Causes and Consequences of Poverty Incidences of Rural and Urban Households in Khartoum State

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DEDICATION

To my Father,

To my Mother,

To my Husband,

To my lovely Kids Hadeel, Omer, and Ahmed

To my brothers, and sisters.

To all my friends

To all poor people
Acknowledgment

I would like to express my appreciation to Dr. Ali Abdel Aziz Salih for Supervising, and guidance in this thesis.

My thanks are also extended to DAAD (German Academic Exchange Service) for sponsoring this study. I also gratefully acknowledge the Department of Project and Regional Planning of the University of Giessen Germany, Especially Prof. Dr. Bauer, for his guidance and supervision during my Sandwich – Programme in Germany.

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Finally, my special appreciation is directed to all the members of my family, and to my friends and colleagues for their invaluable support.
ABSTRACT

The main purpose of this study is to assess the incidences of poverty and distribution and their coping strategies in Khartoum State.

The study has depended on primary and secondary data sources. The Primary data have been collected from household field survey from selected stratified multistage samples totaling 400 household heads respondents. The study covered the three towns (urban and rural) of Khartoum State, namely: Khartoum, Khartoum North and Omdurman.

The study used basic needs approach and Food Energy Intakes (FEI) approach analysis to develop the poverty profile of respondents in Khartoum state and also it used the Lorenz Curve method together with the Gini coefficient to assess income distribution among the different groups.

The results depicted presence of high spending on food items in rural and urban areas in Khartoum state, and higher in Khartoum province.

The nutritional status of the respondents indicated existence of under nutrition in the state and in the three towns in general based on the WHO recommended daily allowance (RDA).

The highest level of respondents below the poverty line has been found in Khartoum, especially in its rural areas. The Lorenz curve and Gini
coefficient analyses depicted the existence of inequity in income distribution in the state, with the highest inequity occurring in Khartoum North. The poor household, suffered from limited access to basic needs and services such as education, discontinued supply of clean safe tab-water and accessing the medical insurance program. The coping mechanisms have been multifaceted including negative and positive ones. The negative mechanisms including, selling of assets, withdrawing of children from schools in search for marginal jobs, reducing the number of meals and for the latter one mechanism includes looking for credit for covering their basic needs and to increase their income. The poor households’ respondents attributed the causes of poverty in Khartoum state to the soaring of food prices, low wages, high taxes, natural disaster, long civil wars and shortages in basic services.

Among the recommendations, the study promotes the adoption and implementation of pro –poor policy packages that encourage income - generating activities and the provision of basic needs in the state by the government and activate the role of civil society organizations to raise awareness among the poor to cope with poverty shocks.
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الي
การแสดง النتائج في تحليلات توزيع في المساواة، حيث أن جنيناً ومواداً من المنحية في الدولة، كأن يكون أعلى حيوان مساعد في التعلم، حيث أن نتائج الدراسة في الفقراء وخدمات الاحتياجات على حصول الدم، ومتى النقص، والتكلفة الارتفاع بسبب التعليم، مثل حالة المياه الأساسية والنظيفة، صعوبة الوصول، تنام على كفاءة وفعالية، وتمكن من أن يكون محلية، والأنشطة الزراعية، كأن تكون جزءًا من التنوير، وال לגבי المدارس، والطفولة، والأعمال، والخدمات في المدن، والمدن. وتمكن من أن يكون التركيز على مشاريع صغيرة، وتقديم الدخل مهمًا ولاستهلاك، والدور المنظمات المجتمعية، والتاريخي للفقراء، والتحديات، والتحديات في مجتمعات أصغر للفقراء، وتطبيق سياسات وتنفيذ شكل فيها، والتحديات في المدن، والتحديات في المجتمعات الدولية، والتحديات في المجتمعات الدولية.
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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Globally, than 1.2 billion people lived on less than US $1 per day at purchasing power parity and more than 2.8 billion, almost half of the world’s population, lived on less than US $2 a day. These people suffered from under nutrition and poor health, had little or no literacy, lived in environmentally degraded areas, have low political voice, and attempt to earn a meager living on small and marginal farms or in rundown urban slums (Todaro, 2005).

Poverty is a complex multidimensional problem. Three decades of research, analysis, conventions, projects and programs, supported by substantial aid funds, all of which were focused on poverty reduction. Poverty can be understood and defined in various ways concerning the place, time and position. Simply, poverty means not having enough to eat, high rate of infant mortality, low life expectancy, low educational opportunities, poor drinking water, inadequate health care, unfit housing and lack of active participation in decision-making processes (BMZ, 1992).
The World Bank (WB) (2000) defined poverty as a pronounced deprivation in well-being, which can be measured by an individual’s possession of assets income, health, nutrition, education, housing and certain right in a society such as freedom of speech, employment opportunities and political empowerment.

1.2 Poverty in Sudan

Sudan, suffered from political and economic instability as well as ecological problems which aggravate the situation by having high poverty rate in comparison to the neighboring countries (Fergani, 1997).

Shazli (2003) stated that Sudan is ranked 57th of the 78 poorest countries in the world. The degree of poverty in Sudan has been measured to be 82.7 percent and 83.1 percent for rural and urban populations, respectively (Nour, 1996). According to the United Nations Human Development Index, Sudan ranked down to 144 out of 174 poor countries in the world. Recent studies show that as many as 90 percent of the population of Sudan can be classified as poor. The Head Count Index (percentage of population in poverty) was over 75 percent in 1990 which reached 95 percent in 1995. Poverty in the Sudan is deeply ingrained and is largely rural. In 2002, about 20 million people were living below the poverty line of less than US$1 a day and about
19 million people (85%) of the rural population had been estimated to be living in extreme poverty in Sudan (IFAD, 2006).

Table 2.1, based on studies and official reports of the Ministry of Manpower in Sudan indicated progressive trends of poverty in areas of rural and urban people living under poverty line with limited access to basic services. The present indices indicate the serious problems of poverty in Sudan areas.

Giving the existing situation, the possibility for Sudan to achieve the MDG of halving the number of the poor between 1990 and 2015 seems to be bleak. Innovative approaches should therefore be sought to score some success in this regard.

Deng (2004) indicated two types of poverty in Sudan: One was conflict-induced poverty emanating mainly from political, economic and social exclusion, and the other was structural based, resulting from socio-economic factors and ill-conceived public policies. However, the poor macro economic policies and miss-management of resource use at the micro level had played significant roles in debilitating the economic structures, resources and
Table 2.1: Extent, depth and severity of poverty by rural and urban residence, north Sudan, for 1968-1996 (in percentages)

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<tr>
<td>Rural (%)</td>
<td>63.68</td>
<td>64.17</td>
<td>83.12</td>
<td>75.4</td>
<td>94.8</td>
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<tr>
<td>Urban (%)</td>
<td>15.90</td>
<td>20.51</td>
<td>52.86</td>
<td>79.6</td>
<td>81.4</td>
</tr>
<tr>
<td>Sudan (%)</td>
<td>51.59</td>
<td>54.26</td>
<td>77.8</td>
<td>77.5</td>
<td>90.5</td>
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| **Poverty Gap P₁**   |      |      |      |      |      |
| Rural (%)            | 28.11| 30.56| 51.67| 47.32| 75.80|
| Urban (%)            | 4.56 | 8.58 | 24.38| 51.13| 53.89|
| Sudan (%)            | 24.66| 23.12| 45.43| 48.66| 68.73|

| **Severity poverty P₂** |      |      |      |      |      |
| Rural (%)               | -     | -    | -    | 34.38| 64.25|
| Urban (%)               | -     | -    | -    | 37.27| 40.30|
| Sudan (%)               | 15    | 31   | 31   | 35.90| 56.66|

overall economic growth. The sluggish economic growth was in turn a result of misallocation of public resources.

According to Fergani (1997) the main factors that caused poverty in Sudan could be summarized into:

- Failure of development strategies,
- Conflict and civil war,
- Political instability,
- Environmental degradation and natural disasters,
- Unplanned massive population movement towards big cities.

The pattern of income distribution in Sudan reveals a tendency towards more concentration of wealth in the hands of a small proportion of the population over time (Ahmed, 2003). The incidence of poverty in Sudan showed a continuous increasing annual rate from 0.5% over the period 1968-1978 to an annual increase of 3.5% over the period 1986-1993 and 2.5% over the period 1990-1996 (MSP and UNDP, 1997).

1.3 Poverty in Khartoum:

Excessive and continued rural migration pressure to Khartoum State had exceeded social services capacity. Today, it is extenuated that Khartoum
state has about 7 million people including 2 million refugees (Sidding, Gebauer, 2007).

With concomitant increasing poverty in the urban centers of the state the poverty situation in Khartoum State is listed reflected in the facts below:

- Concentration of displaced people in remote areas around the city.
- Deterioration of quality of life in all aspects including education, health and social services.
- Limited access to employment opportunities, which lead to high dependency burden.
- Inadequate access to social services, such as education, health, sanitation and supply of domestic water, which resulted in poor health environment and weak physical capacities.
- Low income, specifically lack of sufficient income, to provide adequate food and other basic human needs.

Consistent with Ahmed (2003), the poor people of Khartoum State can be classified as follows:

- urban poor, with low education years and low paid jobs
- Displaced persons, who left their places in rural areas because of war and famine
- government employees and wage earners who have now joined the rank of urban poor
- Urban poor women and children

### 1.4 Problem statement

In keeping with the above-mentioned background, there seemed to be a serious urban poverty problem in Khartoum state. The State has been confronted with a problem of deterioration of life quality due to heavy intensive pressure on social and economic services brought about by migration from rural areas triggered by frequent droughts, floods, civil war and poor economic condition.

The growing overwhelming poverty encompassed a large number of families limiting their capacities, to meet theirs basic needs. To cope with this distorted social and economic situation, people begin to assume marginal jobs and activities, beg in the streets or stay depending on relatives because of high rate of unemployment. This study attempts to assess the current situation and implications of poverty and to evaluate the effectiveness of the coping mechanisms of the poor people in the state.
2.5 Objectives of Study

The main objective of the study is to characterize the depth, equity and causes of poverty in Khartoum State. More specifically, this study aims to:

1. Assess the nutrition status,
2. Assess economic status to estimate poverty incidences in Khartoum State and income gap for reducing poverty,
3. Assess the degree of poverty distribution among households in the state,
4. Analyze the socioeconomic characteristics of poverty in the surveyed households sample in Khartoum State with respect to access to:
   a. Education,
   b. drinking water,
   c. and Health services,
5. Identify causes of poverty and coping mechanisms to reduce poverty,
6. Recommend poverty alleviation and/or improved effective coping mechanisms.
1.6 Research questions:

1. Who are the poor and what are their economic characteristics?

2. How far are people below poverty line?

3. What is the equity distribution of the standard of living among people in the state?

4. Which of the coping mechanisms are the positive and used by households to alleviate poverty and which are negative, and what are their implications?
CHAPTER TWO
LITERATURE REVIEW ON POVERTY

2.1 Introduction:

Poverty can be understood and defined in various ways concerning place, time and position; simply it is the condition of lacking economic access to fundamental human needs such as food, shelter and safe drinking water.

2.2 Definitions of poverty

Poverty means minimum level of income obtained by household or individuals to pay for their basic needs. People with low level of income are considered poor because they do not have enough money to meet their basic needs such as food, housing, education and health. Poverty is a condition that may affect individuals or collective groups, and is not confined to the developing nations. Although the most severe poor people are found in developing counties, there is evidence that poverty is also found in every region of the world.

