Effects of the Global Financial Crisis on the Food Security of Poor Urban Households;

CASE STUDY KITWE, ZAMBIA

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This case study is one of **five case studies** implemented in the context of the study on the effects of the global crisis on the food security of poor urban households (which are accessible on line at www.ruaf.org and www.idrc.org), including -next to the Kitwe case study-:

- Mattah, Agbeko P.D. and Jonas Kofi Akpakli, Effects of the global financial crisis on the food security of poor urban households: CASE STUDY **ACCRA, GHANA**; Humanity Focus Foundation, Accra and RUAF Foundation, Leusden, July 2010.
- Yavich, Natalia et al, Effects of the global financial crisis on the food security of poor urban households: CASE STUDY **ROSARIO, ARGENTINA**; Investiga Más, Estudios de Salud y Sociedad, Rosario and RUAF Foundation, Leusden, July 2010
- Sanchez, Claudia Marcela and Yibby Forero, Effects of the global financial crisis on the food security of poor urban households: CASE STUDY **BOGOTA, COLOMBIA**; IPES-Colombia, Bogota and RUAF Foundation, Leusden, July 2010.
- Atukorala, Sunethra, Pulani Lanerolle and Angela de Silva. Effects of the global financial crisis on the food security of poor urban households: CASE STUDY **COLOMBO, SRI LANKA**; Faculty of Medicine, University of Colombo, Colombo and RUAF Foundation, Leusden, July 2010

The study was undertaken in coordination with **United Nations HABITAT**, Nairobi, Kenya and the **International Development Research Centre** (IDRC), Ottawa, Canada.

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SUMMARY

Although hunger is most often associated with low agriculture output, drought, and famine in rural areas, previous studies have shown that hunger is not always related to food production or food availability. Rather, in urban areas, other factors, such as incomes, inadequate access to basic services and poor living conditions, play more significant roles. In cities, hunger is usually a consequence of people's inability to purchase food that it is both sufficient and nutritious. Thus, variations in income or food prices directly translate into rising rates of malnutrition in urban areas.

This case study in Kitwe was implemented by the School of Natural Resources of the Copperbelt University, as part of a study conducted by the RUAF Foundation (International Network of Resource Centres on Urban Agriculture and Food Security) in cooperation with the International Development Research Centre (IDRC) and the UN-Habitat on the effects of the global financial and food crises on the food security of poor urban households.

Data for the Kitwe city was collected from 300 households in 18 low income and 300 households in 12 medium income areas of Kitwe. The total sample population was 3626 persons of which 1896 (52.2%) were females and 1730 (46.7%) were males. Complete anthropometric data was collected from 690 women (i.e. 317 women in the low income areas and 373 from the medium income areas). Anthropometric data was also collected from a total of 727 eligible children aged 0-5 years, but only 510 children met all the criteria for analysis according to the WHO growth standards. The field work was carried out from 21 September to 17 October 2009. Expert opinion and additional focal group interviews were conducted from January 2010 to March 15, 2010.

An average family size of six members was realized from the survey. There were 584 heads of households out which 17.6 percent were female heads. More than 50 percent of family members in relation to the head of the household were sons or daughters. Out of ethnic groups in Kitwe, the Bemba ethnic group dominated the low and medium income areas with 57 and 53 percent shares, respectively. Education attainment was variable but lowest in the low income areas.

The global financial crisis of 2007/2008 led to an increase of food prices (already consistently rising since 2000), loss of jobs and loss of income. In the effort to cope with this situation most male household heads took up second jobs in the informal sector such as carpentry, block making guarding and other casual work while the majority of female households were engaged in trading at markets and street vending. Since such efforts respond to the crisis could not compensate for the loss of income and rising food prices, most households were compelled to reduce spending, also on food.

The majority of the households in low and medium income areas spend more than 50% of their income on food. Income spent on food items per month ranged from USD50 to USD110 per household of six in the low income group and from USD50 to USD 277 per household of six members in the medium income group.

The global financial crisis compelled the households to reduce the quantity and quality of food consumed in both low income and middle income areas. The number of meals taken in a day was reduced and with such low incomes many households did not have a wide choice of food items to purchase. As a consequence the diet is often not balanced and largely dependent on

carbohydrate based food items such as maize meal and this greatly affected children's health (more than the mothers) in the short term while the long term effects are yet to be determined.
As a consequence of household's inability to purchase food that is both sufficient and nutritious children of 0-5 years of age in Kitwe showed increased stunting (48 percent) and wasting (7.0 percent) but a small reduction in underweight (14.3 percent) than previous years of 44.2, 2.5 and 15 percent, respectively.

