe Forest Reserve. The remaining communal area is made up of a dryland area (78,200 hectares) and the Chobe floodplain, an area liable to flooding (molapo) and covering 90,900 hectares.

The total population of the Chobe district was 7929 (1981) while the Enclave population is estimated on 5048 inhabitants (CFDA field survey 1987 / 88). Kasane is the administrative centre of the district and with 2190 inhabitants the largest settlement. Various governmental institutions are located here. The main settlements in the Enclave are Mabele, Kavimba, Kachikau, Satau and Parakarungu. These villages all have a primary school, a health post or clinic and a Tribal Administration office and have therefore a supporting function for the surrounding settlements.

The existing physical infrastructure in the Enclave is confined to the inhabited area, excluding Forest Reserve and hunting area. The Chobe Enclave is connected with Kasane by an all-weather gravel road (50 km). From Kachikau the Kasane-Maun road becomes a dirt road and can become impassable during the rainy season. During flooding and heavy rain the villages Satau and Parakarunga can sometimes not be reached by road, in such cases mokoro canoes are needed. At Ngoma there is a bridge over the Chobe river to Caprivi (Namibia). Kasane / Kazangula is the gateway to other places such as Francistown (500 km), Victoria Falls (Zimbabwe, 100 km) and Livingstone (Zambia / via a ferry boat over the Zambesi river 100 km).

3.2 Natural environment

Climate

The physical factors that determine the potentials for crop growth are related to climate, soils and relief. In general terms, the Chobe Enclave is characterized by a semi-arid to sub-humid climate with a mean annual temperature of 30 degrees Celsius and an evaporation of some 2300 mm. Most of the mean annual 650 mm of rain falls in the months of October to March / April. Rainfall exceeds the evaporation in general only in January. Mean rainfall is a rather theoretical concept in Botswana. A season with average rainfall is rare since the inter annual variability of rainfall is very large. The length of the growing season is only 121 days in one out of two years and less than 88 days

in one out of four years. Compared with the situation in the rest of Botswana, the agro-climatological conditions in the Chobe Enclave belong to the most favourable of the country.

Geomorphology, soils and vegetation

The soils and vegetation in the study area are strongly correlated with the geomorphological units and these characteristics will be described per unit. Geomorphologically, the Enclave can be divided into three major units: a relatively high area, the Chobe flats and the Chobe / Linyanti floodplain (see basemap).

1. The relatively high areas (2 to 4 meters above their surrounding) are well known as "the ridge" and "the beach ridges". The ridge, on which the major villages Mabele, Kavimba and Kachikau are situated, is an escarpment which locally rises up to 30 meters. The sand ridges, on which Satau and Parakarungu are situated, are mainly north / south oriented. These areas are not liable to flooding, have sandy soils and are vegetated with trees. The Chobe Forest Reserve which is limited by the ridge contains species like Mukusi or Rhodesian teak Baikaea plurijuga) and Mukwa (Pterocarpus angolensis), which are economically interesting.

2. The Chobe flats are intermediately high areas forming large plains in which shallow channels occur. Both plains and channels are subject to flooding which on average occurs in one out of ten years. The sandy or loamy soils of the plains contrast with the clay loam top soils in the channels. The vegetation consists mainly of grasses, with palm tree species like the mokola palm (Hyphaene petersiana) of which the leaves are used for basketry, are only present in the highest locations.

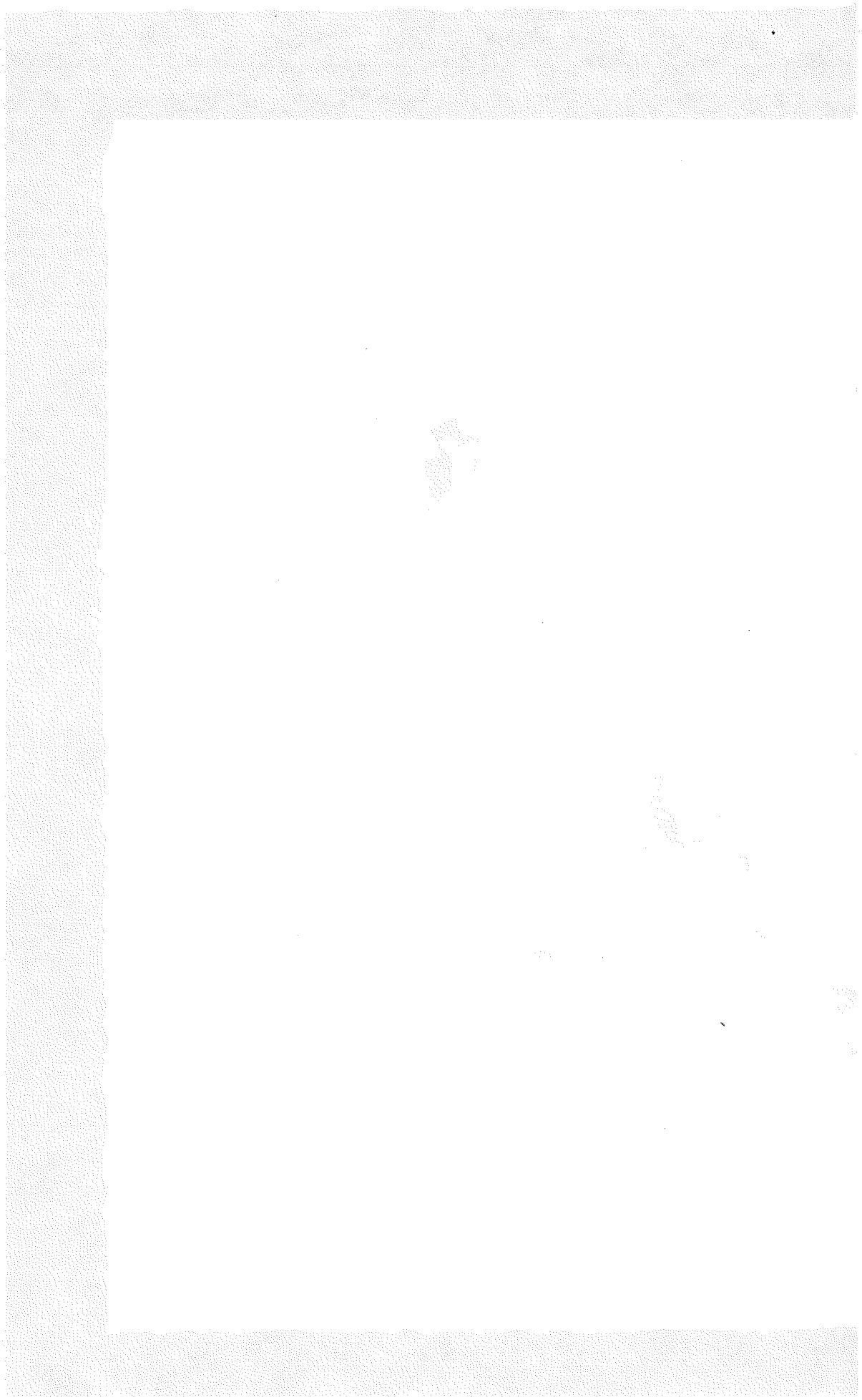
3. The Chobe/Linyanti floodplain are low lying areas characterized by an irregular network of relatively deep but wide channels. The topsoil is heavily textured and has a high organic matter content. This unit is more frequently flooded than one time in ten years, some parts even annually and the vegetation consists of reeds and grasses.

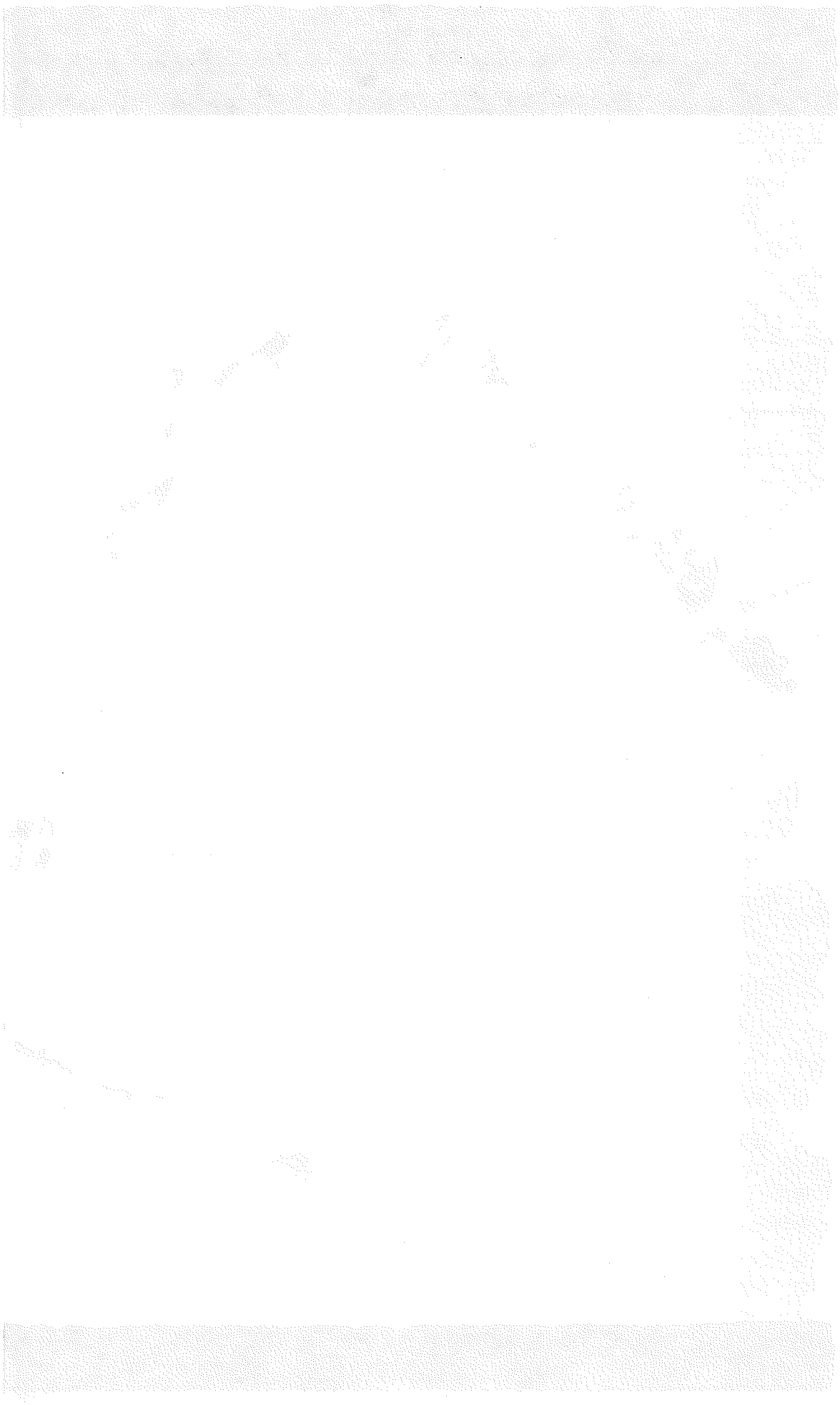
Hydrology

The hydrology of the area is fairly complicated. The Chobe Enclave is drained by the Chobe river, but may receive water from the following open water resources: the Zambezi river, Kwando - Linyanti river system and the Okavango river.

Floods play an important role for the people in the Chobe Enclave, especially the "big flood" during wich most of the area north of the escarpment is inundated. This "big flood" seems to occur rather regularly, having a return period of 10 years (1958, 1968, 1978 and 1989 have been recorded). The major part of the flood water originates from the Kwando-Linyanti river although the Zambezi may contribute considerably. Water coming from the Okavango river may enter the area through the Selinda spillway. This only occurs during extremely high floods in the Okavango Delta.

Annual floods with a much smaller extension generally occur east of Kavimba. These floods are very significant for the arable agricultural





activities in the Chobe Enclave. Molapo farming is an arable farming system in which soil moisture is used for crop water requirements after the receding of the flood. The flood which occurs between March and June is generated by water from the Zambezi river, which causes the backflow of the Chobe river and is variable over the years. In connection with the variation of the annual flood levels there is a comparable variation in the molapo areas that profit from the supply of water.

Wildlife
Various game species are present in the Chobe Enclave. The Chobe floodplain used to contain a considerable wildlife population amongst which were kudu, waterbuck and hippo but the recent drought and increasing human population have decimated the numbers. More game is present in the Chobe Forest Reserve (130,700 ha connected to the Chobe National Park) and the hunting area to the south west of the floodplain (84,900 ha also linking up with the Chobe National Park). In these areas elephant, buffalo, giraffe, zebra, kudu, sable antelope and lion can be found. The Enclave area seems to be most important as a dry season fall back area for animals such as elephant, buffalo, kudu and zebra.

Open water of the Chobe and Linyanti river contains fish species like bream, bubblefish and tigerfish. During flooding large quantities of these species can be catched in the Chobe / Linyanti floodplain and in the channels and depressions of the Chobe flats.

3.3 The Chobe Enclave residents

3.3.1 Settlement history

The settlement history of the Chobe Enclave goes back to the 18th century when Basarwa (San) were known to reside in the area. A large infiltration into the area took place around 1750 when the Lozi empire at the upper Zambezi expanded forcing tribes like the Bahambukushi, the Bayei and the Basubiya to move southwards. The Basubiya moved to the Chobe river and settled in the section between the Kwando and the Zambezi confluence. In 1830 they were conquered by the Sebitoane and parts of the tribe moved temporarily to the Mababe Depression but when this depression dried up in 1902 they returned to the Chobe floodplain. Munga became the capital of the Basubiya, and was destroyed by floods in the 1940 - 50s. The Batawana moved in during the 1910s when, as a result of succession struggles for the Tawana chieftainship, a group of Tawana split up from the main tribe at Tsau and moved to the Chobe flood plain and settled in Kachikau, one kilometre north of its current location (Shamukuni, 1972).

The current settlement pattern has been largely influenced by the flooding of the Chobe flats. Especially after the high flood in 1958, many people moved from the plains to the edge of the forest as well as to the slightly more elevated sand ridges. Originally, Munga was the largest settlement but due to the floods people had to resettle in Mabele, Kavimba, Parakarungu and Satau. The present location of Kachikau is also the result of the major flood of 1958 which almost

entirely destroyed the original village. During the last ten years a substantial number of Enclave residents have moved back to previously occupied hamlets close to lands areas in the flood plain. It seems therefore that settlement patterns are correlated to major and minor floods and the temporary unaccessibility of the floodplain for arable agricultural purposes as well as to voluntary decisions of area residents to react to the erratic climatic conditions and the repercussions thereof in terms of arable agricultural potentials during various years.

3.3.2 Demographic features

The total number of de facto inhabitants of the Chobe Enclave is estimated at 5048 people in June 1988 (2384 in the Southern Enclave and 2664 in the Northern Enclave). Compared to the 1981 census figure of 3603 inhabitants this indicates an average annual population growth of roughly 5 percent over a 7 year period. This figure is the result of two components, natural population growth and net migration. Natural growth may be high because absolute numbers are rather small, therefore causes a small absolute increase a high natural growth figure. Apart from a considerable out migration there must be a significant number of people moving into the Enclave otherwise the natural growth must have been higher than 5 percent, which is unlikely. This growth rate is considerably higher than the national estimate of 3.5 percent. As the inhabited area of the Enclave is roughly 600 square kilometers, the population density is just under 9 persons per sq. km. Todate the major villages are Mabele, Kavimba, Kachikau, Satau and Parakarunga. The number of smaller inhabited hamlets in the Enclave is 21. For the location and number of inhabitants per settlement, see the basemap and table 3.1 respectively.

Table 3.1 De facto population per settlement in the Chobe Enclave, 1988

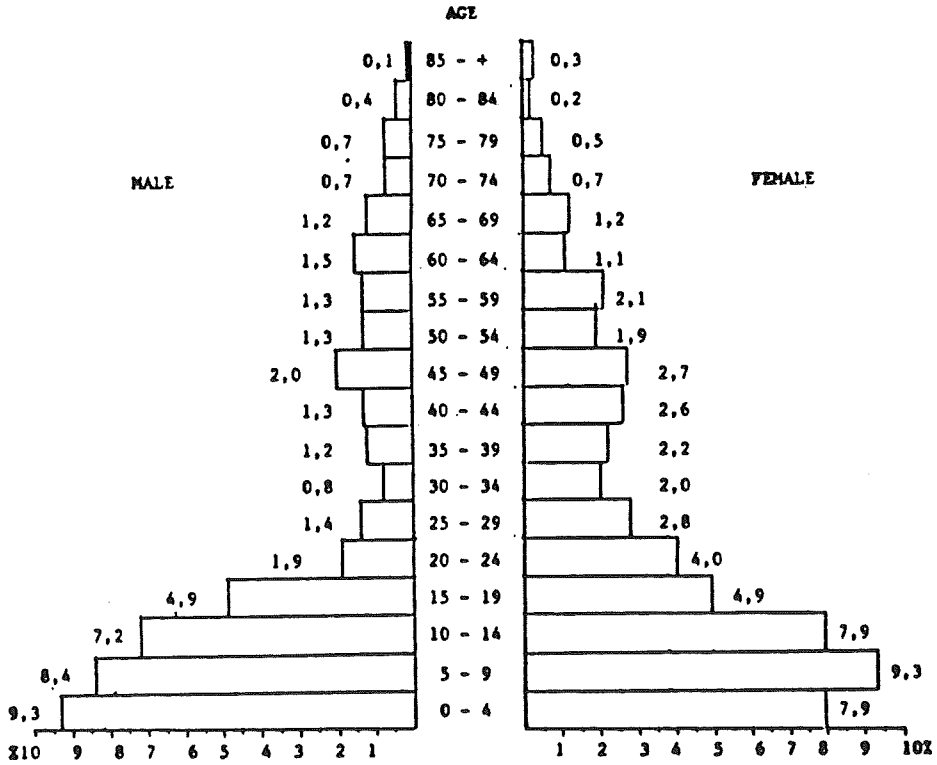
	Northern Enclave:		Southern Enclave:	
	Satau	739	Muchenje	196
	Mazanzu	72	Mabele	342
	Chikabi	82	Mawana	126
	Chida	184	Kavimba	302
	Lyambezi	165	Mathabanello	60
	Maunga	98	Seriba	141
	Mazunzwe	135	Legotwana	146
	Parakarungu	715	Kachikau (+camp)	648
	Chituzanamatako	124	Munga	81
	Ikonde	156	Mpteke	136
	Karoga	54	Kataba	146
	Mabozu	140	Barangwe	60
Total	Chobe Enclave			5048

Source: University of Utrecht / CFDA field survey, 1987 - 88

The average household size in the area is around 5.5 persons per household. This excludes the absentee household members; on average 1.5 persons in the southern and 0.7 in the northern Enclave. Taking these absentee household members into consideration the total de jure Enclave population can be estimated at roughly 6000 people in 1988; in other words 20 percent of the household members is absent. The sex distribution of the de facto population is female 54 percent and male 46 percent. For the entire Enclave 42 percent of the households are headed by females (including the 7% de facto female headed households).

The age distribution of the Enclave population is depicted in figure 3.1 which shows the various five year age classes. About half of the population is less than 15 years of age. The difference between boys and girls in the 0 - 4 years age bracket is remarkable. Noticable is the absence of man and women in the working age group 20 - 44 years.

Figure 3.1 Population Chobe Enclave: age distribution in five year classes in percentages, male / female (=100), 1987 - 88



Source: University of Utrecht / CFDA field survey, 1987 - 88

In the northern Enclave this age group makes up a mere 18 percent of the total population, in the southern area it is even less (15%). This skewed population distribution is mainly due to the attraction of formal employment outside the Enclave, for man and women alike. Many absentee household members stay in Kasane (two thirds of the total number of absentees) or go there for education (secondary school); the others have been able to find employment in other parts of Botswana

(only a few people were reported to be working abroad). Absenteeism in these numbers is a relatively recent phenomenon; in the southern Enclave 75 percent of the absentees left during the last 10 years, in the northern area the figure is even more significant as 50 percent left during the last two years and 75 percent of the absentees is less than 30 years of age. The better accessibility to the job market in Kasane and beyond for the southern area villagers may explain the fact that there seems to be a slightly longer history of working outside the Enclave in the escarpment villages of Mabele, Kavimba and Kachikau.

In conclusion it is important to notice that:
- population growth in the Enclave is high;
- a considerable part of the working age group 20-44 year is not present in the Enclave.

