

CHAPTER ONE: INTRODUCTION

1.1 Background

Mozambique has a population of 16.6 million people, of which about 80 percent live in rural areas. It is considered one of the poorest countries in the world. Social indicators point out that 70 percent of the population, that is 11.6 million people, live in a state of absolute poverty. The incidence of poverty is higher in rural areas than urban with a rural headcount reaching 71.2 percent as compared to 62 percent in urban areas (MPF, 1998). The per capita income in Mozambique is US \$230 per year, which is considerably below the average for Sub-Saharan Africa (\$480) and very much below the average of low-income groups, which is estimated at \$520 (World Bank, 2000). The Human Development Index, an index of income, education and life expectancy, ranks Mozambique as 169th out of 174 countries. In fact, key social indicators for Mozambique continue to fall below the average for Sub-Saharan Africa and most other low-income countries. Only 24 percent of the population have access to safe water compared to 47 percent in the Southern African region, and 74 percent in low-income countries. Illiteracy is estimated at 60 percent, which is also below the average of Sub-Saharan Africa (42 percent) and the low-income group of countries (32 percent).

The infant mortality per 1 000 births is 134 compared to 91 in the region, and 69 in the group of low-income countries. Life expectancy at birth is 44 years. Discounting the AIDS pandemic, this was originally projected to be 50 years by 2010. At present the HIV prevalence rate for adults (ages 15-49) is estimated at 12.2 percent (World Bank, 2003); if infection continues at the current rate, AIDS will cause the life expectancy at birth to drop as low as 36.5 years by 2010.

Mozambique's economic performance has been good in recent years. The increased political and economic stability, the post-war resettlement, economic reform, large inflows of aid, coupled with weather conditions favourable for agriculture, contributed to the average annual GDP growth rate of 6.5 percent since 1987 (World Bank, 2001a). Until 1994, the inflation rates remained stubbornly high despite improved fiscal and

monetary control. In 1995, however, they began to decline, and following the privatisation of the state-owned banks in 1996 and 1997, they fell sharply.

According to the World Fact Book (2002), activities in the field of agriculture and natural resources are the major sources of income for most rural households, providing employment for between 70-80 percent of the labour force. Services and industry provide employment for 13 and 6 percent of the labour force, respectively. Agriculture contributes about 33 percent to the GDP, services 42 and industry 25 percent. The national data on employment point out that 21 percent of the labour force, which amounts to 1.6 million people, are unemployed.

The agricultural sector is the major employer, and since the end of the war in 1992, it has been growing at a rate of at least five percent a year. This rapid growth is partly caused by the economic reform that had its beginning in 1987. At present, the interest rates, exchange rates and almost all agricultural prices are market determined, and the government has withdrawn from direct intervention in most economic activities (World Bank, 1999).

The government of Mozambique, with support from International Financial Institutions and other donors, drew up the Plan of Action for Reduction of Absolute Poverty (PARPA) in April 2001. The main target of the plan is to reduce poverty from 70 percent to 50 percent by 2010 (PARPA, 2001). To achieve this objective, the government will focus its attention and action on six priority areas aiming at to promote human development and to create a favourable environment for rapid socio-economic growth. The government's six priority areas of action are: (i) education, (ii) health, (iii) infrastructure: roads, water and energy, (iv) agriculture and rural development, (v) good governance, and (vi) macroeconomic and financial management.

Of these areas, the Agriculture and Rural Development Programme defines ten action focuses that have priority. These include: extension services, research, support to agricultural production, animal husbandry, forestry and wildlife, land management,

irrigation, micro-finance, rural communications, and institutional development. The main objective of the programme is to increase the opportunities for income-generation, especially for the family sector. The programme recognises that an increase in income largely depends on agronomic improvements and access to markets. Expansion of the production of the agricultural sector must be carried in conjunction with support of rural extension programmes that focus on the production of specific crops and specific technologies, as well as with improvements in the financial systems. The strategy for rural development must focus on food security, which is fundamental to the reduction of poverty, and on other risks to the poor.

1.2 Problem Statement

In the past, many researchers and policymakers have equated the rural economy with agriculture. According to this view, rural households would receive most of their income from the production of food crops and export crops. In more recent years, this view has begun to change. Presently, the awareness is growing that rural households receive their income from a portfolio of diverse activities, and that one of the most important activities relates to the rural non-farm sector. In some cases, the rural non-farm sector, which includes diverse activities such as public administration, commerce and services, is now seen as providing the bulk of income to rural households (Adams, 2001).

In Mozambique, the role of the non-farm sector in contributing to poverty reduction in the country seems to have been overlooked in the present strategy. At the same time, international experience has shown that rural non-farm sources of income, mainly from the small-scale rural sector, are crucial in providing productive employment and earning opportunities for the poor (Liedholm, 2002). The potential contribution of the rural non-farm sector in generating employment and income in rural areas is increasingly recognized, and some policymakers' even view the development of the rural non-farm sector as one way to alleviate poverty (Kirsten, 1995; Reinecke, 2002).

This change in view is partly due to the evolving understanding of the broader relationship between agriculture, the rural non-farm sector and the poor. During the 1970s and early 1980s, researchers such as Mellor and Lele (1973) and Johnston and Kilby (1975) emphasised the growth linkage effects of agricultural growth. According to these authors, technological change in agriculture would boost production, and so increase the income of landowning households. In turn, these landowning households would then use their income to buy more labour intensive goods and services, produced by the poor working in small-scale firms in the rural non-farm sector. They postulated that in this way accelerated growth in agriculture has production linkages providing the poor with food security, and consumption linkages providing the poor with more employment opportunities in the rural non-farm sector.

1.3 Objectives of the Study

The main objective of this study is to assess the role of rural non-farm sources of income in alleviating poverty in Boane district, Maputo Province, southern Mozambique. The specific objectives of the study are to determine:

- (i) the proportion of households that derive their income from non-farm sources of income;
- (ii) the sectoral composition of non-farm enterprises;
- (iii) the level of income of the different socio-economic groups in order to use this as a welfare indicator;
- (iv) the extent of poverty;
- (v) the characteristics of poor households; and
- (vi) the sources of income among poor and non-poor households.

1.4 Outline of Subsequent Chapters

Chapter two presents a review of the literature on the topic of rural non-farm income and related topics, and so provides an overview of the role of rural non-farm enterprises in the rural economy. This chapter starts with the definition of the key terms that will be used throughout the report, and then examines the role of the rural non-farm sector in the rural

economy with regard to its potential for generating employment and a better income distribution. Then, the main characteristics of rural non-farm enterprises, their size and composition, their capital requirements and seasonality are reviewed. The next section of the literature review looks at the growth potential and economic efficiency of the non-farm sector and identifies the major correlates of growth. The last section of the literature review deals with factors that affect diversification at household level, and those affecting farm and non-farm linkages, the development of the non-farm sector over time, and the major constraints on growth.

Chapter three describes the study area and the research procedures used. In terms of the study area, this chapter describes the main aspects of geography, demography, and the cultural and socio-economic situation. In terms of the research procedures and methods used for the study, the chapter describes the methods used to design the sample, to select the villages, to determine the sample size, the allocation of sample strata, and the household selection criteria. Also, a brief description of the stages of the survey, the main content of the questionnaire and the main variables used for the survey are discussed.

Chapter four presents the results of the study. The results are based on the compilation of data gathered from 37 households. The chapter describes the socio-economic aspects that characterize these rural households based on the results of the field survey. The aspects include demography, sources of income, composition of the non-farm sector, poverty incidence and severity and the main characteristics of the poor, and the sources of income among poor and non-poor. The chapter describes field observations and supports the discussion, the analysis, the conclusion and the recommendations in subsequent chapters.

Chapter five discusses the results of the study. The results are discussed under five topics: (a) the proportion of households that rely on non-farm sources of income; (b) the sectoral composition of non-farm enterprises; (c) the income level of different socio-economic groups; (d) poverty incidence and severity and characteristics of the poor in the district;

and (e) the sources of income of poor and non-poor households. The results of the study are compared with similar studies done in Mozambique and elsewhere.

Chapter six presents a summary of the study, the main findings and conclusions, and policy recommendations to develop the non-farm sector and enhance its role in poverty alleviation.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews the literature on the role of non-farm enterprises in promoting rural development, with a particular focus on non-farm activities in developing countries. To provide clarity on the interpretation of terms that are used in this study, the chapter starts by giving the key definitions for the main terms. This chapter also reviews the role of the rural non-farm sector within the rural economy with regard to employment generation and income distribution, and examines the major characteristics of rural non-farm enterprises in terms of their size, composition, capital requirements and their seasonality. The growth potential, the economic efficiency and the identification of the major correlates of growth of the non-farm sector in developing countries are also reviewed. In addition, factors that determine household income diversification, and farm and non-farm linkages are discussed. A small section of the chapter is devoted to the discussion of the non-farm sector over time, and the various constraints on the growth of the rural non-farm sector.

2.2 Key Definitions

- (i) **Farm income.** This includes the net income from all crop production, livestock and animal traction, as well as the returns for agricultural labour. Crop and animal husbandry are 'farm' activities and this includes silviculture, horticulture, aquaculture, apiculture, and wage labour in any of these activities. Forestry, fisheries, and hunting and gathering through the use of common-property resources are sometimes called 'off-farm' (Barrett et al., 2001). In this report the term 'farm income' is used to indicate all income derived from the production of crops, livestock and forestry, as well as through wage labour or self-employment in the farming sector.

- (ii) **Non-farm income.** This includes all economic activities apart from crop and livestock production. Rural non-farm income (RNFI) includes earned and unearned income received by rural people from the urban economy (via temporary migration, remittances, welfare, pensions, interest) and the rural non-farm enterprise (RNFE), which includes activities based in rural towns. This includes wage earnings from non-farm enterprise labour and government, profits from rental, and from ownership of assets such as land, machinery and water. Transfers, which include pensions, internal and international remittances are also considered as non-farm income (Haggblade et al., 1987 and Barrett et al., 2001). In this report, the concept of rural non-farm income is used to indicate earned and unearned income that is received by rural households from rural non-farm enterprises either in return for labour or through self-employment, as well as money transfers received by rural households from sources in the urban economy.
- (iii) **Rural.** Concepts and definitions of ‘rural’ vary vastly. Many are a mix of locality size and economic characteristics resulting in a range of cut-off criteria from as small as 150 person settlements in Zimbabwe (1969 census definition) to as large as 10 000 person agglomerations in Mauritius and Benin. Most African governments define ‘rural’ to include localities from about 3 000 to 5 000 people (Haggblade et al., 1987). In Mozambique, ‘rural’ is classified as all areas outside the 12 major cities. From the south to the north of the country, the major cities are: Maputo, Matola, Xai-Xai, Inhambane, Beira, Chimoio, Tete, Quelimane, Nampula, Nacala, Lichinga and Pemba.
- (iv) **Poverty.** Similar to the definition of ‘rural’, there also exist various definitions of ‘poverty’. For many years in the literature, poverty was defined in terms of lack of income that is necessary to meet basic needs. With the passage of time, the concept of poverty has been re-defined to mean not only the lack of income, but also the lack of access to health, education and other

services. In recent years the definition of ‘poverty’ has expanded to include aspects such as powerlessness, isolation, vulnerability and social exclusion (World Bank, 2001b). In Mozambique ‘poverty’ is defined as the inability of individuals to ensure for themselves and their dependants a set of basic minimum conditions necessary for their subsistence and well-being in accordance with the general norms of society (PARPA, 2001). Other definitions of ‘poverty’ include the lack of income necessary to satisfy basic food needs or minimum calorie requirements (absolute poverty); lack of sufficient income to satisfy the basic essential food and non-food requirements given the average income in the country (relative poverty); lack of basic human capacities, such as literacy, malnutrition, low life expectancy, poor maternal health, prevalence of preventable diseases, together with indirect measures such as access to necessary goods, services and infrastructure needed to achieve basic human capacities such as sanitation, clean water, education, communications and energy (human poverty).

Several poverty studies use consumption per capita as the basic measure of individual well-being. Based on this, individuals are classified as poor or not poor in terms of the poverty line defined in terms of per capita consumption. There are also major differences in the ‘threshold’ or ‘poverty line’. The World Bank describes the poor as all individuals living on incomes of less than a dollar a day. In Mozambique, various poverty lines exist and they were set based on the cost of 2 150 calories per person per day, plus a modest amount of non-food expenditures (MPF, 1998). In monetary terms, the poverty lines range from 3 359 to 8 713 Meticaís (MZM)¹ per person per day in the country, but the national poverty line was set at 5 434 MZM per person after weighting the various provincial poverty lines and adjusting them to reflect variations in the cost of living. In the same study, a poverty line has been set at 7 316 MZM per person per day for the rural part of the Maputo Province where the Boane district is located. In this report, poor individuals

¹ ZAR=3 500 MZM - 26 April 2004 exchange rate

underestimate the extent of non-farm activities because they fail to reflect those farmers who engage in non-farm activities on a part-time or seasonal basis. Chuta and Liedholm (1979) in a survey in one district in Bangladesh found that the numbers of such farmers were twenty times larger than indicated in the official statistics.