The interviews with experts revealed that the Zambian government has national policies in place that can be used to address poverty and hunger. However,. no specific new policy measures or strategies have been taken to address rising hunger levels due to the global financial crisis of 2008/2009. . This is despite the food riots and labour conflicts that took place in 2008 and 2009 as a result of the increased price of the staple food compounded by the decline in employment opportunities. The main policy documents that addresses hunger and poverty are the National Long Term Vision 2030, articulating alternative long-term development policy scenarios, and the Fifth National Development Plan 2006-2010 (FNDP). However, these policy documents have not been developed as a response to the global economic crunch.
The City of Kitwe does not have any city specific policies that it uses to combat hunger and poverty at household level in Kitwe

Arising from the Vision 2030 and the FNDP (2006-2010), the government has developed the following strategies to combat hunger and reduce poverty:

a. Food security pack under the Programme Against Malnutrition which is intended to promote food security at household level in order to reduce poverty and enhance household nutrition
b. Citizens Economic Empowerment programme which started in 2008 and aims at giving low interest loans to eligible citizens to establish enterprises so that they become self sustainable and create employment
c. Fertilizer Support Program which provides fertiliser inputs to farmers at subsidised prices in order to increase food production
d. Public Welfare Assistance Scheme (PWAS) that -started in 1993 to provide high protein foods to children less than five years in low income areas
e. Livestock and fisheries restocking for areas that are traditionally pastoral to assist in restocking livestock.

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LIST OF ACRONYMS

BMI	Body Mass Index
CHEP	Copperbelt Health education Project
CINDI	Children In Distress
CSA	Census Standard Area
CSO	Central Statistical Office
FAO	Food and Agriculture Organization
FDG	Focus Group Discussion
FNDP	Fifth National Development Plan
HAZ	Height for age
IDRC	International Development Research Centre
Km	Kilometre
LME	London Metal Exchange
MS	Microsoft Corporation
MDG	Millennium Development Goal
MTEF	Medium Term Economic Framework
NCHS	US National Center for Health Statistics
NGO	Non-Governmental Organization
PWAS	Public Welfare Assistance Scheme
PPS	Probability Proportional to Size
SD	Standard Deviation
SEA	Standard Enumeration Areas
VAT	Value Added Tax
WAZ	Weight for Age
WFP	World Food Programme of the UN
WHO	World Health organization
WHZ	Weight for height
UN	United Nations
UNICEF	United Nations Children's Fund
USD	United States Dollar
ZDHS	Zambia Demographic and Health Survey

1. INTRODUCTION

1.1 This study

The case study presented here is part of the "Study on the effects of the global financial crisis on the food security of poor urban households" that was undertaken in 5 cities by the RUAF Foundation on request of -and in collaboration with- the International Development Research Centre (IDRC) in Canada and UN Habitat, Nairobi.

The main objective of this study is to generate data that can help understand the extent to which rising food prices and the financial crisis are impacting on malnutrition levels in cities and how the policy and institutional context has been mitigating or exacerbating problems of food insecurity. It is hoped that the study will provide local actors with valuable information for the design of adequate policies and programmes to counteract the effects of the financial and food crisis.

An appraisal of the food security of households was conducted in selected low and middle income neighbourhoods of 5 cities in different continents through both quantitative and qualitative analysis, including Bogota (Colombia), Rosario (Argentina), Accra (Ghana), Kitwe (Zambia) and Colombo (Sri Lanka).

Although hunger is most often associated with low agriculture output, drought, and famine in rural areas, previous studies have shown that hunger is not always related to food production or availability; rather, in urban areas, other factors, such as income level, inadequate access to basic services and poor living conditions, play more significant roles. In cities, hunger is usually a consequence of people's inability to purchase food that it's both sufficient and nutritious. Moreover, food represents about 60-80 percent of consumer spending by poor urban households in developing countries. Thus, variations in income or food prices directly translate into rising rates of malnutrition in urban areas.

The financial crisis has the potential to affect developing countries and the urban poor through economic retrenchment, negative effects on the terms of trade with the rich world and consequent job losses, especially in cities which are more directly embedded in the global economy. Because of the stage-wise nature of much household migration (Natali 2009), the reduced remittances from family members working abroad can disproportionately affect urban households.

This financial crisis came at a time when most countries are still struggling with the impacts of rising food and fuel prices. Despite the decline in international cereal export prices from their peaks in the first half of 2008 and policy responses by governments, food prices have remained at high levels in many developing and low-income-food-deficit countries compared to five years ago. It is estimated by the World Bank that the high food and fuel prices alone have increased the number of extremely poor in the world by at least 100 million. In many cases, domestic prices are still higher than before and where they have declined, price reductions have been relatively much less than those in the international markets.