3.3.3 Cultural charateristics

The economic and social organisation of a society is influenced by ethnicity and for understanding farming systems it is therefore necessary to know some about the culture of the different ethnic tribes of the Enclave. Hinderink and Sterkenburg in their study on cattle holding in Ngamiland (1989) describe the role of ethnicity as follows: "Cattle grazing systems in Ngamiland have to be distinghuised according to ethnic origin of the owners, the relationship with arable agriculture, and to herd size in combination with land tenure conditions" (op cit. 1989).

Nowadays, 75 percent of the Enclave population is Basubiya, most of who live in the northern Enclave (97% of the northern population) and the villages to the north east of Kachikau. Just under 20 percent of the total number of residents are Batawana who live mainly in Kachikau and the villages Mpeteke, Kataba and Barangwe. The remainder are Basarwa (1.5%), Bayei (1%), Bahambukushi (1%) and others (2.5%), they are scattered through the villages in the Enclave.

The process of integration and incorporation into the national economy has not passed by the Enclave but for instance marriages between people of different tribes are still exceptional. This applies only to the two main groups and the Basarwa. The other smaller groups are also partly integrated into the population. The Basarwa occupy a rather special position in which they are all permanently settled and live randomly through the area. Nowadays, they live and work close together within the extended family which is probably left from the time they were still full time hunters gatherers two generations ago. They practise arable agriculture on fields which are communally owned and worked. They have no cattle, only a few donkeys and hunting - gathering is still practised and relatively important for their own consumption.

The Basubiya are riverine people. They have always preferred locations next to open water and fishing has been part of their economic base together with arable agriculture and livestock keeping. The Basubiya live in close contact with their relatives. They live dominantly in family groups of wards descending from one family, the eldest male

member of the family being the head. This also means that sons stay with their father when they are married (patrilocal). Women leave the family when they marry. However, when they get children without being married, they usually stay with the family.

The nuclear families live in homesteads which are grouped around one kraal in which all the members of the extended family have placed their cattle. The cattle belong to a nuclear family but may be used by other members of the family too. Cattle is their mobile capital, it means status and is mainly used for ploughing and consumption. It is not so much used for special celebrations, like funerals and births. Traditionally, the dowry was paid by cattle but nowadays people prefer money.

Cattle as well as fields are inherited by the oldest son who divides and shares the animals with his brothers. Traditionally, daughters have no rights because they leave the family when they marry, but this system is changing. Nowadays, they may own cattle and fields also. Fields are owned and worked by the nuclear family. Ploughing is mostly done by male members in the family whereby the fields of the sisters have the lowest priority.

The Batawana who originate from the drier area around Tsao (Ngamiland) are traditionally cattleholders combined with subsistence agriculture. They are like the Basubiya patrilocal but their settlement pattern differs. They keep their cattle at cattle posts which are located at some distance from the larger villages (upto 15 km).

The cattle of the nuclear family is, most of the time, kept in one kraal at the cattlepost together with the animals of the other extended family members. Male members are residing at the cattlepost for herding the cattle, whilst the rest of the family resides in the main village (Kachikau). During the wet season, women assist their men at the cattlepost working the fields which are mostly located in the surrounding of the cattleposts. The heritage system does not differ from the Basubiya and also changes in favour of unmarried women.

The Batawana are less directed to arable agriculture than the Basubiya which is caused probably by their limited access to the better molapo fields on the one hand and, on the other hand, because historically and culturally cattle are favoured above arable agriculture. The importance of cattle is underlined by the difference in seize of the dowry, 6 to 8 cattle for Batawana and 2 to 6 beasts for Basubiya traditionally. Compared with the Basubiya, Batawana households have less access to draught power which is probably caused by the less important role of the extended family in the Batawana society.

3.4 The agricultural production structure

That the Chobe Enclave is still a clearly agrarian society may be without any doubt considering the fact that almost 85 percent of the heads of household spend most of their time on agriculture as their first activity (another 10% mention the governments Drought Relief work programme). Less than 2 percent of the households do not own any piece of land. Most of the families have molapo as well as dryland fields on average 6.4 and 4.0 ha respectively, although the more fertile molapo fields are more popular. The total molapo area owned is estimated at over 6000 hectares (excluded outstanding extended family rights) whilst the dryland area's total is less than 4000 hectares.

A word of caution is needed here in terms of the definitions of molapo and dryland area. Molapo agriculture is a farming system which is characterized by the utilization of temporary flooded areas as ploughing takes place when the floods recede. By doing so farmers make use of the soil moisture available through inundation and rainfall dependency is virtually non-exsistent. The Chobe Enclave consists of a large area which is liable to inundation in times of high flood only and in the north eastern tip (between Mabele and Ngoma bridge) a small strip of land exists that is flooded annually. The concept of molapo farming, however, is used in both cases whereby the latter is called "real or wet molapo" and the former "rainfed or dry molapo". Because the flood level changes annually, the ratio between wet and dry molapo areas is different for each year. In the Northern Enclave the dryland areas are limited and the (rainfed) molapo areas are substantial in size, especially those belonging to Satau and Parakarungu residents. The situation in the southern area is characterized by medium sized dryland and molapo fields whereby from Ngoma Bridge to the south west the molapo fields become less "real", generally bigger and largely rainfed. The female headed households own less land than the male headed families; in the northern Enclave for instance, female headed households (35% of the total) own 6.1 hectares on average whilst the total area average was almost 12 hectare per family.

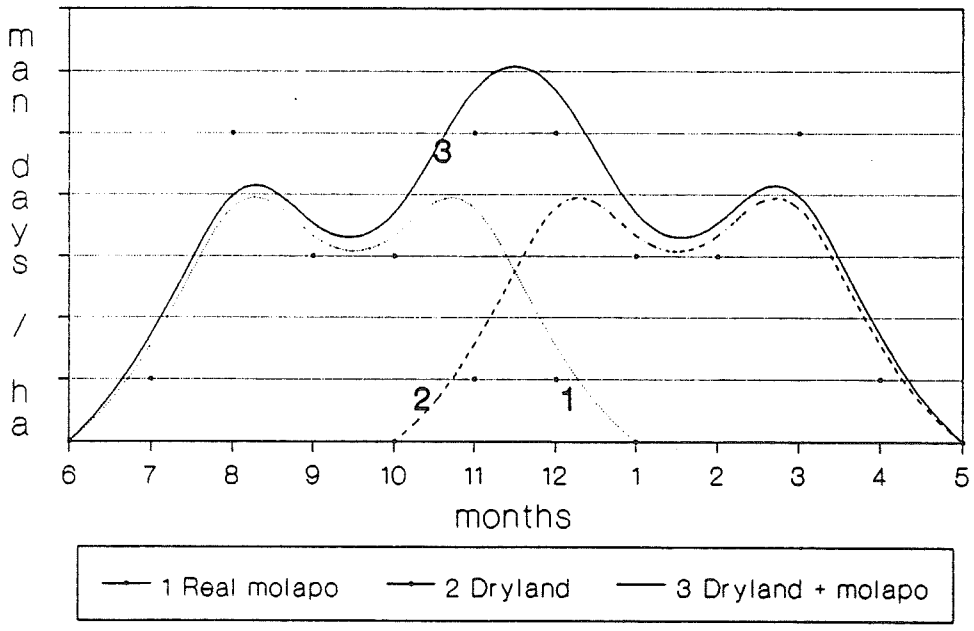
It is common for a household to have more than one piece of land. The main reason for this is the variability in the natural environment and the necessity to spread arable agricultural risks, i.e. variability in perception, by ploughing various fields with different soils on different altitudes (which causes a difference in soil moisture availability). Not less important is the constant moving around in the area whereby families clear and plough land in certain localities.

Maize and sorghum are the staple food crops and these crops are planted together with pumpkin, watermelon, cowpea and sweet reed. Dryland fields are dominantly planted with sorghum. Real molapo fields are mainly planted with mais whilst dry molapo fields are mainly grown with maize and sorghum, intercropped with pumpkin, watermelon, cowpea and sweet reed.

Livestock forms a substantial part of the means of subsistence of the Chobe Enclave. The total number of cattle enumerated during the CFDA field survey in May 1988 was 10600 head. The average number of cattle

per household is slightly over 11 head. However, the distribution over the population is extremely skewed: 10 percent of the households own more than 40 percent of the cattle and 50 percent of the households own about 3 percent of the total number of livestock (Gini coefficient: 0.84). Cattle is mainly used for draught power and as a source of capital which can be sold when neccesary. Important for arable agriculture is the availability of draught power. Draught power is defined as all cattle available in the kraal excluding calves and including donkeys. Classification of available draught power resulted in four classes: no draught power, not enough draught power (1-10 animals), enough draught power (11-20 animals) and more than enough draught power (more than 20 animals). See figure 4.3 for draught power typology, more than 60 percent of the study area families do not own enough draught power to plough their fields. For female headed households the situation is far worse; more than 90 percent of them lack enough animal draught power to plough their own fields. They together with their male headed equals without enough draught power, rely on borrowing or hiring animals to practice farming. Smallstock in the Enclave consist of goats only. The total number of goats enumerated during the CFDA field survey in 1988 is 3300 head (1800 in the northern area and 1500 in the southern area). Two thirds of the households in the Enclave do not own any goats, whilst goats are mainly held by Subiya households. They are used for special occasions like weddings and funerals and sold to the primary school under the Drought Relief supplementary feeding programme.

Figure 3.2 Relative agricultural labour input per year



Source: University of Utrecht / CFDA field survey, 1987 - 88

For the dry molapo and dryland areas the agricultural season starts after the first heavy showers in December - January (depending on the location and weather conditions). In the wet molapo areas farmers are not dependent on the first rains and they will start ploughing in July/ August. Labour demand is not equally required during the agricultural season. For ploughing and harvesting there is a maximum labour demand. Depending on available manpower and field type, labour shortage may become a constraining factor for arable agriculture (see figure 3.2).

Agriculture in the Enclave is characterized by a low level of inputs; mechanised farming hardly exists. Harvest figures fluctuate over the years and during drought years the Chobe Enclave does not produce enough food to feed the resident population. During good years farmers may sell their agricultural surplus to the Botswana Agricultural Marketing Board (BAMB) in Pandamatenga.

Arable agriculture practices in the Chobe Enclave are strongly influenced by the prevailing climatological and weather conditions as well as by the availability of labour and draught power. These constraining factors lead to a traditional risk spreading type of agriculture in which food subsistence is the main objective. Cattle as well as smallstock are part of this risk minimizing strategy because this capital on hoof may be slaughtered and / or sold during hard times.

CHAPTER 4 THE CHOBE ENCLAVE HOUSEHOLDS AND RURAL INCOME

To increase insight knowledge of the role non-agricultural activities play in the rural economy, these activities need to be analysed in the context of the rural (Enclave) economy as a whole. It must be kept in mind that the figures in this chapter present a picture of the situation during the 1986 - 87 agricultural year. This was the second year with "normal" rainfall after the drought period of 1981 - 84. The effects of this drought period on the composition and the importance of the different activities are difficult to check up because there are no comparable data of the years before. However, the survey shows clearly that the area had not yet recovered from the drought.

4.1 Employment

The active population of the Chobe Enclave is defined as those people who do not attend school and are actively involved in the labour process. By these standards, the active population consists of an estimated 1890 labourers (37%); 1169 women and 718 men (62 and 38% of the active population respectively). Considering the de facto population of 5048 this implies a dependency rate of 2.7: one inividual has to make a living for 2.7 persons. This is rather high compared with the national average of 1.1. It is difficult to explain the development of the dependency rate because of a high mobility of the Enclave residents, resulting in a rapidly changing population structure and distribution. The distribution of the labour force by gender is comparable to the situation of rural Botswana in general where women are the majority as well.

The potential number of labourers per household is 2.5 assuming a lower age limit of 17 years and given an average number of 5.5 members per household. On average 0.5 and 1.2 members per household are involved in formal and informal activities respectively. The potential number of labourers per household who are available for agricultural labour is 1.9 [1]). Formal activities are assumed to be predominantly full time and as such they compete with the agricultural labour demand. Informal activities and the Drought programme do not clash because both activities are mainly practised during the dry season.

The labour force, man and women alike, is firstly involved in agriculture (86 %, see table 4.1). A distinction between first and second activity is made on basis of time investment. Remarkable are the different numbers of men and women involved in formal activities (i.e. government, business, tourism and Drought LBRP) as a non-agricultural first activity, (21% and 7%). Informal non-agricultural activities

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Footnote: [1])= Potential agricultural labour = household members older than 16 years minus household members involved in formal activities (excluding household members involved in the Drought programme).

(such as hunting, gathering, beer brewing) are negligible as first activity. However, as second they are by far the most important activity for both sexes (43%). Roughly 35 percent of the people are not involved in a second activity at all.

Table 4.1 First and second activity of the active population in percentages (measured in time spenditure)

Activity	Men		Women		Total	
	first	second	first	second	first	second
Agriculture	78	16	90	8	86	11
Informal naa.	1	41	3	44	2	43
Formal	21	10	7	9	12	10
None	-	33	-	39	-	36
Total	100	100	100	100	100	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

Table 4.2 shows, given the first activity, in which second activity these people are involved. For 86 percent of the people who are firstly involved in agriculture, informal activities are the second most important activity (43%), followed by formal activities (9%). In total 98 percent of the population is involved in agriculture as a first (86%) or as a second activity (12%), and 35 percent is involved in agriculture only. This means that more than half of the people are involved in non-agricultural activities, as a second activity mainly, and practically all people are involved in agriculture.

Table 4.2 Relation between first and second activity of the active population, in percentages

Activity second / first	Agriculture	Informal	Formal	None	Total
Agriculture	-	43	9	35	86
Informal	2	-	0	0	2
Formal	10	0	-	2	12
Total	12	43	9	37	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

When the figures of tables 4.1 and 2.2 (rural labour force) are compared, it is rather striking to see that the representation of formal activities (12%) is comparable with the national average of 15 percent. The differences between men and women are also similar to the rural employment situation in Botswana. Agriculture is relatively more important for the Enclave labourers (86%) than it is on a national scale (72%). Compared with the figures presented in literature, considering the involvement of the population in non-agricultural activities as a first or as a second activity, the Enclave displays the

same pattern (see section 2.2.2). Non-agricultural activities are slightly under-represented as a first activity, i.e. 14 percent against 20 percent in the literature and over-represented as second activity 53 percent against 30 to 40 percent.

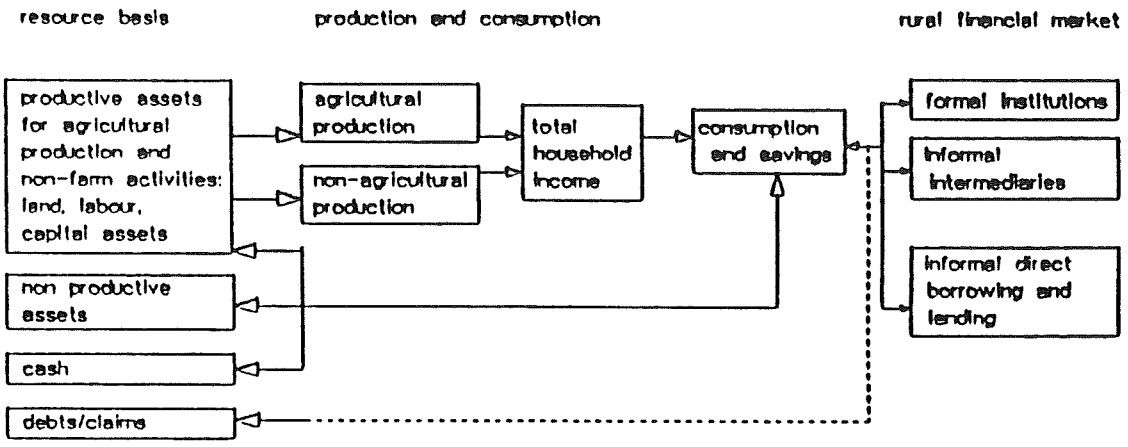
People who are involved primarily in agriculture are on average older then those who are firstly involved in non-agricultural activities. Fifty and 20 percent of both groups respectively are older than 45 years, whilst roughly 20 percent of the first group are even above 60 years of age. This means that people who are only involved in agriculture (35%) are relatively under-represented and people firstly involved in non-agricultural activities (14%) are over-represented in the small but vital age group 15 - 45 years.

In summary, agriculture is the most important activity for the majority of the Enclave labourers. A relatively small number of people, more men than women, are involved full time in formal activities and almost half of the population is also involved in informal activities as a second activity.

4.2 Composition of the household income

Income is defined as household business income (gross return minus variable and fixed costs). In the Enclave economy gross return and household business income are almost equivalent because variable and fixed costs are low to zero for most agricultural and informal activities. Paid inputs are used seldomly (apart from ploughs and harrows) and a lot of resources in the Enclave are free (for formal activities costs are only applied to business). Therefore, household business income is taken here as equal to spendable income or purchasing power.

Figure 4.1 Financial relations of the farm household



Source: Moll, 1989

All posible financial relations of a household are structured in figure 4.1. The links between resource base and production on the one hand and the more specified links between production (agricultural / non-agricultural) and the household income on the other are all subject of further analysis.

The Enclave is already involved in the cash economy and most of the transactions are paid in cash. However, despite these payments in cash, payments in kind still occur for such transactions as wage labour by non-relatives (this is rare but if practised of ten paid in traditional beer ("chibuku"). Holding cattle for other people ("mafisa") is paid in cattle mainly; dowry ("bogadi") is dominantly paid in cash and less in cattle. In addition to these payments in kind, presents may become a substantial part of the income; especially during drought years food is given to relatives. These transactions in kind are not quantified and not included in the analyses of this study. They are rather marginal but it must be kept in mind that small deviations from the income figures are possible (especially for mafisa cattle holders and those people who are involved in wage labour income may be underestimated). For instance, in the southern part of the Enclave, remittances in kind are received by 15 percent of the households, compared to 33 percent who received cash.

The average household income is 1705 Pula (see table 4.3) and is comparable to the average rural household income in Botswana Pula 1312. Given the average of 5.5 members per household in the Enclave, the income per head of the population is calculated at 310 Pula. Roughly half of the income is earned by formal activities followed by agriculture and informal activities with 23 and 21 percent respectively. Remarkable is the role of ARAP wich is the most important agricultural source.

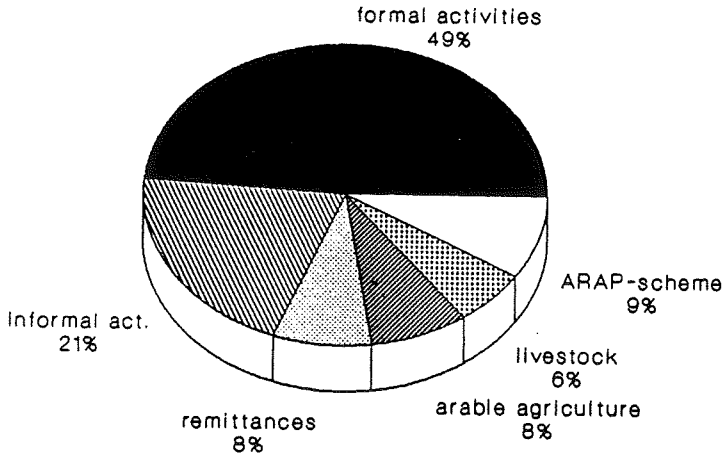
Compared with the rural situation of Botswana (see table 2.4) the average income of the Enclave households is one third higher. This may almost be completely attributed to formal activities (Pula 833 against Pula 535). Remittances are far less important for Enclave households compared with the average rural household in Botswana. Agriculture is more, and livestock is less, important than the national rural average, which is probably caused by better crop conditions and constrained cattle sales in the Enclave compared with the rest of Botswana.
Compared with the average rural income from the ARAP scheme in Botswana, this source is significantly more important in the Enclave (Pula 147 against Pula 41, see table 2.5); this might be explained by the obscurity of the ARAP scheme by the farmers in 1985. The export of Chobe cattle is restricted by the Botswana Meat Comission to 200 head per year because different animal diseases prevail in the Chobe district caused by frequent contact with wildlife. However, the presented average figures must be seen in perspective because the income distribution in the Enclave is highly skewed (Gini-coefficient= 0.56).