2.3.2 Income Distribution

As indicated in the previous section, the contribution of micro and small non-farm enterprises in generating employment and income is generally recognized. To some observers, this is an encouraging sign — markets are working, and people find opportunities to participate in ways that economically empower them, and feed them, particularly those that would have been the most disadvantaged. In other words, it is a form of equity enhancement. To other observers, however, the increase in the number of people engaged in micro and small enterprises is a sign of failure of the national economy to provide productive jobs. They suggest that the reason for small enterprises lies in the fact that people are forced to take refuge in activities that provide minimal, subsistence support.

The available data on Africa, however, do not show an unambiguously clear pattern of equity enhancement through rural non-farm earnings. In the case of Nigeria and Lesotho the data, actually, show an opposite trend: higher income groups derive a greater share of their earnings from non-farm sources than do the poor. Less detailed evidence from rural Tanzania, Zambia, Uganda and Zimbabwe suggest similar trends (Haggblade et al., 1987). Support to the equity enhancing view of non-farm rural income sources comes from rural Botswana and Northern Nigeria. These data indicate that poor households depend more heavily on non-farm enterprises than wealthy households do (Haggblade et al., 1987).

will be defined as those that fail to reach a per capita consumption of 7 316 MZM per day.

2.3 The Role of Non-Farm Enterprises in the Rural Economy

2.3.1 Employment Generation

Around the world the contribution of non-farm enterprises, mainly micro and small, in generating employment and income has become more and more recognized. Haggblade et al. (1987) found that rural non-farm enterprises provide the primary employment for between three and seventy-three percent of the labour force in Sub-Saharan Africa. Mali is the country with the lowest percentage of rural labour force employed in rural non-farm enterprises at three percent, and Nigeria the highest at 73 percent. As referred to earlier, in Mozambique data on rural non-farm sources of income is scarce. Haggblade et al. (1987) referring to 1963 data, found that eight percent of the total labour force in Mozambique was engaged in RNFE. Similar studies found that the number of households reporting that some members of the household operated a micro or small enterprise ranged from about 20 percent in Botswana to over 40 percent in Malawi and Kenya. The same study (Haggblade et al., 1987) revealed that 17 to 27 percent of the people in the working age group are employed in non-farm enterprises. The employment generated by the non-farm sector is nearly twice as high as the total employment in registered enterprises and the public sector (Liedholm, 2002). Machethe et al. (1997) noted that 25 to 50 percent of cash income is earned in local non-farm employment, and 50 to 70 percent is received through migration remittances and pensions.

Generally, small non-farm enterprises are not registered and so they do not appear in national statistics. Recently, several baseline surveys have been undertaken to gain a better understanding of the dynamics of the non-farm sector. Mead and Liedholm (1998) report on certain measurement errors that cause underestimates of the total number of people engaged in non-farm activities. For example, in some countries rural respondents will report that farming is their main occupation even though they might be engaged in this only for part of the time. In a similar fashion, primary employment statistics may also

2.4 Characteristics of Rural Non-Farm Enterprises

2.4.1 Size and Composition

The available empirical work is limited, but it does indicate that the vast majority of rural non-farm enterprises are very small. Typically, the majority consists of one person working alone (Mead and Liedholm, 1998). Self-employment is, thus, a central element in these rural economies. If rural non-farm enterprises were to be defined as firms with 1-50 workers, then those with 10-50 workers constitute less than two percent in virtually all countries surveyed in Africa (Liedholm, 2002).

In terms of composition, rural commerce and rural services tend to dominate the rural non-farm economy in most developing countries. In a survey of nine countries it was found that generally between 2 to 46 percent of the enterprises are engaged in commerce, 11 to 35 percent in rural services and 10 to 50 percent in construction and mining (Haggblade et al., 1987). Other non-farm activities such as transport and the provision of utilities generally accounts for less than 25 percent. Mead and Liedholm (1998) and Liedholm (2002) in a similar study, report that a significant number of micro and small enterprises are engaged in trading and manufacturing activities. Manufacturing activities are particularly important in rural areas, and three activities have consistently been identified in this regard: textiles and wearing apparel, food and beverages, and wood and forest products. They found that these three categories comprise about 75 percent of the manufacturing enterprises in urban areas of many developing countries, and nearly 90 percent of the enterprises in rural areas.

2.4.2 Capital Requirements

Non-farm rural enterprises are not only small in size but also require modest capital investments. High capital activities such as grain milling, sawmills, wholesaling, gasoline stations, photography and pharmacies demand investments in the order of \$1 000-10 000 per enterprise; while pottery, personal services, small scale trade and repair activities

require in the range of \$50-600 (Haggblade et al., 1987). Capital costs not only include the cost of equipment but also buildings, and working capital. It must be taken into account that investment costs depend heavily on the nature of the business premises and whether are owned or rented.

2.4.3 Seasonality

Non-farm enterprises typically show peak activity during the dry season, that is, immediately after the harvest, when there is a surplus of available labour and a high demand for non-farm products in the rural economy. Despite the marked seasonality, quite a number of time allocation studies have found that non-farm activities rarely decline to zero during the growing season. Even during the peak agricultural season, non-farm activities can occupy as much as three to four hours a day per household (Eicher and Baker, 1982).

While an aggregate non-farm activity fills in the troughs in the agricultural calendar, a disaggregate view of the non-farm economy reveals several exceptions to this. Evidence from Sierra Leone (Haggblade et al., 1987) indicates that, for example, blacksmithing activities reach their peak during the height of the agricultural season for the simple reason that, particularly in this season, farmers require new tools and repair services for their equipment.

2.5 Growth Potential and Economic Efficiency

Several studies have been conducted to understand the growth potential of small non-farm enterprises. There are variations in terms of the growth potential by type of enterprise. The available evidence indicates that tailoring, dressmaking, carpentry and furniture making, baking and milling have all continued to grow in importance even though larger scale domestic factory production activities, and pottery appear to have generally declined in importance. One crucial issue on which there has been divergence of opinion is whether the demand for these activities increases as rural income increases. Hymer and Resnick (1969) in their description of a model of an agrarian economy with

non-agricultural activities show that in rural areas the importance of rural non-farm industry declines as the income rises; they argue that the rural non-farm sector produces inferior goods, and, thus, the demand for these would be expected to decline as rural income rises. Mellor and Johnston (1984), on the other hand, contend that there is a strong, positive relationship between income and demand for these activities. Chuta and Liedholm (1990) based on their research of household expenditure, provide support for the latter.

The key issue in the supply factors is whether rural small non-farm enterprises are efficient users of economic resources, especially when they are compared with their larger-scale urban counterparts. Both partial and comprehensive measurements of economic efficiency have been used in attempting to answer this question. Partial measurements assume that labour is abundant and that capital is the only scarce resource. Virtually all the aggregate and most industrial studies reveal that small-scale non-farm enterprises generate more employment per unit of scarce capital than do their large-scale counterparts.

The efficiency of rural firms, however, varies according to their production characteristics, particularly their size and location. A review of various RNFE surveys (Liedholm and Mead, 1987) reveals some important patterns. The rural firms that are most likely to be economically efficient tend to possess a certain set of characteristics, many of which are very evident. They generally use hired labour, operate away from home, operate in localities with more than 2 000 inhabitants, and are involved in selected product lines with better economic prospects, such as tile-making, furniture manufacturing, baking and repair activities.

2.5.1 Correlates of Growth

Five major correlates of growth of non-farm enterprises may be identified. These are: (i) development of rural towns; (ii) level of development of the infrastructure; (iii) population density; (iv) increase in per capita income; and (v) increase in agricultural productivity. These variables appear to be the most important determinants of growth but

this list can be extended to include enterprise size, initial size of the enterprise, sector, human capital, gender of the entrepreneur, location, and country (Liedholm and Mead, 1987; Liedholm, 2002).

The development of rural towns and the rise of non-farm enterprises appear to be intimately linked. In part, this may have been caused by benefits of size, economies of scale and scope, as well as prospects for a centralized, and cost effective provision of key productive and institutional infrastructure. Secondly, the level of infrastructure – including roads, telephones, electricity, water, banking and transport facilities - emerges as a likely stimulant for growth of rural non-farm enterprises. After all, a decrease in the cost of information and transport flows may improve the efficiency with which rural labour and financial markets channel their inputs into activities that yield the highest returns. Moreover, decreased transport cost opens up rural resources and markets for viable exploitation. It can be expected that this will facilitate movement to a more specialized productive rural economy. The third factor is the population density. A higher population density makes a more rapid attainment of minimum efficiency scales possible for full-time specialization in given activities. In other words, the emergence of a service sector depends on a close physical proximity between suppliers and clients. The fourth factor is the per capita income. Engel's law mandates that this is a tandem movement for the overall economy. If definitions of 'rural' remain sufficiently wide to include the non-farm growth in rural towns, then increase in income will be reflected in an increasing share of non-farm activities within the total of rural income.

Finally, and central to this review, is the relationship between agricultural production and non-farm activity. There are two reasons why growth in agricultural income per capita can be positively associated with an increase in rural economic activity: (i) increased farming productivity is generally considered a precondition for rural specialization, that is, if labour is to be released into non-agricultural pursuits without lowering food production and supply in rural communities; (ii) if rural growth multipliers do exist, both the production and consumption linkages are stimulated by agricultural growth and will stimulate the rural production of non-farm goods and services in response. Consequently,

rising levels of rural non-farm income will partly be caused by agricultural growth and, therefore, correlated with an increase in farm income.

2.6 Determinant Factors for Diversification of Activities by Rural Households

When discussing income composition across different levels among rural households, there are two sets of determinants of diversification that are identified in the literature, namely push and pull factors.

Push factors are related to cropping risk that induces households to diversify into non-farm activities. Since returns to non-cropping activities are less than perfectly correlated with returns to cropping activities, households reduce their overall income risk by undertaking a mix of the two types of activities (Reardon et al., 1994). Given that the poor tend to be more risk averse, they are more induced to employ push factors. Reardon et al. (1994) identified five push factors in the Sahel and Sudan namely: (i) low unstable yields; (ii) short growing season; (iii) lack of irrigation or occurrence of drought (iv) credit/capital market failure and (v) land constraints. Over a four year period, they found that in the areas mentioned, diversification was driven by the need to compensate for bad harvests. Despite evidence of growing land constraints in the region, this factor was found to be the driver for diversification. It suggested a credit market constraint or failure. Reardon et al. (1994) also found that households with more liquid assets and cash crops were in a better position to diversify their activities.

Pull factors induce re-allocation of resources of potentially more attractive non-cropping activities in order to exploit profitable opportunities and so increase the total income. In economies with credit market constraints, richer households are more likely to respond to these factors by self-financing their diversification of activities. The most important pull factors identified in the literature are: (i) terms of trade between agriculture and non-agriculture; (ii) migration opportunities; (iii) local non-farm opportunities in backward and forward linkages with agriculture.

The major source of diversification by households has been through activities related to small-scale non-farm enterprises, which include manufacturing and repair activities. Commerce, services and transport are also important activities within the rural non-farm sector. Data available from the national census in various countries and rural surveys in Africa indicate that, generally, non-farm activities provide an important source of primary rural employment (Liedholm, 2002).

2.7 Farm and Non-Farm Linkages

Five important farm and non-farm linkages are identified in the literature: two in factor markets and three in product markets. The factor market linkages involve capital and labour flows between agriculture and non-farm activities. Product markets include backward production linkages from agriculture to non-farm equipment suppliers, as well as forward production linkages from agriculture to processors and distributors, and consumer demand linkages that are generated as a result of increasing farm incomes.

2.7.1 Factor Markets

Capital Flows

(i) Investment of Agricultural Surplus Income in Non-farm Activities. Although capital flows clearly move in both directions, that is, from farm to non-farm and from non-farm to farm, most observers believe that the outflow from agriculture is the larger one (Haggblade et al., 1987). Certainly, at the aggregate level, much evidence suggests that surpluses have been consistently transferred out of agricultural domain by means of fiscal measures, crop pricing and trade policies. Marketing boards and export levies typically 'tax away' 30 to 50 percent of farmers' cash crop prices (World Bank, 1981).