In 1993, the World Bank regarded a person earning/spending less than US $1(purchasing power parity) per day as living in absolute poverty. Relative poverty also varies, with levels of economic development, perceptions and
expectations of the majority on what is minimally acceptable. Absolute poverty can be eradicated and relative poverty can only be alleviated because what is minimally accepted today may vary over time, from villages to urban areas, and from country to country. Absolute and relative poverty trends may move in opposite directions; relative poverty may decline, while absolute poverty may increase. (Renate, 2002)

2.3 Culture of poverty:

The culture of poverty concept is a social theory explaining the cycle of poverty. The cycle of poverty is the "set of factors or events by which poverty, once started, is likely to continue unless there is outside intervention". This occurs when poor people do not have the resources necessary to get out of poverty such as financial capital, education, or connections. In other words, poverty-stricken individuals experience disadvantage because of their poverty, which in turn increase their poverty. This would mean that the poor would remain poor throughout their lives (http://en.wikipedia.org/wiki/Africa).

The poverty cycle is usually called "poverty trap" when it is applied to countries. Based on the concept that the poor have a unique value system, the culture of poverty theory suggests the poor remain in poverty because of their adaptations.
Lewis (1998) argued that the burden of poverty was systemic, and therefore imposed upon these members of society; they led to the formation of an autonomous subculture as children were socialized into behaviors and attitudes that perpetuated poverty.

### 2.4 Causes of poverty:

Many different factors have been cited as causes of poverty. At the international level some emphasized the global systemic causes (such as trade, aid and debt), while others point to national level deficiencies of public administration and financial management. Some point to personal factors such as drug use, work ethics and educational level as the main causes of poverty, while others indicate inadequate social services and policies biased in favor of the wealthy and social elite, as a cause of enduring poverty. Other factors included:

#### 2.4.1 Individual characteristics:

Poverty is explained by specific circumstances and/or characteristics of poor people. Some examples are:

- Level of education, skill, experience, intelligence
- Health, handicaps, age
- Work orientation, time horizon, culture of poverty
Discrimination, together with race, sex, etc

2.4.2 Acute causes of poverty:

2.4.2.1 Natural disasters:

Natural disasters such as droughts and floods have devastated communities throughout the world. Developing countries often suffer more from extensive and acute natural disasters crises this is due to limited resources which inhibit the construction of adequate housing, infrastructure, and mechanisms (http://www.gdrc.org/icm/index.html).

2.4.2.2 Food insecurity:

People who rely on seed and vegetables that they produce for household food consumption (subsistence farmers) often go through cycles of relative abundance and scarcity. For many families that rely on subsistence production for survival, the period immediately prior to harvest is a “hungry period” During these periods of scarcity, many families lack sufficient resources to meet their minimal nutritional needs. Being familiar with these cycles, development practitioners were enabled to anticipate and prepare for periods of acute need for assistance (http://www.gdrc.org/icm/index.html).
2.4.2.3 Economics:

In a wage-based economic system, lack of access to jobs at appropriately skilled levels can deprive individuals of essential income and undermine human dignity and sense of worthiness, capital by which the wealthy in a society shift their assets deprives nations of revenue needed to break the vicious cycle of poverty.

Weakly well-established formal systems of title to private property are seen by writers such as Hernanddo De Soto as a limit to economic growth and therefore a cause of poverty. Also unfair terms of trade, in particular, the very high subsidies to and protective tariffs for agriculture in the developed world, is seen as a major cause of enduring poverty in developing countries heavily reliant on commodity exports. Low wages can undermine the ability of households to save and thus make them less resilient to shocks in the economy and more vulnerable to poverty (http://www.gdrc.org/icm/index.html).

2.4.2.4 Health care:

Poor access to expensive health care makes individuals less resilient to economic hardship and more vulnerable to poverty. Inadequate nutrition in childhood, itself is an effect of poverty, undermines the ability of individuals
to develop their full human capabilities and thus makes them more vulnerable to poverty. Lack of essential minerals such as iodine and iron can impair brain development. It is estimated that 2 billion people (one-third of the total global population) are affected by iodine deficiency, including 285 million 6- to 12-year-old children. In developing countries, it is estimated that 40% of children aged four and under suffer from anemia because of insufficient iron in their diets (Behrman and Hoddinott, 2004).

Disease, specifically associated with poverty such as AIDS, malaria, tuberculosis and others overwhelmingly afflict developing nations. They perpetuate poverty by diverting individual, community, and national health and economic resource away from investment and increases productivity (WHO, 2005).

2.4.3 Entrenched factors associated with poverty:

2.4.3.1 Colonial histories:

One of the most important barriers to development in the poor countries is lack of uniform, basic infrastructure, such as roads and means of communication. Some development scholars have identified colonial history as an important contributor to the current situation. In most countries with a history of colonization, the colonizers developed local economies to
facilitate the expatiation of resources for their own economic growth and development (http://www.gdrc.org/icm/index.html).

2.4.3.2 Centralization of power and Corruption:

In many developing countries, political power is disproportionately centralized. Instead of having a network of political representatives distributed equally throughout society, one major party, politician, or region may be responsible for decision-making throughout the country. This often causes development problems. For example, in these situations, politicians make decisions about places that they are unfamiliar with, lacking sufficient knowledge about the context to design effective appropriate policies and programs (http://www.gdrc.org/icm/index.htm).

Corruption often accompanies centralization of power. Corruption inhibits development when leaders help themselves to money that would otherwise be used for development projects. In other cases, leaders reward political support by providing services to their followers (http://www.gdrc.org/icm/index.html).

2.4.3.3 Conflict and Wars:

War contributes poverty by diverting scarce resources from alleviating poverty into maintaining military power. The recent conflict over borders
between and or inside countries orients all resources to war, and therefore, countries face severe food shortages (http://www.gdrc.org/icm/index.html).

**2.4.3.4 Environmental degradation:**

Awareness and concern about environmental degradation have grown around the world over the last few decades, and are currently shared by people of different nations, cultures, religions, and social classes. However, the negative impacts of environmental degradation are disproportionately affecting the poor. Throughout the developing world, the poor often rely on natural resources to meet their basic needs through agricultural production and gathering resources essential for household maintenance, such as water, firewood, and wild plants for consumption and medicine. Thus, the depletion and contamination of water sources directly threaten the livelihoods of those who depend on them (http://www.gdrc.org/icm/index.html).

**2.4.3.5 Social inequality:**

One of the causes of poverty in the world is the social inequality that stems from cultural attributes. Inequality places individuals in different social categories at birth, often based on religious, ethnic, or 'racial' characteristics. In South Africa, apartheid laws defined a binary cast system that assigned
different rights and social spaces among Whites and Blacks (http://www.gdrc.org/icm/index.html).

2.5 Effects of poverty

As listed above some effects of poverty may also be causes. Those living in poverty and lack access to basic health services, suffer from hunger or even starve, experience mental and physical health problems, which make it hard for them to improve their situation (http://en.wikipedia.org/wiki/Africa).

One third of deaths - some 18 million people a year or 50,000 per day. Have been attributed to poverty-related causes. About 270 million people, most of them women and children, have died as a result of poverty during 1990 decade (WHO, 1999).


It has been observed that in many developing countries the households depend on the income of their children. About 218 million children between 5 to 17 years old have been working as laborers in the world by 1996. (Mckay, Talbott, Arvantis, 1996).
Those living in poverty engage in economy, and commits crimes. Lack of essential infrastructure, poor education, poor health services, and poor sanitation contribute to the perpetuation of poverty (Moreno, Warah, 2006).

Poor access to affordable public education can lead to low levels of literacy. Weak public service provision and high levels of poverty can increase states' vulnerability to natural disasters. States can also be more vulnerable to the international economy shocks, such as those associated with rising food prices (World Bank, 2007).

The capacity of the state is further undermined by the problem that people living in poverty may be more vulnerable to extremist political persuasion, and may be vulnerable to human trafficking, internal displacement and exile as refugees. Countries suffering widespread of poverty may experience drop of active population rate, particularly in high-skilled professions, through emigration, which further undermine their ability to improve their domestic situation.

2.6 Urban Poverty

Three decades of studies, analysis, conventions, projects and programs, supported by substantial aid funds focused on reducing urban poverty. The
number of urban people living at or below the poverty line, continued to increase.

2.6.1 The costs of non-food essentials for the urban poor

Rising of commodity prices in urban markets and fall of wages of poor people led to rising levels of urban poverty. Factors affecting urban poverty, urban situation livelihoods and expenditures as the following:

(1) Housing:

Most of urban dwellers pay for accommodation through rent or, to buy high value land, and building materials (Wratten, 1995) argued that rising costs had increased the problems of affordable housing; in one low-income settlement many tenant-households spent more than a quarter of their income on rent, of poor quality houses or overcrowded houses (Richmond, 1997; UNCHS and World Bank, Lee, 1998). Low-income households that do not rent are likely to live in self-built homes in illegal and informal subdivisions. They often have to pay particularly high prices for water and other services (Barbosa, Cabannes and Moraes, 1997).

(2) Health-care:
The tendency for health care providers is to seek ways to increase the proceeds available to urban health services by charging users or by transferring health services to private sector. This would force low-income groups to face high costs.

Health care was found to be the largest expenditure item after food and house rent (Kabir, Rahman, Salway and Pryer 2000).

(3) Energy:

The lowest income households were found to be spending 10 percent of their income on fuel (Islam and others, 1997).

(4) Public transport:

Various studies of urban poor communities showed that public transport costs represent a significant part of the total household expenditure (Urban Resource Centre, 2001). A study in Zambia comparing urban to rural expenditures showed that considerable amount of money was spent on transport (12 per cent). Expenditures are likely to be particularly high for poorer groups living on the city peripheries.

2.6.2 Aspects of urban Poverty
Urban Poverty has three interrelated aspects: “poverty of money”, “poverty of access” and “poverty of power.” (Hangzhou, 2000).

2.6.2.1. Poverty of money

Lack of money is more of a symptom of poverty than a cause. In most cases, the poor lack the ability to accumulate assets, to create wealth and break though poverty trap.

Their profits or potential savings are often: (i) appropriated by moneylenders who charge usurious interest rates;(ii) by formal and informal regulatory and enforcement agents or organizations who demand bribes or extort protection money;(iii) and by middlemen or other stronger business partners who exploit the poor because they lack market information or the ability to use that market information to increase their own incomes (Hangzhou, 2000).

2.6.2.2. Poverty of Access

Most of urban poor live in overcrowded, poor sanitary slums and squatter settlements. Poor do not have security of tenure, because of their illegal status. They are often not provided with formal basic infrastructure and services such as piped water, electricity, waste water disposal and solid waste collection by government agencies and organizations. They have to purchase these in informal markets, often pay much more than higher-
income groups. Studies in several cities of Asia and the Pacific have shown that the poor end up paying two to five times as much for informal access to public goods and services than higher-income groups (Hangzou, 2000).

2.6.2.3. Poverty of Power

The poor suffer from diseases associated with poor sanitation, lack of clean water, and industrial pollution. Another important aspect of power is information. The poor often lack access to information. When information is available it is often in media and forms that are either not accessible to or understandable by the poor (Hangzou, 2000).

2.7 Collective Mechanisms for Alleviating the Poverty:

Several non-governmental organizations have made valuable attempts to catalyze coalitions of the poor in the cooperatives. These coalitions have strengthened the bargaining positions of the poor and have assisted them in building beneficial partnerships.

Experience has also shown that many of the collective mechanisms of the poor have been short-lived, particularly those that developed in response to external threats such as evictions, or around a particular issue such as provision of water or housing. Often once the external threat was resolved, community-based organizations disintegrate. While making important
contributions, such organizations are often transitory in the struggle to break the cycle of poverty.

On the other hand, community-based organizations developed around issues of long-term concern have potential for empowering the poor and brake the cycle of poverty.

The poor have little access to banks and insurance companies in times of volatile flows of income (Rutherford, 1999). To protect themselves against such risks, the poor developed informal insurance mechanisms such as selling assets, exchanging gifts, cash transfers and diversifying crops. Unfortunately, these approaches have proved inadequate and have instead retarded economic growth and social mobility (Morduch, 1999). Since the 1970s there have been many pro-poor banking institutes established in the semi-formal sector including micro-finance institutions (MFIs) and non-governmental organizations (NGOs) to satisfy this need (Rutherford, 1999).