Table 4.3 Composition of the household income per source, in percentages

Source	Average income in Pula	% of total income
Non-agricultural		
formal	833	49
informal	353	21
remittances	130	8
Subtotal	1316	77
Agriculture		
arable	142	8
livestock	99	6
ARAP-scheme [2)]	147	9
Subtotal	389	23
Total	1705	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

Figure 4.2 Distribution of most important source of income in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

Footnote [2)]= Government subsidy under the ARAP scheme consistst of P.50 for every ploughed hectare with a maximum of P.500.

Source of cash income is another indicator of the importance of the different sources for the households (see figure 4.2) as these scores represent figures for the population as a whole (against the figures in table 4.3 which are average figures of the different sources per household).

For 27 percent of the households, informal activities are the most important source of cash income, followed by formal and agricultural activities for 26 and 20 percent of the households respectively (see figure 4.2). Remarkable is the role of the non-productive sources remittances and the ARAP scheme which are the most important sources for 14 and 13 percent of all households respectively. Compared with the situation in Southern district the similarity is remarkable (see table 2.5). The difference is that formal activities are more important in the Enclave (26 percent to 15 percent in Southern district) and remittances are less important in the Enclave (14 against 34 percent). Note however that government assistance (such as the ARAP scheme) was not categorized as a source of income in the Southern district study.

Table 4.4 Distribution of total income for households per income class by source of income, in percentages

Income class in Pula	Non-agricultural				Agricultural				Total
	for.	inf.	remit.	tot.	arab	cattle	ARAP	tot.	
0	56	31	71	6	70	77	29	18	1
0-50	na	9	6	na	3	1	14	12	5
50-100	na	16	1	na	5	3	16	12	5
100-200	5	11	2	11	5	3	14	13	9
200-400	1	13	7	11	7	7	19	19	10
400-600	4	8	5	14	4	5	8	11	17
600-800	2	2	1	5	2	0	0	5	11
800-1000	1	1	2	3	2	2	0	3	7
1000-2000	5	5	2	14	2	1	0	6	19
2000-5000	8	3	0	10	2	1	0	3	15
>5000	4	1	0	5	0	0	0	0	6
Total	100	100	100	100	100	100	100	100	100

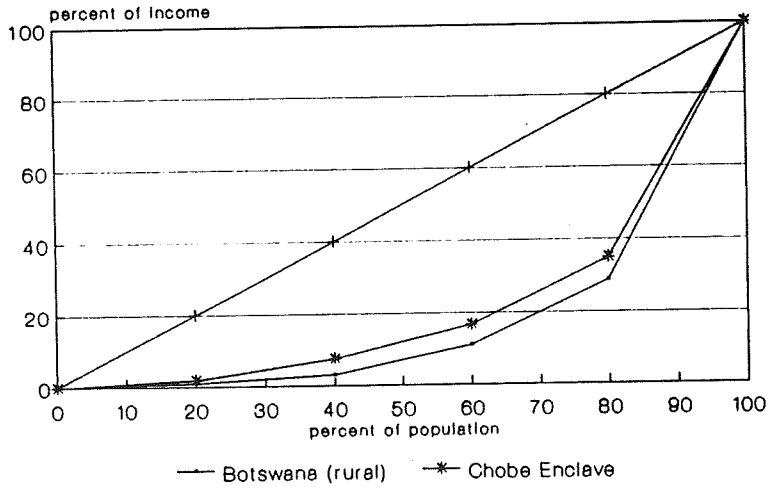
(Gini-coeff.= 0.40 0.70 0.79 0.64 0.78 0.79 0.47 0.57 0.55)
Source: University of Utrecht / CFDA field survey, 1987 - 88

From table 4.4 two aspects become clear 1) how many households gain income from the different sources and to what extent, and 2) how are incomes distributed (Gini-coefficients). Of all the households only 1 percent has no cash income at all. Remarkable is the marginality of agriculture in the overall view, respectively 70 and 77 percent of the households have no income from arable agriculture and / or livestock. Income from agriculture is more equally distributed than income from non-agricultural activities. Compared with the average rural situation of Botswana the income in the Enclave is more equally distributed (see figure 4.3). Income from formal activities and ARAP is most equally distributed over the households. However, 56 and 29 percent of the

Gini c. 0.40 formal
0.47 ARAP

households, respectively, have no income at all from these sources. The relative share of the formal income in the total income is less important than the 49 percent suggests. This high figure is caused mainly by a small group, 12 percent of the households, who earn more than 2000 Pula a year and thus push this figure upwards. Remittances are received by one fourth of the households but yet there is also a stream of remittances sent out. On average Pula 99 is sent out by 24 percent of the Enclave households. This means that the average net return is Pula 41. These figures only represent the remittances sent out and received by Enclave households, however, remittances are only one aspect of the rural income situation.

Figure 4.3 Income distribution of the population of the Chobe Enclave (1987 - 88) and rural Botswana (1987)



(Chobe Enclave, Gini-coeff.=0.55; Rural Botswana, Gincoeff.=0.73)
Source: University of Utrecht / CFDA field survey, 1987 - 88 & Bank of Botswana, 1987

Table 4.5 Relation between non-agricultural and agricultural income for households per income class, in percentages

Non-agricultural income, in Pula	Agriculture income, in Pula					
	0	1-100	100-400	400-1000	1000->	Total
0	0.7	0.4	2.9	1.8	0.0	5.9
1-100	2.9	5.1	5.0	3.0	2.0	18.4
100-400	2.9	6.3	6.6	5.2	1.5	22.4
400-1000	4.4	6.2	7.3	2.9	1.8	23.7
1000-->	7.3	5.9	9.2	4.8	3.4	30.5
Total	18.4	23.9	31.3	17.0	7.5	100.0

(Chi-square=127.8; p=0.040; C=0.57)
Source: University of Utrecht / CFDA field survey, 1987 - 88

After these remarks about the distribution of income over the households for the different income sources it is interesting to asses whether there is a relation between the amount of income earned from one source given a specified income from another source (see table 4.5).

Table 4.5 shows how the households, given a specified income from non-agricultural activities, are divided over the agricultural income classes. The trend is a positive lineair relation and the association is quite strong. The more a household receives from agricultural activities, the more it receives from non-agricultural activities too. Households which have more than Pula 1000 from non-agricultural activities deviate from this trend because they have less agricultural income than expected. A positive lineair relation exists also for the following three income situations:

1) informal - formal income: 29 percent of the households have no income at all from one of these sources. The association between income from informal and formal activities is strong [3]). Especially households who receive a considerable amount of money from informal activities have high incomes from formal activities as well.

2) The association between formal and agricultural income is quite strong but it must be remarked that only 64 percent of the households receives income from formal activities.

3) The relation between income from informal and agricultural activities has a low but acceptable validity and no remarkable deviations of the lineair relation occurs.

In summary, it can be remarked that, in terms of income, non-agricultural activities are more important than agriculture. The Enclave situation is comparable with the average rural situation in Botswana and this finding is an underlining of Liedholm's hypothesis which stated that incomes from non-agricultural activities are of greater importance for rural households than incomes from agricultural activities. However, it must be remarked that distribution of income from non-agricultural activities is heavily skewed. Especially in the formal sector a minority of government paid officers push the average figure upwards.

Footnote [3])= Statistical associations between income sources
1. informal - formal
(Chi-square=9.75; p=0.64; C=0.19)
2. formal - agricultural
(Chi-square=126.1; p=0.049; C=0.53)
3. informal -agricultural
(Chi-square=100.5; p=0.470; C=0.50)

4.3 Activities and incomes per socio-economic status

In the previous section, figures were presented on the scope and magnitude of non-agricultural activities of the Chobe Enclave households in general. The distribution of incomes is skewed and certain households seem to be more involved in agricultural and non-agricultural activities than others. Whether these distributions are associated with other socio-economic characteristics of the households will be assessed in this section.

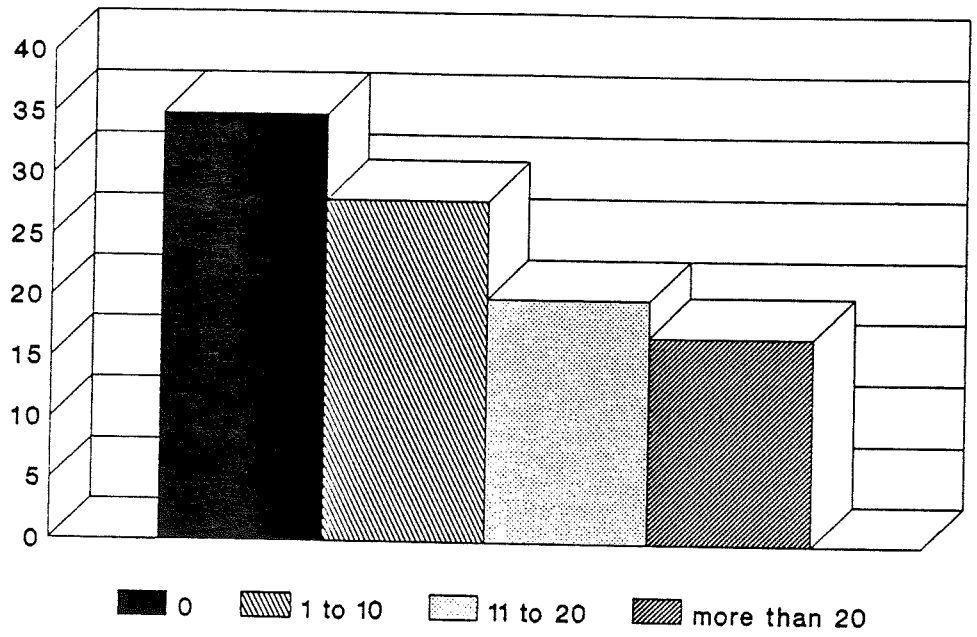
4.3.1 Draught power classes

The CFDA field survey undertaken in 1987 - 88 resulted in two technical reports and a final report (Jansen et al, 1988 a), b) and c). It was recognized that many households do not have enough draught power to perform arable agriculture in a satisfying way. Because the availability of draught power [4]) plays such an important role in the economy of the Chobe Enclave households, it is interesting to compare this feature with several other variables relating to non-agricultural activities. Figure 4.4 shows the distribution of households over the four draught power classes.

From table 4.6 several conclusions may be drawn concerning the composition of the households and their agricultural characteristics. Households with large numbers of draught animals are also larger in terms of household size. The result is that these households have more people available for agriculture. With growing numbers of draught animals, households posess and plough more hectares of both molapo and dryland. All draught power categories are equally involved in formal and informal activities.

Footnote [4])= Draught animals are defined as all cattle available in the crawl; except calves and including borrowed cattle (mafisa-in).

Figure 4.4 Distribution of households over the draught power classes, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

It seems that the availability of sufficient draught animals is essential for a high production in the arable agriculture sector. This also leads to a high productivity per labourer. Although households from the fourth class have the largest number of members potentially available for agricultural activities, output per hectare is not (much) higher than of other households. High output of maize is reached by ploughing a lot of land. In correlation with these findings, third and fourth category the households are characterized by a high orientation towards market production whilst households with little or no draught power are mainly occupied with production for subsistance [5]).

A very strong association (see annex 3) between the type of household and the draught power class is observed (C=0.47 at 0.01 level). Female headed households are mainly found in the class lacking any draught power. This means that just a few of these households (8 percent) have enough draught animals. For male headed households this figure is 52 %.

Footnote: [5])= A household is categorized as a subsistance farm when there was no marketable surplus produced during the previous two agricultural seasons.

Table 4.6 General characteristics of households per draught power class

	Number of draught animals			
	0 none	1-10 not enough	11-20 enough	>20 more than enough
% female headed hh.	68	32	13	2
Household size	4.6	5.8	5.6	6.8
Hh. members >16 years	2.1	2.5	2.7	2.9
Hh. members <17 years	2.5	3.3	2.9	3.9
Hh. members formal act.	0.6	0.6	0.5	0.4
Hh. members informal act.	1.1	1.2	1.3	1.4
Hh. members agric. (pot.)	1.5	1.9	2.2	2.5
Molapo ha. owned	2.4	6.8	7.4	12.8
Molapo ha. ploughed *)	1.5	3.5	4.9	7.2
Ploughing intensity **)	63	51	66	56
% hh. without molapo	7	1	9	0
% of hh. did not plough	21	5	12	3
Dryland ha. owned	2.2	2.9	5.6	7.8
Dryland ha. ploughed *)	0.7	1.5	1.3	2.5
Ploughing intensity **)	32	52	23	32
% of hh. without dryland	4	1	6	0
% of hh. did not plough	54	39	30	32
Maize harvested ***)	3.2	9.0	19.4	19.0
Maize sold ***)	1.4	3.9	12.6	11.4
Sorghum harvested ***)	0.5	1.1	1.3	1.4
Sorghum sold ***)	0.1	0.3	0.1	0.0
Maize per ha. ***)	1.45	1.80	3.73	1.96
Sorghum per ha. ***)	0.23	0.22	0.21	0.14
Maize per labourer	0.47	4.7	8.8	7.6
% of hh. subsistance	71	46	28	19
Cattle in kraal ****)	0.0	6.0	19.2	40.9
Draught animals	0.0	5.4	16.0	34.6
Oxen in kraal	0.0	1.9	6.0	9.5

*) = agricultural season of 1986 - 87; households that did not plough are included
**) = defined as % of ha. in possession which is ploughed
***) = measured in 70 kg. bags
****)= measured in head, all stock counted as one
Source: University of Utrecht / CFDA field survey, 1987 - 88

When income from ARAP is not seen as agricultural income, table 4.7 shows that income from agriculture forms only a minor proportion of the total household income of all classes. The share of agricultural income rises when the number of available draught animals increases. In absolute terms the ARAP payments rise too, but in relative terms the share is quite stable in all classes. Compared to the findings for rural Botswana in general (see table 2.6), income from ARAP is very high in the Enclave. In general, households in category 1 and 2 receive less income from arable agriculture than expected, while households in the third class receive more than expected (remember the high yields

per hectare in this group). Income from livestock rearing is more or less distributed as expected; except, and this is not surprising, the first class receives less. The households from the fourth draught power class receive a higher income than expected from ARAP. This is explained by the large number of hectares ploughed by this group (see table 4.6).

Table 4.7 Composition of household income per draught power class, in Pula and percentages

Source of income	Number of draught animals 1 none 0		2 not enough 1-10		3 enough 11-20		4 more than enough >20		Total
	mean	%	mean	%	mean	%	mean	%	%
Non-agric. act.									
formal	303	34	887	55	1170	48	1420	55	50
informal	330	37	210	14	579	24	368	14	20
remittances	143	16	151	9	74	3	46	2	6
Sub-total	776	87	1248	78	1823	75	1834	71	76
Agriculture									
arable	33	3	97	6	294	12	265	10	9
livestock	9	1	116	7	152	6	192	8	6
ARAP-scheme	68	9	133	9	174	7	297	11	9
Sub-total	110	13	346	22	620	25	754	29	24
Total	886	100	1603	100	2443	100	2588	100	100

(Chi-square=58.58; p=0.001; C=0.42)
Source: University of Utrecht / CFDA field survey, 1987 - 88

In general, income from formal activities rises with increasing numbers of draught animals. For all households, except those which have no draught power at all, income from formal activities takes account of the largest share of the household income. Households without draught animals receive much less income from formal activities as one would expect on basis of the distribution of the two variables over the total population, while households in the other classes receive incomes form these activities as expected or even more than that. These figures confirm the view of Colclough and Fallon who observed that with larger herds of cattle, households receive more incomes from formal activities in absolute terms. However, when the relative share of formal incomes in the total household income is taken into consideration this positive correlation is not found in the Chobe Enclave. This explained by the fact that all households in the Enclave receive high relative shares of income from formal activities; there is not much differentiation between the draught power classes in this respect. Colclough and Fallon observed a high differentiation.

Households without draught power receive income from informal activities as their main income source. This source comes in third place for all other households. In absolute terms, however, the amounts of money fluctuate irregularly over the classes; the third draught power class receives most cash money from informal activities.

In relative terms, the share of remittances received is highest in the class without draught animals gradually decreasing when a household has more draught animals. In absolute terms this observation is disturbed by the rather high amount of remittances received by households in the second class. Colclough and Fallon observed that the households with the largest herds of cattle receive the highest amounts of remittances per head. In the Enclave the figures are (from category 1 to 4 respectively): Pula 31, Pula 26, Pula 13 and Pula 7 per head; the opposite of the trend observed by Colclough and Fallon.

Table 4.7 also illustrates the skewness of income distribution; households without draught power (34%) receive only 12 percent of all incomes, while households with more than enough draught power (17%) receive 34 percent of all incomes. Especially agricultural income is highly skewed towards draught power-rich classes; the highest draught power class receives 41 percent of all agricultural income, the draught powerless class receives a mere 6 percent of this income. To a lesser extent, but still more than total income, income from formal activities is skewed. Here, the lowest draught power class receives 8 percent of all formal income, while the highest draught power class receives 38 percent of this income.

For income from informal activities and remittances the picture is not so clear. Although the distribution of income from informal activities is skewed for the draught powerless class, the skewness is not so extreme as it is for agricultural and formal income. The respective classes receive 22, 15, 38 and 25 percent of all informal incomes. It is only for remittances that the class without draught power receives as much (35%) as their relative size in the Enclave population. The highest class receives 10 percent of all remittances and the second class scores high with 36 percent. In general, income except for remittances, is skewed positively towards draught power-rich households. This skewness is higher for agricultural than for non-agricultural incomes.

The main observation which can be made from table 4.8 is that amongst draught powerless households a higher than expected proportion belongs to the poorer classes. While among households with more than enough draught power a higher proportion of rich households can be found. The third class is characterized by a high proportion of very rich households. Households with a limited number of draught animals are over-represented in the middle-income class. This relation however, is not strong.

When tables 4.8 and 4.7 are compared some observations can be made. The poverty of the households without draught power seems to correspond with their low income from all sources (except remittances). Especially in the formal and agricultural sector they earn little. The other way

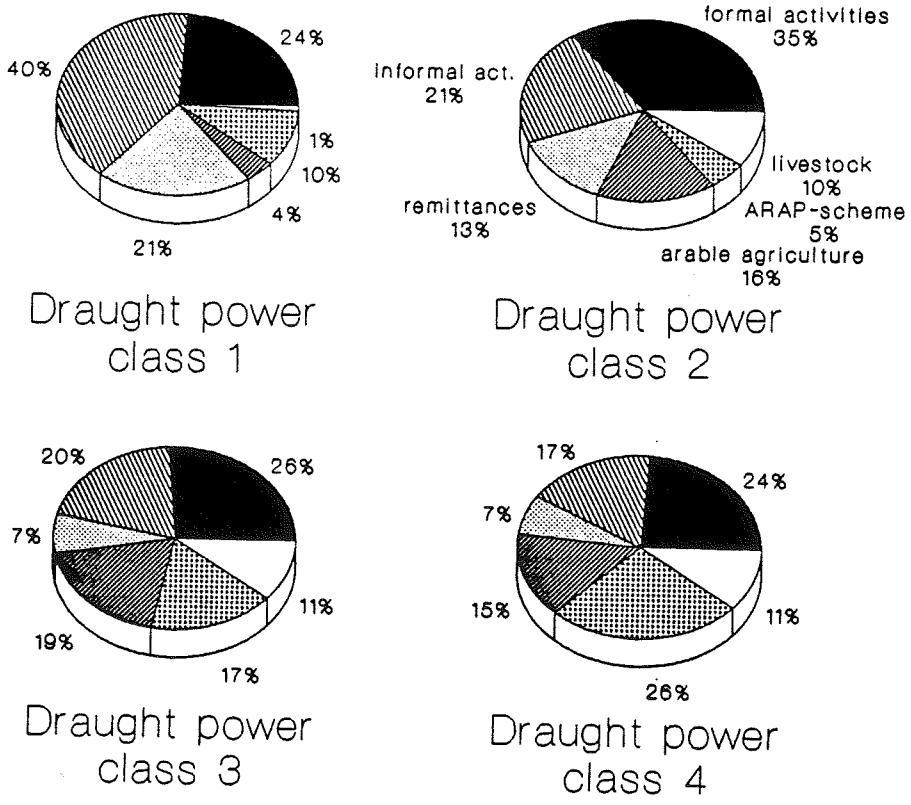
around, the relative wealth of the households with high numbers of draught animals corresponds with their high incomes from formal, agricultural and, to a lesser extent, informal sources. The relative richness of the households in the third class is, again, the result from a good performance in the formal, informal and agricultural sector.