Sharpley (1981), using data from African countries from the period 1969 to 1975, finds a steady increase of governments that use financial resources originating from agriculture. In Mozambique, for example, this resulted in the situation that in 1975 the agricultural domain supplied 76 percent of the country's gross capital formation. Given the general structure of government expenditure, it is very likely that many African governments

transfer this kind of surplus income from agriculture primarily into urban and non-agricultural activities. Many observers are concerned about the lack of productivity in the rural areas as a result of the investment that were made possible by these transfers (World Bank, 1981).

Private investors have also channelled investment funds from agriculture to non-farm activities. Haggblade et al. (1987) points out that 15 to 40 percent of private investments in Kenya and Sierra Leone are transferred from agriculture to non-farm activities.

(ii) *Investment of Non-farm Surplus Income in Agriculture.* Surplus income that is generated in non-farm activities provide for investment for enhancing productivity in agriculture. Kitching (1977) in a review of sixteen farm managers' surveys from East Africa, repeatedly finds evidence that non-farm earnings play a crucial role in farmers' acquisition of productive agricultural assets, especially land. The weight of the evidence, he believes, supports his hypothesis that non-farm earnings are the single most important input determinant of farm income. Collier and Lal (1986) reach a similar conclusion. They infer from Kenyan data that off-farm earnings, primarily urban wages, are important in determining whether new agricultural technology and innovation is adopted by farming households, presumably because non-farm earnings supply the funds necessary for productive investment in agriculture. Berry and Sabot (1978) report that a similar flow of non-farm earnings played an important role in the expansion of Nigerian cocoa farming in the 1930s and 40s.

Labour flows

Labour input in rural areas regularly flows back and forth between farm and non-farm activities. Labour input for the non-farm sector is mostly in demand in the dry season shortly after the harvest. (Haggblade et al., 1987) indicates that about 80 to 90 percent of the labour force is employed in agricultural activities and that the remaining 10 to 20 percent of the rural labour force is in non-farm employment. It is also estimated that about 20 to 30 percent find secondary employment in the non-farm sector. When these

data are combined with those on secondary employment in agriculture, it is estimated that 30 to 60 percent of the rural labour force works in both farm and non-farm activities. From this it can be concluded that a sizeable part of the labour force moves back and forth between the rural farm and non-farm sectors.

2.7.2 Product Markets

(i) Backward Linkages

Agriculture requires production inputs, some of which can be supplied by rural enterprises. The type and magnitude of backward linkages vary depending on the agricultural technology available, size of farm holding, type of crop, and whether the crop production happens under irrigation or is rain fed.

Johnston and Kilby (1975), in evaluating the magnitude of backward linkages in Asia, identify fertilizer, followed by equipment, and then cement and building materials as the three key production inputs to agriculture. Fertilizer is by far the largest of these inputs in Asia, and requires petroleum and capital.

Cement and building materials are the second and third production linkages. In Africa, topography and hydrology are mostly quoted as the limiting factors. Shallow river basins coupled with low population density limit the potential of cost effective irrigation in most African countries (Delgado, 1984). Furthermore, animal traction and other farm implements are less prevalent in Africa than Asia. Manual labour – for example, by using the hoe – in agriculture prevails in the humid sub-tropical regions where Tse Tse flies prevent animal traction. Even in arid West Africa, where the disease does not threaten livestock, only about 10 percent of all the households practise animal traction (Mellor et al., 1987).

(ii) Forward Linkages from Agriculture to Processors and Distributors

The forward linkages from agriculture to local processors and distributors appear to be much larger than those on the input side. Haggblade et al. (1987) divide rural non-farm

activities into three categories: (i) activities unrelated to agriculture, (ii) activities supplying inputs and (iii) activities that are processing outputs. Many firms service a diversity of clients, although precise details are not available. For example, metal workers fix bicycles, automobile parts, and manufacture gates, door hinges and bars for windows. In commerce much of the rural commerce is involved in the distribution of domestically produced agricultural goods, but a large part of the commerce sector is involved with the distribution of imported consumer goods and equipment. Haggblade et al. (1987) draw two conclusions from their analysis: (i) input supply is far smaller than forward processing linkages from agriculture. Even if all metal working, blacksmithing and metal repair were related to agriculture, the forward processing and distribution links would be at least ten times as great; and (ii) Food processing is clearly important. Although bread baking is done with imported flour, virtually all other processing activities involve transformation of local agricultural production. Brewing provides the most non-farm employment opportunities in many of the countries they researched. Milling is also consistently important in this. Oil extraction, sugar production, tea drying and packaging and coffee drying are often predominantly performed in rural areas by large-scale enterprises. Again, the small-scale orientation of much of the past research has most probably been the reason that these activities have, so far, eluded the statistical net.

Distribution of agricultural products undoubtedly generates the largest non-farm production links to agriculture. Retailing is a labour intensive activity. It accounts for particularly, the main share of female employment in much of West Africa.

(iii) Consumption Links

In a dynamic situation where farm incomes are on the increase, the consumer demand linkages emanating from these increases have the potential to be an important stimulant for the growth of the rural non-farm economy. As per capita income increases, the demand for local services - especially transport, personal services and small industry for food processing - typically increases. The Asian experience suggests that the production of these commodities and services is labour intensive. Hence rural employment in the non-food grain sector increases quite rapidly as a result of the rise of the income per

capita in the non-farm sector. It must be borne in mind, though, that these patterns of growth may depend on a combination of high population density and adequate transport facilities to make services accessible to the villages. Thus, these patterns may be less appropriate to large parts of Sub-Saharan Africa where the population density is much lower (Haggblade et al., 1987). One might hypothesize that as the per capita income increases, in the absence of relatively cheap labour-intensive goods and services in rural areas, the demand will shift less rapidly from foods to services in Sub-Saharan Africa compared to Asia. The consequence of this might be that there are weaker demand linkages to the rural non-farm economy.

2.8 Non-Farm Sector over Time and Major Constraints to Growth

A brief historical look at the decrease of size of the agricultural labour force employed in the agricultural sector in various places in the world, shows that it fell from 35 to 5 percent during the period 1801-1951 in Great Britain; from 28 to 17 percent during the period 1899-1947 in the Netherlands; from 68 to 12 percent from 1840 to 1950 in the United States and from 85 to 33 percent in the period 1872-1960 in Japan (Lanjouw and Lanjouw, 1995). As a consequence, migration to urban areas and/or the development of non-farm employment in rural areas were to provide the much needed employment. An increase in the level of urbanization, however, imposes various social costs. At the same time, it has become evident that large-scale urban industrialization strategies such as are pursued by many developing countries during previous decades have failed to absorb a growing labour force that is seeking employment.

During the process of major changes in agricultural production processes, when the agricultural productivity per worker rises, a surplus of labour force is created that can be utilized to develop the non-agricultural sector. At this stage, the non-farm enterprises constitute the major possibilities for employment through the expansion of the existing enterprise or the creation of new enterprises. It appears that the balance between these two new prospects for employment is primarily influenced by the state of the macro-economy. When the economy is thriving, RNFE also thrive and expand by engaging

additional labour. In such circumstances, it may be that more people are in a position to terminate existing activities and move on towards more rewarding ones. When the economy is stagnant, the reverse occurs. Few enterprises expand their employment levels, and, in fact many may lay off workers.

Also, the policy environment plays an important role as a stimulus for growth of the non-farm sector. In some countries, the overall policy environment is biased against small rural non-farm enterprises (Haggblade et al., 1986). Consequently, great care must be exercised to create a favourable policy environment in the design of a country's development strategy, as many governments do not seem to include rural non-farm activities in their policy making, which means that policies can inadvertently have adverse effects on RNFE. Government policies with respect to infrastructure, industry and agriculture have important, albeit indirect, effects on the expansion of rural non-farm employment and income generating opportunities. Because of the strong linkages between agricultural and rural non-farm activities, agricultural policies have a strong influence on rural small-scale enterprise. Evidence suggests that the demand for rural non-farm goods and services stems from the agricultural sector, and that this demand is transmitted through both income and production linkages. The evidence also indicates that the rural households' elasticity of demand for rural industrial goods is positive, and that agriculture generates the largest portion of rural income. Policies designed to increase agricultural output and/or income have an important indirect effect on the demand for these activities. Consequently, government actions that may range from improvements in terms of trade between the agricultural sector and the large-scale urban sector, to specific investment programs designed to increase direct or indirect agricultural production and income, can generate an increased demand for a wide array of industrial goods and services.

Reinecke (2002) reviews the literature with regard to the impact of the policy environment on small-scale enterprises. He questions the economic reasons for favouring any specific size or class of enterprise that are favouring well-functioning output and input markets which are biased neither in favour of small nor large enterprises, as the key

ingredient of an enabling policy environment. The underdevelopment of both input and output markets, the extremely low number of market participants and the resulting high transaction costs are often mentioned as important obstacles to successful small enterprise development in developing countries.

2.9 Summary

This chapter reviewed literature related to the role of rural non-farm sources of income in promoting rural development and, so, poverty alleviation. International experience has shown that rural non-farm enterprises play a significant role in the rural economy in generating jobs and creating income opportunities for the poor. The rural non-farm enterprises are generally small in size and do not require high cost investments. The most capital-intensive investments are grain milling, sawmilling and wholesaling. These activities demand capital in the order of \$1 000-10 000 per enterprise. In terms of economic efficiency, they are efficient users of economic resources when compared with their larger scale urban counterparts. However, the efficiency tends to vary depending on the production characteristics, and particularly on the size and location. Haggblade et al. (1987) and Liedholm (2002) identify five main factors correlating with growth of rural non-farm enterprises: (i) level of development of town, (ii) level of development of infrastructure, (iii) population density, (iv) increase in per capita income, and (v) increase in agricultural productivity.

Two main factors are identified which affect the diversification of the households. These are push and pull factors. Push factors are related to the cropping risk that induces households to diversify into non-farm activities. Push factors include: (i) low unstable yields; (ii) a short growing season (iii) lack of irrigation potential (iv) credit/capital and market failure (v) land constraints. Pull factors induce reallocation of resources to potential non-cropping activities in order to exploit profitable opportunities and increase total household income. Pull factors identified are: (i) terms of trade between agriculture and non-agriculture (ii) migration opportunities (iii) local non-farm opportunities in backward and forward linkages with agriculture.

Five farm and non-farm linkages were discussed: two in factor markets and three in product markets. The factor market linkages involve capital and labour flows between agricultural and non-farm activities. Product markets include backward linkages from agriculture to non-farm equipment suppliers, and forward linkages from agriculture to processors. Both distributors and consumers demand linkages that are generated as a result of increasing farm income.

This chapter closed by examining the role of non-farm enterprises in the world over a period of time taking the consideration of population growth rate and technology. Given the limits of arable land, such growth rates of the population cannot be productively absorbed in the agricultural sector. This leaves migration to urban areas or development of non-farm employment in rural areas to take up the slack.

CHAPTER THREE: DESCRIPTION OF STUDY AREA AND RESEARCH PROCEDURES

3.1 Introduction

This chapter describes the study area, research methods and survey procedures. The description of the study area includes the geography, and the cultural and socio-economic situation. The description of methods and research procedures includes the methods that were used to design the sample, select the villages, determine the sample size, allocate sample strata and select households. A brief description of the questionnaire and the main variables is provided. This chapter also describes the tools for data processing, analysis and interpretation. A brief summary of the main aspects discussed in this chapter is provided at the end of the chapter.

3.2 General Description of the Study Area

The study area, the Boane District, is one of the seven districts of the Maputo Province. It is located 30 Km south of Maputo City (32° 32 E, 26° 03 S; 12m). The size of the district is about 650 km², with a total population of about 55 000 inhabitants residing in 31 villages (Table 3.1). It is believed that almost the entire population practises subsistence agriculture. Factors that contributed to selecting District of Boane for this study were its proximity to Maputo City, (the most densely populated city in the country), and the accessibility of the district throughout the year due to a developed rural infrastructure such as roads. Boane is one of the few districts with electricity and a good telecommunications network, including a cellular network.

There are a number of private and state enterprise developments in the area. This is facilitated by the presence of water for irrigation sourced from the Umbeluzi River and Pequenos Libombos Dam. There is a considerable presence of private and non-governmental organizations (local and foreign) in the district, which also have invested in the area. One of the biggest investments in the private sector is the Mozambique

Aluminium Smelter (Mozal) that is estimated to be over three billion dollars. Apart from Mozal, most of the activities supported are social in character, such as building schools, hospitals and small water dams. A major investment that took place was the construction of the Boane Agricultural Institute, where courses are taught in agricultural techniques up to diploma level.

Boane District prides itself on having one of the first government agricultural extension networks in the country. The district's extension network was established in 1987, as part of the government strategy to assist smallholder subsistence farmers to attain food security, and improve the rural households' production of food crops.