2.8 Nutrition Status

Nutritional status can be defined as food dietary in take, which meets all body’s needs of energy and other important nutrient for growth and development (Garrow, 1993).
WHO used universal standard to determine daily needs of body for nutrients based on the recommended daily allowance (RDA) considering age and physical activity of individual. FAO and WHO suggested several interrelated factor that affect the nutritional status of household, such as inadequate food intake according to body needs (age, sex, physical activity) and food distribution among family members. These factors are together affected by food choices, habit and consumption, which in turn is affected by economic factors. So the poor socio-economic status can not afford purchasing basic family needs of poor (health, education and shelter Mohammed.2004).

2.8.1 Assessment of nutritional status:

The nutritional status can be assessed by different methods, which includes the following:

1. Anthropometric method includes the height, weight, and age

2. Biotechnical method includes the laboratory techniques to determine levels of various nutrients in blood

3. Clinical method: to look for physical signs of deficiency, or disorders associated with malnutrition
4. Dietary method: includes information describing what an individual or household are eating, based on their habits of eating, socio-economic, cultural influences of food selection to determine their nutritional status.

Their different ways used in collection of dietary information:

1. The 24 hour record,

2. The 3-or7 day food record,

3. The nutritional history: the interviewer recorded the amount and frequency of food consumption during a period of time, usually 1-6 month, correlated with physical and biochemical data,

4. The household survey: aims to measure all the food consumed by a family over a period of time, usually a week or month, the procedure includes weight of all food in the home recording all food purchases, and food remain at home and also food wastage then recording the age, sex, members of household. The household survey is useful for differentiating food consumption pattern for different economical and cultural groups.

3.9 Poverty measures:

In most nations, poverty is still defined and measured through consumption-based poverty lines, despite the recognition of how inadequately these
measures in capturing many aspects of deprivation (Satterthwaite, 2003). Webster (1989) and Smith (1994) defined poverty with reference to poor families households categorized as those that do not have enough cash income to secure the minimum requirements of food, shelter and clothing.

While the poverty line is defined as the cost of a basket of basic needs commodities, the basket itself in quantitative terms remains invariant (consistent with the notion of absolute poverty) and prices are endogenously determined within the model so is the monetary poverty line (Decaluwé et al., 1999). Doraid (2000) confirmed that, developing countries that have identified their national poverty lines, have generally used the "food poverty" method. These lines indicate insufficient economic resources to meet basic minimum food needs. Even though, there is general agreement that the relevant methods for determining poverty lines for developing countries are the cost of basic needs. However, if people are able to afford only a minimum quantity of food, shelter, and clothing, their levels of living are said to be very low. If they enjoy greater variety of food, shelter, clothing, and other things, such as good health, and education they are enjoying relatively high levels of living (Todaro, 1996). The most commonly employed definition of living standards is in terms of consumption levels. Mellor (1978) argues that, only those whose income is
well above the extreme poverty line can sell a sizable proportion of their food production to finance purchases of non-food goods and services (basic needs). This method involves identifying a typical diet for the poorest person that is necessary for living a healthy life (Ali, 2002). Consequently, energy-built calorie-based poverty lines are widely used around the world (Deaton, 2004).

3.10 Qualitative and Participatory Assessment

The study also used Participatory Poverty Assessments (PPAs) which are tools for consulting the poor directly and systematically. Using PPAs can deepen the understanding of poverty, explain processes of impoverishment and household survey data convey the priorities of the poor, and assist in analyzing poverty beyond the household unit. PPAs can capture dimensions of poverty that are not always addressed in household surveys. Experience has shown that poor people speak of poverty in different terms from those typically used in policy analysis. They may refer to such characteristics as vulnerability, physical and social isolation, lack of security and self-respect, powerlessness, and lack of dignity. In addition, past PPAs have offered insights into dimensions of poverty that had not been previously examined by household surveys, such as vulnerability, gender, crime and violence, and seasonality. PPAs use a variety of methods that combine visual techniques, such as mapping, matrices, and diagrams, with verbal techniques, such as open-ended interviews and discussion groups. The process of undertaking a PPA is different at the community and national levels. The community level
involves undertaking the study with the locally led teams. The national-level study involves linking communities to broader policy dialogue. The types of qualitative data which are important for poverty reduction strategy design and monitoring include the following:

1- Poor people’s priorities for improving their situation—desegregated by sex and by other important characteristics of the community;

2- Causality data—people’s perceptions of causes and consequences of poverty;

3- Opportunities poor people see for improving their situation;

4- Constraints and barriers to improving their situation;

5- Locality differences—differences between districts and between rural and urban centers;

6- Perceptions on quality of service delivery, infrastructure, and governance at the local level; and

7- Identification of who are the poor.
CHAPTER THREE
CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY

3.1 Introduction

The literature provides many poverty statistics and empirical results, but little theory to explain them. Perhaps as Duncan (1984) noted this is because a theory of poverty is complex to model. Complex explanation of why people are poor would require many interrelated theories like theories of family composition, earnings and asset accumulation.

3.2 Methods of Data Collection and Analytical Techniques

This study is based on both primary and secondary data sources. The Primary data are collected from household surveys using a structured questionnaire for the year 2007. The study covered three areas in Khartoum State, namely Khartoum, Khartoum North and Omdurman.

The data have been collected by professional enumerators under the supervision of the researcher, using stratified multistage simple random sampling technique. 400 households have been selected from (Khartoum, Khartoum North and Omdurman). Each area has been subdivided into
localities and each locality to urban and rural areas.

A representative sample has been selected from each of the different areas as follows:

1- Khartoum areas:

Includes Alreyad, Al amarat, Arkawit, Almamora, Alsahafa, Alshagra, Mayo, Soba west, Alsaama, Jebal awlia, Alkalakla

2- Omdurman areas:

Includes Althora, Dar alsalm, ALmohandseen, Algaraffa, Algaziera Slang, Nile city, Wad Nobawi, Ummbada, Wad Albakhait, Almorada,

3- Khartoum North areas:

Includes Shambat, Alsafia, Umm Alqora, Alesilat, Umm Dawan Ban, Wawosee, Alhalfaia, Alhajyaesf, Almugtrbeen, Aldaroshap, Alailafoon

The key data collected covered aspects of urban and poverty in the following areas:

1. Socioeconomic aspects:

   - Socioeconomic factors of the household- heads (e.g. age, education, occupation, number of family members, etc…).
- House ownership by type and value

2. **Food consumption aspects:**

- Composition of diet by household members
- Quantities and types of main food items consumed by the household (e.g. meat, sugar, bread, egg, etc...).
- Prices paid for food purchases

3. **Source of income aspects:**

- Job wages of household heads
- Primary and Secondary jobs
- Income from sons and daughters, other family members, supporting money given as gift

(Diversity of sources indicates vulnerability and coping mechanisms)

4. **Drinking water and health information aspects:**

- Sources of drinking water (National network, wells etc...)
- Cost of drinking water
- Health status and medical cost of treatments and medicines spending, etc...)
- Social ceremonies and contributions.
3.3 Measurement of household Nutritional Status:

To assess the nutritional status of respondents the study selected the most important food items, commonly consumed such as, red meat, bread, milk, sugar, potato, egg, etc. These food quantities were converted into their nutritive constituents value (carbohydrates in kilo-calories) by using the food composition table for Sudan. These values were then compared with the Recommended Dietary Allowance (RDA) of WHO, to detect the level of malnutrition of the respondents, and for drawing their food poverty line estimates.

3.4 Poverty Line Approaches

Poverty is a complex and multidimensional process and its analysis requires an investigation of complex realities rather than simple numbers or statistics (Chambers, 1988 and Sen, 1999). For this study, two approaches have been applied to establish the food poverty line in the urban areas; these were Food Energy Intakes (FEI) approach and the Cost of Basic Needs (CBN) approach. The Basic Needs Approach concentrated on the degree of fulfillment of basic human needs in terms of health, food, education, water, shelter, transport” (Streeten et al.1981). So in order to construct the food poverty line, the basic needs of households and associated the goods basket
were identified. In this study the food poverty line is calculated from the main common food basket used in Khartoum State. The daily consumption is calculated based on adult equivalence. The prices of such common food basket were obtained from the field survey. Based on the WHO caloric values, the number of calories for each kilogram of food basket is determined. Then, the total calories consumed a per adult were calculated, and the required calories per adult per day and the amount of Kg required were also calculated based on the daily minimum caloric requirement of 2300 kilo calories per person as determined by the WHO for Sudan.

3.4.1 Food poverty line

The estimate of food poverty line in this study has been based on the WHO survey with the assumption that the average Sudanese person requires 2300 calories per day to be adequately nourished. The construction of food poverty line is to specify the food requirements of individuals or families; one can assume that an individual has access to adequate food if he or she has access to adequate nutritious foods.

Therefore the food poverty line is the cost of the minimum food bundle, which is a normative food consumption bundle at which an average individual achieves the daily minimum food energy requirement.
The standard food bundle represents the consumption habit of the poor in a specific country (Anand and Nur, 1988, Atkinson, 1991). This line is also referred to as extreme poverty line (World Bank, 1996). In this study the term “extreme food poverty line” has been used to identify the household as extremely poor. The food poverty line changes over time, as yesterdays’ luxuries become today’s necessities. It also changes from one country to another; even differs from one location to the next within the same country (El Amin, 2004). The study charted the food poverty line from selected urban and rural localities in Khartoum state according to the different customs of the food bundle.

Food items were integrated into food poverty line to estimate the overall poverty line in which these non-food items included:

- Water expenses: Costs paid for receiving drinking water from various available sources.
- Education expenses: costs paid for school registration, daily school expenses, stationary costs, etc…).
- Health expenses: Costs paid for doctor’s interview, medicines, treatments and other medical costs (e.g. medical laboratory investigations).
- Clothes expenses: Costs paid for clothes during the survey season.
- Social contributions: Contribution funds paid in wedding ceremonies and insurance.

3.4.2 Non-Food poverty line

Accordingly, the cost of the basic needs that takes into consideration both food and non-food items have been used to establish the extreme poverty line. After constructing the food poverty lines, then can specify the food-income gaps of the families.

The non–food poverty line was obtained by adding up the cost of non-food items (education, health, water and etc…) to the food poverty line. Household s reduce food spending by changing the quality or variety of the food consumed before they reduce the quantity of food eaten (Radimer et, 1992). The minimum non-food consumption is defined as the minimum consumption level of non-food items that are being lived to meet the minimum of living needs of the household. The study used the food share regression model of RAVALLION and BIDANI (1994) was used to estimate minimum non-food expenditure of household as follows:
\[ S_j = a + b \left( \frac{x_j}{z} \right) + e_j \] (1)

Where, \( S_j \) = share of total expenditure of household, \( j \) devoted to food, \( a = \) constant, \( b = \) coefficient, \( x_j = \) total expenditure of household \( j \), \( z = \) food poverty line, \( j = \) total number of household (400), \( e = \) error term.

To arrive at extreme poverty line according to the basic needs approach, the cost of other social needs should be added to food poverty line as follows:

Extreme poverty line = food poverty line + non-food expenses regression household expenditure on non-food items against food expenditure. The non-food poverty line can be estimated as follows (Kyaw, Vol87):

\[ \text{Poverty line} = \text{Food poverty} \times (2-\alpha) \]

3.4.3 The expenditure on food was objectively identified using the following equation:

\[ Y_r = PF \] (2)

Where: \( Y_r \) equals the total expenditure on food of the household and \( P \) is the commodity price vector taken in the sample \( F_i \) during the period of investigation (2007). \( F \) is the food basket which is common in people's diets. For the purpose of this study the essential food staples, which constitute the
main ingredients of the diet in most of the households of Sudan, were chosen: Bread, meat, milk, sugar, tea, coffee, potatoes, eggs.

3.4.4 Total expenditure on food and non-food items was obtained using the following equation:

\[ Y = Y_r + N_a \]  

(3)

Where: \( Y \) is the total expenditure on food and non-food items, and \( N_a \) is the total expenditure on non-food.