Table 4.8 Draught power classes per income class, in percentages

Income class	Number of draught animals 0	1-10	11-20	>20	Total
Poorest 20%	32	13	18	13	21
20 to 40%	24	18	22	11	20
40 to 60%	17	26	15	24	20
60 to 80%	18	21	15	24	19
Richest 20%	8	22	30	28	20
Total	100	100	100	100	100

(Chi-square=26.88; p=0.01; C=0.30)
Source: University of Utrecht / CFDA field survey, 1987 - 88

Figure 4.5 Distribution of most important sources of cash-income per draught power class, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

When only the most important source of cash income is taken into consideration, the picture changes in several respects from the one of the average household in each draught power class. Most of the differentials which will be discussed can be explained by the skewed distribution of several sources of income. Figure 4.5 shows that formal activities are far less important for all households together than for the average household [6]). Except for the second class they are of equal importance for all classes. Presumably, the high score of the second class is caused by a high participation rate of this group in the Drought programme (see further section 5.1.3), while they lack other opportunities to earn an income. Informal activities are valued a bit higher in the way they are presented in figure 4.5. But here too they are of greater importance for households without draught power. Remittances are for all classes (and especially for the two highest classes) more important when analysed in this way. The category "government assistance" is mainly formed by households which have ARAP funds as their main source of income. It is observed that this category can not be ignored. It seems that many households lack other sources of cash income, so that governmental assistance becomes the sole base of cash for the household. From table 4.6 it is known that in absolute terms the class with more than enough draught power ploughs most hectares. This causes the high score of class four on government assistance in figure 4.5. Hardly for any household in the class without draught power agriculture is the most important income source. For the other households agricultural incomes are remarkably stable [7]).

To summarize it can be concluded that:
- The amount of land in possession and ploughed in absolute terms is positively related to the number of available draught animals.
- Enough draught power is a critical prerequisite for a high arable production. Productivity per labourer is also positively correlated with the availability of draught power. Productivity per hectare is not related strongly to the availability of draught power; the class with most draught animals get high yields simply by ploughing a lot of land.
- The availability of draught power and the type of head of the household is strongly related; i.e., female headed households are

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Footnote: [6])= In table 4.7 absolute amounts of incomes per household stood central, while in figure 4.5 the relative distribution of only the most important source of cash-income for all households stands central.

[7])= The described relation between the draught power classes and the respective most important sources of income, is strong (C=0.39 at 0.01 level).

highly over-represented in the classes with less draught animals, while male headed households are over-represented in the classes with higher numbers of draught animals.
- With growing numbers of draught animals, the number of people potentially available for agriculture rises. The number of household members involved in formal and informal non-agricultural activities is for all draught power classes more or less equal.
- Almost all types of households receive more than 75 percent of their income from non-agricultural activities. For the class without draught power, this figure is as high as 87 percent. Only the class with more than enough draught power receives less income from non-agricultural activities, i.e. 71 percent.
- There is a strong relation between income sources and draught power classes, whereby incomes from agricultural and formal sources are positively related to the number of draught animals available. Households without draught power receive less income than expected from all income sources except remittances (i.e. formal, informal and agricultural).
- Most incomes from informal activities are earned by households in the third draught power class, while these incomes are relatively of highest relevance for households with no draught power at all.
- Agricultural activities are the most important income source (and even for only 5 percent of the draught powerless households) for less than 30 percent of the households in each category.
- Formal activities are for a quarter of the households the most important source of income, except for households from the second draught power class, where the figure is even higher (35%) caused by a high participation rate of this group in the Drought Labour Based Programme.
- The draught power-rich class has the largest number of households which are dependent on government assistance (which implies for the largest part ARAP subsidies).

4.3.2 Male-headed and female-headed households

It is widely recognized that it makes a difference in social and economic terms whether a household is headed by a male or a female. In the Chobe Enclave, 64 percent of the households is male headed while 36 percent is female headed. A few general characteristics of the types of households are given in table 4.9.

In absolute terms, male headed households (MHHs) are slightly bigger than female headed households (FHHs) for all household size characteristics.

The total output of maize is for FHHs much lower than for MHHs. First of all this is the result of the fact that MHHs plough and own more land (i.e. 2.6 times more molapo, and 3.5 times more dryland), secondly MHHs have more labourers available for agricultural activities, and thirdly MHHs have many more draught animals at their disposal. This results in high productivity figures, per hectare and labourer, for MHHs. The cultivation intensity is more or less equal for both types of households, which means that FHHs make use of borrowed (from the

MAP 2: COMPOSITION OF THE HOUSEHOLD INCOME PER CLUSTER, in percent

LEGEND

- International boundary .....
- All weather road .....
- Motorable track .....
- Village ..... Ivuvwe
- River .....
- Kachikau escarpment .....
- Sand ridge .....
- 10 km grid 8010

- Formal activities .....
- Informal activities .....
- Remittances .....
- Arable agriculture .....
- Livestock .....
- ARAP-scheme .....

Shaile
LINYANTI FLOOD PLAIN
R. Linyanti
Pelican Pool
INTERNATIONAL BOUNDARY
Lake Iyambezi
CHOBE FLATS
Chituzanamatako, Ikonde
Karoga, Mabozu
Lyambezi, Maunga,
Mazunzwe
Mabozu
Chituza
Iyambezi
Parakarungu
Mazunzwe
Maunga
Karuha
Xaroga
Satau
Chida
Ivuvwe
CHOBE FLOOD PLAIN
R. Chobe
Masanzu
Matomporo
Mazanzu, Chikabi
Chida
Chikabi
Lake Namgombe
Sandweza
Sand ridge
Munga
Barangwe
Kataba
Shorobe
Muchenje, Mabele,
Mawana
To Maun
Mpeteke
Mabele/
Muchenje
To Kasane
Mathabanello, Seriba,
Legotwana, Munga
Seriba
Mpeteke, Kataba,
Barangwe
Kachikau
Kachikau
Legotwane
Matabanelo
Kavimba
Kavimba

Scale
km 1 0 1 2 3 4 5 6 7 8 9 10 km

SOURCE: -SIR M. MACDONALDS & PARTNERS; PREFEASIBILITY STUDY OF THE AGRICULTURAL POTENTIAL OF THE CHOBE ENCLAVE, 1989
-CFDA FIELD SURVEY, 1987-'88

MAP 2: COMPOSITION OF THE HOUSEHOLD INCOME PER CLUSTER, in percent

LEGEND

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- All weather road .....
- Motorable track .....
- Village ..... Ivuvwe
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- Formal activities .....
- Informal activities .....
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- Livestock .....
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Mabozu
Chituza
Iyambezi
Parakarungu
Mazunzwe
Maunga
Karuha
Xaroga
Satau
Chida
Ivuvwe
CHOBE FLOOD PLAIN
R. Chobe
Masanzu
Matomporo
Mazanzu, Chikabi
Chida
Chikabi
Lake Namgombe
Sandweza
Sand ridge
Munga
Barangwe
Kataba
Shorobe
Muchenje, Mabele,
Mawana
To. Maun
Mabele/
Muchenje
To Kasane
Mpeteke
Seriba
Mpeteke,Kataba,
Barangwe
Kachikau
Mathabanello,Seriba,
Legotwana, Munga
Kachikau
Legotwane
Matabanelo
Kavimba
Kavimba

Scale
km 1 0 1 2 3 4 5 6 7 8 9 10 km

SOURCE: -SIR M. MACDONALDS & PARTNERS; PREFEASIBILITY STUDY OF THE AGRICULTURAL POTENTIAL OF THE CHOBE ENCLAVE, 1989
-CFDA FIELD SURVEY, 1987-'88

family) or hired (Pula 25 per ha. usually) draught animals to plough their fields. However, usually the owner of the draught animals ploughs his / her own fields first, after that the fields of the borrower / renter is ploughed. Because the great variability of percipitation the timing of ploughing is crucial in order to get a good harvest. Therefore, borrowers or renters are disadvantaged. This might be another explanation for the poor per hectare results of FHHs. In correspondence with the low agricultural output, FHHs are less oriented to the market (33%) than MHHs are (65%).

Table 4.9 General characteristics of male- and female headed households

	Male-headed	Female-headed
Household size	5.9	4.8
members >16 years	2.8	1.9
Hh. members <17 years	3.2	2.9
Hh. members formal act.	0.5	0.5
Hh. members informal act.	1.4	0.9
Hh. members agric. (pot.)	2.4	1.4
Molapo ha. owned	8.2	3.1
Molapo ha. ploughed *)	4.8	1.8
% of hh. without molapo	3	8
% of hh. did not plough	7	20
Ploughing intensity **)	59	58
Dryland ha. owned	5.3	1.6
Dryland ha. ploughed *)	1.8	0.5
Ploughing intensity **)	34	31
% of hh. without dryland	2	4
% of hh. did not plough	33	56
Maize harvested ***)	14.3	4.3
Maize sold ***)	8.6	1.3
Sorghum harvested ***)	1.0	0.9
Sorghum sold ***)	0.0	0.3
Maize per ha. ***)	2.17	1.87
Sorghum per ha. ***)	0.15	0.39
Maize per labourer	6.0	3.1
% of hh. subsistance	35	67
Cattle in kraal ****)	17.7	2.8
Draught animals	14.9	2.6
Oxen in kraal	4.7	0.9

*) = agricultural season of 1986-'87; households that did not plough are included
**) = defined as % of ha. in possession which is ploughed
***) = measured in 70 kg. bags
****)= measured in head, all stock counted as one
Source: University of Utrecht / CFDA field survey, 1987 - 88

As far as cattle is concerned, the situation for FHHs is even worse. MHHs have approximately six times more cattle and draught animals than FHHs do, while FHHs own only a fraction of the available draughtpower. The fact that just 8 percent of all FHHs have enough or more than

enough draught animals seems to speak for itself. Concluding, it is justified to say that FHHs are worse-off in all agricultural terms than MHHs are. This caused by the inharitage system which favours sons over daugthers. But from traditional custom it is known too that fathers and / or sons are obliged to help their relatives within the extended family with ploughing and / or lending land for cultivation. Although the Chobe Enclave society seems to be in a proces of modernization (see section 3.3.3), these traditional customs may serve as a lifenet for the poorer and weaker groups in the society (e.g. FHHs and households without draught power).

All this taken into consideration, one would expect FHHs to look for other sources of employment and cash income in a more active way than MHHs would do, because they are supposed to have more incentive to do so. From table 4.9 however, it appears that both types of households have on average the same number of people working in the formal sector (namely 0.5 persons; 56 percent of all households without anybody in this sector). As far as informal activities are concerned, there is a strong relationship between the two variables. Unexpected however, is the fact that it are the MHHs who are more involved in informal activities, rather than FHHs. MHHs have on average 1.4 individuals in the informal sector (19% of MHHs not involved at all), while FHHs have on average 0.9 individuals in this sector (27% of FHHs not involved at all). Thus as far as employment is concerned, there seems to be no reason to assume that FHHs are more active in the field of non-agricultural activities than MHHs are.

Table 4.10 Composition of household-income per type of head of household, in Pula and percentages

Source of cash income	Male-headed households mean (Pula)	%	Female-headed households mean (Pula)	%
Non-agric.act.				
formal	1048	51	434	42
informal	426	21	221	22
remittances	51	2	237	23
Sub-total	1525	74	892	87
Agriculture				
arable	200	10	37	4
livestock	147	7	11	1
ARAP-scheme	182	9	81	8
Sub-total	529	26	129	13
Total	2054	100	1021	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

From table 4.10 can be seen that MHHs receive in total twice as much income (100%) than FHHs. In the study of Koussoudji and Mueller this differential is only 60 percent. In the Enclave the differentials per source of cash income are as follows (the respective findings of

Koussoudji and Mueller are given between brackets): arable agriculture 440% (150), livestock rearing 1240% (120), formal activities 140% (30), informal activities 100% (63) and the ARAP scheme 125% (not available). Only for remittances FHHs receive more income than MHHs. Here the ratio is -90% (-35) [8]).

When differentials in household size characteristics (see table 4.9) are accounted for by expressing the various earnings per head involved, the picture changes. Illustrative are some figures for FHHs (figures for MHHs are given in parantheses): arable agriculture, Pula 26 per head (Pula 83); agriculture total, Pula 92 per head (Pula 220); formal activities Pula 868 per head (Pula 2096); informal activities Pula 246 per head (Pula 304). Thus, when presented in this way, FHHs still earn less than MHHs, but the differential is much less than if household size characteristics are not accounted for.

In general the findings of Koussoudji and Mueller are confirmed by this study, i.e. for all income sources (except remittances) is the rule that FHHs receive substantial smaller amounts of money than MHHs. However, in the Enclave the differentials are even bigger than in rural Botswana in general. This means that FHHs in the Enclave are relatively worse off than FHHs in rural Botswana in general, when compared with MHHs in both instances. The differences in absolute amounts of both MHHs and FHHs in the two studies, can be explained by the fact that the studies were performed in different times, and by the fact that the incomes in kind were capitalized in the study of Koussoudji and Mueller. So, if the figures of table 2.8 are compounded with an annual interest rate of, for example, 6 percent during 13 years, MHHs received Pula 2690 and FHHs Pula 1680. When the worth of transfers in kind would be substracted, the figures will be close to the ones of the Enclave.

Comparing the composition of income for both types of households, it becomes clear that incomes from agriculture are of minor importance for both household types. Even if ARAP subsidies are counted for as

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Footnote [8])= In reality, FHH can be devided in two groups; "real" FHH and "de facto" FHH. The de facto FHH are a minority (15% of all FHH), but most of them have husbands who stay outside the Enclave (for half of the cases in Kasane) and many of them are involved in formal activities (e.g. governmental service and the tourist sector). Usually these FHH are supported by their husbands who sent quite large amounts of remittances. In fact, only one third of the de facto FHH do not receive remittances while this figure for real FHH is 70 percent (MHH: 85%). And the de facto FHH which do receive remittances, receive large amounts, i.e. on average P.763, while real FHH receive on average P.135 (MHH: P.51). Therefore the proportion of remittances in the household income of real FHH is in fact smaller than the figures presented in table 4.10.

agricultural incomes, a mere 26 percent of the total income for MHHs come from agriculture. The share of arable agriculture and livestock rearing is for FHHs still lower than it is for MHHs. ARAP and informal activities provide for both household types more or less the same amount of cash relatively speaking. The income share from formal activities is lower for FHHs than for MHHs, while for remittances the opposite applies. When these results are compared with the ones for rural Botswana in general (see table 2.7) there are some differences to be noticed. First of all, livestock rearing as a source of income plays a very modest role in the economy of Enclave households. This is the case for both types of households. Second, incomes from formal activities play a more important role in the Enclave household (both types) than in rural Botswana in general. Remittances are of greater importance for FHHs in the Enclave than for FHHs in rural Botswana in general. Arable agriculture and informal income sources are of comparable importance for both types of households in the Enclave as well as in rural Botswana in general. The differences between the types of households in the two areas are more or less comparable, although in rural Botswana in general formal income sources are more important for FHHs than for MHHs while this is not the case in the Enclave.

The conclusion is that FHHs perform less not only in the agricultural sector, but also in the non-agricultural sector. This might be explained with the help of a time constraint. FHHs need to spent relatively more time in agriculture (because they have less workforce and draught-power) than MHHs, therefore they have less time left for non-agricultural activities, causing a worse performance in that field too.

Table 4.11 Type of head of household per income class

Income class	Type of head of household: Male-headed abs.	%	Female-headed abs.	%	Total %
1. poorest 20%	28	16	28	29	20
2. 20 to 40%	34	20	20	20	20
3. 40 to 60%	37	21	18	19	20
4. 60 to 80%	32	18	21	22	20
5. richest 20%	44	25	10	10	20
Total	175	100	97	100	100

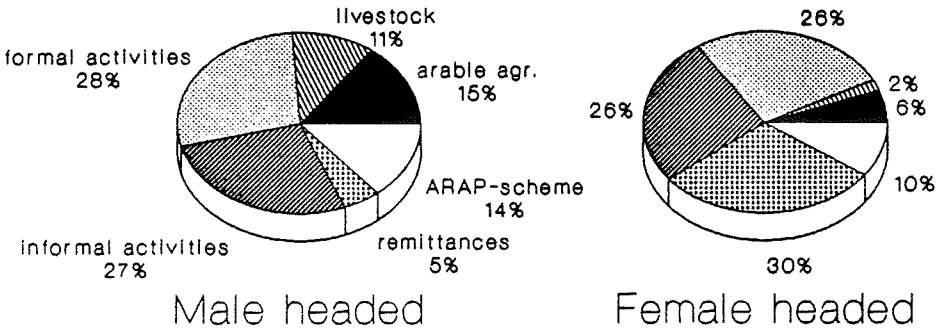
(Chi-square=12.27; p=0.02; C=0.21)
Source: CFDA field survey, 1987 - 88

From table 4.11 can be concluded that MHH are slightly over represented in the highest income class, while FHHs are over represented in the lowest income class. For the rest the scores are more or less as expected, and consequently the relation is weak.

From figure 4.6 it can be seen that the scores on formal and informal activities, as the most important source of cash income, is for both types of households comparable. The main difference again lies with the

remittances. For 30 percent of the FHHs remittances form the most important source of cash income, while this is the case for only 5 percent of the MHHs. On the other side, far more MHHs stated that they are mainly dependent on agriculture for cash (mainly livestock) than FHHs. This is a strong relation but, here too, it must be said that if de facto FHHs are excluded, the share of remittances falls to 26 percent, while the share of informal activities and government assistance rise 2 percent each.

Figure 4.6 Distribution of most important sources of cash income per type of head of household, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

To summarize it can be concluded that:
- FHHs are in all agricultural terms worse off than MHHs.
- In terms of employment, FHHs and MHHs have the same number of household members in the formal sector. MHHs have more members in the informal sector than FHHs.
- Both types of households receive more than 75 percent of their income from non-agricultural sources of income.
- FHHs earn less than MHHs out of all sources of income, except remittances. When the income figures are expressed per head, the differential is still clear, but much smaller. In comparison with rural Botswana in general, the situation in the Enclave is comparable in direction, but the differences between FHHs and MHHs in the Enclave are much greater.
- Relatively speaking, formal activities account for the largest part of income for both types of households. At the second place come agricultural activities for MHHs, and remittances for FHHs. Informal activities take care of a comparable proportion of income for both types of households.
- When only the most important source of income is taken into consideration, both types of households do not differentiate in respect to incomes from formal and informal activities. Here too are agricultural activities much more important for MHHs, while remittances are very important for FHHs.

4.3.3 Income classes

Mean income for the households in the Enclave is rather a relative idea, because the distribution of income is skewed. Therefore, the households are divided into 20 percent income groups. The first 20 percent contains the households which have the lowest incomes and so on. The poorest 20 percent get 2% of the total income while the richest 20 percent get 65% of the total income. What this means becomes clear when one see that more than 80 percent of the households have less than the average household income of Pula 1705.

As can be seen in table 4.12, absolute figures rise for all sources when total income increase, except for remittances. Agriculture as a whole is the most imporant source for the 0 to 60 percent income group and formal activities are the most important source for the richest 40 percent. Informal activities are the second most important source for all households but its relative share decreases when income rise. Remarkable is the fact that in a society where 85 percent of the people are dominantly involved in agriculture this sector on average is less important than the non-agricultural sector for all income classes. Together with the fact that ARAP is the most important agricultural source for 0 to 60 percent of the households this is a further consolidation of the statement that agriculture in the Enclave is still predominantly in the subsistence stage.