3.3 Research Method and Survey Procedures

3.3.1 Sample Design

Because of the main objective of the study, which is to assess the role of rural non-farm sources of income in alleviating poverty in the Boane District it is important that the sampling frame includes all people living in the district, excluding those in prisons, army camps and hotels. The sample design must also ensure that:

- (i) the sample (villages and household selection) is not biased and is representative of the district;
- (ii) all the different groups of the population in the district are included.

Table 3.1. will be used as the sampling frame since it includes all population groups residing in the district.

**Table 3.1. Boane District Population by Village
January 2002**

Village cluster	Name of the village	Number of	
		Families	Inhabitants
South cluster	Eduardo Mondlane	518	1826
	Marien Nguabi	326	1661
	25 de Setembro	432	1905
	7 de Setembro	442	1278
	Massaca I	562	5371
	Massaca II	377	1806
	Umpala	415	2023
	Paulo Samuel		
	Kankhomba	702	4330
	Jossias Tongogara	321	1353
	Circulo Jimo	201	793
	Salganha-Sede	118	229
	Ambrozia	87	301
	Bairro Mahanhane	845	3750
	Manguiza	53	270
<i>Sub-total</i>		<i>5399</i>	<i>26896</i>
District Capital cluster	Bairro I	519	2975
	Bairro II	474	2791
	Bairro III	302	1763
	Bairro IV	348	1899
	Bairro V	185	765
	Bairro VI	195	948
	Bairro VII	240	1391
	Aldeia de Campuane	286	1291
	Pov. De Campuane	290	1530
	Pov. Radio Marconi	368	1941
	Pov. Macombo	51	188
Aldeia Tchonissa	127	430	
<i>Sub-Total</i>		<i>3385</i>	<i>17912</i>
North cluster	Povoacao de MatolaRio	244	1553
	Pov. Djuba	150	778
	Djonasse	251	1210
	Chinoquila	1036	5716
	Aldeia Mulotana	213	1103
<i>Sub-Total</i>		<i>1894</i>	<i>10360</i>
Total		10678	55168

Source: Administração do Distrito de Boane, Janeiro de 2002

3.3.1.1 Village Selection

The distribution of the population in the district is given in Table 3.1. This table lists the 31 villages in the district, divided into three main geographical strata. Each stratum represents a cluster of villages. The decision was made to select eight villages: three from the south cluster, three from the district capital and two from the north cluster. This decision was based on the time constraint imposed on the survey, that is, only 16 days were available to conduct the fieldwork. It was also influenced by the assumption that it would take two days per village to interview the selected households. To ensure an unbiased selection of the villages, and that the sample of villages was representative of the district, each village in the various strata was assigned a number (i.e. 1 to 14 for south cluster, 1 to 12 for the district capital cluster, and 1 to 5 for the north cluster). Next, a pocket calculator was used to generate random numbers per cluster to select the villages for the survey. The numbers generated corresponded to Eduardo Mondlane, Massaca II and Jossias Tongogara villages for the south cluster. For the north cluster, two random numbers were generated and corresponded to Djuba and Djonasse villages. For the district capital cluster, three numbers were generated corresponding to Bairro I, Radio Marconi and Campuane villages. See Table 3.2.

3.3.1.2 Determination of the Sample Size

The sample size had to be derived from the desired precision level. In other words, the issues centred around what margin of error could be tolerated, the desired confidence level, how robust the data needed to be, the degree of variability in the population to be studied, and the resources available. Normally, the calculation of the sample size is based on the following formula:

$$n = \frac{[(100) * S]^2}{Y * F}$$

Where:

n is the sample size;

S is an estimate of the standard deviation;

Y is the population size

F is the confidence level.

Since it is difficult to estimate the standard deviation (S) before the actual study is carried out, the standard deviation is normally taken from results of similar studies. The most recent survey on household consumption in one of the villages in the district, found the $SD = 3\ 396.9$ (Bila, 1998). This figure will be used as the estimate of the standard deviation. Using the formula, where $Y = 10\ 678$ (Table 3.1), $SD = 3\ 396.9$ and $F = 5$, the required sample size is 40 households. This means that at least 40 households have to be interviewed for the results to be statistically representative. The next section explains the selection process of the 40 households.

3.3.1.3 Determination of the Household Sample Size per Village

Taking account of the selection of the villages (8) and determination of the sample size (n) of 40 households, the sample size per village will be a proportion or a fraction of the total sample size and will vary from one village to the other depending on the actual number of households per village; i.e. $k_i = (N_i/N)$ where k_i is the fraction, (N_i) is the number of households in a given village and (N) is the total number of the households in the sample; e.g. Eduardo Mondlane village with 518 households (N_i) and a total number of the households of all researched villages of 2 790 (N), the fraction of this village (k_i) is $518/2\ 790 = 0.19$. Since the sample size (n) has been determined as 40, the sample size for Eduardo Mondlane village (n_i) is $n_i = k_i * n$ or $0.19 * 40 = 7.6$ households. This method was used to determine the number of participating households in each village as presented in Table 3.2.

3.3.1.4 Household Selection

In preparation for a random and unbiased selection of the households, a 'list' of the population residing in each of the eight villages selected for the survey, was produced

through a house-to-house registration in the selected villages. The registration consisted of taking the name of each head of the household in all eight villages selected, and of assigning an individual number. For example, Eduardo Mondlane Village has 518 households registered. So, in this case, the numbers allocated were between 1 to 518. As mentioned earlier, the registration produced a sampling frame that contained all members of the population residing in the eight villages. It was, therefore, necessary to go through a random sampling procedure in order to reduce selection bias. By using this procedure, each individual household in the eight villages had an equal chance of being selected to participate in the study.

Using the same procedure as in the village selection, a pocket calculator was used to generate seven random numbers for the Eduardo Mondlane village. The seven random numbers corresponded to the sample fraction, or number of households. Since the village has 518 families, only the numbers 0.1 to 0.518 were considered. For Massaca II village, for example, five random numbers were generated and only numbers from 0.1 to 0.377 were considered since the village has 377 households. The same methodology was used for the other villages. In circumstances where the chosen household was not willing to participate, a nearby household was asked without any further generation of the random numbers. Once an agreement was reached, a day was agreed upon to hold the interview.

3.3.2 Survey Procedures

3.3.2.1 Stages

The study was conducted in two stages. The first stage was preparatory: its purpose was to allow time to gather the material and information needed for the study. This included study area visits, questionnaire preparation and testing. In this stage, it was important to interview the district administration, the district directorate of agriculture and the village secretaries in order to gather relevant information for the survey. The second stage entailed physically doing the survey by using a questionnaire. The fieldwork was conducted from 7 to 25 January 2002.

Table 3.2. Allocation of Sample Strata

Village clusters	Name of the village selected	Number of households per village (Ni)	Proportion to the total sample (ki)	Sample size per village (ni)
<i>South</i>	Eduardo Mondlane	518	0.19	7
	Massaca II	377	0.13	5
	Jossias Tongogara	321	0.11	5
<i>District Capital</i>	Bairro I	519	0.20	8
	Aldeia de Campuane	286	0.10	4
	Pov. Radio Marconi	368	0.13	5
<i>North</i>	Pov. Djuba	150	0.05	2
	Djonasse	251	0.09	4
<i>Total</i>		<i>(N) 2790</i>	<i>1</i>	<i>(n) 40</i>

3.3.2.2 Brief Description of Variables and the Questionnaire Content

The questionnaire was designed to help gather information required to satisfy the objective of the study (Appendix 2). To successfully achieve this objective, the determination of household incomes, its sources and the relative importance of it are crucial. The questionnaire (Appendix 2) is divided into four sections and the information collected in each section is briefly summarized below:

Section one - Gather general information on the household structure such as: name of the head of the family, size of the household, education, age and gender of the head of the household.

Section two - Examine household activities and sources of income. This section is further sub-divided into three subgroups: The focus of the first part is to determine the

number of people employed per household, the type of employment and kind of activity. The second part is designed to inquire about other activities carried out by the household outside formal employment. The third part inquires about other forms of income that the family may have such as pensions for the disabled, for the elderly, and for demobilized soldiers, remittances or other forms of grants received by members of the family, temporary labour, tourist fees and others to be specified by respondents.

Section three - Examine agriculture related activities carried out by the household as an entity; information is gathered about topics such as: the number of plots and their size owned by the family, major crops that are cultivated, use and type of major agricultural inputs used, and the local of purchase.

Section four - This section is designed to determine the household level of income. The section is sub-divided into two sub-sections: The first sub-section is designed to gather information on household level of income based on expenditure on food. The second section focuses on gathering information on household expenditures on non-food stuff. Section one focused on information such as major family expenses per type of food and the quantities per month needed, or in any other specified period. Section two required information of other family expenditures such as the amount spent on health services and education, and hiring labour for the most recent agricultural season for those rural households with farms.

3.4 Data Processing, Analysis and Interpretation

In order to compare income levels and to determine the poverty levels of the different income groups of population found in the survey the data collected was analysed. An Excel spread sheet was used to calculate the main statistics (size, maximum and minimum values, standard deviation, standard error and variance). The analysis was carried out in response to the specific research objectives as defined in Chapter one and grouped in four main categories as follows:

Sources of income: Based on answers provided by the heads of the households to the items in the questionnaire, the sources of income were determined. The households were expected to derive their income from two sources, that is, from the farm or from non-farm sources - as defined in chapter one. Farm income is all income derived from the production of crops, livestock and forestry. Non-farm income refers to earned and unearned income received by rural households from rural non-farm enterprises and from the urban economy. This includes wage earnings from non-farm labour, employment in government departments and private sector employment. Also profits from non-farm enterprises are part of non-farm income, including rentals received on assets such as land, machinery and water. Transfers are also part of income in the non-farm sector, which includes pensions, internal and international remittances mostly from relatives in Maputo City, Swaziland and South Africa.

Next, in order to determine the sectoral composition of the non-farm enterprises, the households were asked to state their main entrepreneurial activity.

Level of income: The level of income was used as the major welfare indicator. The household income was determined based on household consumption of food and non-food items for the following reasons:

- (i) Income could be interpreted as a measure of welfare *opportunity* while consumption is interpreted as a measure of welfare *achievement* (Atkinson, 1989, quoted in MPF, 1998). Not all income is used for consumption, however, nor is all consumption financed out of income. In other words, the two measures typically differ. Had we been concerned with realized rather than potential welfare, consumption would arguably have been a more appropriate indicator.
- (ii) Typically, income fluctuates less than consumption. Individuals rely on credit, savings and transfers to smooth the effects of fluctuation in income. Therefore, the level of consumption provides a more accurate and stable measurement of individual welfare over a period of time.

- (iii) Some researchers and policymakers believe that survey respondents are more willing to reveal their consumption levels than their income levels.
- (iv) In developing countries, a large proportion of the population is involved in – often-informal – self-employment. Thus, measuring actual income generated by these people is difficult. Also, many individuals are involved in multiple income earning activities in any given year. It follows that the process of recalling and aggregating the various incomes coming from different sources is not easy.

The questionnaire was designed to carefully determine household expenditures based on household food and non-food expenditures. The declared amounts were valued based on local market prices with the aim of determining the amount that was spent during a given period. The data will be used to determine the income per capita per day. In addition to the sources and level of income, the survey was expected to produce general data on population characteristics such as: age, family size, education level and gender of the head of the household.

Poverty measurements and estimates in the district: Reduction of poverty is considered the ultimate objective of all economic development activities, and poverty measurements are, thus, a useful tool for monitoring the decrease or increase of living standards. It follows that poverty measurements are useful performance indicators for the socio-economic development of a region or a socio-economic group or both. To provide information that can be depended upon for interpretation and analysis, and that is useful for policymakers, two measurements of poverty were used. These are the *head count index*, which determines the percentage of the households in the total population with a consumption level per capita that is below the poverty line. The other measurement is the *Poverty Gap Index*, which defines the mean distance below the poverty line expressed as a proportion of that line. To do this, it is necessary to determine the poverty line. As defined in chapter two, poor individuals will be defined as those that fail to reach a daily per capita consumption of 7 316 MZM, which was set as global poverty line for the rural

Maputo Province where Boane district is located. Households with a welfare level below the poverty line would be defined as poor and those above the line as non-poor.

Characteristics of the poor and source of income among poor and non-poor: to successfully characterize the poverty and its nature, poverty profiles were prepared. A poverty profile gives the characteristics of the nature of poverty in a region. It assesses the extent of poverty and the distribution across socio-economic groups. It illustrates the heterogeneity and complexity of poverty issues, and helps to identify empirical correlates of poverty. Poverty profiles are also used to determine the characteristics of the poor, and to determine the distribution of incomes among poor and non-poor households. Poverty profiles are typically bi-variate in nature and focus on the issue how poverty levels are associated with a set of characteristics that are considered one at a time. Poverty profiles are useful descriptive tools when it is necessary to know how poverty levels are related to a given set of socio-economic characteristics.