Among those at greatest risk are the urban poor that are dependent on the market to access food and since the share of food in their total expenditures is much higher than that of wealthier sections of the urban population. Especially female-headed urban households are vulnerable to the impacts of the financial crisis and rising food and fuel prices.

Against this background, UN Habitat and IDRC decided Mid 2009 to undertake this study in order to generate more data on the effects of the financial crisis and rising food prices on the urban poor and to provide local actors with valuable information for the design of adequate policies and programmes to counteract the effects of the financial and food crisis.

Four types of data were collected for this study:

- Information on the economic, policy and institutional context affecting food security, both pre-dating the crises and as positive or negative measures taken since the crises began.
- Data on the current livelihood assets and strategies of households in low and middle income areas of the case cities which reflect responses to external stresses, shocks and institutional circumstances and to the households' internal needs and constraints. These external and internal factors both pre-date and are directly related to the food price and the financial crises.
- Perceptions of survey respondents and Focus Group Discussion participants about how these recent crises have affected household livelihoods and what coping strategies they have explicitly adopted to secure their livelihoods, especially those related to food consumption.
- Anthropometric data measuring current nutritional "outcomes" among under six-year olds and fertile women between 15 and 49 years. Although the livelihood practices and coping strategies affecting food consumption which households have been pursuing contribute importantly to these nutrition "outcomes", there are other contributions, such as diseases and environmental circumstances which have not been included in the survey. In order to understand whether these nutritional outcomes have worsened since the crisis, in other words, whether the livelihood practices and coping strategies adopted by households since the food price and financial crises have had a more severe effect on nutrition the results of the anthropometric studies are compared as far as possible with earlier nutritional assessments.

In this report, the implementation and results of the case study in Kitwe, Zambia are presented.

The results of the comparative analysis of the outcomes of the 5 case studies are presented in the "Synthesis report".

1.2 The local context in Kitwe

The City of Kitwe is the second largest city in Zambia with a population of 363,734 (CSO, 2000 census), which is 28.8 percent of the population of Copperbelt province. The annual population growth rate is about 0.8 percent, and slightly over 66 percent of the population is below the age of 25 years (UN-Habitat, 2009). The city of Kitwe covers an area of 777 Km^2. The landscape is an attractive mix of gently undulating woodland, farmland and big rivers such as the Kafue flowing through the eastern edges of the city. Kitwe is called the commercial hub of the Copperbelt Province and shares district boundaries with Ndola, Chingola, Mufurila, Luanshya and Kalulushi. All these towns are mineral rich particularly in copper