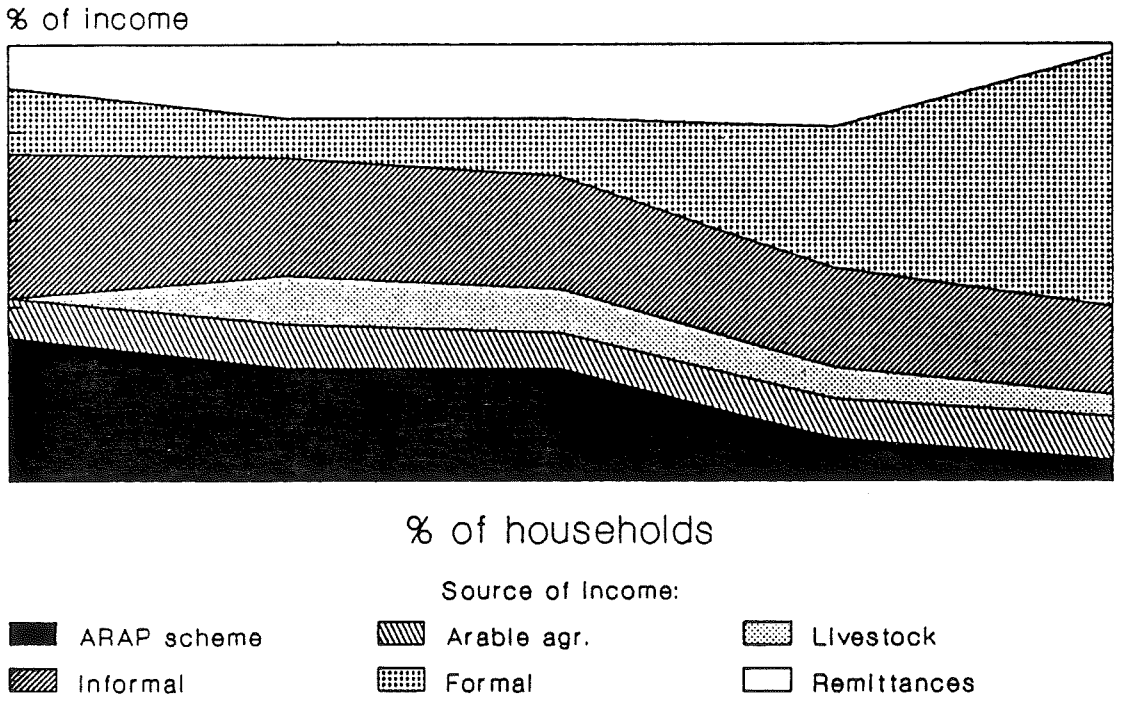
Table 4.12 Composition of the household income per income class, in Pula and percentages

Source of income	Income class 1 0-20%		2 20-40%		3 40-60%		4 60-80%		5 80-100%		Tot.
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	%
Non-agr.activ.											
formal	25	15	41	9	95	12	516	32	3496	59	50
informal	56	33	132	27	199	26	396	24	989	20	20
remittances	17	10	80	17	132	17	274	19	77	2	6
Subtotal	100	58	253	52	426	54	1191	73	3496	80	76
Agricultural											
arable	16	9	44	10	87	8	254	9	423	10	8
livestock	0	0	49	11	76	10	111	7	263	5	6
ARAP	55	33	121	27	196	26	149	10	214	5	9
Subtotal	70	42	214	48	365	44	390	26	903	20	24
Total	168	100	467	100	791	100	1579	100	5465	100	100
Total per head	37		104		136		243		841		

Source: University of Utrecht / CFDA field survey, 1987 - 88

Out of figure 4.7 and table 4.12 it becomes clear how the share of the different sources change when total income increases. Striking is the fact that independent of the height of the total income, all households seem to get income from all sources categorized. Noticeable is the agreement between the income structure of the income groups 1, 2 and 3. The greatest changes take place for the richest 40 percent of the households, agriculture becomes less important and is almost totally replaced by income from formal activities. Informal activities are an important source for all households and its share in the total income decreases from 42 to 20 percent when income rises. Remittances as a source of income are relatively most important for the middle income group (see also table 4.13). Totally 25 percent of all households receive remittances.

Figure 4.7 Composition of household income by increasing total income, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

A total of 24 percent of all households sent remittances. But it must be remarked that the group of households which receive is another group than those who sent remittances, just 8 percent of the households involved belong to both groups. The amount of remittances sent and the number of households who sent, rise when total income increases. Except for the richest 20 percent who sent more net and deviate from this trend. Net return is positive for the 0 - 80 percent income classes.

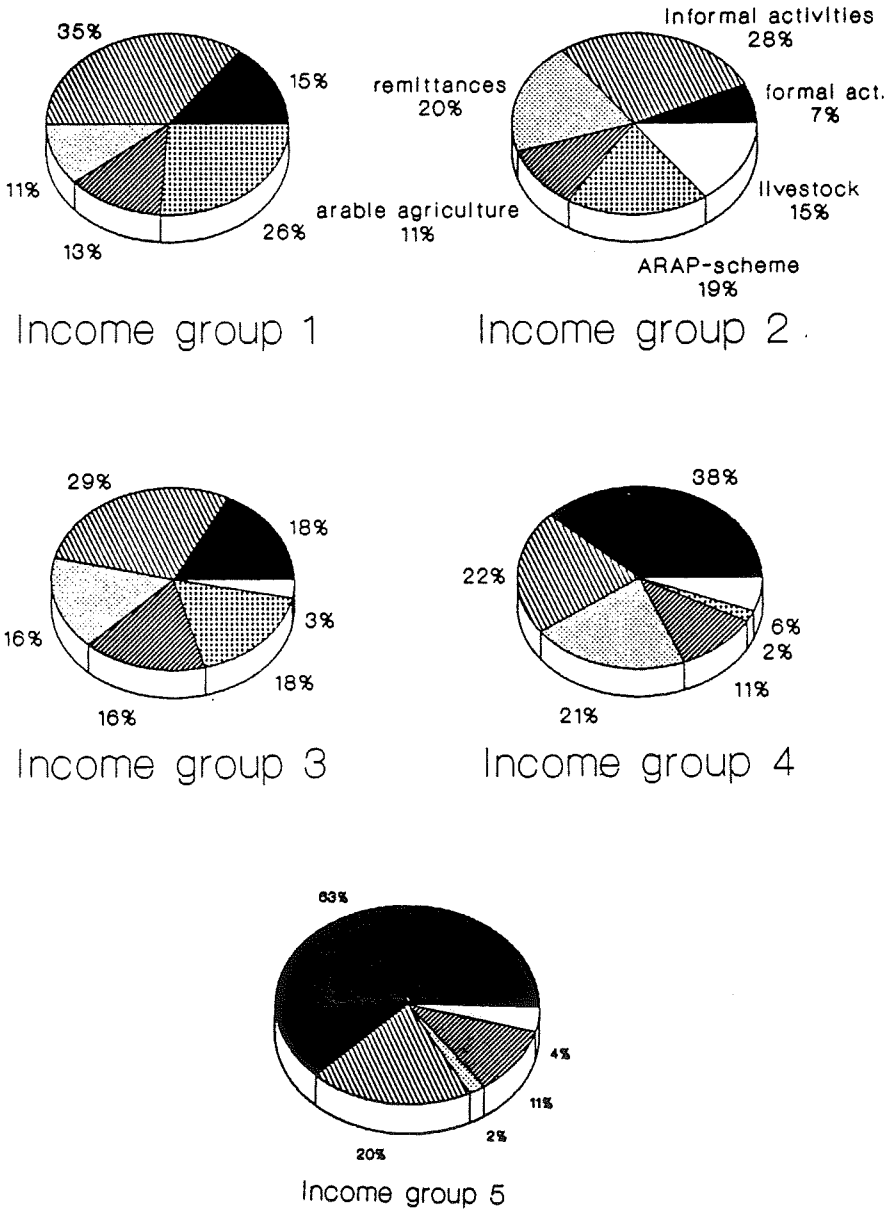
Table 4.13 Remittances received and sent per income class for the households of the Chobe Enclave

Income class	Remittances received Pula	% of hh/inc.class	Remittances sent Pula	% of hh/inc. class	Net
1 0-20%	17	5	8	3	+ 9
2 20-40%	84	17	32	9	+52
3 40-60%	134	16	41	11	+93
4 60-80%	274	18	221	15	+53
5 80-100%	85	4	206	25	-121
Total	117	23	99	24	+ 18

Source: University of Utrecht / CFDA field survey, 1987 - 88

Figure 4.8 deals with the most important source of income. Informal activities are the most important source for the 0 - 60 percent income groups and this are the formal activities for the richest 40 percent. Remarkable is the importance of the non productive income sources remittances and ARAP for the 0 - 80 percent income groups, it ranges from 39 to 23 percent.

Figure 4.8 Distribution of most important sources of cash-income per income class, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

Height of income is highly dependent on the availability of the production means, land , capital and labour. To get insight in distribution and availability of these means a number of general charateristics are categorized and related to income (see table 4.14). Poorer households are generally smaller than richer households. Roughly more than half of the members per household for all income groups are younger than 17 years. The category household members older than 16 years gives an idea of the potential number of labourers and seems to be related to height of income. Interesting is the datum that when these latter figures are reduced by the number of household members who are involved in formal activities, former differences almost disappear. The potential number of agricultural labourers per household is namely roughly 1.9. If the potential number of agricultural labourers per income class are compared with the agricultural income figure in table 4.12 it seems that the available manpower does not influence the difference in agricultural income from arable activities. The number of household members involved in informal as well as formal activities are higher for the richer households; which is not unexpected for the latter activities because these form a substantial part of the total income.

Richer households own and plough more molapo and dryland fields than the poor. In absolute terms this trend is the same for maize and sorghum harvested. Despite the small harvest of maize in absolute terms, the richer households harvested more maize per ha and per labourer, wich can be explained on the one hand by the fact that they plough more hectares and therefore do benefit more from the advantages of risk spreading. On the other hand richer households can make use of the first showers, mostly resulting in better harvests, because most of them have immediate acces to draught power. The richer households do produce more for the market.

The amount of income earned is positively related to the number of draught animals per household; this association is quite strong. This trend is clear for category 1 which decreases from 53 to 15 percent when income increases (see table 4.15). The richest 20 percent are over-represented in the categories 3 and 4. Strange however is the fact that even of the poorest 40 percent, roughly 30 percent of the households, have more than ten draught animals, whilst the agricultural income of these income groups is rather low. This observation might be explained by pointing to the age of cattleholders in these income groups. These households are predominantly headed by a male older than 60 years and therefore these households are not activily involved in arable agriculture anymore.

Table 4.14 General characteristics of households per income class

Income class % of the households	1 0-20	2 20-40	3 40-60	4 60-80	5 80-100
% Female hh.	50	37	33	40	19
Household size	4.6	4.5	5.8	6.5	6.5
Hh. members >16 years	2.0	2.2	2.6	2.6	3.0
Hh. members <17 years	2.6	2.3	3.1	3.9	3.5
Hh. members formal act.	0.3	0.3	0.4	0.7	1.0
Hh. members informal act.	0.9	1.1	1.3	1.3	1.4
Hh. members agric. (pot.)	1.7	1.9	2.2	1.9	2.0
Molapo ha. owned	4.3	5.1	7.1	6.8	8.8
Molapo ha. ploughed *)	1.7	2.7	4.3	4.4	5.8
% of hh. without molapo	7	4	2	6	6
% of hh. did not plough	19	2	7	9	5
Dryland ha. owned	1.3	3.5	4.5	4.8	6.0
Dryland ha. ploughed	0.7	1.2	1.3	1.3	2.1
% of hh. without dryland	9	0	0	4	2
% of hh. did not plough	54	41	32	34	38
Maize harvested **)	2.9	6.5	10.8	9.9	23.7
Maize sold	0.7	1.9	3.8	5.5	18.3
Sorghum harvested	0.6	0.7	1.2	1.1	1.3
Sorghum sold	0.0	0.0	0.4	0.1	0.2
Mais per ha.	1.1	1.7	1.9	1.7	2.0
Sorghum per ha.	0.3	0.3	0.2	0.2	0.1
Mais per agric. labourer	1.7	3.4	4.9	5.2	11.9
Sorg. per agric. labourer	0.4	0.4	0.5	0.6	0.6
% of hh. subsistence	62	51	43	42	35
Cattle in kraal ***)	8.2	9.6	11.6	13.0	19.9
Draught power	7.0	7.9	10.3	10.9	16.8
Oxen in kraal	2.0	2.8	3.5	3.5	5.1

*) = agricultural season 1986 - 87; households that did not plough are included
**) = measured in 70 kg bags
***)= measured in head, all stock counted as one
Source: University of Utrecht / CFDA field survey, 1987 - 88

Table 4.15 Distribution of draught power classes per income class, in percentages

Draught animals Cat.	Income class 0-20%	20-40%	40-60%	60-80%	80-100%	Total
1 0	53	43	30	34	15	35
2 0-10	18	26	36	30	31	28
3 11-20	18	22	14	15	30	20
4 >20	11	9	20	21	24	17
Total	100	100	100	100	100	100

(Chi-square=26.88; p=0.009; C=0.30)
Source: University of Utrecht / CFDA field survey, 1987 - 88

Striking is the agreement of a number of characteristics between income classes 3 and 4 (see table 4.15). On average these have both 3.5 oxen and draught animals are roughly equally distributed but also for a lot of other variables (molapo / dryland owned and ploughed) they have more or less the same score. As one can see in table 4.5 these classes have almost the same amount of income from agriculture Pula 365 and Pula 390 respectively. Despite the higher total income of group 4, on average Pula 1579 to Pula 791 for group 3, it seems that the agricultural income and the amount of production means used for agriculture stagnate whilst the total income rises. This stagnation might be explained through an association between the input and output of agricultural and non-agricultural activities following a certain process, described down here.

The following process existing of three stages seems to occur with relation to agricultural investments / output when total income increases. 1) At the first stage agricultural income rises together with total income, this happens for the first three income groups. 2) The second stage begins when a certain level of agricultural investments / output is reached, households do not invest more in agriculture, despite their rise of the total income. From that point households use their extra money gained by informal activities for other purposes than agriculture. This might be the explanation of the stagnation of the agricultural income for income group 4 compared with income group three. 3) The transition from the second to the third stage seems to be characterised through the passing by of a certain total income level. When total income increases further, households seem to start investing more in agriculture and output rises again. This latest statement seems to be underlined by the economic characteristics of income group 5. Their total income is much higher compared with income group 4 and they do use more means for agricultural production resulting in a rise of the agricultural income compared with income group 4. This pattern of a changing share of theagriculture income, if the total income increases, is also shown by figure 4.7.

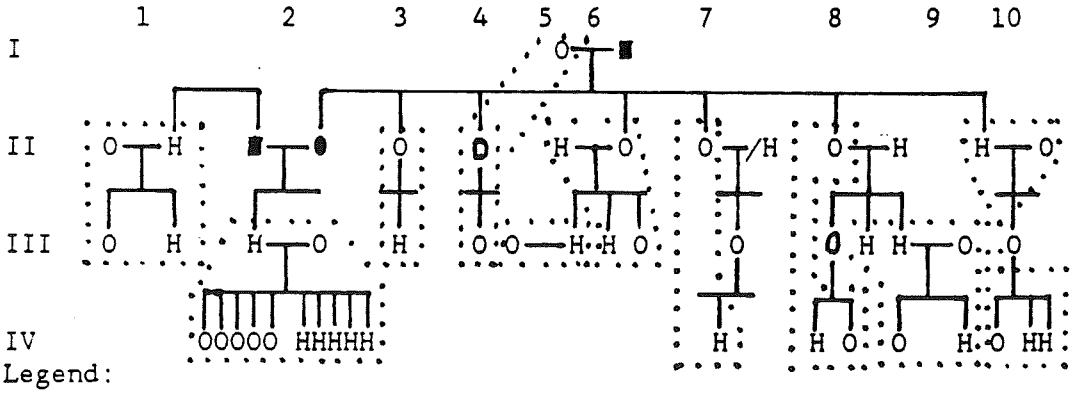
Because the economic situation seems really bad for the poorest 40 percent of the households, especially compared to the average income figures of rural households in Botswana, this group will be the subject for a further analyses. Therefore, it is neccessary to look at the social (family) relations and structure of these households also (see intermezzo I).

It is already mentioned that FHHs are over-represented in this group because they have less access to the production means cattle and land which is caused mainly by the traditional heritage system. FHHs seen as a whole, more often consists of one or two persons 27 percent for the poorest 40 percent, to 12 percent FHHs for the income groups 3, 4 and 5. According to the mariatal status of the head they are more often unmarried or widow / divorced 42 percent and 52 percent respectively, against 29 and 32 percent for the other 60 percent. De facto female headed households are under represented in this group 6 percent and over-represented in the richer groups 37 percent. The heads of the FHHs are older than the average. So, the total view one get of the FHHs belonging to the the poorest 40 percent is the following; a part of

these households are not longer economically active because they are too old, the ones who are still active are dependent on relatives for the production means. Generally the tasks of the older heads are at the compound like for instance taking care of their grandchildren.

Intermezzo I

The extended family which is shown here is not a typical example of the most families of the Enclave, but the most common social and economic relations between households of an extended family exisist within this family. This is a Basubiya family who lives in Legotwana. This family exsists out of five sisters (household nr. 3, 4, 6, 7, 8) one brother nr. 10 ,their old mother and a cousin in the second line nr.1. The other households nr. 2, 5 and 9 are children of the second generation. The households 3-10 live close together around the family kraal and the households 1 and 2 live some distance away from the other households and they have their cattle stays in Munga as "mafisa out".



Legend:

O= female
H= male
●= female dead
▮= male dead
O--H= married
O-/H= divorced

absentee householdmembers are not shown in the above figure

Characteristics of the households:

Nr.	Head of the hh	Number of hh members	Draught animals	Category	Income class
1	male	4	12 (Maf.out)	n.a.	n.a.
2	male	12	5	2	n.a.
3	female	2	0	1	2
4	female	3	1	2	1
5	male	2	n.a.	n.a.	n.a.
6	male	4	4	2	n.a.
7	female	2	0	1	n.a.
8	female	3	0	1	1
9	male	5	0	1	5
10	male	5	12	3	3

As shown in the above table, hh 10 has more than enough drought

power and he assists his four sisters (nr. 3,4,7 and 8) with ploughing. Hh 4 uses one of her own animals completed with her uncle his oxen. Hh 9 is lending the draught animals from his uncle, hh 10. Hh 6 has four draught animals consisting of one cow, one heifer and two oxen. To make his span complete he is using two oxen from his brother in law hh 10. Hh 1 ploughs with his own oxen Hh 2 uses one ox of his own and borrows three oxen from his uncle hh 1. Striking is the relation between head of the hh, draught power catagory and income class.

MHHs belonging to the poorest 40 percent are by far older than the average, 50 percent is older than 55 years. According to marital status they do not deviate from the overall trend. For men it is easier to marry again after divorce or death of their wife than for women.

MHHs belonging to the poorest 40 percent more often consist of one or two persons, namely 16 percent against 6 percent for the rest of the MHHs. Practically all the cattle of the poorest 40 percent belong to MHHs. The total view we get of these male headed households is that a part of them own a considerable number of cattle which are used by a minority themself because they are less active economically and do not plough anymore. But this cattle is still used by relatives. Altogether most of the households are economically not dependent of the small income they gain, but they are dependent of relatives for food sometimes and for other needs than food mostly. MHHs contribute to their relatives through lending of land and cattle, whilst the contribution of FHHs is one way.

Resuming it can be said:
- When total income rises, agricultural income rises also but the income share from non-agricultural income activities rises faster, relatively and in absolute terms.
- Larger households are more represented in the richer income groups and they are also more involved in non-agricultural activities but the number of potential agricultural labourers is equally divided over the income groups.
- Formal activities are by far the most important source for the richest 40 percent. Informal activities too, are more practised by richer households and on average they gain more from these activities.
- Poor households are on the whole line economically worse off, non-agriculture activities are on average the most important source but compared to the richer households it is almost nothing. The households of this group are socially related to households who belong economically to the richer groups and therefore their situation is less worse.
- After a certain (agricultural/total) income level is passed by, the rise of investments in agriculture seems to be conditioned by the height of the income gained with non-agricultural income.

4.4 Production linkages between the agricultural and the non-agricultural sector

Forward and backward linkages between the agricultural and non-agricultural sector hardly exists in the Enclave. Food processing in the form of beer brewing and wine making is the only example of forward linkages between the non-agricultural and agricultural sector. Backward linkages are also less important and consists of the production of hoes for agricultural use by blacksmiths and basketry. Other agricultural inputs and equipment like ploughs, harrows and rowplanters are delivered by the Agricultural Demonstrator or they are made by the people themselves like sledges and harnesses and yokes for ploughing. The economy as a whole is less differentiated and the non-agricultural sector can be characterized as supporting for the Enclave predominantly, apart from the CFI activities. Whilst agriculture is directed to subsistence mainly.