Naturally, policy-makers have a great interest in such a question, particularly when the set of characteristics might be used as indicators for targeting groups that must be assisted. For instance, policymakers intending to target female-headed households may want to know whether such households are significantly poorer than male-headed households. In the case of additive transfers, poverty profiles can guide government departments and others to where a minimum of financial input has a maximum impact on the aggregate measurement of poverty.

3.5 Summary

This chapter described the study area, research methods and procedures that were used. The description of the study area included the geography, demography and socio-economic aspects of the area. The chapter described the research method used: i.e. how the sample was designed, how the selection of the villages was done, how the sample size was determined, and the criteria for selection of the households participating in the study in each village. Stratified random sampling was used for village selection. The number of

households to be part of the survey per village was determined as a proportion of the size of the village, compared to the total number of households in the district. A list of households residing in each village was produced, which became the basis for a random and unbiased selection of the households for the survey. From the complete list of names of all heads of households in the eight villages, and the number of households decided upon in each village, 40 households were randomly selected to participate in the survey. The survey was conducted by means of a questionnaire to compile the main data from each household. The last section of this chapter described the method used for data analysis. The data were to be analysed to respond to the four main questions of the study, that is, source of income, level of income, poverty estimates and poverty profile.

CHAPTER FOUR: RESULTS OF THE STUDY

4.1 Introduction

The purpose of this chapter is to present the major findings of the study. A detailed description of the results is presented in Appendix one. As discussed in the previous chapter, 40 heads of households were selected for interviewing, but only 37 households provided full information that could be used in the analysis. Therefore, the results are based on the compilation of data resulting from interviewing 37 heads of households. The interviews were based on the pre-designed questionnaire and were held during the fieldwork stage in the period 7 to 25 January 2002.

This chapter presents the socio-economic aspects of the rural households that participated in the study, their sources of income and the composition of the non-farm enterprises in the district. It also presents data on the level of income of rural households, and assesses the poverty levels of the different socio-economic groups covered by the study. In line with the overall objective of the study, this chapter also assesses the main characteristics of poor households and sources of income among poor and non-poor households.

The chapter describes the field observations in support of the discussion, analysis, conclusions and recommendations. No attempt is made to explain or to analyse these characteristics here in this chapter; this is left for the next two chapters.

4.2 Socio-economic Characteristics of the Population

4.2.1 District Population Profile

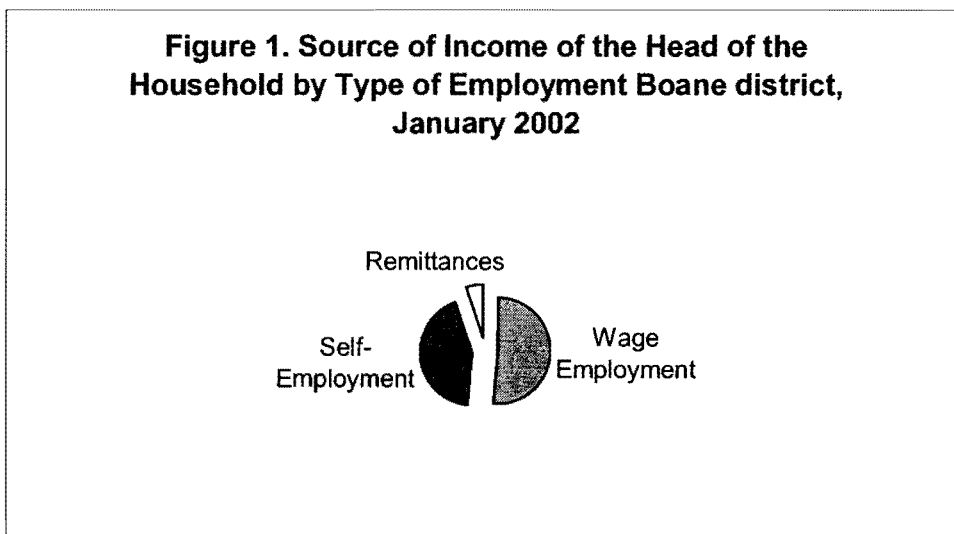
A total of 37 heads of households from eight different villages in the Boane District responded fully to the interview. The results show that 73 percent of the households are male-headed while 27 percent of the households are female-headed. In terms of

education, 70 percent of the heads of the households had education up to primary level or below. Only 30 percent had education at secondary or tertiary level. The average age of the heads of the household in the district is 43 years. Female heads of the households tend to be older with an average age of 45 years.

The average size of the household in the district is five persons. Although there was little variation amongst the farm and non-farm households, households whose heads rely non-farm sources tended to be larger with six persons on average per household. Households whose heads rely on farm sources tended to be slightly smaller with an average of five persons per household. All households stated to have at least one plot of land that was used for cultivation. A detailed analysis of the population characteristics is presented in Appendix 1, Table A.1.

4.3 Sources of Income

The study revealed that 19 of the 37 heads of households- that is, 51.4 percent - household heads that were interviewed were employed as wage labourers; 16 household heads, or 43.2 percent, were self-employed; and two household heads, or 5.4 percent depended on social welfare grants and family remittances to meet their expenses (Figure 1).



4.3.1 Wage Employees

A breakdown of the income of the wage employees into farm and non-farm activities (Table 4.1) shows that 26 percent of the household heads are employed on commercial farms (15.8 percent in crop production and 10.3 on livestock farms) and 74 percent in the non-farm sector. In the non-farm sector, construction is the leading employer, and employs 21 percent. This is followed by repair services employing 15.8 percent. Although the Mozambique Aluminium Smelter (Mozal) is one of the biggest aluminium plants in the District, it generates relatively little employment, namely a mere 5.3 percent.

**Table 4. 1. Wage Employment of the heads of the household and Type of Enterprise
Boane District, January 2002**

Economic activity	Number of households	Percentage
Farm Sector		
Crop production	3	15.8
Livestock farms	2	10.3
Sub-total	5	26
Non-farm sector		
Construction	4	21
Repair	3	15.8
Civil Servants	2	10.6
Commerce	1	5.3
Industry (Mozal)	1	5.3
NGOs	1	5.3
Not Specified	2	10.6
Sub-Total	14	74
Grand-Total	19	100

4.3.2 Self-Employment

A breakdown of head of the households self-employed group (Table 4.2) shows that all 16 households heads that indicated that they are self-employed are engaged in subsistence agriculture. Most of the crops produced by this group are subsistence crops. Table 4.2 shows that the three main crops produced by this group are the following subsistence crops: maize, beans and cassava. None of the self-employed farmers have irrigation systems and only four, that is 25 percent, use improved agricultural inputs such as fertilizer and improved seeds. Related to credit, only three, that is 19 percent, admitted that they participated in a kind of saving and credit scheme called in local language “*Xitique*”, that is a group rotating money scheme that serves both as saving and credit mechanism.

Table 4. 2. Crops Produced by the Sixteen Households Heads in Self-employment, Boane District, January 2002

Crop type	No households	Percentage
Maize	16	100
Beans	12	75
Cassava	10	62.5
Peanuts	8	50
Pumpkin	4	25
Sweet potato	3	18.75
Tomato	1	6.25
Access to agricultural inputs and credit		
Access to irrigation systems	0	0
Use of improved agricultural inputs	4	25
Access to credit/saving schemes	3	18.75

4.3.3 Other Sources of Income

4.3.3.1 Remittances

The study revealed that two heads of households, or 5.4 percent of the sample, are composed of households who primarily depend on social welfare grants and/or family remittances. These households stated that they received their remittances from relatives working and residing in Maputo City, the Kingdom of Swaziland and the Republic of South Africa.

4.3.4 Share of Farm and Non-Farm Sources of Income in the District Economy

Taking into consideration the definitions of farm and non-farm sources of income given in chapter two, the study revealed that of the 37 heads of households, 57 percent, that is 21 heads of households, rely on income from farm sources. This particular group is composed of the heads of households employed as labourers on commercial farms (5) plus those members of the household that were self-employed and are engaged in subsistence farming (16). The other heads of households, 26, or 43 percent, rely on non-farm sources of income for their survival. Interestingly, they are all employed as labour in non-farm enterprises with the exception of the two who rely on social welfare or family transfers for income. None of the households were found to undertake non-farm activity as self-employment.

**Figure 2. Farm and Non-farm Sources of Income
Boane District January 2002**



4.4 Level of Income

The estimated average income is based on the consumption expressed through household expenditures (Appendix 1, Table A.2). The average income in the district is 1 028 308.56 MZM per month per household or 8 186.6 MZM per person per day, which represents approximately \$0.34 US, or 3.74 Rand per person per day, at the January 2002 exchange rate. Female-headed households have on average a higher income of 9 278.9 MZM per person per day (Appendix 1, Table A.4). Where the head of household is engaged in non-farm activities, the households have the lowest income, estimated at 7 770.4MZM per person per day. These incomes are significantly different at the 95 percent confidence level. Table 4.3 provides a summary of the incomes of the different socio-economic groups in the district as found in this study.

4.4.1 Household Expenditure Categories

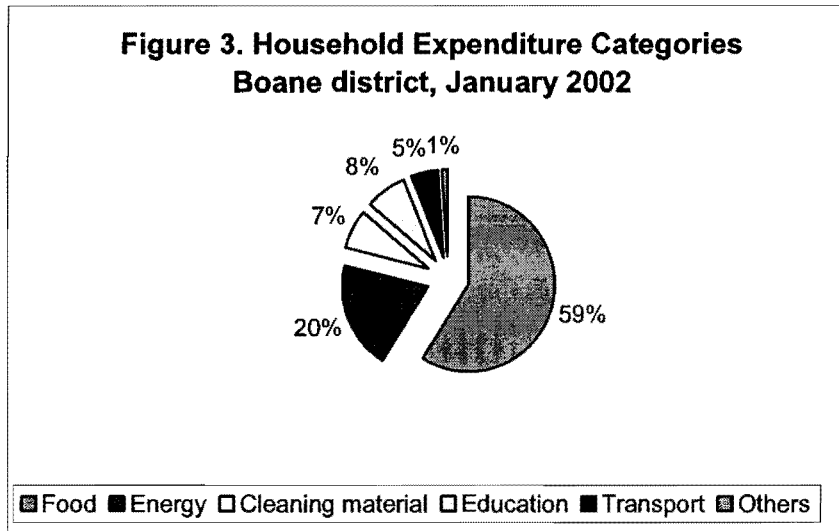
Generally, it was found that in terms of expenditure categories, food was the main category of expenditure. It accounted for 59 percent of the household expenditure. This was followed by fuel (firewood, charcoal and kerosene), which accounted for 20 percent of the expenditure (See Figure 3). Households tended to spend less on transport than on

any other item. Detailed descriptions of the expenditure categories are provided in Appendix 1, Table A.2.

**Table 4.3. Mean Income of Different Socio-Economic Groups in the District
Boane District, January 2002**

Population group	Population share (%)	Age	Household size	Mean income (MZM/person/day)
Gender				
Male-headed households	73	42 (2.3)	5.1 (0.4)	7782 (768.7)
Female-headed households	27	45 (3.45)	5.3 (0.9)	9278.9 (2305.2)
Sources of income				
Farm	57	44 (2.24)	4.8 (0.44)	9030.13 (997.13)
Non-farm	43	41 (1.44)	5.6 (0.3)	7079.5 (499.47)
Level of Education				
Primary school or lower	70	45 (2.4)	5.1 (0.43)	8261.6 (933.97)
Secondary school or higher	30	38 (1.44)	5.3 (0.29)	8009.32 (525.20)
District total average	100	43 (1.92)	5.1 (0.39)	8186.62 (826.29)

() Standard error



4.5 Poverty Measurements

4.5.1 Poverty Estimates

Using the total poverty line for the rural Maputo Province as a point of reference, as discussed in chapters two and three, the results of this study show that the district's poverty rate (headcount) is 57 percent. This indicates that more than half of the households live in a state of absolute poverty. The district's poverty index ¹ is 32.9, which is also high (Table 4.4 below). Detailed descriptions of the results are provided in Appendix 1, Tables A.1, A.3-10.