3.4.5 Foster, Greer and Thorbecke (FGT) Measures:

Maxwell (1999) indicated that there were many different ways, each with its own merits in which poverty can be assessed; the standard US$ 1 a day has become a tool to draw attention to global poverty. It is increasing in use to highlight where most of the poverty is concentrated. There are advantages to the universality of this measure. Lipton and Litchfield (2001) argued that such standard was widely available and enabled international comparison. Given the intra-group income distributions, a number of poverty indices could be computed (Ravallion, 1994). The most widely used class of poverty indices in the literature was the FGT, by Foster, Greer and Thorbecke (1984). The FGT indicators. These indicators allow for the measurement of
the proportion of the poor population (the head count ratio) as well as the
depth (gap ratio) and the severity (squared gap ratio) of poverty at group and
national levels bring poverty gap and poverty severity. The study used FGT
measures to estimate the different poverty measures of people in Khartoum
State. The FGT poverty is measured by the following:

(i) The poverty head count ratio:

Head count ratio is defined as the percentage of the population whose
monthly per capita total consumption expenditure falls below the district
level poverty line. This gives the proportion of the population for which
consumption or income is less than the poverty line $z$. It will be generated
when the parameter $\alpha$ equal zero. Head count ratio also denoted with $P_0$ is
estimated as:

$$H = \frac{q}{n}$$

Where: $H$ = head count ratio, $q$ = poor people under poverty line, $n$ = total
sample
(ii) Poverty gap ratio:

This represents the depth of poverty, also denoted with $P_1$ which measures the distance separating the population from the poverty line. It is generated when, the parameter $\alpha$ equals one and is estimated as follows:

$$pg=\frac{1}{N}\sum_{j=1}^{N} \left\{ \frac{z-c_j}{z} \right\}^\alpha$$  \hspace{1cm} (5)

Where:

$PG = \text{poverty gap ratio}$, also denoted with $P_1$. $N$ is total number, $Z$ is poverty line; $c_j$ is per capita consumption of household.

(iii) Poverty severity or squared poverty gap:

The severity takes the square of the distance and it reflects the inequality among the poor also denoted with $P_2$. It is obtained when the parameter $\alpha$ equals $s^2$ as follows:

$$PS = \frac{1}{n} \sum_{i=1}^{q} \left[ \frac{z-y_i}{Z} \right]^2$$  \hspace{1cm} (6)

Where: $PS = \text{poverty severity or squared poverty gap}$. 
3.6 Inequality:

A measure of poverty focuses on the situation of individuals or households who find themselves at the bottom of the income distribution. On the other hand, it is a broader concept defined over the entire population and not just for the population, below a certain poverty line.

Inequality measure can be calculated for any distribution, including consumption, income, monetary variables, and land. It attempts to capture the deviation of a given distribution of a certain variable from the ideal distribution termed (perfect equality). Beyond its impact on poverty, inequality has a direct, negative impact on social welfare. According to the theory of relative deprivation, individuals and households do not assess their level of welfare in terms of consumption or income only. They also compare themselves with others. The simplest way to measure inequity is to divide the population into fifths quintiles from poorest to richest and the level proportion of expenditure or income that accrue to each level.

There are three methods to present inequities:

(1) Frequency distribution,

(2) Cumulative frequency distribution,
3.7 Lorenz curve

The Lorenz curve was developed by Max O. Lorenz in 1905 as a graphical representation of income distribution. It portrays observed income distribution and compares this to a state of perfect income equality. It can also be used to measure distribution of assets (Todaro, 1996).

In discussions of personal income, we frequently make statements such as, "the bottom twenty percent of all households have ten percent of the total income". The Lorenz curve is based on such statements; every point on the curve represents one such statement. The Lorenz curve is a graph that shows, for the bottom x% of households, the percentage y% of the total income which they have. The percentage of households is plotted on the x-axis, the percentage of income on the y-axis.

A perfectly equal income distribution in a society would be one in which every person has the same income. In this case, the bottom x% of society would always have y% of the income. Thus a perfectly equal distribution can be depicted by the straight line y = bx called the line of perfect equality or the 45° line (Deato, 1997). A perfectly unequal distribution, by contrast, would be one in which one person has all the income and everyone else has
none. In that case, the curve would be at \( y = 0 \) for all \( x < 100 \), and \( y = 100 \) when \( x = 100 \). We call this curve the line of perfect inequality.

Note that providing those incomes (or whatever else is being measured) cannot be negative. It is impossible for the Lorenz curve to rise above the line of perfect equality, or sink below the line of perfect inequality. The curve must be increasing and convex to the y axis see fig (3.1).

A typical Lorenz curve looks like this:

**Figure 3.1 Lorenz curve**
3.8 Gini coefficient of inequality:

The Lorenz curve is used to calculate the Gini coefficient, which is the area between the line of perfect equality and the Lorenz curve. It is the percentage of the area between the line of perfect equality and the line of perfect inequality.

The Gini coefficient is based on Lorenz cumulative frequency curve that compares the distribution of specific variable (e.g. income) with uniform distribution that represents equality. To construct the Gini coefficient, need to graph the cumulative percentage of household (from poor to rich) on the horizontal axis and cumulative percentage of expenditure or income on vertical axis. This is given by the Lorenz curve from fig (3.2). It can be calculated as the ratio of the area between diagonal (perfect equality line) $A/(A+B)$, if $A=0$ the Gini coefficient become zero, which means perfect equality line. Where as if $B=0$ the Gini coefficient becomes one, which means complete inequity (Kander, 2001).
Figure 3.2 Gini coefficients:
CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction:

This chapter gives the presentation and interpretation of the study results. The chapter contains description of the spending structure of households and income-inequality distribution analysis in Khartoum state. The chapter also identified the level of poverty incidences and causes in the state by area, urban and rural status in the state. The chapter concludes with analysis of the poverty profile and the coping strategies dealing with poverty in the state. In this chapter, the study has also attempted to map the poverty reduction profile of the poor households in Khartoum state.

4.2 Household spending structure in Khartoum state:

Data on respondents’ expenditure have been collected to provide information on standards of living in Khartoum state and areas (rural and urban), including spending of their incomes on different items such as food, education, health, housing, clothing etc. The results of the analysis in table 4.1 revealed high spending on food (40-47%) followed by education (11-15%), health (5-7%), housing (3-10%), electricity (4-5%), clothing (5%), and furniture (1-4%), drinking-water and for other uses (2%), leisure and
garbage collection (1%). The spending on food has been highest in Khartoum area (47%) compared to the other two areas of Khartoum North and Omdurman. The spending on food has been higher in rural areas than in the urban areas, and it assumed to cause the overall high level of spending at the State level. This high spending on food is commensurate with the existing patterns of households spending in the developing counties with high low income groups (Nour, 1996). The high spending on food is dictated by the function of food for survival, maintenance and growth of the human body and as a source of energy for the human activities including energy for manual and mental activities. In this sense, spending on food is demand-price and demand income inelastic. It not is disposed with despite increases in food prices or reduction in household income level. In Khartoum state, as well as in Sudan in general, the nature of extended families and cooking for large numbers of family members and unexpected guests, together with the recent soaring in food prices, are among the main factors responsible for such high spending on food.

Spending on education has dictated by the relatively reduced subsidy of public schools in Sudan. With the introduction of the economic liberalization policy by the turn of the 1990s decade, the government encouraged self-financing policy and private services activities and enterprises in education,
health, electricity, telecommunication and others. By this policy, government policies began to depend on additional financial support from households for building new classrooms and maintenance of old ones, payment for school furniture, textbooks, stationeries, and uniform. The government encouraged private schooling and universities, which enforce debilitating school and university tuition annual fees that paid in advance or in installments. The families have to meet additional expenses for the transportation and meals of their children.

Thus, the high spending on education in Khartoum State has been critical in accessing good education since the quality of public schools has been deteriorating, and the quality of education in private schools has been limited to few ones. Many private schools in Khartoum state lack the minimum requirements for proper school establishment. They just established for securing wealth to the investors. The situation in the rural areas is even worse since schools established in centres serving a number of surrounding villages, with poor transportation means. Students have to walk long distances to arrive to school, and have to pay the requested fees and other related expenses. For this reason, many of the households in the rural areas withdrew their children from attending schools at early age and
directed them towards informal marginal jobs to assist in supplementing family income and supporting in supply of its basic needs.

The relatively low spending on health facilities in the state reflects the inability of most of the households to meet the rising cost of both public and private health services in view of the adopted liberalization policy. Despite this low spending, the spending on health is still higher in rural areas than in urban areas (table 4.2). This higher spending has caused by the shortage of reliable health-services facilities and the necessity of traveling to Khartoum state capital hospitals and clinics by day and night for health treatment. Most of the households in both urban and rural areas of the state prefer to use indigenous medical treatment by culture and to avoid higher modern medical expenses. In Sudanese culture, people visit health centers in argent cases only.

The results of the analysis also indicated that few the people rent houses in Khartoum and Khartoum north and in Omdurman. The low percentage of people renting houses despite the extremely high rents is explained by the ownership of houses by the majority of the respondents, being formally or informally built In Omdurman area, people spend more on house rent as it is cheaper in congested areas receiving poor rural migrants and IDPs from all parts of Sudan.
Table (1.4) household’s spending in Khartoum State by Items in Percentage:

<table>
<thead>
<tr>
<th>Area</th>
<th>Food</th>
<th>Education</th>
<th>Transport</th>
<th>Medicine</th>
<th>Lighting</th>
<th>clothing</th>
<th>Social</th>
<th>Support to Extension family</th>
<th>Water</th>
<th>Furniture</th>
<th>Rent</th>
<th>Tax</th>
<th>Leisure</th>
<th>Garbage</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>KN</td>
<td>44</td>
<td>15</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>K</td>
<td>47</td>
<td>11</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>O</td>
<td>40</td>
<td>13</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>T</td>
<td>44</td>
<td>13</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>100</td>
</tr>
</tbody>
</table>

Source study field survey 2007

KN=Khartoum North province, K=Khartoum province O=Omdurman province=Total Khartoum State
Table (4.2) household is spending in Khartoum State (Rural, Urban Areas) by Items in Percentage:

<table>
<thead>
<tr>
<th>Area</th>
<th>Food</th>
<th>Education</th>
<th>Transport</th>
<th>Medicine</th>
<th>Lighting</th>
<th>clothing</th>
<th>social</th>
<th>Support to Extension family</th>
<th>Water</th>
<th>Furniture</th>
<th>Rent</th>
<th>Tax</th>
<th>Leisure</th>
<th>garbage</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>KHN R</td>
<td>46</td>
<td>15</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>KHU</td>
<td>42</td>
<td>16</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>KHR</td>
<td>47</td>
<td></td>
<td>8</td>
<td>12</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>KHU</td>
<td>42</td>
<td>17</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>OR</td>
<td>43</td>
<td>13</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>OU</td>
<td>39</td>
<td>15</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Source study field survey 2007

KHN R=Rural Khartoum North area/ KHU=Urban Khartoum North area KHR= Rural Khartoum North area/ KHU= Urban Khartoum North area OR=Rural Omdurman area/ OU= Urban Omdurman area OR=Rural Omdurman area/ OU= Urban Omdurman area
4.3 Poverty status in Khartoum state:

The poverty status in Khartoum state by areas (Khartoum, Khartoum North and Omdurman) has been estimated using food-poverty method which calculates the actually kilocalories intake and compares it with the recommended food intake allowance (RFIA) of WHO for Sudan, as a benchmark for malnutrition level. It has assumed that those households, which cannot afford buying food that takes them above malnutrition benchmark level, are food-poor. The study also estimated the non-food-poverty indicator which is then inserted into the lower non-food demand equation to estimate the overall poverty level combining food and non-food access (table 4.3). The overall poverty level has used as an indicator for identifying poverty income level line for the households of Khartoum state.