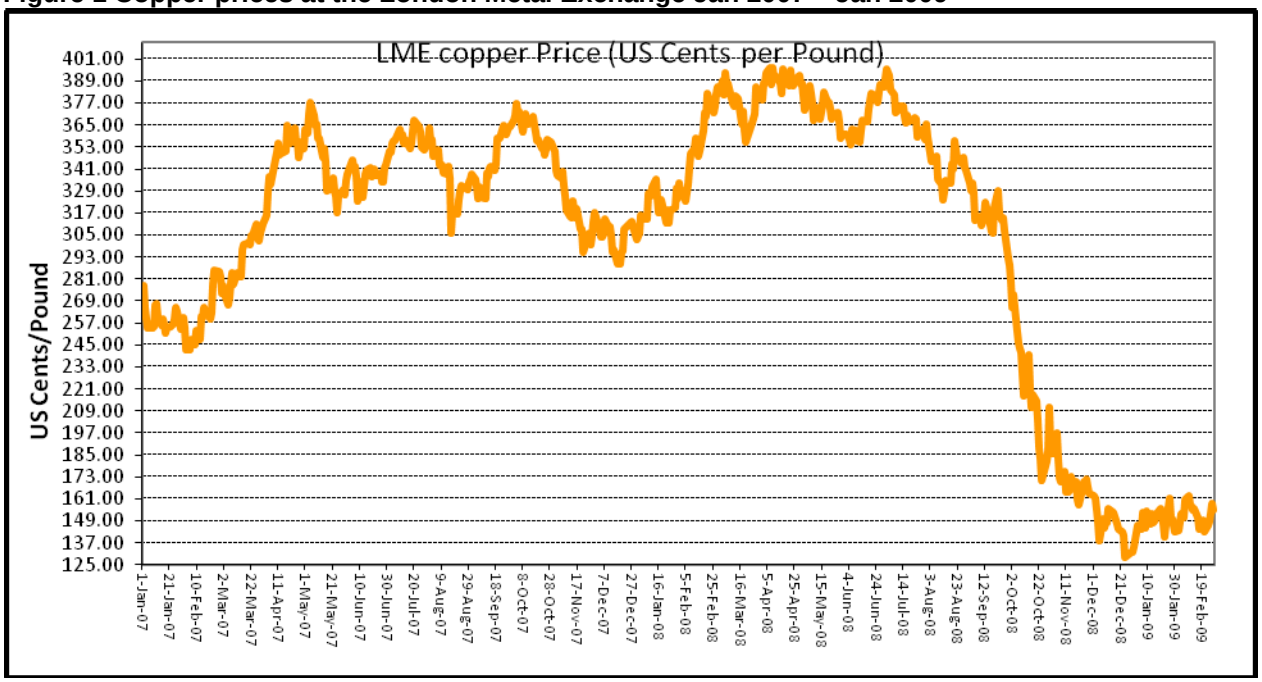
Employment

Copper mining industry is the largest employer in Kitwe. Other economic activities include agriculture, trade, commerce, industry (mainly mining related), forestry, and fisheries. The trades and services sector is second in number of workers/employees.

Unemployment rates grew with the decline of the mining sector in the 1990s. Like other mining towns in Zambia, Kitwe's Nkana Mine retrenched hundreds of miners most of whom the retrenched residents are now self-employed in the informal sector[1]. Incomes to support livelihoods include small-scale entrepreneurs and quarrying for industrial minerals like laterite, gravel, and sand for building. Such quarrying is small-scale and informal, carried out by residents in locations rich in these resources. Small-scale trading, since the liberalization of the economy, has become a significant provider of employment in the district. The rise of informal small-scale trading has created informal employment opportunities for people who were either retrenched or could not find employment due to the closure or restructuring of some companies particularly the mines.

During the period just before the global financial crisis, the economy of Zambia and indeed Kitwe was booming due to high copper prices in these years (Figure 1). Since the copper mining and trade are the main economic sector in Zambia, this made that the per capita GDP rose from USD 360.5 in 2001 to USD 935.4 in 2007 and for the first time in history, Zambia recorded a single digit inflation of 8.9% in 2007. During that period the mines increased employment by recruiting labour from the surrounding slums. However, during the global financial crisis the copper prices were drastic plunging to as low as 125 US cents per pound in December 2008, which is less than one third of the price six months before: 389 cents per pound (Kamanga, 2009).

Figure 1 Copper prices at the London Metal Exchange Jan 2007 – Jan 2009



Source: London Metal Exchange

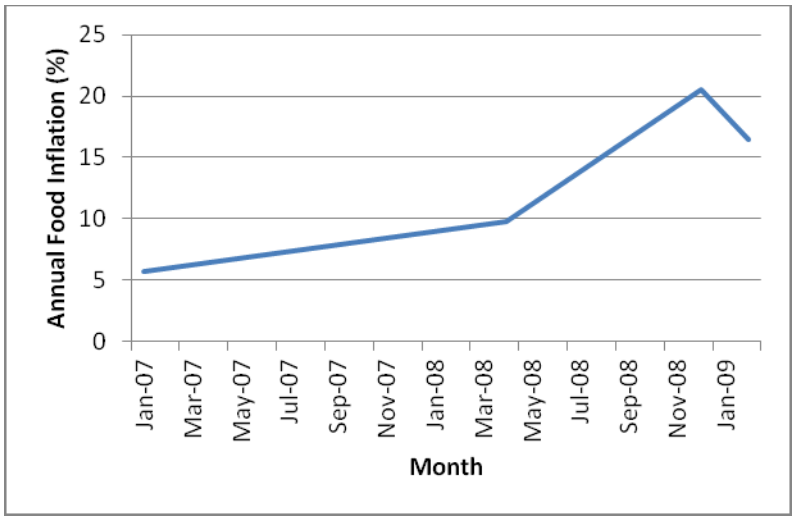
Food security situation

The job losses in the mining and manufacturing sectors impacted negatively on the livelihoods of most families in low and medium income groups. In addition, the price of most food items

1 For Zambia as a whole it is estimated that the informal sector contributes 48.9 percent of Zambia's gross national product (World Bank, 2004, 2006, Zambia Country profile)

increased, which started already in 2000, but more pronounced so during the global financial crisis with a peak of 13.5 percent increase in December 2008. For example, the staple food maize mealie meal increased from USD 0.32 per kilo gram in January 2008 to USD 0.55 per kilogram June 2009. Cassava, another staple food, increased from USD 0.50 to USD 0.78 per kg during the same period (www.fao.org/giews/pricetool/). The annual rates of inflation in food prices as compiled by CSO (2007, 2009) increased from 5.7 percent in 2007 before the crisis to 20.5 percent during the crisis of 2008 (Figure 2). These price changes have impacted negatively on people, especially city dwellers who depend on cash to purchase food.