Turning to the factor 'gender', the incidence of poverty is higher in the male-headed households with a headcount at 59 percent compared to 50 percent of the female-headed households. The gap index indicates that poverty is deeper in the female-headed households, though, than in the male-headed ones. It is estimated at 35.7 and 32.2 respectively. When we take the sources of income into consideration, poverty is higher

¹ Poverty Gap Index is defined as the mean distance below the poverty line and is expressed as a proportion of that line. This measure reflects the depth of the poverty, not merely the incidence of it. The poverty gap may be written as HI, where H is the headcount index and I is the income-gap ratio or $I=1-(u/z)$ when u is the mean consumption of the poor and z is the poverty line (MPF, 1998 p. 56)

among households whose heads are engaged on non-farm sources with the headcount index at 62.5 percent, compared to 57 percent of the households whose heads depend on farming. Households headed by a literate person or one with an education level of secondary school or higher, have the lowest poverty incidence with a headcount index at 45.5 percent. Households headed by an illiterate person have on average a higher poverty incidence with a headcount index at 61.5 percent.

Table 4.4. Poverty Estimates, Boane District, January 2002

Population Group	Population share (%)	Mean income* (Non- poor)	Mean income (Poor)	Mean income (poor and non- poor)	Head count index	Poverty gap index
Gender						
Male-headed households	73	11,884.8 (836)	4,961.4 (325.8)	7,782 (768.7)	59	32.2
Female-headed households	27	13,855.2 (3653.1)	4,702.6 (312)	9,278.9 (2305.2)	50	35.73
Sources of income						
Farm	56.7	13,746.40 (949.84)	4,742.61 (175.09)	9,030.13 (997.58)	52.3	35.1
Non-farm	43.3	10,424.32 (287.46)	5,072.61 (217.6)	7,079.5 (499.47)	62.5	31.1
Level of education						
Primary school or lower	70	13,703 (957.39)	4,860.72 (192.18)	8,261.62 (933.97)	61.5	34
Secondary school or higher	30	10,496.55 (268.33)	5,024.65 (218.73)	8,009.32 (525.2)	45.5	31.7
District	100	12500.62 (802.4)	4899.75 (193.41)	8186.62 (826.29)	57	32.9

() standard error

* Mean income in MZM per person day

4.5.2 Poverty Profile

A poverty profile characterizes the nature of poverty in a particular area. It assesses the magnitude of the poverty and its distribution across different socio-economic groups. It provides information on the characteristics of the poor, and illustrates the heterogeneity amongst the poor and helps to identify empirical correlates of poverty.

4.5.2.1 Household Poverty: The Relationship with Household Size

Poor households tend to be larger than non-poor households as shown in Table 4.5 below. The average household size in the district is 5.1 persons (Table 4.3), but amongst the poor households, the size is 6.6 persons. For non-poor households, this is only 3.25 persons per household. (Table 4.5).

Table 4.5. Household Poverty Relationship with Size of the Household

Household	Poor	Non poor
Male-Headed households	6.3 (0.5)	3.4 (0.5)
Female-Headed Households	7.6 (0.7)	3.0 (0.6)
Farm Sources	6.8 (0.31)	2.6 (0.21)
Non-Farm Sources	6.3 (0.3)	4.3 (0.17)
Primary education or lower	6.63 (0.31)	2.6 (0.21)
Secondary education or higher	6.4 (0.3)	4.33 (0.17)
District	6.57 (0.3)	3.25 (0.24)

()Standard error

4.5.2.2 Relationship of the Level of Poverty with Source of Income, Gender and Level of Literacy

The relationship of the level of poverty of a household with source of income, with gender and with level of literacy – showing two measurements: the head count and poverty gap - is shown in Table 4.6 below.

Farm Households: The head count shows that 62.5 percent of the male-headed households that rely on agriculture as the main source of income, live in absolute poverty, compared to 20 percent of the female-headed households. When we look at the level of education, it is found that 43 percent of those who have primary school or less and rely on farming, are poor. Surprisingly, 80 percent of those with secondary school or more and rely on farming are also poor. It might be inferred that if you are literate and live in a rural area and depend on farm income, you are likely to be poor. The gap index indicates that poverty is deeper in the female-headed households and less deep in the more educated households with a gap index of 35.3 and 26.8 respectively (Table 4.6).

Non-Farm Sources: The head count shows that 54.5 percent of the male-headed households and 80 percent of female-headed-households that rely on non-farm activities as the main source of income live in absolute poverty (Table 4.6). Related to the level of education, 80 percent of those who have enjoyed education up to primary school level or less and rely on non-farm sources of income are poor. Also, 16.7 percent of those with secondary school or higher and rely on non-farm activities live in a state of absolute poverty. From these data it might be inferred that if you are illiterate, live in a rural area and depend on non-farm income you are likely to be poor. Poverty is deeper in the female-headed households, with a gap index of 36.3 (Table 4.6).

**Table 4.6. Household Poverty Relationship With Sources of Income,
Gender and Literacy, Boane District, January 2002**

Household	Farm		Non-farm		Total (District)	
	Head-count index	Poverty Gap Index	Head-count index	Poverty Gap Index	Head-count index	Poverty Gap Index
Male HH	10/16 (62.5%)	35.3	6/11 (54.5%)	26.9	16/27 (59%)	32.2
Female HH	1/5 (20%)	33.4	4/5 (80%)	36.3	5/10 (50%)	35.7
Primary school or lower	7/16 (43%)	35.0	8/10 (80%)	31.7	16/26 (61.5%)	34
Secondary school or higher	4/5 (80%)	26.8	1/6 (16.7%)	7.4	5/11 (45.5%)	31.7
District	11/21 (52%)	35.1	10/16 (62.5%)	31.1	21/37 (57%)	32.9

District: The headcount shows that 59 percent of the male and 50 percent of female-headed households live in absolute poverty (Table 4.6). Related to the level of education, 61.5 percent of those who have primary school or less are poor, and 45.5 percent of those with an education at secondary school level or more, also live in a state of absolute poverty. Poverty is deeper among the female-headed households with a gap index of 35.7 (Table 4.6).

4.6 Sources of Income Among the Poor and Non-Poor Households

Table 4.7 indicates that the majority of the poor (52 percent) and non-poor household (62.5 percent) derive their incomes from farming Appendix 1, Tables A.8 and A.9 provide a detailed description of the statistics of the poor and non-poor.

**Table 4.7. Source of Income Among the Poor and non-Poor Households
Boane District, January 2002**

Sources of income	Poor households		Non-poor households	
	Number	%	Number	%
Farm	11	52	10	62.5
Non-farm	10	48	6	37.5
Total	21	100	16	100

The results in Table 4.7 show that farming is the main source of income for most of the rural households in the district.

4.7 Summary

This chapter presented the results of the study in five main categories: (i) household employment and the proportion of the head of households that rely on non-farm sources of income; (ii) sectoral composition of the non-farm enterprises; (iii) income level of different socio-economic groups; (iv) extent of poverty and characteristics of the poor in the district; and (v) the sources of income among poor and non-poor households.

The study revealed that 51.4 percent of the heads of households are employed in wage labour, 43.2 percent are self-employed, and 5.4 percent depend on social welfare grants and family transfers to meet their expenses. In terms of the share of farm and non-farm households, 57 percent of the households heads rely for their income on farm sources and 43 percent on non-farm sources. The study also found that 74 percent of the labour force is employed in the non-farm sector. In terms of composition of the non-farm sector, construction is the leading employer followed – in this order – by repairs, civil services, commerce, the aluminium industry, and NGOs.

The average income in the district is 1 028 308.56 MZM per month per household, or 8186.6 MZM per person per day, which represents approximately \$0.34 US, or 3.74 Rand per person per day (January 2002 exchange rate). Female-headed households have on average higher incomes, and the households headed by individuals who rely on non-

farm sources have the lowest income. The incomes are significantly different at 95 percent confidence level.

The district poverty rate (headcount) is 57 percent. This indicates that more than half of the population live in a state of absolute poverty. The district's poverty gap index is high at 32.9. In terms of gender, the incidence of poverty is higher in the male-headed-households with a head count at 59 percent compared to 50 percent in female-headed households. The gap index indicates that poverty is deeper in the female-headed households than in the male, estimated at 35.7 and 32.2, respectively. Taking into consideration the sources of income, poverty is high among the non-farm households with the headcount index at 62.5 percent, compared to 57 percent of those whose income depends on farming. Literate households whose heads have education at the level of secondary school or more, have the lowest poverty incidence with a headcount at 45.5 percent, while the illiterate households whose heads have education at the level of primary or lower have a headcount at 61.5 percent.

Poor households tend to be larger than non-poor households. The district's average household size is 5.1 persons. Non-poor households have on average 3.26 persons per household, compared to 6.6 persons in the poor households.

Related to the sources of income among poor and non-poor households, the study found that the majority of the poor, that is, 52 percent, and non-poor households, that is, 62.5 percent, derive their income from farming.

CHAPTER FIVE: DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter discusses the results of the study, which are compared with similar studies in the country and in the region. The causes of the differences or similarities are, then, discussed. The discussion takes into consideration that the ultimate objective of any economic intervention in the district is poverty alleviation and improve the well-being of the inhabitants. In relation to this, the chapter discusses the actions required to improve the contribution of the non-farm sector to poverty alleviation in the Boane District.

The main results discussed in this chapter are: The proportion of households that rely on farm and non-farm sources of income; the sectoral composition of the non-farm enterprises; the income level of different socio-economic groups; poverty incidence and severity and the characteristics of the poor in the district; and, lastly, the sources of income of poor and non-poor households.

5.2. The Proportion of Households Relying on Farm and on Non-Farm Income Sources

The study results revealed that the majority of the households in the district rely on farming as the main source of income. The portion of the households that rely on farming is lower than found in other rural districts of Mozambique; countrywide it is estimated at 70 percent (World Bank, 2001b). However, similar results to the findings in the Boane District have been found elsewhere in Africa in communities with socio-economic settings comparable to those in the District (Machethe et al., 1997; Liedholm, 2002).

Although the percentage of population engaged in non-farm activities is lower than the farm population, the contribution of the non-farm sector in generating employment in the district is significantly higher (74 percent of the total employed labour force). This figure is also high compared to the eight percent for the total Mozambique labour force engaged in non-farm activities that was found by Haggblade et al. (1987). However, figures similar to those in the District of Boane were found in Nigeria (Haggblade et al., 1987). It

appears that the high dependence on and employment rates of households in non-farm enterprises are a result of the considerable presence of large non-farm enterprises in the district, which, in turn, are facilitated by favourable policies in the country, a good infrastructure and a relatively high population density in the district.

5.3 Sectoral Composition of Non-farm Enterprises

Six types of non-farm enterprises were found to provide employment for the rural households (Table 4.1). The composition of the different types of non-farm enterprises operating in the district is thin or narrow-based. In regions with similar economic and social settings as the Boane District, households tend to be engaged in a variety of activities such as baking, brewing, milling, packaging of agricultural products, and oil extraction, some of which is by means of self-employment (Haggblade, et al., 1987; Liedholm, 2002). In the present study, none of the households was found engaged in these activities as a form of self-employment. This suggests that non-farm enterprises in the district are large and capital intensive. For example, the Mozambique Aluminium Smelter (Mozal) located in the district is a multi-million dollar investment and generates employment for only five percent of the households. It appears that the policy environment is biased against micro and small rural enterprises. International experience tends to show that micro and small-scale rural non-farm enterprises such as baking, milling and brewing, tend to have a stronger effect on the provision of employment and poverty alleviation than large firms (Liedholm, 2002).

It also emerges from the results of this study that the one missing crucial factor for broad-based sectoral presence of rural non-farm sector enterprises in the district is agricultural productivity. The study revealed that agricultural productivity and development of agriculture are constrained by three main factors as indicated in chapter four, Table 4.2: (i) access to irrigation, (ii) access to agricultural inputs such as fertilizer and an improved variety of seeds, and (iii) access to credit. Irrigation greatly increases farming productivity and has been associated with growth in local economies. In South Asia, for example, the expansion of irrigation was an important factor behind the rapid agricultural growth (DFID, 2002). Similarly the use of fertilizers and improved variety of seeds

increased the productivity in Zimbabwe, Zambia, Kenya and Malawi (Eicher and Baker, 1982). When it is available to farmers, credit is an important support service that provides an important incentive for the adoption of new technologies. One reason for low implementation and adoption of new technologies disseminated by local extension services is the inability of farmers to pay (Mucavele, 2000).

Agricultural productivity is regarded as the first step in the process of agricultural transformation (Timmer, 1998), and early industrial development is frequently based on the processing of agricultural products (DFID, 2002). Agricultural growth can increase the incomes that the poor and non-poor receive from agricultural production, and raises the wages that households receive from agricultural employment. In addition, rising incomes of small farmers are typically spent on locally provided goods and services, many of which are supplied to or employ poor people (DFID, 2002). A further effect of agricultural growth on poverty alleviation is its impact on food prices. For the rural poor food is a major expense. In this study food cost was found to represent 60 percent of the total household expenditure. Lower food prices help create food security and reduce hunger. A recent study covering 58 developing countries concluded that a one percent increase in agricultural productivity is associated with a reduction of between 0.6 and 1.2 percent in the proportion of people living in poverty (DFID, 2002).