4.3.1 Food poverty in Khartoum state:

Taking the food poverty indicator, table 4.4 gives the kilocalories intake by the three areas of Khartoum state. The nutritional analysis indicated the incidence of malnutrition in the state as a whole (2123 compared to 2300 k-calories per person per day benchmark), also the results depicted more malnutrition status in the rural areas (1785 k-calories per person per day) than in the urban areas (2093 k-calories per person per day). Khartoum area
had the most severe incidence (1894 k-calories per person per day). Again, with rural Khartoum area as being highly hit (1550 k-calories per person per day) compared to urban area (2043 k-calories per person per day).

The underlying cause of such status could be relate to the high influx of rural economic, drought/flood struck migrants, and war affected internally displaced peoples (IDPs) from rural areas into Khartoum state. The state has been the main receiving immigrant state among all states of the Sudan due to concentration of services and economic opportunities during the last two decades. It also been observed that those immigrants have settled on the peripheries of the three areas of the state, and mostly in Khartoum and Omdurman areas. The relatively better nutritional position of the rural areas respondents of Khartoum North could be explained by the presence of crop and livestock resources along the Blue Nile and the River Nile, which cater for food production and income generation activities, and perhaps for accommodation of the immigrants offering them plausible livelihood opportunities.
Table (4.3): Estimated non-food Demand in Khartoum State:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated coefficient</th>
<th>Standard error</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of total expenditure to food expenditure in Khartoum state</td>
<td>0.372*</td>
<td>0.017</td>
<td>0.557</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure in rural Khartoum state</td>
<td>0.074*</td>
<td>2.427</td>
<td>.700</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure urban Khartoum state</td>
<td>0.619**</td>
<td>55.112</td>
<td>45.452</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Dependent variable: share of total expenditure of household
<table>
<thead>
<tr>
<th>Area/State</th>
<th>Rural</th>
<th>Urban</th>
<th>Area/State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khartoum area</td>
<td>1550</td>
<td>2043.46</td>
<td>1894.54</td>
</tr>
<tr>
<td>Khartoum North area</td>
<td>1946.92</td>
<td>2065.872</td>
<td>2069.25</td>
</tr>
<tr>
<td>Omdurman area</td>
<td>1861.03</td>
<td>2175.55</td>
<td>2119.21</td>
</tr>
<tr>
<td>Whole State Sample</td>
<td>1785.4</td>
<td>2093.55</td>
<td>2123.016</td>
</tr>
</tbody>
</table>

Source study field survey 2007
4.3.2 Income poverty in Khartoum state:

Based on the food poverty analysis, the income poverty status in Khartoum state has been estimated (table 4.5). The poverty status has estimated according to the head account or poverty index \( (p^0) \), poverty gap ratio or poverty depth \( (p^1) \) and poverty square or poverty severity \( (p^2) \) indicators. From the table 4.5, it has indicated that about 71% of the respondents in Khartoum state fall below the poverty line. The poverty incidence in rural Khartoum State (69%) has been higher than in the urban areas (43%)

4.3.2 Income poverty in Khartoum Areas:

The level of the respondents below the poverty line have been highest in Khartoum area (63%), (56%) below the poverty line in Oumdarman area lowest in Khartoum north area (45%) (Table 4.6 and figure 4.1). The poverty gap and its severity also indicate similar patterns showing a high gap and severity for the state and for Khartoum area.

The poverty incidence in rural Khartoum area mostly suffering than the other two areas (table 4.7). However, when comparing urban poverty, Khartoum area turns out to be in a better position (24%) than the other two areas (37% each). The poverty gap and poverty severity reflect similar patterns as those of the head count indicators. These results may that verify
further the findings of the food-poverty analysis indicated above and may be explained along the same lines as stated earlier. However, these results add new dimension to the already discussed results. The better position of households as table 4.6 showed with 45 percent of the people living below poverty line conceals wide income disparity among its households. Therefore, what is important is not to know only the poverty position by income measure but also by income distribution measure. The other two areas though experience more respondents living under poverty line still have more equity in income distribution among their households respondents.
Table (4.5): Poverty incidence of household in Khartoum state:

<table>
<thead>
<tr>
<th>Poverty indicator</th>
<th>Khartoum State</th>
<th>Khartoum State by rural, urban areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>$P^0$</td>
<td>71</td>
<td>59</td>
</tr>
<tr>
<td>$P^1$</td>
<td>0.28</td>
<td>0.17</td>
</tr>
<tr>
<td>$P^2$</td>
<td>0.11</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Source study field survey 2007
(4.6): Poverty incidence of household in Khartoum state by area and rural and urban levels:

<table>
<thead>
<tr>
<th>Poverty indicator</th>
<th>Khartoum North area</th>
<th>Khartoum area</th>
<th>Omdurman Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P^0$</td>
<td>45</td>
<td>63</td>
<td>56</td>
</tr>
<tr>
<td>$P^1$</td>
<td>.047</td>
<td>.11</td>
<td>.04</td>
</tr>
<tr>
<td>$P^2$</td>
<td>.013</td>
<td>.047</td>
<td>.013</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Figure (4.1) Poverty status by area in Khartoum state:

![Chart showing poverty status by area in Khartoum state]

Source: Study field survey 2007

Table (4.7): Rural and urban poverty status in Khartoum state by area:

<table>
<thead>
<tr>
<th>Poverty indicator</th>
<th>Khartoum North area</th>
<th>Khartoum area</th>
<th>Omdurman area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td>$p^0$</td>
<td>59</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>$p^1$</td>
<td>.15</td>
<td>.07</td>
<td>.23</td>
</tr>
<tr>
<td>$p^2$</td>
<td>.062</td>
<td>.026</td>
<td>.113</td>
</tr>
</tbody>
</table>

Source: Study field survey 2007
4.3.4 Gini coefficients and Income Distribution results in Khartoum state:

The Gini coefficient analysis verifies the same results obtained by the Lorenz curve analysis (table 4.8). The Gini coefficient has been as high as 0.72 on average reflecting a high degree of inequity in income distribution in the state as a whole. The Gini coefficients for Khartoum North area has been higher 0.63 than Khartoum 0.53 and Omdurman areas 0.25.

The Lorenz curve analysis depicted the existence of inequity in distribution in the state, with the highest inequity occurring in Khartoum North area. Figure (4.2) indicates that the upper deciles (10%) of the respondents have earned about 55% of all income at the state level, while figure (4.3) indicates that upper deciles (10%) of the respondents have earned about 60% of total income of the area. The other two areas indicated better income distribution (figures 4.4 and 4.5). Figure (4.4) depicted less percentage of income inequality of (42%) for Khartoum area, and figure (4.5) showed 30% of income inequality for Omdurman area.
Table (4.8): Gini coefficient for Khartoum state by area:

<table>
<thead>
<tr>
<th>Sample</th>
<th>Gini Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole sample</td>
<td>0.72</td>
</tr>
<tr>
<td>Khartoum area</td>
<td>0.51</td>
</tr>
<tr>
<td>Khartoum North area</td>
<td>0.63</td>
</tr>
<tr>
<td>Omdurman area</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Figure (4.2) Income Distribution in Khartoum state:

Source: study field survey 2007
Figure (4.3) Income Distribution Khartoum North area:

Source: Study field survey 2007
Figure (4.4) Income Distribution for Khartoum area:

Source: Study field survey 2007
Figure (4.5) Income Distribution in Omdurman area:

Source study field survey 2007
4.3.4 Poverty reduction in Khartoum state by food poverty line:

Poverty reduction depends upon initial conditions such as the distribution of assets, access to social and physical goods and services, and the geographic factors. To estimate the cost for reducing the poverty situation of the poor households in Khartoum state, the study used the food poverty method to estimate the income gap covered by the government and the civil societies in order to bridge the poverty-income space. Despite the existing consumption level of these food items, the food poverty analysis reflect the need for further consumption to bridge the income poverty gap for these food items. Table 4.9 gives the required addition of income to bridge the food gap for each food item in the household menu. The total supplementary income needed to cover the required payment for those food items estimated at about SDG 46.53 per person per mouth (SDG 279.18 for a household of 6 members per month). Surprisingly, the food poverty line in Khartoum state has estimated at (SDG 1.551) almost equivalent to the used UN/WB indicator of US$ 2 per person per day for an average size of a household of six persons. Based on this calculation, households need extra SDG for buying red meat SDG 47.16 and for sugar SDG 23.4 and another SDG 79.74 for buying more bread, and SDG 47.88 for buying more milk. The other food items of potatoes SDG 50.76, for broad beans require SDG 10 and
foreggs SDG19.44 each for compensating for their supplemental supply. From tables (4.10, 4.11, and 4.12) the additional income needed are SDG 1012.32 and SDG 377.46 per person per mouth for rural and urban households respectively. The high supplemental need in income in the rural area reflects the poverty situation of households in these areas of the three major areas of Khartoum state. The needed extra income for the food items in the rural areas are high ranging between SDG38.7 for broad beans as a minimum to SDG 289.26 for bread as a maximum. It realized that bread, potatoes, red meat and milk constituted the highest income demand needs in the rural areas of the state. The high-income demand for these food items may indicate the marginalization of the rural areas with respect to marketing. On comparing food reduction cost needs by area, Khartoum area needed about SDG5.90, and Khartoum North needed SDG 3.041 while Omdurman needed the least about SDG 1.949 per person per day.

Regarding the individual food items, red meat, bread and milk constituted the most demanding items for income supplementation in Khartoum area, with lower levels of demand in Khartoum North area and even lower level in Omdurman area. When considering the rural versus the urban effect, the same pattern of the overall state has been replicated (tables 4.20, 4.21, 4.22, 4.23, 4.24, 4.25 in the annexes).
Table (4.9): Income gap reduction (for household by SDG):

<table>
<thead>
<tr>
<th>Area</th>
<th>Income gap reduction (for household by SDG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khartoum State</td>
<td>279</td>
</tr>
<tr>
<td>Rural Khartoum State</td>
<td>1012.32</td>
</tr>
<tr>
<td>Uran Khartoum State</td>
<td>377.46</td>
</tr>
</tbody>
</table>

Source: Study field survey 2007
Table (4.10): Actually Consumed and Required Calories and food poverty line in Khartoum State

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day actually consumed calories*</th>
<th>per day required calories</th>
<th>price (SDG per Kg of diet)</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>141.8</td>
<td>11.3</td>
<td>0.023</td>
<td>0.266</td>
</tr>
<tr>
<td>Bread</td>
<td>1255.91</td>
<td>100.5</td>
<td>0.004</td>
<td>0.443</td>
</tr>
<tr>
<td>Meat</td>
<td>83</td>
<td>6.6</td>
<td>0.039</td>
<td>0.262</td>
</tr>
<tr>
<td>potatoes</td>
<td>22.136</td>
<td>1.8</td>
<td>0.159</td>
<td>0.282</td>
</tr>
<tr>
<td>Egg</td>
<td>124.25</td>
<td>9.9</td>
<td>0.011</td>
<td>0.108</td>
</tr>
<tr>
<td>Broad beans</td>
<td>25.69</td>
<td>2.1</td>
<td>0.029</td>
<td>0.059</td>
</tr>
<tr>
<td>Sugar</td>
<td>470.23</td>
<td>37.6</td>
<td>0.003</td>
<td>0.130</td>
</tr>
<tr>
<td>Total</td>
<td>2123.016</td>
<td></td>
<td></td>
<td>1.551</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Table (4.11): Actually Consumed and Required Calories and food poverty line in Rural Khartoum State:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>121.32</td>
<td>35.1828</td>
<td>0.027</td>
<td>0.964</td>
</tr>
<tr>
<td>Bread</td>
<td>1112.23</td>
<td>322.5467</td>
<td>0.005</td>
<td>1.607</td>
</tr>
<tr>
<td>Meat</td>
<td>75.04</td>
<td>21.7616</td>
<td>0.044</td>
<td>0.949</td>
</tr>
<tr>
<td>Potatoes</td>
<td>19.3</td>
<td>5.597</td>
<td>0.183</td>
<td>1.023</td>
</tr>
<tr>
<td>Egg</td>
<td>19.3</td>
<td>5.597</td>
<td>0.070</td>
<td>0.393</td>
</tr>
<tr>
<td>Broad beans</td>
<td>22.22</td>
<td>6.4438</td>
<td>0.033</td>
<td>0.215</td>
</tr>
<tr>
<td>Sugar</td>
<td>416.01</td>
<td>120.6429</td>
<td>0.004</td>
<td>0.473</td>
</tr>
<tr>
<td>Total</td>
<td>1785.4</td>
<td>517.8</td>
<td></td>
<td>5.624</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Table (4.12) actually consumed and Required Calories and food poverty line in Urban Khartoum State:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day actually consumed calories*</th>
<th>Scaled up per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>165.02</td>
<td>16.502</td>
<td>0.023</td>
<td>0.376</td>
</tr>
<tr>
<td>Bread</td>
<td>1160.27</td>
<td>116.027</td>
<td>0.004</td>
<td>0.513</td>
</tr>
<tr>
<td>Meat</td>
<td>97.54</td>
<td>9.754</td>
<td>0.062</td>
<td>0.606</td>
</tr>
<tr>
<td>Potatoes</td>
<td>28.23</td>
<td>2.823</td>
<td>0.037</td>
<td>0.104</td>
</tr>
<tr>
<td>Egg</td>
<td>43.11</td>
<td>4.311</td>
<td>0.022</td>
<td>0.096</td>
</tr>
<tr>
<td>Broad beans</td>
<td>30.88</td>
<td>3.088</td>
<td>0.042</td>
<td>0.128</td>
</tr>
<tr>
<td>Sugar</td>
<td>568.5</td>
<td>56.85</td>
<td>0.005</td>
<td>0.270</td>
</tr>
<tr>
<td>Total</td>
<td>2093.55</td>
<td>209.355</td>
<td></td>
<td>2.097</td>
</tr>
</tbody>
</table>