Figure 2 Annual Food Inflation in Zambia (%)



Source: CS0, 2009

Since Kitwe is not a major food producing town, its food security is closely interwoven with the prevailing national economic environment and the national production of maize. Changes in the national maize production have a direct bearing on the residents of Kitwe who depend on maize meal purchased from the market. The lower the national maize production, the higher maize prices are likely to be in Kitwe.

Despite the economic reforms that the Zambian government initiated in 1991, food security has not improved. In 1994, a third of Zambia's population (33%) was said to be vulnerable to food insecurity with the exception of the population of the Copperbelt. In 1997 the figure had risen to 82% in some areas of Zambia. The 2000/01 drought brought more than 25% of the population face to face with starvation particularly in the southern regions of Zambia (Simatele, 2006).

In September 2008 leading up to the global financial crisis, the food security situation in Zambia was stable in most areas due to availability of early seasonal foods (FEWS NET, 2008). However, the situation in some areas, particularly in southern Zambia, was negatively influenced by the tightening of cereal supplies, a steep increase in cereal prices, reduced cereal harvest prospects due to a late season dry spell, and the ongoing impact of flooding. In August 2009, FEWS NET (2009) indicated that Zambia was generally food secure due to large stocks of maize that were available at the household level and in local markets.

Food security in Kitwe is also compounded by a 17% HIV/AIDS prevalence (CSO, 2009). In situations where low income households depend on trading as a source of livelihood, incidences

of HIV/AIDS impact on the ability of the household to trade and thus compromise their food security situation. Urban and peri-urban agriculture are common activities that households engage in to supplement other sources of livelihood. The major crops that are grown are primarily leaf vegetables and maize. These crops are sold in local markets within the localities and to middlemen who trade in the city's main markets.

Poverty situation

The apparent sign of poverty in Kitwe is the number of street children and orphans. FOSC (Friends of Street Children) estimates that there are between 150 and 250 children living on the streets of Kitwe at any one time (FOSC, personal communication). Central Statistics Office (CSO) estimates that 20% of all children below the age of 19 years were orphans, out of which 4% were maternal orphans, 11% paternal orphans and 5% were double orphans. These orphans were more likely to be from extremely poor households than from the moderately or non-poor households (CSO, 2005).The number of street children and orphans reflects the effect that poverty has become endemic in Kitwe. More than 64% of Kitwe's residents are poor according to 2008 estimates (CSO, 2009), scattered in the multitude of informal settlements and low income neighbourhoods.

In 2008, the CSO indicated that 1 in 5 children were severely stunted as a result of low access to and poor quality of nutrition.

2. METHODOLOGY AND ORGANISATION OF THE STUDY

2.1. Introduction

The effects of the global financial and food crisis on employment, income food security and nutrition of urban poor households in the city of Kitwe were assessed by interviewing households and key informants in ad random selected low and medium income areas of Kitwe.

The case study generated both quantitative and qualitative data through:

- A desk review of available secondary information on the development of food prices before, during and after the global financial crisis and its impacts. Data sources included the FAO Global Information and early warning service data base at http//www.fao.org/giews/pricetool/ and the publications from Central Statistical Office of Zambia, Living conditions report (CSO, 2007) for surveys of 1991 – 2006; ZDHS (2007) and the World Health Organisation database (WHO, 2006).
- Household surveys among 600 households in low and middle income areas of Kitwe
- 24 hour recall of food consumed
- Anthropometric measurements of under-five year olds and women from 15 to 49 years old to assess their nutritional status
- Focus Group Discussions with key informants in the selected neighbourhoods in order to understand better the strategies adopted by the households to cope with the rising food prices and unemployment.
- Interviews with officials and experts to get their opinion on the policy responses to the global financial and food crisis by the Zambian government at national and local level.

2.2. Organization of the study

The study was implemented by staff from the School of Natural Resources of the Copperbelt University in collaboration with Kitwe District Health Office, the Central Statistical Office and Kitwe Central Hospital. The study field team comprised of 13 people, including one senior researcher, one coordinator, two nutritionists, one care provider, 3 central statistical officers, 3 enumerators and 1 data entry clerk (Table 1). Other experts were hired to help with data processing and reporting.