Final demand linkages through consumer demand provide the most important linkage between the agricultural and non-agricultural sector. Because agriculture is hardly commercialised, the income from agriculture is low. Resulting in a low demand for products other than food. This may be part of the explanation of the less developed non-agricultural sector. Rise of the purchasing power of the households is mentioned to be the motor for rising demand for goods of the non-agricultural sector (see section 2.2.4). Therefore, people with income from formal activities can play an important role in the development of the non-agricultural activities because they have the strongest purchasing power. Public work programmes should have the same effect. However, the question arises if especially the poorer households use their little sum of cash money for products other than food. Because it seems that people start buying goods of the non-agricultural sector after they have provided their basic needs. A certain income level has to be passed first. For the richer households this threshold is probably reached but relatively the share of income from Drought is small.

4.5 Spatial differentation

There are 21 settlements in the Enclave. To see whether the income structure is dependent on the location of the households a division is made between the main villages Muchenje, Kavimba, Kachikau, Satau and Parakarungu, all of them with a number of supply services, and the smaller villages (more than 300 inhabitants). The smaller villages were clustered, clusters 3 and 5 are oriented on Kavimba and Kachikau respectively, and clusters 7 & 8 on Satau and 10 on Parakarungu. Some general employment and agricultural characteristics of the villages will be presented first.

Generally the appearance of FHHs / MHHs is not dependent on a certain locational factor. Three clusters deviate of the average ratio (36:64). The area dominantly inhabited by the Batawana in the south eastern part of the Enclave, which has to do with the cattle post system, man stay with their cattle while the women remain in Kachikau (cluster 4 and 5)

and cluster 8 probably because there live relatively more fisherman who are absent for longer periods. Of the households in the main villages, more members are on average involved in formal activities the number ranges from 0.6 to 1.1 than in the hamlets 0.2 to 0.4 members. The number of household members involved in informal activities is not related to these locational bipartition. The potential number of agricultural labourers per household do not differ greatly for the clusters.

Table 4.16 General characteristics of households per cluster

	Cluster *)									
	1	2	3	4	5	6	7	8	9	10
% Female Hh	28	50	50	58	12	27	24	16	35	39
Household size	6.1	5.9	5.0	4.8	4.7	6.2	4.7	6.5	5.8	5.7
Hh members <17y.	3.4	3.2	3.0	2.5	2.1	3.5	2.8	4.0	3.1	3.1
Hh members >16y.	2.7	2.7	2.0	2.3	2.6	2.7	1.9	2.5	2.7	2.6
Hhm.invol.i.for.	0.7	1.1	0.4	0.9	0.2	0.6	0.2	0.2	0.7	0.2
Hhm.invol.i.inf.	1.3	1.0	1.1	1.0	1.5	1.2	1.0	1.6	1.2	1.2
Hhm.agric.pot.	2.3	2.4	1.8	1.9	2.4	2.4	1.7	2.4	2.5	2.5
Molapo ha.own.	3.0	4.8	6.0	3.0	4.9	11.2	6.5	7.1	7.2	9.1
Molapo ha.plo.	2.4	3.0	3.1	1.5	1.6	5.5	4.0	5.9	4.5	6.1
% hh. without mo.	6	12	7	12	0	0	0	4	0	0
% hh. did not pl.	0	7	13	22	38	0	0	0	0	0
Dryland ha.own.	2.5	1.4	3.7	2.0	6.2	6.5	2.8	7.0	2.8	4.9
Dryland ha.plo.	1.8	0.5	1.0	0.8	3.4	0.8	0.7	0.7	1.6	2.1
% hh. without dr.	10	12	7	0	0	0	0	0	0	0
% hh. did not pl.	0	57	20	49	29	54	77	24	58	41
Maize harvested	13	6	6	1	0	16	12	19	10	23
Maize sold	2	3	2	0	0	11	6	13	6	16
Sorghum harv.	2	1	0	1	1	1	1	1	2	1
Sorghum sold	1	0	0	0	0	0	0	0	0	0
Maize per ha.	3.0	1.7	1.5	0.2	0.0	2.5	2.5	2.8	1.7	2.9
Sorghum per ha.	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.2
Maize/ agri.lab.	5.7	2.5	3.3	0.5	0.0	6.7	7.1	7.9	4.0	9.2
% Prod.for subs.	38	19	56	89	76	39	53	26	29	29
Cattle in kraal	10.8	11.7	16.3	8.4	16.8	11.5	16.9	13.7	8.1	15.2
Draught animals	9.2	11.8	12.7	7.1	14.7	9.9	14.9	11.2	6.9	12.5
Oxen in kraal	2.9	3.3	4.6	1.2	3.7	4.0	4.2	3.8	2.7	4.3

*) (N=) Cluster:
(32) 1= Muchenje, Mabele, Mawana
(16) 2= Kavimba
(27) 3= Mathabanello, Seriba, Legotwana, Munga
(41) 4= Kachikau, Forest Camp
(24) 5= Mpeteke, Kataba, Barangwe
(33) 6= Satau
(17) 7= Mazanzu, Chikabi, Chida
(20) 8= Lyambezi, Maunga, Mazunzwe
(31) 9= Parakarungu
(31) 10= Chituzanamatako, Ikonde, Karoga, Mabozu
Source: University of Utrecht / CFDA field survey, 1987 - 88

Because overall differences are small it seems that available number of labourers are not the most important factor for explaining the existing differences in agricultural income between the clusters. As noted by Jansen et al. (1988a,b,c) farmers in the northern area (clusters 6 to 10) plough more fields and had a better harvest then the farmers of the southern area. This idea is consolidated by the agricultural income figures of table 4.16.

On average 46 percent of the households only practise arable agriculture to satisfy subsistence demand and 54 percent of the households try to produce for the market also. The pattern which occurs is strongly related to ethnic origin of the households and village size. For the Batawana households the ratio of the production goal subsistence / market is 83:27 while the ratio for the Basubiya is 57:53. This can be explained by the fact that Batawana households own on average more unfertile dryland and less fertile molapo fields than the Basubiya. Another factor which influences this difference is might be the fact that Batawana are traditionally more cattle oriented while the Basubiya have a longer arable agricultural tradition.

Table 4.17 Distribution of draught power classes by village seize per ethnicity, in percentages

Draught animals Cat.	Subiya			Tawana			Total
	Main	v.	Hamlets Tot.	Main	v.	Hamlets Tot.	
1 0	29	30	30	64	30	51	35
2 0-10	37	29	33	10	17	12	28
3 11-20	23	28	20	17	25	20	20
4 >20	11	24	17	10	30	17	17
Total	100	100	100	100	100	100	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

As noted before draught animals are not equally divided over the Enclave. Distribution of draught animals seems to be influenced by ethnicity of the households. The other tribes are excluded in this table because their number is small. Differences only exist for the categories 1 and 2, in the Tawana area there are much more households who do not have draught animals, 51 percent against 30 percent of the Subiya households. The number of households who rent draught animals are higher for the Tawana households 34 against 21 percent while the Subiya households do more borrow 28 against 20 percent. A further difference exist between the main villages and hamlets of these tribal areas. Differences in category 1 are caused by the already mentioned way of cattle holding, the cattle post system of the Tawana and cattle next to the homesteads of the Basubiya. In the more remote located hamlets category 4 is over-represented for both groups. For the Batawana this is explained by the fact that the cattleposts are located here and it is a way of risk spreading with relation to diseases. The risk spreading strategy is the most important explination for the location of the Subiya cattle in the hamlets.

Table 4.18 Composition of the household income by cluster, in Pula

Source of income	Cluster 1	2	3	4	5	6	7	8	9	10
Non-agric.										
formal	759	2547	551	1254	285	1329	243	137	1124	150
informal	161	284	156	236	303	569	376	298	792	246
remittances	53	244	89	113	83	90	160	154	70	206
Sub-total	982	3076	796	1579	661	1985	778	589	1986	595
Agriculture										
arable	71	73	54	3	0	255	133	291	133	371
livestock	122	50	101	89	94	76	84	90	164	92
ARAP-scheme	114	122	111	85	131	229	150	213	139	174
Sub-total	317	215	262	178	225	560	367	595	430	637
Total	1285	3321	1058	1732	886	2545	1145	1183	2416	1233
Total/head	211	563	212	361	189	410	244	182	417	216

Source: University of Utrecht / CFDA field survey, 1987 - 88

If the clusters in table 4.18 are ranked, two different groups can be distinghuised. Firstly, when the total agricultural income is ranked one get a straight division between the southern part (cluster 1 to 5, agricultural income Pula 178 to 317) and the northern part (cluster 6 to 10, agricultural income Pula 367 to 637). This is not totally unexpected because the CFDA study by Jansen et al. (1988a, b, c) already noticed that households in the northern part are on average bigger farmers who have more cattle and fields. Strange however, is the fact that this applies for all clusters in the southern Enclave, while not all clusters in the southern area have less cattle and fields than the northern clusters. This might be explained by, on the one hand locational variability in percipitation during the germination period and on the other hand the presence of smaller more rain independent molapo fields in the southern part.

Secondly, the other distinction can be made when the total household income is ranked. The households with highest total incomes are all residing in the five main villages, Muchenje, Kavimba, Kachikau, Satau and Parakarungu (see map 2). This is caused by the large amount of income from formal activities. Which is not strange respected the presence of a great number of government personnel. Income from formal activities is highest in the five main villages, whilst the remote located clusters 8 and 10 are heavily under represented. Informal activities are not related to the above distinghuised divisions and a particular pattern does not occur. Satau and Parakarungu score the highest and the clusters 1 and 3 the lowest income from informal non-agricultural they deviate from the other clusters which score on average between Pula 250 and Pula 370.

The presence of these officers in the main villages appears of course also in the relative structure of the income distribution, the share of formal activities range from 47 to 77 percent (see map 2). For the small villages the relative importance of formal income range from 12 to 52 percent. Agriculture is for the total household income much more important for the small villages, with a share of 25 to 52 percent, than for the main villages 6 to 25 percent. The share of informal activities is most equally distributed, they range from 9 to 33 percent for the main villages and 15 to 34 percent for the other villages. For cluster 5 and 7 informal activities are with respectively 34 and 33 percent the most important source of income.

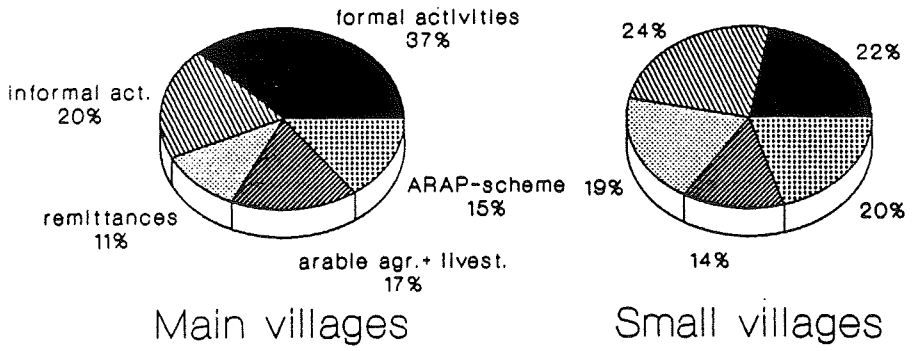
Table 4.19 Income classes per village type, in percentages

Income group	Main villages	Small villages
1 0-20%	18	23
2 20-40%	15	25
3 40-60%	20	20
4 60-80%	25	14
5 80-100%	21	21
Total	100	100

Source: University of Utrecht / CFDA field survey, 1987 - 88

If households in the different income groups were equally divided over the villages in the Enclave, then the score for the main and small villages would be the same. But they are different for the income groups 2 and 4. The poorer groups are over-represented in the small villages and group 4 is over represented in the main villages.

Figure 4.9 Distribution of most important sources of income per village type, in percentages



Source: University of Utrecht / CFDA field survey, 1987 - 88

As figure 4.9 shows, household incomes in main as well as in small villages are characterized by diversity of sources. Formal activities are as expected the most important source of income for the main villages and for the small villages these are the informal activities. The weak economic base of a great number of households independent of

the location is clear when one see that the non-productive sources remittances and ARAP are the most important source of cash income for 26 percent of both groups.

The following three different regional divisions can be distinghuised on base of different spatial and socio-economic characteristics:
1. a locational division of the settlements in main villages and hamlets on base of seize and level of services supplied;
2. a geographical north south division;
3. a cultural division by ethnicity in two areas inhabited by predominantly Basubiya and Batawana.

Summarizing, the following can be concluded for the three regional divisions:

ad 1. - There is a quite strong relation between income from formal activities and size of the villages. These activities are over represented in the main villages. This is caused by the presence of a great number of government paid officers in the main villages.
- The poorer groups are slightly overrepresented in the small village and income group 4 is slightly over-represented in the main villages.
- Informal activities are the most important source of income for the households of the small villages, while this are the formal activities for the main villages.

ad 2. - Out of the north south division it becomes clear that the households in the northern area are larger farmers, more dependent on agricultural and less dependent on non-agricultural income source, when compared with the household of the southern area. For the agricultural differences this has to do with the greater fields they own and plough compared to the southern area. Agricultural opportunities in the northern part are the best because of better and larger molapo area.
- The southern area households gain, compared with the ones of the northern area a larger income share from non-agicultural activities, this might be explained by two factors, on the one hand they have to compensate the lack of agricultural income through more labour input which is possible because their agricultural labour input is less and on the other hand they have a better accessibility to the market (i.e. tourists and Kasane) which means more demand in the southern area).
- This north south division is coloured by the presence of the Batawana who are a minority but influence the figure of the south and deviate of the Basubiya on a number of points. Therefore, it is necessary to make a division of the area on base of ethnicity.

ad 3. - Ethnicity applies to be an important factor explaining the distribution of cattle. The socio-cultural factor is still important to explain a number of differences between the two main groups. Especially in the agricultural field, which has to do with the different ways of cattle holding. However, differences in seize and importance of non-agricultural activities are not related to ethnicity.

CHAPTER 5 NON-AGRICULTURAL ACTIVITIES IN THE CHOBE ENCLAVE

5.1 Formal non-agricultural activities

5.1.1 General description

Of all households in the Enclave 43 percent are involved in formal activities. Practically all are involved in just one activity. Only 3 percent of all households are also involved in a second formal activity (i.e. the Drought Labour Based Relief Project) most of the times. Under the category miscellaneous (see table 5.1) people are categorized like traditional headman of a ward who are officially acknowledged by government, but who are not paid for their duties. On average 0.5 members per household are involved in formal activities, earning some Pula 833 per household.

Table 5.1 Formal activity, in terms of percentage of households involved and mean incomes in Pula per household involved

Activity	% of hh	Pula (mean)
None	57	-
Government	14	3809
Drought programme	23	183
Industry	2	1860
Business	4	1892
Tourism	1	1300
Miscellaneous	3	....
Total	- *)	833

*)= Households can be involved in more than one formal activity
Source: University of Utrecht / CFDA field survey, 1987 - 88

5.1.2 Government

People who work for the government are involved in a great number of activities like: primary education, local administration, tribal police, health and a number of servicing functions. They are well paid, especially compared to private sector activities and are all residing in the five main villages (see table 5.2). Government personnel who live in the smaller villages are mostly drivers. A total of 102 people is in governmental service and lives in one of the main villages.

Most households containing a government officer (77%) are male headed. They belong to the richest 20 percent dominantly (74%). On average they are larger, not because they have more children but mostly because they take care of the grand parents. The distribution of draught animals is unexpected, respectively 20, 43, 23 and 14 percent according to the typology. So, it does not seem to be true that these households invest their money in cattle.

Table 5.2 Type of government paid jobs in the five main villages

Activity	Mabele	Kavimba	Kachikau	Satau	Parakarungu
Chief/headman	1	1	2	1	1
Court clerk	1	1	2	1	1
Tribal police	1	1	1	1	1
Councillor	-	-	1	1	-
Landboard assistant	-	-	1	1	-
Teacher	6	7	6	8	9
Agricultural demonstr.	1	-	1	1	1
Nurse	1	-	4	1	3
Clinic driver	-	-	1	-	1
Family welfare educ.	1	2	1	1	1
Borehole operator	1	1	1	1	1
Relief borehole operat.	1	1	1	1	1
Nightwatchman	2	1	3	2	2
Post agency	-	1	-	1	2
Total	16	16	25	21	24

Source: University of Utrecht / CFDA field survey, 1987 - 88

The role of this small group of people must not be underestimated because these are the well educated people who have economically and socially a dominant position in the Enclave. These are the people who belong to the small local elite and they have an enormous purchasing power especially compared with the income from other formal activities. Relatively they are less involved in informal activities and they are the potential buyers of the products from the informal sector resulting in an assumed process of trickling down of government money to the poorer households. For the description of a typical household involved in formal activities, see Intermezzo II.

Intermezzo II
Amos Sankwazo is 45 years born at Munga and married with a young woman of 30 years from Seriba and they have four children. Two children join the school whilst the youngest two stay with the parents of Amos. He is teacher of the primary school in Mabele and lives in a government house next to the school. He has fourty head of cattle which are kraaled in the family kraal at Mawana some 30 minutes walking. He is the central figure of the family and they can make use of his cattle for ploughing. He starts ploughing his fields during summer holidays in December approximately 8 hectare, 5.5 ha. dryland planted with sorghum and 2.5 ha. rainfed molapo planted with maize. At Munga the family has still another 40 to 50 ha but this is not used at the moment. His wife is doing the weeding of the fields and is sometimes assisted by the unmarried sisters of Amos. In the hunting season Amos is joining the hunters of the area during the weekends. Together they make use of his car and he is also transporting the skins, totally he gains on average P.1200 a year with these activities. His wife has a hawker shop in Mabele earning P.1500 a year. Amos is transporting the goods for his wife and another hawker shop in Muchenje for P.50. He sents remittances to his youngest brother who is living in Kasane but is unemployed most of the time. His parents stay with the rest of the family at Mawana and regularly he is bringing them goods.

5.1.3 Labour Based Relief Project

The Labour Based Relief Project (LBRP) is one of the components of the Drought relief programme and contains two important fields, stamping at school and public work programmes (i.e. erection of buildings and infrastructural works. The total funds for LBRP earmarked for payments of labourers in the Enclave in 1986 was roughly Pula 30,000. The payments are Pula 24.50 per month for stampers during 1986 - 87 and Pula 45 per month in 1986 for the other activities, for 1987 it increased to Pula 50 per month. Stamping is done by women only for ten months per year whilst the other projects are executed by man as well as women during the slack season from June till December. Some women are involved in both activities. During 1986 totally 86 and 446 labourers were involved in stamping and other LBRP activities, respectively and per month 26 handstampers and 61 labourers for other projects were employed (table 5.3). The LBRP goal is monthly rotation of labourers. In practice though stampers are employed for 2,5 months and other labourers are involved for 1,1 month per year on average. Kavimba has the highest and Satau the lowest rotation rate according to stamping. The income per labourer is low, but the share in the total income for the poorest is considerable (table 5.4). During 1987 the following LBRP projects were completed: the guesthouse of Kachikau, the rondavels for the court clerk in Kavimba and Satau and in Parakarungu a cattle well and rondavel for the Tirelo Seshaba Participant (TSP).

Table 5.3 Impact of Labour Based Relief Project for Chobe Enclave residents, 1986

Location	LBRP excluding stamping			Stamping		
	labourers nr./mth.	involv. nr./yr.	mean inc. /lab.in P.	labourers nr./mth.	involv. nr./yr.	mean inc. /lab.in P.
Mabele	11	81	46	5	16	75
Kavimba	16	110	43	5	26	45
Kachikau	8	75	42	5	14	89
Satau	10	68	38	5	13	92
Parakarungu	16	112	43	6	17	89
Total	61	446	43	26	86	72

Source: North West District Council, 1986

Table 5.4 Share of the Labour Based Relief Project in employment and income for the households per income class

Income class	Employment, distr. of hh. involved in Drought	Income % of total	Income in Pula
0-20%	26	15	25
20-40%	19	6	30
40-60%	26	10	80
60-80%	26	3	50
80-100%	3	<1	3
Total	100	2.5	42

Source: University of Utrecht / CFDA field survey, 1987 - 88

The Drought programme is by far the most important formal activity in terms of employment (see table 5.4). Compared to other formal activities the mean income from Drought is rather low. This is caused by the low income per month and the participation for a short period. Despite the low wages drought is an important cash earning activity, because the people who invest time and energy are sure that they gain a certain amount of cash income. Compared to the uncertainty of gaining income from informal activities a lot of people prefer to invest their time in Drought.