Source study field survey 2007
4.4.4 The Food meal composition of a typical household in Khartoum state and at rural and urban levels:

The study assumed the typical household meal in Khartoum state to be composed of bread, sugar, milk, red meat, eggs, broad beans and potatoes. The consumption of these food items may differ between the rural and urban areas of the three main areas of the state. The bread, sugar and potatoes food items provide the basic needs of body survival and energy requirement for maintenance and efforts expenditure, while in addition to their supply of Energy, milk, eggs, red meat and broad beans they supply the body with its basic needs for growth and muscle building. The introduction of eggs and potatoes has been recent due to the expansion in demand of change in taste created by the expanded production of new investors for quick profit earning. From table 4.8 it noted that bread has constituted the largest source of calorie intake followed by milk and eggs in Khartoum state. However, rural people, who enjoy more red meat and broad beans than eggs, do not consume eggs on the same level. In urban areas, people prefer more red meat than eggs, though egg consumption has been increasing in fast food meals.

The point is that consumption of these food items dictated by several factors namely their prices, the prices of their substitutes and/or their
complementarities, the income of the household, the number of people in the family and the taste developed for these food items. Moreover the income and price elasticity of these food items also dictate the quantity bought or sold in the market. In this regard, bread prices began to increase by the turn of 2007, and started to lay pressure on the income of the households, especially the poor ones. Red meat, on the other hand, also experienced price increases based on the export situation of live sheep to Saudi Arabia, the major market for Sudan livestock exports. It stated that the price of the red meat in Khartoum state has been almost similar, if not higher than its price in Saudi Arabia markets. This rise in the red meat prices has also added its toll on the poor households in Khartoum state. The poor households either buy the intestines and other non-valuable parts of meat or buy the red meat on intervals when they can afford it. The prices of milk, potatoes and broad beans have almost been stable for a long time since they were produced in large quantities and since the two produced crops, (potatoes and broad beans) are storable products. The price of eggs fluctuates due to seasonality and poultry diseases outbreaks.

Services and channels, which render a high cost on their purchases not being affordable by the existing income level of the rural households
4.5 Poverty status by socioeconomic characteristics:

Socio-economic characteristics of the poor household expected to have great effects on poverty incidences in the study area. The field survey covered collection information on poor households’ age, occupation, source of secondary income, level of education, type of family, transport and house ownership, water sources, health, and problems facing the poor households in accessing basic services.

As figure 4.6 indicates, households in Khartoum state suffer from shortage of some basic needs and services. About 42.5% of the poor household compared to about 30.9% of the non-poor household had difficulty in accessing basic education for their children because of the high education cost. Accordingly, about 17.5% of the poor households forced their children into marginal jobs to contribute to family income. About 35% of the poor against 30.9% of the non-poor suffer from discontinued supply of clean safe tab-water. About 20% of poor household and 25% of non-poor household had problems on obtaining medical insurance program.

4.5.1 Poverty status by age:

As figure 4.7 shows, most of the poor headed-households and non-poor fall within the age scale of 41-50 years old. While 11% of the non-poor headed-
Figure (4.6): Poverty status by selected characteristics of household

Source study field survey 2007

Figure 4.7: Poverty status by age in Khartoum State

Source study field survey 2007
households were young with expectations for a better standard of living, about 13.7% of the poor headed-households fall within the 51-60 years old indicating the relevance of aging and the captivity of the household in the poverty trap

4.5.2 Poverty status by level of education:

As figure 4.8 shows most of the poor headed-households had primary and secondary education and few of them were illiterate or had Khalwa education. Limited number of the poor headed-households had been able to complete the university level. On the other hand, the non-poor headed-household privileged with high secondary and university education levels.

4.5.3 Poverty status by primary and secondary occupation:

Having an occupation is a generally acceptable mean of generating decent income among households in a society. As shown in figure 4.9, the study has identified the different occupations of the respondents’ headed-households in Khartoum state in the following manner: government employees (18%), petty traders (6.7%) and labor (8.9%). The last two types are co-notated with low level of education and widespread problem of unemployment. Nevertheless, people resort to secondary occupations to increase their level
Figure (4.8): Poverty status by level of education in Khartoum State:

Source study field survey 2007

Figure (4.9): Poverty status by Occupation in Khartoum State:

Source study field survey 2007
of income and to cope with the rising cost of living demands. The results of the study depicted about 25.6% that more poor headed-households had been able to have a second occupation than the non-poor ones (table 4.11). While Non-poor headed-household had a main and a secondary occupation (16.3%), about 25% of the poor-headed-households had a secondary occupation. However, it seemed that the quality and payment of the secondary source of income is low in both absolute and relative terms than those of the non-poor simply because of their low educational and skills endowments. Moreover, it also found that more non-poor families receive additional income from renting a car or a building (house, offices or storehouses) and from inheritance. About 24 % of the poor headed-household compared to 8.3% of the non-poor did not have access to another occupation or source of income.
Table (4.13): Poverty status by secondary source of income in Khartoum State

<table>
<thead>
<tr>
<th>Poverty status</th>
<th>Type of secondary Source</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Another work</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>25.6</td>
<td>48.9</td>
</tr>
<tr>
<td>Non-poor</td>
<td>16.3</td>
<td>51.1</td>
</tr>
<tr>
<td>Total</td>
<td>41.9</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Rent of car or building</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>5.5</td>
<td>15</td>
</tr>
<tr>
<td>Non-poor</td>
<td>15.8</td>
<td>10.7</td>
</tr>
<tr>
<td>Total</td>
<td>21.3</td>
<td>25.7</td>
</tr>
<tr>
<td></td>
<td>inheritance</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Non-poor</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Non-poor</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25.7</td>
<td></td>
</tr>
</tbody>
</table>

Source: study field survey 2007
4.5.4 Poverty status by family size:

The extended family constitutes a basic characteristic in most parts of Sudan. In this context, the results of the analysis indicated that almost 57% of the poor households and 38% of the non-poor had one form or another of extended families (table 4.12). The 20% of the nuclear families of the poor may reflect the nature of incoming migrants and IDPs into Khartoum state in single or in few numbers to explore the possibility of living in the state. The 38% of the nuclear families among the non-poor household reflects the evolutionary effect of urbanization and its economic impacts in reducing the number of extended families into more simple families that have to meet the increasing expenses of life. From this result, it may be argued that extended families are closely correlated to poverty level.

4.5.5 Poverty status by Source of water:

Table 4.13 showed that about 30% of the poor households get drinking water from the national grid and that about 10.6% get water by buying on the street for not being able to pay their monthly water supply bills. About 43.7% of non-poor households get their water from the national grid and 6.2% obtain water from own well-driven water pumps. This low access to drinking water in the state has been a manifestation of poor quality services offered by the authorities at high cost.
Table (4.14): Poverty status by Type of Family in Khartoum State:

<table>
<thead>
<tr>
<th>Poverty status</th>
<th>Type of Family</th>
<th>Nuclear</th>
<th>Compilation</th>
<th>Extended</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td></td>
<td>20.8</td>
<td>13.7</td>
<td>14.3</td>
<td>48.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(13.7+14.3=28)</td>
<td>0.57</td>
</tr>
<tr>
<td>Non-poor</td>
<td></td>
<td>32.2</td>
<td>14.4</td>
<td>4.6</td>
<td>51.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(14.4+4.6=19.0)</td>
<td>0.38</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>53</td>
<td>29.1</td>
<td>18.9</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Table (4.15) Poverty status by Source of water:

<table>
<thead>
<tr>
<th>Poverty status</th>
<th>Source of water services Mechanized Water System</th>
<th>Pumping System</th>
<th>Water barrels sold in street</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>30.3</td>
<td>8</td>
<td>10.6</td>
<td>48.9</td>
</tr>
<tr>
<td>Non-poor</td>
<td>43.7</td>
<td>6.2</td>
<td>1.2</td>
<td>51.1</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>14.2</td>
<td>11.8</td>
<td>100</td>
</tr>
</tbody>
</table>

Source study field survey 2007
The problem of the national grid is not restricted to poor irregular supply of enough clean water, but in the limited distribution of highly infected water to the extent that private sector supply of bottled water and animal-driven barrel-water laden-carts sale business have flourished in Khartoum state. The State government pledged that its prime priority for the 2009 and next year’s budget year is to solve the drinking water problem for all citizens in the state.

4.5.6 Poverty status by type of transport:

From table 4.14, the main type of transport in Khartoum state is the public transport for almost 76% of the poor and 67% of the non-poor respondents in the state. Nevertheless, it observed that not less than 10% of the poor and 7% of the non-poor households use government cars. The government had offered a number of its senior staff the opportunity to drive government vehicles to facilitate their ease access and fulfillment of their jobs on time and when needed. However, this facility have rendered under relatively strict supervision against personal interest use. While 25% of the non-poor use their private cars for transportation, about 12% of the poor use their private cars for transportation and for income generation.
Table (4.16): Poverty status by Type of transport in Khartoum State:

<table>
<thead>
<tr>
<th>Poverty status</th>
<th>Type of transport</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private car</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>6.1 (0.12)</td>
<td>48.9</td>
</tr>
<tr>
<td>Non-poor</td>
<td>13.2 (0.25)</td>
<td>51.1</td>
</tr>
<tr>
<td>Total</td>
<td>19.3</td>
<td>100</td>
</tr>
</tbody>
</table>

|                | Government        |       |
| Poor           | 5.6 (0.11)        |       |
| Non-poor       | 3.5 (0.7)         |       |
| Total          | 9.1               |       |

|                | Public transport  |       |
| Poor           | 37.2 (0.76)       |       |
| Non-poor       | 34.4 (0.67)       |       |
| Total          | 71.6              |       |

Source: study field survey 2007
4.5.7 Poverty status by type of sources of medical services:

As table 4.15 depicts about 26.15% of the poor household against 21.85 of non-poor go to the general hospital and 13.2% of the poor against 14% of non-poor who had health insurance. Similar percentages of both segments visit the medical centres as an inelastic price and income demand commodity. Very few of the two segments use traditional medicine for treatment. This result may indicate the high cost incurred in medical treatment by both the poor and non-poor segments of the respondents in the state. Only the able ones of the non-poor (8.1%) can visit the private medical clinics.