Table 1 Composition of the Study team

Designation	Organization
Dr. Jacob Mwitwa PhD – Senior Researcher	Copperbelt University –SNR
Mr. Phillimon Ng'andwe MSc. Data analysis and reporting	Copperbelt University – SNR
Mr. Mubanga Charles–District Statistician	Central Statistical Office
Mrs. Grace Hazemba – District Nutritionist	Kitwe District Health Office
Mr. Dick Msiska – Nutritionist	Kitwe Central Hospital
Mr. Emmanuel Mawanga – Data collection expert	Central Statistical Office
Mr. Banda Mangani – Data collection expert	Central Statistical Office
Mr. Bright Mwamba – Data collection	Central Statistical Office
Ms Florence Chondoka – Nurse	Kitwe Central Hospital
Ms Abby Chinyimba. BSc. – Enumerator	Individual
Ms Belinda Zimba BSc – Enumerator	Individual
Ms Basila Simooya BSc – Enumerator	Individual
Mr. Chama Ngandwe – Dip – Data entry clerk	Individual

2.3 Sampling[2]

Cluster sampling was used in this study. Clusters were selected using systematic sampling based on a sampling frame of all communities in the programme area worked out by the Central Statistical Office in Kitwe and the computed sampling interval. The sampling frame included every community in the project area, its population size, and its cumulative population.
The sampling frame for this study was elaborated from a list of Standard Enumeration Areas (SEAs) based on the national census carried out in 2000. A total of 30 SEAs (18 of low income status and 12 of medium income level) were selected in consultation with the Central Statistical Office in Kitwe and with help of "low income" and "middle income" maps supplied by the Central Statistical Office.
A systematic sampling of all households from a list of all households that was prepared for each of the selected SEAs was carried out.

Clusters were selected with probability proportional to size (PPS). This meant that larger communities had a greater chance of having more clusters than smaller communities and thus mirrored the distribution of cases in the general population. All SEAs in the city were arranged into low income clusters, which totalled 379 SEA based clusters, and medium income clusters, which included 44 SEAs. The high income urban areas were excluded from the study.
Eighteen clusters were selected randomly from the low income clusters and twelve from the middle income areas. The assumption made was that these areas were arranged in a circle. The following relationship was assumed: $N= nK$ where N is the total number of SEAs (clusters) that were assigned sampling serial numbers in low and medium income urban areas and n is the sample in a given income group and K is the sampling interval and similarly $K=N/n$. Each time the sampling interval was calculated, it was rounded down to the nearest whole number, and decimal points were ignored. In both strata, low and medium sampling serial numbers were assigned in ascending numbers from the first SEA (cluster) listed. In low and medium SEAs (clusters) sampling serial numbers were assigned in ascending order for each income group separately starting with 1 for each income group. The sampling interval K was calculated in low income urban clusters and medium income urban clusters separately using equation $K=N/n$. A random start was obtained using the random numbers table. The selection of clusters or SEAs continued by adding K (sampling interval) to the serial number of each selected cluster/SEA until the sample size 'n' was achieved.

The sample size was proportionate to the number of households in the selected low and medium income areas. In the medium income there were 2,044 households randomly selected from 12 randomly selected SEAs (clusters) (table 2 and 3). These 12 SEAs varied in size by population and thus the number of households selected for the survey was calculated based on proportions. This implied that some SEAs (clusters), due to low population, had less than ten households for the survey while others with high populations had more than ten households to sample. The low income areas had 18 randomly selected clusters (Table 2) while the medium income had 12 (Table 3).

The top population of sample areas was based on CSO (2000) and it was from this that the number of households listed for the survey was determined - 300 households for the low income and 300 households for the medium income group. The actual listing of the households was done during the survey by the supervisor a day in advance using maps of the selected clusters (SEAs) and consultation with the local community to establish the starting point. The interval between households was predetermined at every 8th household.