5.4 Income Level of Different Socio-economic Groups

Female-headed households have on average higher incomes than any other socio-economic group in the district. Other studies (Haggblade et al., 1987; Liedholm, 2002), however, found that female-headed households tended to be worse off in comparison with male-headed households. Similar studies conducted in Mozambique found that poverty was unrelated to gender (MPF, 1998) and similar results can be drawn from this study.

The findings of Haggblade et al. (1987) and Liedholm (2002) might well be true, particularly in the African context where men are regarded as the “bread winners” of the family. If, this were so, one would expect that female-headed households, such as those

headed by widows, would be worse off than male headed-households. From this study it cannot be inferred under which conditions a female heads the household, and the study was not designed for this purpose. The results of the study (Appendix 1, Table A.4) do show a high variability of incomes among female-headed households, which suggests that the group is not homogenous. It is possible that there is more than one type of female-headed household in the district, for example, a low-income group headed by widows and the elderly women, and another higher-income group where the male in the family has immigrated to find work in South Africa, Swaziland, Maputo city, or elsewhere. In this case, the male still provides most of the income for the family, although on a day-to-day basis a woman heads the household.

Comparing farm and non-farm sources, farm households have higher incomes than non-farm households, and they vary as well. Similarly, with regard to female-headed households, the degree of variability of income among farm households is high (Appendix 1, Table A.5). This fact is also supported by the poverty analysis (Section 5.5). The variability of income among farm households is explained by seasonality of agriculture. As mentioned in Chapter three, the survey was undertaken in January 2002. Depending on the rain and the time of planting, during this period some households harvested some of the crops planted earlier in the season – August/September 2001 – while others who planted late had run out of food, since most of the crops are only expected to be harvested in late March.

5.5 Poverty in the District

The study revealed that more than half of the households in the district live in a state of absolute poverty. The poverty incidence is lower in the district than is found in other rural districts of the country, where it is estimated at 70 percent (MPF, 1998). Recent studies in the Boane District by the Ministry of Planning and Finance found similar results as those found in the present study, namely a poverty incidence of 55 percent (MPF, 2002). This shows that the methods used for this study are relevant despite the

participation of a relatively lower number (37) of households than statistically desired to be representative (40).

Comparing different socio-economic population groups in the district (Table 4.4), it was found that poverty is higher in the households whose heads derive their income from non-farm sources (62.5 percent) and lower in households whose heads had a higher level of education (45.5 percent). This is not surprising since knowledge is the most powerful engine of production (Schultz, 1998). In terms of the gap index that indicates the depth of poverty, it was found that poverty is deeper in female-headed households, estimated at 35.7 percent. The lowest gap index is among households whose heads relied on non-farm sources of income. As discussed earlier, the great depth of poverty among female-headed households is related to greater variety of circumstances they live in, which results in a high variability of income among this group.

Related to the lowest gap index among the households whose heads relied on non-farm sources, this is, also, not surprising since most of them are employed, as a consequence of which they have a regular and relatively high income (Table 4.3).

Comparing farm and non-farm groups, poverty is higher among the non-farm sector households, with a head-count index of 62.5 percent, as opposed to 57.1 in farm sector households. The gap index is higher in the farm sector, 35.1 (Table 4.3). The reason for this must be found in the seasonality of agriculture. January is a lean period and depends on the crop production of the previous year. Hence, households depending solely on agriculture might well face severe food shortages, which affect the consumption spending level. Because of the production constraints faced by this group, farm households cannot produce enough food to both sell and feed themselves throughout the year. These constraints were discussed in detail in section 5.3 and they are: (i) lack of access to water for irrigation, drought and a short growing season; (ii) lack of agricultural inputs, mainly fertilizer and seeds; and (iii) lack of credit. Section 5.3 also discussed how these factors affect farm households. These factors not only explain why poverty is deeper among farm sector households, but also why rural households are pushed out of agriculture.

5.5.1 Characteristics of the Poor

Poverty profiles (Table 4.5 and 4.6) are useful in the sense that they focus on how poverty levels are associated with a set of characteristics and how they relate to a particular context. Poverty profiles are a useful descriptive tool if there is interest in knowing how poverty levels are related to a given set of socio-economic characteristics. According to the MPF (1998), there is a natural interest from policymakers in such a question, particularly when such a set of characteristics can be used as an indicator for targeting poverty alleviation measures. For instance, policymakers intending to target female-headed households may want to know whether such households are significantly poorer than male-headed households. In the case of additive transfers, poverty profiles provide a direct guide to where a minimum of financial resources must be directed in order to have a maximum measurable impact on poverty reduction.

In the following section I will discuss the characteristics of the poor in relation to size of the household and sources of income, education and gender:

(a) Household Poverty: Relationship with Household Size – The findings show that household poverty depends largely on the size of the household. Generally poor households tend to live in larger households than the non-poor (Table 4.5). The poor have more dependants than non-poor. Poor households have twice as many dependants as non-poor households, and so their dependency rates are significantly higher than those for non-poor households. Although female-headed households tended to be larger, this does not support the feminisation of poverty since there are fewer female-headed households living in poverty than male-headed-households (Table 4.4). Higher dependency ratios among poor households suggest that there is inadequate access to health services particularly in relation to family planning, by the poor in the district. Alternatively, HIV/AIDS may already have a negative impact on the population the district, in which case, families might have been forced to adopt orphans, which also increases the number of dependents in the family.

(b) Relationship between Sources of Income and Education, Gender, and Poverty.

More literate households tended to be less poor (Table 4.6). However, differences between poor and non-poor are often less significant than between male and female-headed households and between sources of income. Women in the non-farm sector tended to be better off. There is, also, a strong relationship between the education level of the household's head and the household's state of poverty: households headed by those with a higher level of education tended to be less poor, and this was particularly true for the non-farm sector (Table 4.6).

5.6 Sources of Income among Poor and Non-poor Households

The analysis of sources of income among poor and non-poor households (Table 4.6) shows that the majority of both poor and non-poor depend on agriculture as the main source of income. In other words, both poor and non-poor households continue to be engaged in agriculture as the main activity. It follows that the role of agriculture in the development of the local non-farm sector and the local economy cannot be neglected.

Given the fact that agriculture remains the most important source of income for both poor and non-poor, accelerating the rate of growth in agricultural production might well lead to a significant reduction in poverty, and to better income distribution. As discussed in Section 5.3, a further effect of agricultural growth on poverty is through its impact on food prices.

To improve the role of agriculture in economic development and poverty alleviation, the government will have to adopt agricultural policies that will raise the productivity of the existing agricultural economy. It would appear that the low productivity of farm labour, land and other resources as demonstrated by this study, are caused by the lack of particular inputs and weak institutions. Therefore, the development of agricultural programmes must identify the necessary inputs, determine their proportion and establish priorities among the various existing programmes to increase the appropriate allocation of funds and other resources. These policies should seek to increase the efficiency of labour-intensive agriculture, by relying on innovation rather than on large capital

investments. This is particularly important since the dependency ratio of poor households is high. By promoting forms of agriculture that are more labour intensive, the ratio of unproductive members in the household may well be reduced.

Broad-based agricultural growth is associated with strong labour-intensive linkages on the consumption side. These could enhance the potential for employment and might have income multiplier effects that cut across rural and urban areas. On the other hand, if rural income gains from agricultural growth were to remain concentrated in the more affluent households, the pattern and growth of rural household expenditures will favour capital intensive products over labour intensive products, and imported goods rather than labour intensive, locally produced goods and services. And this would weaken the impetus towards a rapid and equitable growth.

Broad-based agricultural growth is important for the district, and when agriculture were to be transformed, it would then become possible to link agricultural growth to large indirect growth in the non-farm sector. Agriculture, however, must not be seen as an isolated sector but as an integral part of the broader rural economy. The goal should be to leverage some of the farm/non-farm linkages identified earlier in this study by moving low income and low productivity farmers into other economic activities where opportunities are greater.

5.7 Summary

This chapter discussed the results of the study. Five main findings were discussed: (i) the proportion of households that rely on non-farm sources of income, (ii) the sectoral composition of the non-farm enterprises, (iii) the income level of different socio-economic groups, (iv) poverty in the district and (v) characteristics of the poor, and the sources of income for poor and non-poor households.

The majority of the households rely on agriculture as the main source of income. Although the proportion of households relying on non-farm sources of income is lower than that relying on farm sources of income, the findings of this study indicate that there

were more households relying on non-farm sources in this district than in most other rural districts of Mozambique. This trend is caused by the significant presence of large non-farm enterprises in the district, which was facilitated by a good infrastructure – such as roads and telecommunication networks – and a relatively high population density.

Six types of non-farm enterprises were found to provide employment for the rural households: construction, repair services, civil services, commerce, aluminium industry and NGOs. The sectoral composition of the non-farm sector was found to be narrow when compared with other studies found elsewhere in Africa. A broad-based non-farm sector would include activities such as brewery and milling which in most instances elsewhere in Africa would be undertaken as self-employment. In the Boane District, none of the households was found to undertake non-farm activities as self-employment. It seems that the policy environment in the country may not be that favourable towards the creation of micro and small enterprises.

The poverty incidence in the district is lower than the average rural poverty found in Mozambique, which is estimated at 70 percent. When comparing different socio-economic groups, it was found that poverty is less in the more educated households. This is not surprising since more educated households can take better decisions on how to conduct their lives. Having said this, poverty is a general phenomenon that tends to affect all socio-economic groups. Poor households tended to have more dependants than non-poor.

The majority of poor and non-poor continue to depend on agriculture as the main source of income. This indicates that agriculture must not be ignored in terms of importance for the development of the local economy and well-being of the rural households.

CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

In 2001, the government of Mozambique completed the Plan of Action for the Reduction of Absolute Poverty (PARPA), which defines the development priority areas and the main areas of action in order to reduce poverty from 70 to 50 percent by 2010. Together, Agriculture and Rural Development constitute one of the six priorities of PARPA. The role and contribution of the rural non-farm sector in contributing to poverty reduction in the country seems, however, to have been overlooked in the present plan.

International experience and evidence indicate that non-farm activities provide an important source of primary employment in developing countries. Because of the potential contribution of non-farm enterprises in generating employment and income in rural areas, some policymakers view the development of the non-farm sector as one way to alleviate poverty. As a result, the non-farm sector has become important in discussions about the rural economy. The idea that rural non-farm enterprises could well be the final solution to the problems of rural areas is mainly the result of (a) success of rural industrialization in China and East Asia; (b) failure of previous urban-based development strategies that were oriented towards industrialization; and (c) the limited capacity of agricultural intensification strategies to absorb sufficient a portion of the available labour force.

In Mozambique, the proportion of households that derive their income from non-farm activities in rural areas is not known. Other information related to these households, such as their level of income, the poverty incidence among the group, as well as the sectoral composition of the rural non-farm sector is not available either.

This study was primarily designed to assess the role of rural non-farm sources of income in alleviating poverty in the Boane District of the Maputo Province in southern Mozambique and focussed on determining the following:

- The proportion of households that rely on non-farm sources of income;

- The sectoral composition of non-farm enterprises;
- The level of income of the different socio-economic groups;
- The extent (incidence) and severity of poverty;
- The characteristics of poor households;
- The sources of income among poor and non-poor households.

The main results of the study are:

- (a) The proportion of households that rely on non-farm sources of income is higher (43 percent) in the district than in most other rural districts of the country. Most households are engaged in non-farm activities as a consequence of the considerable presence of large non-farm enterprises in the district, which are facilitated by a favourable policy environment in the country and the existence of a good infrastructure in the district.
- (b) Regarding the sectoral composition of non-farm enterprises, six types of enterprises were identified. These are: construction, repair services, civil services, commerce, aluminium industry and NGOs, respectively.
- (c) With regard to the level of income of the different socio economic population groups, female-headed households have on average the highest income of all socio-economic groups. Non-farm households have the lowest income.
- (d) The district poverty rate shows that the majority of the population (57 percent) live in a state of absolute poverty. The district's poverty index is also high at 32.9. In terms of gender, the incidence of poverty is higher in the male-headed-households with a head count of 59 percent compared to 50 percent in the case of female-headed households. By contrast, the gap index indicates that poverty is deeper in female-headed households than in the male-headed ones; it is estimated at 35.7 and 32.2 percent, respectively. Taking into consideration the sources of income, the level of poverty is higher among non-farm households as indicated by

the headcount index of 62.5 percent for this group, compared to 57 percent among the households whose income depends on farming. However, poverty is less severe in the non-farm households when measured by the gap index. Literate heads of households with an education level of secondary school or more have the lowest poverty incidence (45.5 percent), while for illiterate heads of household the poverty incidence is 61.5 percent.