4.6 Respondents classifying themselves as poor and non-poor households:

Respondents define whom as the following:

- Are not able to pay their daily food expenses (46%),
- Cannot afford paying their monthly expenses (13%),
- Whose income cannot cover their expenses (14%),
- Are not able to obtain their basic needs (8%),
- Do not have regular source of income (15%) (See figure 4.10).

Given these definitions, about 59% of the respondents classified themselves as poor, 36% as middleclass (36%) and 55 as well off (see figure 4.11).
Table (4.17) Poverty status by Source of medical services in Khartoum State:

<table>
<thead>
<tr>
<th>Poverty status</th>
<th>Source of medical services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>private</td>
<td>General hospital</td>
</tr>
<tr>
<td>Poor</td>
<td>0.7</td>
<td>26.1</td>
</tr>
<tr>
<td>Non-poor</td>
<td>8.1</td>
<td>21.8</td>
</tr>
<tr>
<td>Total</td>
<td>8.8</td>
<td>47.9</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Figure (4.10): Classification of poor by respondents:

- 46% who can not afford to pay daily food
- 15% who can not cover his monthly expenditure
- 14% who can not cover his yearly expenditure
- 13% whose income is less than expenditure
- 8% who can not access to his basic need
- 4% who have not regular source of income

Source: Study Field Survey 2007
These definitions and classifications are not far from the formal definitions and classifications. The definitions rotate around income capacity of affording payment for food as a necessity for survival, while the classification is still reiterating the 1960s and 1970s classification of societies into first, middle and third class, which seem to have disappeared in the 1990s into rich and poor segments of the society; those who have and those who have not.

4.8 Causes of poverty in Khartoum State:

In order to delineate the coping mechanisms of the poor households’ respondents need to underline the causes of poverty in Khartoum state. As table 4.16 reveals, the main outlined causes of poverty are in the following order: soaring food prices signaled by 17.4% of the respondents, low wages and high taxes by 16.4%, natural disaster by 14.4%, the long civil wars by 12.25% and the shortage in basic service (education health, housing, water.) by 11.1%.
Figure (4.11): Classification of poverty status by respondents:

Source: study field survey 2007
### Table (4.18): Respondent response of causes of poverty in Khartoum State:

<table>
<thead>
<tr>
<th>Causes of poverty</th>
<th>Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil war</td>
<td>12.2</td>
</tr>
<tr>
<td>Natural disaster</td>
<td>14.4</td>
</tr>
<tr>
<td>Low wages</td>
<td>16.4</td>
</tr>
<tr>
<td>Rising of food prices</td>
<td>17.4</td>
</tr>
<tr>
<td>Unemployment</td>
<td>12.1</td>
</tr>
<tr>
<td>Shortage of basic services</td>
<td>11.1</td>
</tr>
<tr>
<td>High taxes</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: study field survey 2007
4.9 Adopted and suggested coping and protecting mechanisms against poverty in Khartoum state:

4.9.1 Coping mechanisms to mitigate poverty in Khartoum State:

The coping mechanisms ranged between positive and negative ones as shown in table 4.17. The major way out for most of the respondents had been to look for financial support in form of loans, credit and Zakat for establishing own micro-enterprises for income generation. Another avenue for mitigation of poverty has in looking for an employment in the form of a supplementary job, leaving the country into Saudi Arabia or the Gulf states. Selling of assets and withdrawing children from schools in search for marginal jobs have been among the suggested solutions. Reducing the number of the meals has been among the main suggested vain alternatives for mitigating the effects of poverty.

4.9.2 Suggested protecting measures against poverty incidence in Khartoum state:

As figure 4.12 suggests, additional protecting measures has considered as sound for reducing the negative repercussions of poverty among poor households. About 54% of the poor respondents identified job search and self-employment as a main tool to protect them against the poverty trap. About 15% considered home budgeting as crucial in balancing
Table (4.19): Coping mechanisms used by respondents to mitigate poverty in Khartoum State:

<table>
<thead>
<tr>
<th>Coping mechanisms</th>
<th>Response percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrow money</td>
<td>27.5</td>
</tr>
<tr>
<td>Supplementary jobs</td>
<td>17.7</td>
</tr>
<tr>
<td>Financial support</td>
<td>7.4</td>
</tr>
<tr>
<td>Zakat</td>
<td>3.8</td>
</tr>
<tr>
<td>Stop kids education</td>
<td>7.1</td>
</tr>
<tr>
<td>Reduce numbers of meals</td>
<td>11.9</td>
</tr>
<tr>
<td>Access to credit</td>
<td>5.8</td>
</tr>
<tr>
<td>Selling of assets</td>
<td>8.3</td>
</tr>
<tr>
<td>Traveling outside Sudan</td>
<td>10.6</td>
</tr>
<tr>
<td>Total responses</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Their income and expenditure, while 11% proposed the establishment of productive and consumption cooperative societies to provide them with decent sources of livelihood. The others just reiterated same coping measures mentioned above which included reducing of spending on food (6%), generating income activities (10%), and migration out of Sudan (2%), while 2% of the respondents were depressed, as they could not suggest any solution for pulling out of the poverty trap.

It seemed strange that none of the suggested solutions requested the government and the international organizations to do something about this issue despite their wide allegation of promoting policies and programs for poverty alleviation. No one referred to the Millennium Development Goals (MDGs) of reducing poverty and food insecurity by half of its present position by 2015. Even though for those who suggested need for financial support in the form of credit have not discussed the role of micro-finance project that began to loam widely in the social-development banks. The family bank is one of the enlarging tools for the spread of micro-finance, but its access seems to been restricted by rules and regulations inaccessible and unaffordable by the majority of the real needy ones.
Figure (4.12): Protection from poverty cycle:

Source: study field survey 2007
CHAPER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This provides the summary of the study, the conclusions drawn out from the findings, and the main recommendations for improvement of the situation of the poor people in Khartoum state.

5.1 Summary:

This study was conducted in Khartoum state (2007-2008) with an objective of characterizing the nature, type and extent of poverty in urban and rural areas of Khartoum State. It was also conducted for identifying the coping strategies of the poor people in dealing with their current situation. The study targeted three area of Khartoum state covering 32 residential areas in the State, in Khartoum, Khartoum north and Omdurman areas. This study had been based on both primary and secondary data collection. The Primary data have been collected from the household surveys using a structured questionnaire from a stratified multistage random sample. The selected household heads had been based on 1% from each area giving a total sample size of 400 households, of whom 395 households gave positive responses.

The study used the Cost of Basic Needs (CBN) approach and Food Energy Intakes (FEI) approach for poverty analysis. This including the estimated of
the poverty line \{poverty index (p^0), poverty depth (p^1) and poverty severity (p^2)\}. and development of Lorenz Curve and Gini coefficient for income distribution. The study also used the Participatory Poverty Assessments (PPAs) for completing the poverty profile.

The results showed high spending on food items in the rural and the urban areas in Khartoum state, and Khartoum areas is the higher areas on spending on food, although the nutrition status in the state and areas fell under WHO recommended daily allowance (2300 kilo-calories).

48% of the respondents in Khartoum state fell below the poverty line. The food poverty line in Khartoum state has been estimated at SDG 206.4. The level of the respondents below the poverty line had been highest in Khartoum areas and lowest in Khartoum north areas.

The poverty gap and severity also indicate similar patterns showing a high gap and severity for the state and for Khartoum areas.

The poverty incidence in rural Khartoum (70%) has been higher than in the urban areas (27%), with rural Khartoum areas mostly suffering than the other two areas. However, when comparing urban poverty, Khartoum areas turns out to be in a better position (24%) than the other two areas (37% each). The poverty gap and poverty severity reflect similar patterns as those
of the head count indicators. The Lorenz curve analysis depicted the existence of inequity in income distribution in the state, with the highest inequity occurring in Khartoum North area explained along the same lines as stated earlier. The other two areas (Khartoum and Omdurman) indicated better income distribution.

The consumption of the food items may differ between the rural and urban areas of the three main areas of the state. It is noted that bread represents the largest source of calorie intake followed by milk and eggs in Khartoum state.

The study indicates that households in Khartoum state suffer from shortage of some basic needs and services. And the study results showed that there is high significant difference between the poor and non-poor households in access to basic needs and services and their socio-economic characteristics. The poor households had difficulty in accessing basic education for their children because of high education cost. They were more inclined to force their children into marginal jobs to contribute to family income. They also suffer from discontinued supply of clean safe tap-water and they had problems of obtaining medical insurance program.

Poor headed-households and non-poor fall within the age group of 41-50 years old and the main occupation of the poor household heads were
government employees’. The results showed that most of the poor headed-households had primary and secondary education. On the other hand, the non-poor headed-household had been advantaged with high secondary and university education levels. The poor and non-poor households get drinking water from the national network and they suffer from low access to drinking water in the state. The main type of transport in Khartoum state is the public transport for almost 76% of the poor and 67% of the non-poor respondents in the state.

The study results lay out some of the coping mechanisms used by the respondents ranging between positive and negative ones. The negative ones as selling of assets and withdrawing children from schools in search for marginal jobs have been among the suggested solutions. Reducing the number of the meals has been among the main suggested alternatives for mitigating the effects of poverty. And the positive one as credit for establishing own micro-enterprises for income generation.

Protecting measures have laid out some tools used by households for reducing the negative repercussions of poverty. About 54% of the poor respondents identified job search and self-employment as a main tool to protect them against the poverty trap. Establishment of productive and consumption cooperative societies, reducing of spending on food. The poor
households’ respondents recognized the causes of poverty in Khartoum state to soaring of food prices, low wages, high taxes, natural disaster, long civil wars and shortage in basic services.

5.2 Conclusion:

• Low income – employment relationship and low level of education of household heads had bad effects on their economic and social situation. Large numbers of population in the state, especially in the rural areas suffered from low income.

• High spending on food items in the rural and urban areas in Khartoum state with under nutrition.

• People with low income included government employees.

• Low income people who fell below poverty line were in rural Khartoum areas.

• Inequity in income distribution concentrated in the state, especially in Khartoum north areas.

• Shortage in access to basic needs service, particularly drinking water, free education and insurance medical services.

• Negative coping mechanisms have been used by most of the respondents and had complicated poverty effects.
5.3 Recommendations:

The following recommendations have been based on the results of the study:

- Adoption and implementation of packages that promote income rising and diversify especially among the most affected households (in rural Khartoum areas).
- Encourage income generating projects among low income groups with cooperatives and micro-enterprises.
- Increase supply of basic services by the government especially access to drinking water, health service, free education.
- Improve awareness of poor people to cope with poverty shocks.
- Improve skills of poor people by training for self-employment to manage micro-enterprises.
- Activate the role of civil society organizations to raise (CBOs) for developed human capacity like (Sanaa Alhaya originations).
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Annex Table (4.20): Actually Consumed and Required Calories and food poverty line in Khartoum Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>125.96</td>
<td>26.5</td>
<td>0.030</td>
<td>0.80</td>
</tr>
<tr>
<td>Bread</td>
<td>1192.08</td>
<td>250.3</td>
<td>0.004</td>
<td>1.01</td>
</tr>
<tr>
<td>Meat</td>
<td>95.6</td>
<td>20.1</td>
<td>0.075</td>
<td>1.50</td>
</tr>
<tr>
<td>potatoes</td>
<td>15.815</td>
<td>3.3</td>
<td>0.516</td>
<td>1.71</td>
</tr>
<tr>
<td>Egg</td>
<td>22.3</td>
<td>4.7</td>
<td>0.031</td>
<td>0.15</td>
</tr>
<tr>
<td>Broad beans</td>
<td>22.184</td>
<td>4.7</td>
<td>0.052</td>
<td>0.24</td>
</tr>
<tr>
<td>Sugar</td>
<td>420.6</td>
<td>88.3</td>
<td>0.006</td>
<td>0.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1894.54</strong></td>
<td><strong>397.9</strong></td>
<td></td>
<td><strong>5.90</strong></td>
</tr>
</tbody>
</table>