2 Technical terms used in this paragraph are explained in Annex 2

Table 2 Low Income areas: selected SEAs, number of households and location

S/no	Constituency	code	Ward	code	reg	Cs	SEA	popul.	hhold	s/size
62	Chimwemwe	19	Buntungwa	4	2	1	2	925	138	17
83	Chimwemwe	19	Buntungwa	4	2	6	2	762	128	16
20	Chimwemwe	19	Kawama	2	2	5	2	586	152	19
104	Chimwemwe	19	Lubuto	6	2	1	1	606	87	11
41	Chimwemwe	19	Twatasha	3	2	3	3	800	158	19
125	Kamfinsa	20	Bupe	12	2	6	1	403	72	9
167	Kamfinsa	20	Kamfinsa	14	1	5	2	261	61	8.0
146	Kamfinsa	20	Ndeke	13	2	5	3	717	133	16
209	Kwacha	21	Bulangililo	8	2	4	1	493	82	10
230	Kwacha	21	Ipusukilo	9	2	3	3	1,701	359	44
188	Kwacha	21	Kwacha	7	2	3	2	1,030	161	20
251	Kwacha	21	Riverside	10	2	4	2	692	152	19
272	Nkana	22	Buchi	16	2	6	3	1,117	203	25
293	Nkana	22	Mindolo	21	1	1	3	306	86	11
336	Wusakile	23	Chamboli	24	2	7	2	420	76	9
357	Wusakile	23	Luangwa	25	2	5	2	880	178	22
378	Wusakile	23	Luangwa	25	2	12	2	403	95	12
314	Wusakile	23	Wusakile	22	2	7	2	673	118	15
Total								12,775	2,439	300

Figure 3 Images from low income areas in Kitwe

The low income areas are characterized by mud houses often with a poultry house attached (left). At the right an informal grocery store (“tuntemba”).

Table 3 Medium income areas: Selected SEAs, number of households and location

s/no.	Constituency	code	ward	code	reg	Csa	SEA	popul	hholds	sample
1	Kamfinsa	20	Bupe	12	2	1	1	1,072	147	22
4	Kamfinsa	20	Bupe	12	2	1	4	1,029	178	26
7	Kamfinsa	20	Bupe	12	2	2	3	746	127	19
18	Nkana	22	Mindolo	21	2	2	2	1,034	130	19
21	Nkana	22	Mindolo	21	2	3	2	1,120	140	21
24	Nkana	22	Mindolo	21	2	4	2	968	140	21
27	Nkana	22	Mindolo	21	2	5	2	1,177	276	41
30	Nkana	22	Mindolo	21	2	7	1	539	167	25
33	Wusakile	23	Chibote	23	2	1	2	948	111	16
36	Wusakile	23	Chibote	23	2	2	2	1,103	154	23
39	Wusakile	23	Chibote	23	2	3	2	730	133	20
42	Wusakile	23	Chibote	23	2	4	3	2,311	341	50
Total								12,777	2044	300

Figure 4. Images of medium income areas in Kitwe

The medium income areas of Kitwe often have back yard gardens next to the house (left). The area is supplied with electricity as can be seen in the picture on the right..

2.4 Adaptation and pretesting of tools; Training of the study team

The overall design of the survey format provided by RUAF Foundation was adapted to the local conditions in Kitwe and pre-tested (Annex 1).

All personnel for the survey data collection were trained during the workshop implemented on 18-22 September 2009. The three supervisors and the research coordinator pre-visited some locations where the survey was to be conducted and met some community leaders in each selected cluster. The aim was to inform them about the survey and its background, get to know their concerns and recommendations and to get their support for the survey. Each enumerator was given a survey questionnaire to read before the workshop. The training focused on

adaptation of the questionnaire, how to take anthropometric measurements and the formats. The training included a practical during which each enumerator practiced to administer the questionnaire and to get measurements from a mother, a baby and children aged 2-3 years.
Also guidelines were prepared for the Focus Group Discussions (FDGs) and the Expert interviews and pre-tested accordingly.
The interviewers for the FDGs and the expert interviews were trained separately.

2.5 Data collection

Household survey and anthropometric measurements
Enumerators were split into three teams led by a supervisor and two enumerators. Each group was given sample areas for data collection based on Table 2 and 3 above. Each interviewing team carried a measuring board and lightweight bathroom-type scale with a digital screen designed and manufactured under the authority of the United Nations Children's Fund (UNICEF) for use in surveys. Children younger than 24 months were measured lying down on the board (recumbent length) and standing height was measured for older children.
The field work was carried out from 21 September to 17 October 2009.
The following data was collected under the three sections of the questionnaire (Annex 1):

- Section 1: *Household composition,* including: the name, gender and age of the members of each household in the sample area.
- Section 2: *Anthropometric measurements,* including: weight and height of women of 15-49 years and the date of birth, weight and height of children between 0 and 6 years old
- *Section 3: Information on the household's characteristics and their strategies to cope with the crisis,* including: employment/occupation, household assets, food sources, recent changes in diet, skipping meals, daily food intake, reactions to rising food prices.