- (e) Most poor households tend to be less educated, i.e. the heads of households. The average district household size is five persons per household. Non-poor households have on average three persons per household compared to seven persons in poor households.
- (f) Regarding the sources of income among poor and non-poor households, the majority of the poor (52 percent) and non-poor households (62.5 percent), i.e. the heads, derive their income from agriculture. Therefore, agriculture continues to play an important role in the economy of the district.

6.2 Conclusions

There is no doubt that the non-farm sector plays an important role in providing income for rural households in the district. The non-farm sector has a potential to provide further opportunities to generate income and, so, to increase its contribution to poverty reduction. For this to happen, however, it is necessary that reform of current policies are undertaken in order to broaden the sectoral base of rural non-farm enterprises. These policies should, firstly, provide an enabling environment to operate small-scale and micro rural enterprises. Experience from elsewhere in the world indicates that most enterprises comprise at most five persons. In some cases, one individual runs enterprises. Households should be able to undertake non-farm activity as self-employment. This will have an effect on the generation of employment and will increase the level of income of the rural poor, which, in turn, will assist to decrease the number of households living in poverty. The second area of action on the reform agenda is to address the issue of

agricultural productivity and growth. Agricultural growth has a strong multiplier effect, and a strong impact on food prices. Food is a major expenditure item for the rural poor, and in this study, it was found to represent about 60 percent of the household expenditure. Lower food prices will help create food security and reduce hunger.

After careful analysis of the results of the study, the main conclusions reached are:

- (a) The proportion of households that rely on non-farm sources in the district is significantly higher than the rate of eight percent for Mozambique as determined by Haggblade et al. (1987). There are two factors that contribute to this. The first factor is related to the constraints faced by the peasant farmer, namely, drought and lack of access to irrigation systems, access to agricultural inputs and credit. These factors tend to push households out of farming. The second factor is related to availability of employment due to the considerable presence of large non-farm enterprises in the district, a situation that is facilitated by policies favouring this type of enterprise. This tends to be attractive since households can maintain a regular income needed to meet their expenses.

- (b) The sectoral composition of non-farm enterprises is narrow. Six types of non-farm enterprises were found in the present study: construction, repair services, civil service, commerce, aluminium industry and NGOs. The district has the potential for a broader sectoral presence of the non-farm sector, provided its potential for agricultural production and the existence of a relatively developed infrastructure are taken into consideration. The presence of a reasonably good infrastructure and the high population density in the district deserve special attention and should be further examined in order to broaden the composition of the non-farm sector in the district. A good infrastructure, particularly roads and telecommunications, are important for the development of the non-farm sector since this can significantly lower transaction costs. Decreases in the cost of information and transport will improve the efficiency with which rural labour and financial markets can channel inputs into those activities that yield the highest returns. Moreover, decreased transport costs open up rural resources and markets to viable exploitation. This

facilitates movement to a more specialized productive rural economy. A high population density also makes the attainment of minimum efficiency scales for full specialization in a given activity more rapid. After all, the emergence of a service sector depends on close physical proximity between purveyors and clients.

The missing factor, and one central to continued and broad-based development of the non-farm sector, is agricultural productivity. Without a strong agricultural sector, the non-farm sector cannot remain sustainable over a long period. Agricultural productivity is regarded as the first step in the process of agricultural transformation. The demand for goods and services of rural non-farm enterprises depends heavily on the purchasing power of the farm population. As incomes rise in the farming sector, farm households will demand more goods from the non-farm sector. Thus, as agricultural production increases, it will generate more demand for inputs such as seeds, irrigation systems, fertilizer, and farm implements that are produced by the non-farm sector. The need to process food crops and other agricultural raw materials also stimulates rural non-farm activities. To effectively raise the productivity in the agricultural sector in the district seems to require the following interventions:

- increased investment to enable more access to irrigation and improved agricultural inputs;
- dissemination of information and technology options for the various productive systems, and training of farmers to apply these technologies;
- promoting that producer organizations take on the responsibility of managing the available resources;
- establishing clear ties between suppliers of agricultural inputs and users; and
- establishing ties with private companies and NGOs that are involved in providing extension services in order to strengthen the rural extension networks through out-sourcing.

When agriculture is in a process of being transformed and, through this, agricultural output increases, it will then become possible to link agricultural growth to large sustained indirect growth in the non-farm sector. Agriculture must not be seen as an isolated sector but as part of the broader rural economy. The goal should be to give more leverage to some of the farm/non-farm linkages that were identified earlier in this paper by moving low income and low productivity farmers into economic activities where opportunities are greater.

- (c) Related to the level of income of different socio-economic groups, female-headed households are on average the highest income group in the district. There is high variability of income in this group, though, which indicates that some households in this group live in extreme poverty. It is possible that there are different sub-groups amongst the larger group of female-headed households. Non-farm households have lower incomes than farm households. The variability of incomes is lower among male-headed households than among female-headed ones. It indicates that male-headed households are more homogeneous in the sense that they have a more regular income and, so, can meet most of their needs. Consequently, poverty is not as severe as is the case in some of the female-headed households.
- (d) Poverty is pervasive in the district, with more than half of the households living in a state of absolute poverty. The distribution of poverty among different socio-economic groups shows that poverty is a general phenomenon. Poor households tend to be headed by less educated people and have more dependants than non-poor households. Improving access to education, for example, through adult literacy, may improve the ability of poor households to deal with their problems. Improving access to health services for the poor, especially to family planning schemes, may result in lowering the birth rate, and, so, in decreasing the family size.

Since poverty is a general phenomenon in the district, and most people in the district are engaged in agriculture, accelerated growth in agricultural production can lead to a significant reduction in poverty and reduce income inequality. Therefore, the government should promote agricultural policies that raise the productivity of the existing agricultural sector. Low productivity of farm labour, low output of land and of other resources in the agricultural economy is usually caused by lack of access to certain inputs of a technical, educational and institutional nature, as has been shown in this study. The development of an agricultural programme should identify these inputs, determine the required quantity and establish priorities among different programmes designed to increase their availability. These policies should seek to increase the efficiency of an existing labour-intensive agriculture by relying on innovations rather than on large capital investments.

Since the poverty profiles also showed that poor households tended to have more dependants than non-poor households, poverty alleviation interventions should be integrated such as family planning and adult literacy, as discussed earlier. In addition, to effectively reduce poverty in the district, income generating activities should be integrated with education programmes and the provision of better health services, mainly aimed at family planning and the prevention of HIV/AIDS.

- (e) Concerning the sources of income among poor and non-poor households, most of those households rely on agriculture as the main source of income. This indicates that both poor and non-poor households remain engaged in agriculture as the main activity. Therefore, the role of agriculture in the development of the local non-farm sector and the local economy must not be neglected.

6.3 Recommendations

6.3.1 Policy Interventions

The results of the study suggest a broad range of policy reforms and interventions to improve the role and contribution of the non-farm sector in providing income, and in reducing poverty areas that need particular attention for policy reforms are: (i) an enabling environment to operate small and micro enterprises, (ii) good access to government services aimed at education and health care particularly focused on family planning and information on HIV/AIDS in order to the reduction of the impact of the pandemic, and (iii) improved productivity of smallholder agriculture.

Below, the suggested areas that need policy reforms are discussed in more detail.

Improvement of the enabling environment for small and micro enterprises

As mentioned before, generally non-farm enterprises are very small: they are run by between 1 and 5 individuals. It was found that in the Boane District there were no households undertaking non-farm activities as self-employment. It may well be that the reason for this is that the current policies discriminate against – or at least do not actively promote - this kind of enterprise. To enable households to undertake non-farm activities as self-employment, it is suggested that the existing policies be reviewed, so that incentives are created for households to initiate non-farm activities. This is expected to have a positive effect on generating of employment opportunities and will increase the income level of the rural poor.

Improving access to education

Poverty profiles shows that there are few poor households whose heads are educated. This is a strong indicator that improvement and enhancement of human capital can increase the ability of people to identify and analyse problems and challenges, and deal with them well. This calls for policies that extend the access to education,

particularly to adult literacy to combat rural illiteracy. A higher level of adult literacy can also contribute to promote of access to the primary education system for children and young people.

Improving access to health care, family planning and information to prevent HIV/AIDS

Poverty profiles show that poor households tend to have more dependants than non-poor households. This shows clearly that an increase in income may not necessarily result in poverty reduction unless combined measures are taken to combine income-generating activities with better education and the provision of better health services, particularly family planning. Family planning can help the households to curb the number of children per household. Another factor that increases the number of dependants is, that it is becoming common to adopt orphans whose parents have died because of HIV/AIDS. To reduce the impact of HIV/AIDS one intervention would be to increase the awareness of and access to measures to prevent infection.

Improving agricultural productivity

The study revealed that most households in the district rely on agriculture as the main source of income. Poverty measurements show that poverty is pervasive, that is, the majority of the district's population lives in a state of absolute poverty. Most poor and non-poor households engage in farming activities as their major livelihood. The district is well endowed with natural resources (soil and water), but agricultural productivity is constrained by lack of access to irrigation, agricultural inputs and improved varieties of seeds. The demand for the goods and services of the rural non-farm enterprises depends heavily on the purchasing power of the farming population. Agriculture is the source of income for the majority of the households, and, thus, provides a principal source of income for rural spending. International experience shows that good policies in the agricultural sector are key determinants for a sustained demand for non-farm products, since the larger part of the population

derives income from agriculture. For the agricultural sector to grow, it requires good fiscal, tariff and pricing policies. Mozambique began its reforms in 1987, and presently, as indicated in the introductory chapter, Mozambique's agricultural policies are favourable for agricultural development. Prices have been liberalized and very few crops are taxed on export. To effectively raise productivity in the agricultural sector in the district, requires the following interventions:

- improvement of the role of government and private institutions in the dissemination of information and technology options for various productive systems, and the training of farmers to apply these technologies;
- improvement of access to water for irrigation by smallholder farmers;
- promotion of farmers' organizations to take on the responsibility of managing the available resources;
- improvement of rural credit policies to enable private sector operation;
- promotion of the production of cash crops, mainly oil seed crops;
- linking of research and extension delivery systems with clear objectives to improve the productivity of the existing agriculture;
- establishment of clear ties between suppliers of agricultural inputs and users; and
- establishment of ties with private companies and NGOs involved in providing extension services, strengthening of the rural extension networks through out-sourcing.

The other policy intervention is *to promote the commercial agricultural sector*. This implies that farmers must be allocated enough land and resources to produce and make a decent living from agriculture without having to look for other work to augment the household income.

Although this study was not meant to interview entrepreneurs, international experience shows that when entrepreneurs are asked about their main problems for growth they seem to emphasize capital shortage - expressed either as needs for cash, operating funds,

liquidity or concern with high price of materials inputs. Prominent analysts of non-farm enterprises (Chuta and Liedholm, 1978) doubt that working capital is as big a constraint as entrepreneurs contend. A variety of management inefficiencies may result in cash flow difficulties, making working capital constraints at least partially a symptom rather than a cause of operational business difficulties. While entrepreneurs may exaggerate the importance, there is no doubt it plays an important role. Hence, credit cannot be diminished as a concern on the supply side. Entrepreneurs rarely identify management or technical inefficiencies as constraints to their operations, although most analysts concur that there is room for improvement in this area, and that there is room for government intervention through the provision of extension services.

6.4 Limitations of the Study

In this study, household consumption was used to measure household income. Although there are sound reasons to use consumption as a welfare indicator, it has the following limitations:

- The measurement of consumption is taken at the household level, not at the individual level. Therefore, an equal allocation of household consumption to each household member is used to go from the household to the individual as the unit of analysis. The equal allocation rule assumes equal consumption by all members of the household, and, clearly, this is not the case. Different household members have different needs; children, for example, consume less food than adults;
- Consumption as it was used in this study fails to incorporate some important aspects of individual welfare, such as the consumption of public goods, such as school education, health care in public hospitals, etc.

This study evaluated the sources of income based on the responses provided by the heads of households concerning their household's monthly expenses. It is known that households tend to be involved in a diverse portfolio of activities at the same time, and it is possible that they may have reported farming or non-farming as the main source of income while they were engaged in both at the same time. Therefore, the findings of this

study represent the heads of households, perceptions in terms of importance of the source of income needed to meet the households' expenses.