Source study field survey2007
Table (4.21): Actually Consumed and Required Calories and food poverty line in Khartoum North Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>milks</td>
<td>140.27</td>
<td>15.4297</td>
<td>0.027</td>
<td>0.409</td>
</tr>
<tr>
<td>bread</td>
<td>1266.74</td>
<td>139.3414</td>
<td>0.005</td>
<td>0.701</td>
</tr>
<tr>
<td>meat</td>
<td>78.298</td>
<td>8.61278</td>
<td>0.106</td>
<td>0.913</td>
</tr>
<tr>
<td>potatoes</td>
<td>29.08</td>
<td>3.1988</td>
<td>0.051</td>
<td>0.162</td>
</tr>
<tr>
<td>Egg</td>
<td>40.88</td>
<td>4.4968</td>
<td>0.050</td>
<td>0.224</td>
</tr>
<tr>
<td>Broad beans</td>
<td>28.32</td>
<td>3.1152</td>
<td>0.052</td>
<td>0.161</td>
</tr>
<tr>
<td>sugar</td>
<td>485.66</td>
<td>53.4226</td>
<td>0.009</td>
<td>0.472</td>
</tr>
<tr>
<td>Total</td>
<td>2069.25</td>
<td>227.61728</td>
<td></td>
<td><strong>3.041</strong></td>
</tr>
</tbody>
</table>

Source study field survey2007
Table (4.22): Actually Consumed and Required Calories and Food

Poverty Line in Omdurman Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>151.58</td>
<td>13.64</td>
<td>0.027</td>
<td>0.363</td>
</tr>
<tr>
<td>Bread</td>
<td>1310.52</td>
<td>117.95</td>
<td>0.004</td>
<td>0.476</td>
</tr>
<tr>
<td>Meat</td>
<td>74.24</td>
<td>6.68</td>
<td>0.088</td>
<td>0.588</td>
</tr>
<tr>
<td>Potatoes</td>
<td>23.03</td>
<td>2.07</td>
<td>0.036</td>
<td>0.075</td>
</tr>
<tr>
<td>Egg</td>
<td>25.44</td>
<td>2.29</td>
<td>0.028</td>
<td>0.065</td>
</tr>
<tr>
<td>Broad beans</td>
<td>27.11</td>
<td>2.44</td>
<td>0.051</td>
<td>0.126</td>
</tr>
<tr>
<td>Sugar</td>
<td>507.29</td>
<td>45.66</td>
<td>0.006</td>
<td>0.257</td>
</tr>
<tr>
<td>Total</td>
<td>2119.21</td>
<td>190.73</td>
<td></td>
<td><strong>1.949</strong></td>
</tr>
</tbody>
</table>

Source study field survey 2007
Annex Table (4.23): Actually Consumed and Required Calories and Food Poverty Line in Rural North Khartoum Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>milks</td>
<td>140.12</td>
<td>28.024</td>
<td>0.028</td>
<td>0.776</td>
</tr>
<tr>
<td>bread</td>
<td>1194.93</td>
<td>238.986</td>
<td>0.006</td>
<td>1.537</td>
</tr>
<tr>
<td>meat</td>
<td>81.72</td>
<td>16.344</td>
<td>0.066</td>
<td>1.078</td>
</tr>
<tr>
<td>potatoes</td>
<td>29.8</td>
<td>5.960</td>
<td>0.060</td>
<td>0.360</td>
</tr>
<tr>
<td>egg</td>
<td>34.79</td>
<td>6.958</td>
<td>0.082</td>
<td>0.570</td>
</tr>
<tr>
<td>Broad beans</td>
<td>24.84</td>
<td>4.968</td>
<td>0.062</td>
<td>0.308</td>
</tr>
<tr>
<td>sugar</td>
<td>440.72</td>
<td>88.144</td>
<td>0.013</td>
<td>1.168</td>
</tr>
<tr>
<td>total</td>
<td>1946.92</td>
<td></td>
<td></td>
<td>5.80</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Annex Table (4.24): Actually Consumed and Required Calories and Food Poverty Line in Urban North Khartoum Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>140.44</td>
<td>18.26</td>
<td>0.025</td>
<td>0.461</td>
</tr>
<tr>
<td>Bread</td>
<td>1211.892</td>
<td>157.55</td>
<td>0.004</td>
<td>0.642</td>
</tr>
<tr>
<td>Meat</td>
<td>74.61</td>
<td>9.70</td>
<td>0.069</td>
<td>0.671</td>
</tr>
<tr>
<td>potatoes</td>
<td>28.31</td>
<td>3.68</td>
<td>0.039</td>
<td>0.144</td>
</tr>
<tr>
<td>Egg</td>
<td>47.44</td>
<td>6.17</td>
<td>0.024</td>
<td>0.149</td>
</tr>
<tr>
<td>Broad beans</td>
<td>32.07</td>
<td>4.17</td>
<td>0.043</td>
<td>0.178</td>
</tr>
<tr>
<td>Sugar</td>
<td>531.11</td>
<td>69.04</td>
<td>0.005</td>
<td>0.337</td>
</tr>
<tr>
<td>Total</td>
<td>2065.872</td>
<td></td>
<td></td>
<td>2.583</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Annex Table (4.25): Actually Consumed and Required Calories and Food Poverty Line in Rural Khartoum Area.

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>89.61</td>
<td>43.013</td>
<td>0.031</td>
<td>1.29</td>
</tr>
<tr>
<td>Bread</td>
<td>985.4</td>
<td>472.992</td>
<td>0.004</td>
<td>1.97</td>
</tr>
<tr>
<td>Meat</td>
<td>69.7</td>
<td>33.456</td>
<td>0.059</td>
<td>1.88</td>
</tr>
<tr>
<td>potatoes</td>
<td>12.81</td>
<td>6.149</td>
<td>0.046</td>
<td>0.27</td>
</tr>
<tr>
<td>Egg</td>
<td>10.34</td>
<td>4.963</td>
<td>0.057</td>
<td>0.27</td>
</tr>
<tr>
<td>Broad beans</td>
<td>19.13</td>
<td>9.182</td>
<td>0.048</td>
<td>0.42</td>
</tr>
<tr>
<td>Sugar</td>
<td>362.97</td>
<td>174.226</td>
<td>0.006</td>
<td>0.93</td>
</tr>
<tr>
<td>Total</td>
<td>1549.96</td>
<td></td>
<td></td>
<td>7.04</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Annex Table (4.26): Actually Consumed and Required Calories and Food Poverty Line in Urban Khartoum Area.

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>169.7</td>
<td>18.67</td>
<td>0.023</td>
<td>0.055</td>
</tr>
<tr>
<td>Bread</td>
<td>1175.12</td>
<td>129.26</td>
<td>0.005</td>
<td>0.002</td>
</tr>
<tr>
<td>Meat</td>
<td>126.68</td>
<td>13.93</td>
<td>0.050</td>
<td>0.251</td>
</tr>
<tr>
<td>potatoes</td>
<td>19.43</td>
<td>2.14</td>
<td>0.056</td>
<td>0.317</td>
</tr>
<tr>
<td>Egg</td>
<td>36.69</td>
<td>4.04</td>
<td>0.023</td>
<td>0.051</td>
</tr>
<tr>
<td>Broad beans</td>
<td>25.89</td>
<td>2.85</td>
<td>0.042</td>
<td>0.176</td>
</tr>
<tr>
<td>Sugar</td>
<td>489.95</td>
<td>53.89</td>
<td>0.006</td>
<td>0.003</td>
</tr>
<tr>
<td>Total</td>
<td>2043.46</td>
<td></td>
<td></td>
<td>0.856</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Annex Table (4.27): Actually Consumed and Required Calories and Food Poverty Line in Rural Omdurman Area:

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>136.7</td>
<td>35.542</td>
<td>0.025</td>
<td>0.893</td>
</tr>
<tr>
<td>Bread</td>
<td>1146.63</td>
<td>298.124</td>
<td>0.004</td>
<td>1.209</td>
</tr>
<tr>
<td>Meat</td>
<td>72.96</td>
<td>18.970</td>
<td>0.066</td>
<td>1.260</td>
</tr>
<tr>
<td>Potatoes</td>
<td>18.09</td>
<td>4.703</td>
<td>0.036</td>
<td>0.168</td>
</tr>
<tr>
<td>Egg</td>
<td>16.84</td>
<td>4.378</td>
<td>0.026</td>
<td>0.114</td>
</tr>
<tr>
<td>Broad beans</td>
<td>23.08</td>
<td>6.001</td>
<td>0.047</td>
<td>0.280</td>
</tr>
<tr>
<td>Sugar</td>
<td>446.73</td>
<td>116.150</td>
<td>0.005</td>
<td>0.628</td>
</tr>
<tr>
<td>Total</td>
<td>1861.03</td>
<td></td>
<td></td>
<td>4.552</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Annex Table (4.28): Actually Consumed and Required Calories and Food Poverty Line in Urban Omdurman Area.

<table>
<thead>
<tr>
<th>Main diet</th>
<th>per day Actually consumed calories*</th>
<th>per day required calories</th>
<th>price per Kg of diet</th>
<th>poverty line in SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milks</td>
<td>182.62</td>
<td>10.9572</td>
<td>0.021</td>
<td>0.227</td>
</tr>
<tr>
<td>Bread</td>
<td>1095.62</td>
<td>65.7372</td>
<td>0.005</td>
<td>0.304</td>
</tr>
<tr>
<td>Meat</td>
<td>86.16</td>
<td>5.1696</td>
<td>0.088</td>
<td>0.456</td>
</tr>
<tr>
<td>potatoes</td>
<td>38.02</td>
<td>2.2812</td>
<td>0.025</td>
<td>0.056</td>
</tr>
<tr>
<td>Egg</td>
<td>46.28</td>
<td>2.7768</td>
<td>0.020</td>
<td>0.055</td>
</tr>
<tr>
<td>Broad beans</td>
<td>35.4</td>
<td>2.124</td>
<td>0.039</td>
<td>0.084</td>
</tr>
<tr>
<td>Sugar</td>
<td>691.45</td>
<td>41.487</td>
<td>0.004</td>
<td>0.170</td>
</tr>
<tr>
<td>Total</td>
<td>2175.55</td>
<td></td>
<td></td>
<td>1.351</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Table (4.29): Estimated non-Food Demand in Khartoum Area:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated coefficient</th>
<th>Standard error</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of total expenditure to food expenditure in Khartoum area</td>
<td>.349*</td>
<td>.173</td>
<td>.690</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure in rural Khartoum area</td>
<td>.375**</td>
<td>.219</td>
<td>.760</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure urban Khartoum area</td>
<td>.375**</td>
<td>.219</td>
<td>.760</td>
</tr>
</tbody>
</table>

Source study field survey 2007
Dependent variable: share of total expenditure of household
Table (4.30): Estimated non- Food Demand in Khartoum North Area:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated coefficient</th>
<th>Standard error</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of total expenditure to food expenditure in Khartoum North area</td>
<td>.094**</td>
<td>.269</td>
<td>.641</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure in rural Khartoum North area</td>
<td>.479</td>
<td>.419</td>
<td>.664</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure urban Khartoum North area</td>
<td>.575*</td>
<td>.324</td>
<td>.590</td>
</tr>
</tbody>
</table>

Source study field survey2007
Dependent variable: share of total expenditure of household
**Table (4.31): Estimated non- Food Demand in Omdurman Area:**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated coefficient</th>
<th>Standard error</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of total expenditure to food expenditure in Omdurman area</td>
<td>$.749***</td>
<td>.257</td>
<td>150.513</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure in rural Omdurman area</td>
<td>$.190**</td>
<td>.283</td>
<td>95.327</td>
</tr>
<tr>
<td>Share of total expenditure to food expenditure urban Omdurman area</td>
<td>1.430*</td>
<td>.593</td>
<td>41.414</td>
</tr>
</tbody>
</table>

Source: study field survey 2007
Dependent variable: share of total expenditure of household