Compared to the avarage ratio female headed households are over-represented in LBRP with 54 percent. Table 5.4 shows that households who are involved in Drought are equally distributed over the income groups, apart from the richest 20 percent who are strongly under-represented. The share of income from Drought in the total income is clear, roughly 10 percent for the poorest 60 percent. Howfar these incomes have replaced the lost incomes caused by drought is not exactly known, but it seems to be less than the national figure of 31 to 38

percent because drought in the Enclave was not so extreme as in the rest of Botswana and did not cause starvation of cattle. The goal of the LBRP to reach the rural poor in particular is only partly realised in the Enclave, because it are not only the poor who are involved in the LBRP. The income groups 3 and 4 have in absolute terms benefitted even more from LBRP than the poorest 40 percent (see table 5.4).

The households of the main villages are involved in Drought mainly, 35 percent of the are involved (9% for small villages). Practically all FHH in the main villages are involved in LBRP. The households from the small villages are underrepresented because they have to walk up to 2.5 hours to reach the projects which take place in the main villages.

The constraints mentioned by the people are:
- the payments are to low;
- projects are only located in the main villages which means that the people of the small villages do not benefit from this projects.

5.1.4 Industry

The only industry in the Enclave is the Chobe Forest Industries (CFI). This private industry is cutting wood in the Forest Reserve south of the Enclave, mainly Mukwa (Pterocarpus angolensis) and Mukusi or Rhodesian teak (Boikiaea plunijuga). In 1987 the foresters moved their camp from Kachikau to Kavimba. There a sawmill is installed now to remove unusable parts of the stem. Before, the stems were transported to the sawmill near Kasane where 70 percent of the wood was cut-off, therefore the transport pushed heavily on the costs resulting in an marginal profit. In 1987 - 88, 7,000,000 cubic metre was cut, of which 75 percent was exported to Zimbabwe where it is used in the mines and as railway sleepers. Of the remaining 25 percent construction timber is made and sold in Kasane and the rest of Botswana.

CFI is a medium seized industry with 164 male labourers (June 1988) who originate from in and outside the Enclave but who are now all residing in the Enclave. From the southern area more labourers are attracted than from the north which is the consequence mainly of the considerable distance of the northern area from Kachikau. The labourers earn dependent on their function between Pula 135 and Pula 200 per month for a full time job.

The cutting of the wood is controlled by the Forestry Officer of Kasane but the ecological consequences of this selective cutting on the long term are unknown. The cross section of the two cutted species has to be, Mokusi 0.35 metre and Mukwa 0.30 metre. There is hardly any regrowth of Mokusi because elephants destroy the young trees, regrowth of Mukwa is a little better. Despite the control on cutting the forest is still ecologically deteriorating. Therefore, it is neccessary that young trees are replanted by CFI. It might be possible to establish a nursery in the Enclave, for instance next to the river at Muchenje where open water is available for the whole year.

5.2.5 Thatch grass and reeds gathering

Because all compounds ("lolwapa") are made from reeds and grass, considerable amounts of these materials are needed. Together with mud and wooden pools, thatch grass and reeds are locally available in abundance. Reeds and grasses are gathered mainly along the main channel of the Chobe-Linyanti river, in the period of June - July, when reeds are fully grown. When a lolwapa is built or repaired, the owners go into the field to gather the grass, reeds and poles themselves most of the times. However, a small amount of these materials is traded. Most of the time, the women collect reeds and grass when they are working in the field. This trade must be seen as an extra source of petty cash. The bundles are sold to other households in the village and the sellers of Parakarungu and Mabozu mentioned Hunters Africa Ltd. (who maintain several camps and hunting safaris in CHA 1) as their customer. Usually the price varies around Pula 1.50 per bundle of thatch grass, and Pula 2.50 per bundle of reeds. As table 5.6 shows, of all households 12 percent stated that someone of the household is involved in the activity. On average 0.2 persons per household are involved in this activity, earning on average Pula 7 per household. For the whole Enclave, this means that some 180 persons are involved, with a total revenue of Pula 6,420 (i.e. Pula 35 per worker involved).

Both larger and smaller households are equally involved in thatch grass and reeds gathering. When the four draught power classes are taken into consideration, it is noted that of the draught power rich households, just 7 percent are involved. On the other side, of the households with 11 to 20 head of draught animals 17 percent are involved. The households without or with a small number of draught animals score more or less on the average of 12 percent. Although this is a typical women business, female headed households are only slightly more involved (14%) than MHHs (12%). The women in MHHs are almost as active in this field as the ones in FHHs. The two highest income classes are much less involved (i.e. 7%) than the poor and lower income classes (15%). Of the second income class, 18 percent of the households are involved. To conclude; it are mainly the households without or with not so much draught power, and households which are rather poor which are invloved most in the activity.

Geographically, households from small villages and of the northern area are involved twice as much (i.e. 16%) in thatching grass and reeds gathering than households from the main villages and the southern area. Especially in the southern main villages of Muchenje, Kavimba and Kachikau participation rates are as low as 3 percent. Households in the cluster of Mazanzu stated too that they are not involved in the activity. High scores are found among the households of Mathabanello, Chituzanamatako (with 24%) and Mpeteke and Satau (19%). These are the villages situated closest to the reed beds along the main channel of the Chobe-Linyanti river, and the Linyanti plain.

The gathering of seeds and fruits and the like, is mainly done for subsistance only (except for the local- and Kasane-trade of Mokola palm and Baobab fruits). Because subsistance needs were not included in the study, there is no quantitative information.

5.2.6 Basketry and mat making

Terry in her 1988 study recognizes that today there is much less production activity of handicrafts than in the past. To quote Terry when she writes about the Basubiya handicraft industry: "Women have woven a variety of products from natural fibres, such as: coil-constructed conical shaped open baskets (called "matunda" in Sesubiya), small closed baskets with lids ("tufu"). palm bracelets ("tusambo"), palm beaded necklaces ("bulungu bo luavo"), beer strainers ("mituto"), sleeping mats ("masasa") from papyrus, and grain storage bins ("mayanga")." And: "Woven crafts made by both sexes included the plaited palm "chipaupau" bag and woven palm hats ("nukawa")."(Terry, 1988, p.7). The materials used for basketry are the leaves of the "mokola" ("vegetable ivory") palm tree (Hyphaene petersiana, formerly H. ventricosa). These palms are to be found everywhere in the Enclave (except for Muchenje and Mabele; people from these villages collect the leaves elsewhere in the Enclave). There is no limitation on the availability of the raw material, and the collection of the leaves is managed well, causing no permanent destruction of palms. Dyeing of the palm fibres is done with the bark, and sometimes the roots, of the "motsentsila" tree (Berchemia discolor) which creates a reddish-brown colour. Sorghum husks, stalks covered with a red fungus and charcoal are used as well to dye the palm fibres (Terry, 1988, p.8).

Table 5.6 reveals that some 8 percent of all households stated that there were one or more members active in basket and / or mat making. This is slightly more than the 5.7 percent mentioned in table 2.1 for the Kenya situation. But, on the other hand, in Ngamiland the activity is much wider spread (Terry, 1988, p.19). In this study it is found that on average there are 0.13 persons involved in basketry and/or mat making per household, earning some Pula 6 per household. For the Enclave in total, this means there are some 120 persons involved in this activity (6% of the active population), with a total revenue of Pula 5,500 (i.e. Pula 45 per person involved).

Although earnings are not high, there is quite a large potential to expand this activity (i.e. the handicraft sector in general). Not only because of the reasonable quality, but also because of new opportunities offered by the booming tourist sector in the district. A central selling point along the main road at Kachikau, where passing tourists (going from Savuti to Kasane and vice versa) can buy directly from the producers seems benefitial. Crafts can also be supplied to curo shops in hotels. Hotels themselves can play a role of customer when they use local handicrafts as ornaments.

All householdsize classes participate more or less equally in the activity. Participating households are in first instance to be found among the households without or with just a few draught animals. Households with more draught power at their disposal are also involved in basketry and / or mat making, but in a lesser extent. Whether a household is male headed or female headed makes no difference for the level of involvement. The only remarkable figure when one looks into the participation rates of the different income classes, is the meager 2 percent of the richest 20 percent of households. All other income

classes participate at a level of roughly 10 percent. To conclude, it are mainly households with little or no draught power which are involved, and certainly not the richest households of the Enclave.

Households involved in basketry and / or mat making are not only to be found more in small than main villages, but especially in the northern part of the Enclave (where 11% of the households stated to be involved, against 5 percent in the south). Participating households are concentrated in the clusters of Lyambezi and Satau (21%) and Mpeteke (14%). Households in the clusters of Muchenje, Kavimba, Mathabanello and Parakarungu are less involved (0 to 4%) than the average of 8%.

The main problems with basketry and mat making are:
- Difficulty with marketing. At the time of survey there was no selling opportunity which was reliable. Several people asked themselves why the RIO did not come anymore on a regular basis. Others stated that they would produce more when there was a good outlet for the products. In this respect it must be noted that shortly after the survey, Botswanacraft Marketing Company (Pty.) Ltd. - Gaborone, undertook a buying trip into the Chobe Enclave . It seems to be Botswanacraft's policy to extend their activities to Chobe District. Regular buying trips like this would be a very welcome stimulance for the Chobe Enclave handicraft sector.
- Quality which can be improved. Therefore it has been advised by Terry (1988, p.32) to station a Handicraft Development Advisor in the Chobe Enclave permanently.
- The water used for preparing the mokola palm is polluted with high concentration ratios of iron, which gives the fibres a yellowish look. This gives the baskets a lower market value.

5.2.7 Other handicrafts

In this section the combined performance of the following catagories from table 5.6 are analysed: carpentry, blacksmithing, knitting and sewing. From the table is noted that in total 8 percent of the households are involved in one or more of these activities. Most of these activities are performed as the first informal activity.

On average these activities are performed by 0.12 persons per household, earning some Pula 27 per household. For the Enclave in total, there are some 110 people practicing these activities, earning a total revenue of Pula 24,760 (i.e. Pula 225 per person involved).

Carpentry is done by men. Carpenters in the sample produced items like wooden spoons (by 3 men), pounding blocks (4), kgotla chairs (1), tables and cupboards (1) and tool handles (3). It is calculated that there are some 45 carpenters in the area, earning on average Pula 500. Almost all of the carpenters practise their skill on an irregular basis. In Parakarungu there is a carpenter who owns a workshop and who manufactures large items like tables and chairs. During the time of survey a carpentry course was given in Parakarungu as well. The course was organized by the RIO of Kasane. Although local carpenters

experience severe competition from industrial products imported into the Enclave, commercialisation of the society will bring opportunities as well. When households reach higher standards of living, demand for local products like beds and cupboards will rise. In other words, it appears there is a severe lack of purchasing power in the area. Furthermore, for items like wooden spoons, kgotla chairs, pounding blocks and wooden toys like small sledges and mini canoes ("mekorro"), there is a rapid growing market in the tourist sector. Possible outlets for the products were discussed under basketry and mat making.

Blacksmithing is done by men too. The skill is passed on from father to son. In total there are some 10 blacksmiths in the area, earning on average Pula 570 each. In the northern part of the Enclave, the survey team came across 5 blacksmiths: 3 in Satau, 1 in Chikabi and 1 in Chituzanamatako. Three of them were old and were to give up their practice soon. Manufactured tools are knives, axes and hoes. All of them stated that they could sell all of their products quite easely to the Enclave residents. But they stated also that they experience more and more competition from imported goods. In order to let this very traditional skill to survive, serious attention should be paid to this group of artists. Among possibilities are: selling via the existing shops and vendors. Then blacksmiths would produce on the basis of a more reliable demand, and customers would be sure of access to the locally produced goods. Also selling on the tourist market (in coherence with other handicrafts, as discussed under basketry and mat making), seems to be a new opportunity. It is likely that tourists are interested in practically used artifacts like these.

Knitting and sewing is done by females. Within the Enclave there are some 55 people involved in the activity, earning some Pula 40 each. In Parakarungu, Kachikau and Kavimba there are knitting and sewing groups. Generally, producers have problems with the selling of their products, i.e. a lack of demand. Here too applies that higher standards of living would do the sector no harm. Another problem is the availability of materials, because they can only be purchased in Kasane.

The following accounts for all activities described hereabove. There is not a direct relation between the participation rate in these activities and household size. Of all households, the ones in the fourth draught power class are least involved (5% too). Households in the second and third draught power class are more involved in the activities than average, i.e. 16 and 13 percent respectively. Households with no draught power at all are involved at a level of 9 percent. Only for knitting and sewing it is true that FHH are more involved than MHH are. All activities taken together however shows that the participation rate of MHH is only slightly higher (12%) than the one for FHHs (9%). Remarkable is the extremely low score of the poorest 20 percent of households, 2 percent of them participate in the discussed activities. The other four income classes score a bit higher than the average rate, with 16 percent as the highest score for households in second income class. Noteworthy is that knitting and sewing is practised first of all by the highest income class. The lowest income class is not involved in knitting and sewing, carpentry or blacksmithing. To conclude; households in the middle draught power

and income classes are involved most of all in the discussed activities.

Whether a household is situated in a main or a small village, or in the north or in the south of the Enclave, makes no difference for the chance that it is involved in one of the discussed activities. Households of the Kachikau and Chituzanamatako clusters score very low with 0 and 3 percent respectively.

5.2.8 Trade and services

Under trade are counted the catagories vending and hawking, and baking from table 5.6. Services fall apart in the catagories building and repair and traditional healing. Also the group "miscellaneous" falls under this heading, containing activities like firewood selling, paid ploughing for others, and paid cattle herding. Table 5.6 shows that 18 percent of all households perform one or more of these activities. It is obvious that the Enclave society is mainly an agrarian one. Non-agricultural activities of importance are directly in the sphere of hunting, fishing and gathering. Non-agricultural activities which do not depend on direct recource extraction from nature, are far less important in the Enclave. This in contradiction to the findings in Kenya (see table 2.1).

On average a household has 0.3 persons involved in these activities, earning P.130 per household. In total there are 275 persons in the Enclave (15% of the active population), earning a total revenue of Pula 119,210 (i.e. Pula 435 per person involved).
The bakers and traditional healers in the sample earned very large amounts of money; Pula 1718 and Pula 1200 on average respectively. Standard deviations are high too, giving evidence of a skewed distribution of incomes. A word of caution is thus given here. Though earnings per household are rather high, there are only a few households actually involved in the lucrative activities like bread baking an traditional healing, pulling the average figures up. In reallity incomes from these activities are likely to be much lower for most households.

In vending and hawking are some 40 people involved. The team made an inventarisation of all vendor and hawkershops in the area. Results are presented in table 5.8.

Logically, most vendors and hawkers are to be found in the larger villages as well as the general dealers and bottle-stores. Most of them are operated by the owner him / herself. Sometimes somebody is hired to run the business (earning more or less Pula 50 per month). General dealers employ people more often, and give higher wages of some Pula 110 per month. The owners who were willing to give insight into their financial administration stated that profits fall in the range of 20 to 30 percent. Turnover varies from Pula 40 to Pula 4000 per month. For their turnover, they are completely dependent on local demand. Especially for the smaller vendors, the main problem is transport of stock from Kasane into the Enclave. To hire a car to bring one load of

stock costs more or less Pula 75. It was observed that most households involved in vending or hawking were involved in several formal activities as well.

Table 5.8 Vendor and hawkershops in the Chobe Enclave

Location	Number of shops	Number of active people
Kachikau	5	5
Kavimba	4	4
Seriba	3	3
Legotwana	1	1
Muchenje	2	2
Mabele	2	2
Mawana	1	1
Satau	4	5
Parakarungu	4	6
Maunga	1	2
Chikabi	1	1

Source: University of Utrecht / CFDA field survey, 1987 - 88

In the larger villages one or two bakers can be found, baking bread and / or fat cakes. Though most households lack purchasing power for luxuries like bread, bakers seem to make good earnings. In total there are more or less 55 people involved in building and repair, earning some Pula 135 each. Activities range from building complete lolwapa to repairing bicycles and shotguns. A special catagory are the traditional healers. They all perform their activities as their first informal non-agricultural activity. It is calculated that there are in total 75 traditional healers in the area, although this seems to be a rather high figure. The sample might have included to much traditional healers, due to a certain positive bias towards them by the authors. But the traditional healers in the sample earn on average high amounts of money, viz. Pula 1200. It is certain they fulfil an important function for the people in the area and many people use their skills. Most traditional healers are involved in regular diseases, but some of them stated that they are able to see whether a person is lucky or happy as well.

Whether a household is smaller or larger than 5 members makes no difference for the participation grade in trade and / or services. Only very large households with 11 or more members are very active in this sector; 36 percent of them stated to be involved. A quarter of the households without draught power stated to be involved in trading and / or services. The second and third draught power class are involved at a level of 10 percent, and the class with most draught animals is involved at a level of 17 percent. FHHs are less active (12%) in these fields than MHHs are (20%). Remarkable is that there is no FHH involved in vending or trading. The already observed high incomes from the selected group of traditional healers, bakers and hawkers is reflected again in the participation rates of the five income classes. Especially the highest incomes class is highly involved (30% of them). In contrast, of the poorest households, only 4 percent are involved. The

other three classes are participating on the more or less average rate of 18 percent. To conclude, highly involved households are households which are very large, which have no draught power, which are headed by males and which receive high amounts of income.

Households in the main villages are participating at a rate of 19 percent in trade and services, while households in the smaller villages are less involved (13%). Especially traditional healers are to be found in the major villages. High participation rates of 28 percent are to be found in the clusters of Mpeteke and Parakarungu. Also the clusters of Kavimba, Kachikau and Satau score higher than the average (as it was already noted that main villages score higher than smaller villages). Of the small villages, the clusters of Mathabanello and Chituzanamatako score low (some 11%). The clusters of Muchenje and Lyambezi are least involved, 6 and 0 percent respectively.

5.3 Programmes of promotion of non-agricultural activities in the Chobe Enclave

The policies and programmes promoting non-agricultural activities in the Enclave are divided into demand and supply-side measures. The distinction made in section 2.4 is followed. The policies and programmes which were implemented in the Enclave upto July 1988 will be discussed. The following organisations / institutions are not active in the Enclave: Field services (formerly BEDU), BTC, BCU, TIPA, BAS and RIP. Probably, this has to do with the remoteness of the district and the small population of the district.

Supply-side policy

In the period June 1985 to November 1987, 32 FAP grants are given to Enclave residents, 29 to fishermen for expanding and / or renewing their equipment and 3 to bakers for preparing ovens. These activities belong to the category small scale businesses valued upto Pula 20,000. For the full time fishermen as well as for the bakers this amount of money offered seems to stimulate their activities considering the profit they make: Pula 470 and Pula 360 respectively. However, a quantative comparison with the situation before the grants were issued is not possible through lack of data. The bakers were already involved in fat cake making before and the fisherman have always been involved in fishing. The constraints at the supply side seems to be solved for these people but the problems of marketing and lack of buyers are still there. The people are satisfied about the coordination through of Fishery officer but the RIO is hardly known.

The RIO together with the Assistant Community Development Officer (ACDO) organised sewing and knitting courses for women in the main villages Kavimba, Kachikau, and Parakarungu. The goal of these courses is twofold, 1) prepairing clothes and other garments for subsistence and, 2) selling sewing and knitting work to local people. A total of 30 to 40 women followed such a course in 1987 and 1988 and only a few of them are willing to sell their products when they have finished their training. In 1988 a number of women were selling already in the Enclave and in Kasane.

Demand-side policy

Demand-side policy on promotion of non-agricultural activities can be divided in indirect measures resulting in strenghtening of the purchasing power and direct measures improving the marketing of products. Botswanacraft visited the Enclave several times during 1988 and bought several baskets. These trips restarted basket making after a slack period. The previous RIO was used to pick up baskets, whilst the new RIO (1987) discontinued the process and basketry subsequently declined. So, marketing seems to be the most important constraint for this activity. The people involved made a good profit from these activities. During 1985 - 88 there were no other activities undertaken which stimulated the marketing of non-agricultural products. Indirectly, a number of measures were executed resulting in a strenghtening of the purchasing power of the households such as the LBRP within the Drought programme and the agricultural programmes ARAP and ALDEP which started in 1981. Both programmes were initiated to increase agricultural output and to strenghthen the economic position of the people. Whether the situation is improved by these programmes is not clear. The ARAP scheme immediately resulted in a flow of money together with the income from the LBRP the average household income increased with Pula 187, (11%); Pula 147 from ARAP and Pula 40 from LBRP. Compared with the average rural situation (see table 2.6) the Enclave households benefit more from these programmes.

Upgrading of the main roads in the Enclave during 1987 - 88 meant an improvement of the physical infrastructure. Especially, the northern area is better accessible now and possibilities for marketing and supply have improved. However, the influence on the development of non-agricultural activities will be slow as people are used to walk and cars are four wheel drive already.

In summary, few activities are developed to stimulate the non-agricultural sector directly and non-governmental organisations are not represented in the Enclave, except Botswanacraft. The effects of indirect promotion of the non-agricultural sector through strenghtening of the purchasing power are not clear. However, the LBRP and the ARAP scheme are, in this view, of considerable importance especially for the poorest 60 percent (altogether 48 to 33 percent of the total income).

In sections 5.1 and 5.2 the opportunities and constraints of the different non-agricultural activities were described. Development of the non-agricultural sector must be directed to these points. A number of ideas from the Enclave residents, representatives of the government and Botswanacraft, and the authors are discussed here. Only measures which directly influence the activities of the non-agricultural sector are considered. The ideas will have to be studied in detail but seem to be viable within the context of the CFDA strategy.

1. Botswanacraft advises to expand and improve the basketry business by establishing a Handicraft Development Advisor and creating a selling point (i.e. a curio shop) in the Enclave along the main road (at for instance Kachikau). A number of other handicrafts could be sold in this shop as well such as kgotla chairs, wooden toys, mats, pottery and goods of the blacksmith.

2. Creating a camp site somewhere along the road Kasane - Savuti camp. Together with a curio shop and, for instance, the establishment of a bar / restaurant it would have the potential to become an attractive site for tourists.

3. Establishing a nursery in the Muchenje / Mabele area in cooperation with Chobe Forestry Industry. Water is available whole year round and trees can be grown before they will be replanted in the Chobe Forest.

4. Construction of clay cooking ovens. Compared with the current way cooking in such ovens this would mean less use of wood. This is all the more important considering the lack of firewood in some parts of the northern Enclave. For the households this means decreasing cost and an increase of available time; for the environment it means less pressure.

5. For a possible set up of credit schemes in the Enclave it is worth to know that some women involved in beer brewing are members of a save and credit group. The money made by this activity is used by the group. In literature about informal credit it is argued that these indigenous groups form a good base for the successful introduction of credit schemes. However, the way in which these groups operate needs to be further studied.

CHAPTER 6 CONCLUSIONS AND DISCUSSION

In correspondence with the two-tiered structure of the script, this chapter consists of two sections. In the first section the present day policy relating to non-agricultural activities is discussed. The second section examines the non-agricultural sector in relation to the rural economy at large and the agricultural sector in particular. The chapter ends with a discussion concentrating on constraints and opportunities pertaining to the development of the non-agricultural sector.

6.1 Policies on rural development and non-agricultural activities

In general, the evolution of rural development thinking is characterized by three major shifts: from industrialization to agricultural improvement, from large scale to small scale project orientation and from sectoral to integrated development. In the seventies the rural non-agricultural activities became the focus of development planners as a result of the shift to integrated rural development. This view emphasises the interrelations between individual activities, sectors, areas and institutions in the development process.

Botswana followed the general path of rural development evolution. The change from a sectoral to an integrated rural development approach resulted in the launching of the CFDA strategy in 1981. The sectorally structured policy measures will not disappear but are be integrated in the CFDA strategy. The development plan for the Chobe CFDA is yet to be finalised. Policy on stimulation of non-agricultural activities within this strategy is promising but not yet integrated in the broader rural context of the Chobe Enclave. Policies and programmes are still mainly sectorally structured. Rural non-agricultural activities are categorized under the secondary industrial sector in Botswana; differences between non-agricultural and industrial activities are mainly seen as a matter of scale.

In literature, it is generally argued nowadays that agriculture is the driving force of the rural economy in general and of the non-agricultural sector in particular. Development of the non-agricultural sector is principally dependent on purchasing power. This means that the non-agricultural sector may be stimulated primarily by direct and indirect demand side measures resulting in an improvement of the marketing on the one hand and increasing demand through strengthening of the purchasing power on the other hand. Secondly, the policy must be directed to improvement of the supply-side by providing all kinds of assistance such as: financial, technical and managerial support.

The government policy regarding non-agricultural activities in the Chobe Enclave till 1988 is characterized by the following measures:

1) Indirect demand-side measures consist of agricultural programmes like ALDEP and ARAP aiming at output increase, and the LBRP within the Drought programme. Whether the agricultural programmes will result in an output increase is not yet clear because of the drought period in

the first half of the eighties. The LBRP together with the ARAP scheme resulted in a direct rise of the purchasing power for especially the poorest half of the households, in relative terms.

2) Direct demand-side measures are almost negligible.

3) Direct supply-side measures consist of financial assistance through the Financial Assistancs Policy (FAP) and sewing and knitting courses organised by the Assistant Community Development Officer (ACDO). During the period June 1985 to Novembre 1987 31 FAP grants were allocated. The supply side measures are small in size and only directed to a small number of informal non-agricultural activities (fisheries / bakery).

Striking is the absence of semi / non-governmental organizations such as Field Services, Botswana Technology Centre (BTC), Trade and Investment Promotion Agency (TIPA) and Business Advisory Services (BAS). They are not active in the Chobe Enclave which may be explained by the remote location of the area. Only Botswanacraft is active and started a marketing policy in 1988 by buying baskets. Probably, the organisation will extend its activities with the placement of a Handicraft Development Officer who will train the local craftsmen and women in order to improve the quality of the goods.

6.2 The role of non-agricultural activities

Employment
Agriculture is the most important activity for the majority of the Enclave labourers. A relatively small number of people, more men than women, are involved full time in formal activities and almost half of the population is also involved in formal activities as a second activity.

The role of non-agricultural activities in the economy of the Chobe Enclave is, regarding the share of the active population involved, comparable with the average situation in rural Botswana. Although the Enclave can be characterised as a remote area, it is not a special case as there are more of such remote areas in Botswana. The Enclave deviates of the average rural situation on the following points: the agro-climatological conditions belong to the most favourable of the country and large scale commercial cattle rearing is absent due to the restrictions of cattle movements in and out of the Chobe District.

The non-agricultural activites are concentrated in the five major villages. This is caused by the presence of a great number of formal sector government officers in these villages. The performance of informal activities is more or less equally distributed over the Enclave and a specific pattern does not occur.

The economic importance of the non-agricultural activities in the Enclave is rather minor for the economy of the Chobe district at large and almost insignificant for the national economy.

Income

Only one percent of the Chobe Enclave households stated that they receive no cash income at all. This figure is low compared to the rural Botswana average of 8 percent. Agricultural activities provide only small proportions of the household income. It appears that under conditions of drought Chobe Enclave households are unable to produce substantial surpluses in the arable sector; at the same time, they lack opportunities to sell cattle outside the Enclave. Non-agricultural activities contribute some three quarters of the total household cash income. This is significant in relation to the hypothesis "that non-agricultural activities might be more important than agricultural activities in rural areas in developing countries", which is deemed so important in literature.

If the average income figures of Chobe Enclave households are compared to those of rural Botswana in general, it appears that:

- Agricultural activities are in both instances of equal importance. However, when ARAP subsidies are left out of consideration it appears that livestock rearing is less important in the Enclave, while arable agriculture is slightly more important compared to rural Botswana in general.

- Non-agricultural activities are for both areas of equal importance.

- Informal and formal activities are of considerably greater importance, in relative terms and even more in absolute terms, for Enclave households.

- Remittances are for Enclave households in relative and absolute terms only half as important as they are for households in rural Botswana in general.

Formal activities

Almost one quarter of the active population (slightly more than 40 percent of the households) is involved in formal activities. These activities may be divided in three groups:

1. People employed by government on a permanent basis such as nurses, teachers, borehole operators. They earn relatively high incomes which distort the average figures.

2. People employed by government on a temporary basis like Drought Labour Based Relief Project labourers and foremen. They form half of the formal labour force, but earn less in absolute terms. Remarkable is the fact that especially the poorer half of the Enclave households are dependent on this source.

3. Private companies and businessmen like Chobe Forestry Industries and shop owners. Only a few of the households are involved in these activities, but they earn respectable incomes.

What shapes the importance of the formal sector for the Chobe Enclave economy is not its limited employment generative capacity but the high incomes earned by those people who are involved in these activities. These incomes provide most of the purchasing power in the Enclave.

Compared to the other income sources, formal activities contribute half of the total cash income earnings of the households. Therefore, it is not surprising that cash income wealth is completely dependent on access to formal employment. Rich households are rich because they earn high incomes in the formal sector.

There is also a strong correlation with the availability of draught power: absolute income rises with the increase of available draught animals. In relative terms this correlation is much less clear: households in all draught power classes are dependent on formal income in more or less the same extent. Only households without draught animals are much less dependent on formal sources of income. As far as male and female headed households are concerned, it can be concluded that female headed households are less dependent on formal activities, which is caused by the fact that they earn much less from this source than their male headed counterparts.

Characteristic of the formal activities performed in the Enclave, is that almost all of them concern supporting activities. Productive formal employment is almost negligible. Compared with rural Botswana in general it is clear that both the relative share and the absolute amounts of income from formal activities are high in the Chobe Enclave.

Informal activities

Informal non-agricultural activities which are performed in the Chobe Enclave range from high paying activities, like vending and traditional healing, involving just a few people, to less paying activities like traditional beer brewing, in which considerable numbers of people participate. Households performing the different activities more frequently than others can be characterised as follows:

- Large households which are rather rich and headed by a female (Chibuku).

- Large households with enough draught power, which are rich and headed by a male (fishing, hunting).

- Households with little or no draught power and rather poor (thatching grass and reeds gathering and basketry).

- Households in the middle draught power and income classes (other handicrafts).

- Households without draught power which are rich and headed by males (trade and services).

Poor households with or without draught power are more dependent on incomes from informal activities than other households. But they are certainly not earning the highest absolute incomes in this sector. Male and female headed households are equally dependent on this source, but female headed households simply receive only half of the absolute amount which is received by male headed households. Thus while various weaker groups in the Chobe Enclave society are more dependent on incomes from informal activities than stronger groups, the latter groups which are already better off also earn the largest inomes from these sources.

Although incomes from informal activities come in the third place of the total household income, these activities provide most employment opportunities outside agriculture. More than three quarters of all Chobe Enclave households or almost 70 percent of the active population is involved in informal non-agricultural activities. The major interest of these activities, therefore, lies in their income redistributive propensities. The fact that agriculture (especially livestock rearing) is far less important in the Enclave than in the rest of rural Botswana, and the fact that only a limited number of households participate in formal activities, make it once more clear that informal activities play a role in the Enclave economy which can not be neglected. Most informal activities have a servicing function for the Chobe Enclave residents. Of the following activities products are sold outside the Enclave too, causing a cash flow into the area: hunting, basketry and other handicrafts, and fishing (when there is a flood).

When compared to the structure of the informal sector in rural Kenya, it becomes clear that those activities which are directly dependent on resource extraction (like hunting, fishing and gathering) are highly over-represented in the Enclave. The more formal-like activities (such as services, repair and wholesale and retail) are less important in the Enclave. The activities performed in the Chobe Enclave are in general not complex and cover a much smaller spectrum than in the case of Kenya. When compared to the situation of rural Botswana in general, the informal sector in the Chobe Enclave is slightly bigger in the sense that it contributes in a larger extent to the households cash income. In absolute terms, the Enclave households earn considerably more from informal activities than households in rural Botswana in general.

6.3 Constraints and opportunities for development

The major constraints hampering the development of the non-agricultural sector are:

1. Lack of purchasing power which results in a low demand (beer brewing, baking, vending and handicrafts).

2. Unreliable sales potential outside the Chobe Enclave due to a malfuntioning marketing system (this applies especially to the handicraft sector); see also point 3.

3. Lack of transport. This makes selling of products outside the Enclave difficult and hampers the supply of stock for shops.

4. Lack of manpower. For several activities it applies that the larger households, with enough manpower available, participate most.

5. Lack of financial means to invest in servicing and manufacturing activities. And lack of knowledge of credit opportunities like FAP.

6. Lack of so called grass roots organisations. There are only a few groups in the Chobe Enclave in which the participants strive towards common goals and interests.

Furthermore, there are some activity specific problems such as unreliable supply of nets for fishermen, lack of hunting licences for the Chobe Enclave residents, a highly concentrated ownership of rifles and transport means for hunting, quality of handicraft products which can be increased.

The most important way to stimulate non-agricultural activities in the Chobe Enclave, leads via the agricultural sector. Under favourable circumstances agricultural output can be high. The strengthening of the agricultural sector, therefore, should almost certainly lead to higher marketable surpluses, leading in turn to a rise increased purchasing power in the Chobe Enclave (see point 1). Interventions in the agricultural sector should aim at labour saving innovations (mechanised ploughing, planting and weed control, bicycles to save travelling time etcetera), see point 4.

Another important indirect measure to stimulate non-agricultural activities is the improvement of transportation to Kasane (see point 2 and 3). Chobe Enclave households could benefit more from the purchasing power of Kasane residents and tourists which stay in Kasane. A mini bus service (private or government run) could be a possibility to increase access to Kasane. The main point would not be the frequency of the service but the reliability of it.

The most important way to encourage the non-agricultural sector in a direct way is to provide a reliable good functioning marketing system (see point 2). This applies first of all to the handicraft sector. Possible outlets are the hotels and curio shops in Kasane and the Chobe Agricultural Show. Also the opening of a curio shop along the Kachikau-Muchenje road could be a selling opportunity within the area.

Stimulation of the process of group formation is important in this respect too (see point 6). When people learn to, and see the benefit of cooperation with other people it will be better possible to benefit from modernization processes by exercising some kind of own control. Such local organisations will be able to articulate own ideas and interests. Amongst the possibilities are: handicraft producer groups and a tourism development group which could run a camp site in the Enclave and could pursue other ways to benefit more from the tourist sector.

Furthermore, some ideas to stimulate productive employment can be mentioned:

- The establishing of a nursery for the cultivation of trees which are to be used for reforestation of the Chobe Forestry Industry logging concessions.

- Construction of clay ovens for cooking wich will decrease fuelwood consumption. Such an innovation contributes in the saving of labour, because less time needs to be spent on the collection of fuelwood. It will also result in a decreasing pressure on the environment and may assist curbing the erosion hazard.

The above mentioned measures will increase employment opportunities in general through foreward (processing of agricultural products, like grain mills) as well as backward linkages (manifacturing of handicrafts as a result of increased demand).

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ANNEX 1

A sample population is never a precise reflection of the empirical population. In order to control how far the values of the sample population deviates of the "real" values of the empirical population the parameters reliability and validity are used. The researcher has to make a choice for a certain level of reliability and validity, according to the goals and the available time and budget of the research.

Reliability = (Z) $\quad Z = \frac{\bar{x}-X}{6\bar{x}}$

$\bar{x}$ = sample mean
X = population total
$6\bar{x}$ = standard deviation
Z = standard score

It is the size of the sample which defines the reliability. According to the goals of the researcher the reliabilty is fixed at 90%, 95% or 99%, within the social sciences 90% is widely accepted. A reliability of 90% means that, the probability that the measured values of the sample population deviates of the values of the empirical population is 10%.

Validity = (d) $\quad d = Z * 6\bar{x} \quad$ or $\quad d = \frac{Z * C}{\sqrt{N}} \quad C = \frac{6\bar{x}}{\bar{x}}$

The validity level has always to be seen in connection with the reliability level. Given a reliability of 90% the validity levels will be interpret as follows:
Validity level
< 10% = widely accepted
10-20% = mostly accepted
> 20% = not accepted

For a number of important variables the validity is presented in percents at a reliability level of 90%.

Variable	Table nr.	Validity in %
Total nr. of households		
Dryland ha. total		17
Dryland ha. ploughed		17
Molapo ha. total		10
Molapo ha. ploughed		10
Draught animals		13
Oxen in kraal		12
Cattle in kraal		13
Total hh. inc. formal non-agr.	4.3	28
Total hh. inc. inf. non-agr.	4.3	28
Total hh. inc. agriculture	4.3	17

Total hh. income	4.3	17
Draught power typology	4.4	
1 - draught animals		?
- total hh. income		18
2 - draught animals		10
- total hh. income		23
3 - draught animals		4
- total hh. income		32
4 - draught animals		8
- total hh. income		35
Income groups	4.12	
1 - total hh. income		12
- total income non-agr.		31
- total income agric.		24
2 - total hh. income		4
- total income non-agri.		17
- total income agric.		17
3 - total hh. income		4
- total income non-agr.		13
- total income agric.		16
4 - total hh. income		4
- total income non-agr.		10
- total income agr.		25
5 - total hh. income		18
- total income non-agr.		21
- total income agr.		18

For a number of variables the validity is >20%, but it does not mean that the scores on these variables are worthless. This low validity is caused by a skewed distribution and an exact validity can only be measured with a normal distribution.

ANNEX 2

Institutions and organizations providing assistance to rural non-agricultural activities

1. Field Services
   formerly, Batswana Enterprises Development Unit (BEDU)
Objective:
- to increase direct participation of Batswana in all sectors and all levels of industry and commerce;
- and particularly promotion of small and medium scale production businesses with special attention to rural entrepreneurs.

Type of assistence:
- providing technical and professional leadership and direction for the effective delivery of an integrated commercial and industrial extension servive as wellas to facilitate the transfer of industrial technology.

2. Botswana Technology Centre (BTC)
Objective:
- to assist especially small scale industry in the choice and adaption of technology;
- promoting the search for technologies suitable for Botswana.

Type of assistance:
- advice on alternative technologies.

3. Botswana Cooperative Union (BCU)
Objective:
- to promote the sale of locally produced goods by providing wholesale services.

Type of assistence:
- provide markets for rurally produced goods by providing wholesale services.

4. Botswanacraft
Objective:
- to collect and market rural produced goods, especially handicrafts.

Type of assistance:
- trial marketing of various rural produced goods (not limited to crafts); if viable, continuous marketing of the goods.

5. Trade and Investment Promotion Agency (TIPA)
Objective:
- trade and investment promotion

Type of assistance:
- short courses or seminars designedto specific needs, some anticipated ttopics include: "Marketing at Home and Abroad", "Costing and Pricing" and "Participation in Trade Fairs".

6. Business Advisory Centre (BAS)
Objective:
- to upgrade management skills of business operators
Type of assistance:
- extension service which provides on-site assistance in improving management skills and record keeping;
- assistence in processing loan applications.

7. National Development Bank
Objective:
Type of assistance:
- loans for fixed capital as well as working capital.

ANNEX 3

In order to analyse the relation between two variables, some statistical measures are used. Which these measures it can be concluded wether a relation is caused by a random distribution of the cases over the two variables or wether the distribution of the cases over one variable is caused by the distribution of the cases over the other variable. In that case it is said that the relation between the variables is a dependent one; the distribution of the cases over one variable is related to the distribution of the cases over the other variable.

Chi-square (χ^2) is a measure which gets higher the more closely related the variables are. It is based on a calculation of the observed distribution of the cases over the variables and the expected, on basis of the distribution of the cases over the two variables in general.

A very important figure here is p, or level of significance, standing for the chance-factor that an observed relation is in fact caused by a random distribution. Usually a 5 percent (p=0.05) level of significance is taken, which means that there is a chance of 5 percent that the observed dependent relation is in reality not a dependent one, but caused by a rare random distribution. Even when Chi-square is high, the decision wether the variables are dependent or independent must be made on basis of p.

The next step is to see how strong the relation between the two significantly dependent variables is. The problem with Chi-square is that it gets bigger when the sample size gets bigger and therefore it is hard to tell from the Chi-square how strong the relation is. Therefore Pearson's contingency coefficient C is used, which is noted algebraically as :

$$C=\sqrt{\frac{\chi^2}{\chi^2+ N}}$$

Pearson's contingency coefficient C neutralizes the effect of the sample size in a simple way. The coefficient ranges from 0 when the variables are independent to 0.707 when the variables are completely dependent. In the report the Pearson's contingency coefficient C will be interpret as follows:

C	Strength of relation
0	no relation (independent)
0.01 to 0.20	very weak relation
0.20 to 0.30	weak relation
0.30 to 0.45	strong relation
0.45 to 0.55	very strong relation
0.55 to 0.70	(almost) perfect dependency