Data were collected from 300 households in 18 low income and 300 households in 12 medium income areas of Kitwe, representing 7.4 percent of the total number of households in the two areas. The surveyed households included a total population of 1,755 and 1,871 persons in low and medium income area respectively.

A total of 1896 females were interviewed of which 984 women were aged between 15-49 years. Out of 984 eligible women anthropometric data was collected from 317 women in the low income areas and 373 from the medium income areas. About 30% of the eligible women refused to be measured. Anthropometric data was also collected from a total of 727 eligible children aged 0-5 years, but only 510 children met all the criteria for analysis according to the WHO growth standards. The difference is due to the fact that some children were at school while others declined to be measured (Table 4).

Table 4 Number of household and individual interviews and measurements

	Low income	Medium income	Total
Household Interviews			
Household selected	300	300	600
Household interviewed	300	300	600
Household response rate	100 %	100 %	100 %
Anthropometry			
Number eligible women 15-49 years	436	548	984
Number measured	317	373	690
Response rate women	73 %	68 %	70 %
Number of eligible *children 0-5 years*	416	295	711
Number measured	298	212	510

Response rate children	72 %	72 %	72 %

Expert interviews and Focus group interviews
Expert interviews and Focus Group Discussions (FDG) were conducted between January 2010 to March 15, 2010.

The expert interviews were held to analyse the policy responses adopted by the Zambian government and the city of Kitwe to counteract the global financial and food crises and rising hunger levels. Interviews were conducted with the town clerk, the Mayor, Kitwe City administrators, social workers, community leaders, teachers, nurses, nutritionists and doctors from within the city (Table 5).
These interviews covered the following topics:

- The kind of policy responses taken by national and/or city government during the global financial crisis to mitigate the consequences of the crisis for food security and nutrition, and their impact, effectiveness and sustainability.
- Factors that have led to such decisions e.g. the occurrence of labour or other violent conflicts that have motivated a policy response with regard to food security and nutrition.
- Other national or local policies that were already in place to mitigate rising hunger levels, and their impact, effectiveness and sustainability

In total 40 experts were interviewed (response rate 100%)

Table 5 Expert opinion survey respondents in Kitwe

Policy Makers	Development Experts	Medical Personnel	NGOs	Education
District Commissioner	Ministry of Community Development & Social Services	Medical doctors	CINDI	Teachers
Town Clerk	Community leaders	Nurses	CHEP	
City Mayor	Ward councillors	Nutritionists	Churches	
Counsellors	Ward chairpersons			

In addition 3 Focus Group Discussions (FGDs) were conducted with representatives of the low and medium income groups in the selected areas by. Each FGD was led by two facilitators with help of a set of questions for the FGD. In total 103 persons participated in the FDG's. The topics discussed included the impacts experienced in the urban communities as result of increasing food prices and job losses and the measures these families have taken to counteract these effects of the global financial crisis.

2.6 Data processing

Data was captured in spreadsheet templates created for the purpose of cleaning and computer validation in MS Excel (Microsoft Corporation). All the sections of the questionnaire from household identification, question 1 through question 60 were electronically captured by a trained data clerk and cleaned by a researcher.
The procedure was as follows:-

- Data was captured by a trained clerk and entries were done during the same time it was collected and errors in recording were fed back to the field staff
- Data was then merged (i.e., low and medium income) and then cleaned by a senior researcher
- Data were exported to SPSS for further cleaning and obtaining of frequencies.
- Data sets for eligible children 0-5 years old were filtered off to enable calculation of z-scores. Only measured children with valid dates of birth (month and year) and valid measurement of

both height and weight were included (2nd data cleaning). Data was then exported to the WHO (2010) Anthro software version 3.1.0 for calculating growth indices
- For women 15-49 years of age the Body Mass Index (BMI) was calculated
- Data was independently processed and analyzed by an expert.

2.7 Factors influencing the quality of the results

Timing: The survey was conducted during the period (September to October) when it was extremely hot in Zambia which affected the enumerators who had to move about with heavy scales and height boards since the sample areas where spread over a wide area. Many children were attending school during the time of visits.

Equipment: The equipments, scales and boards, were old and their reliability was low. Often mothers refused measuring the length of babies lying down (for traditional beliefs) while older children did not feel comfortable in the measuring boards.

Survey Format: Some questions were limited to identifying the MAIN activity (e.g. main job, main source of food, main source of income) without asking for the secondary ones, while many households combine various activities and sources.

Terms of reference: No detailed procedures for data analysis e.g. computation of z-scores, standard tables and figures were not provided.

3. DISCUSSION OF THE RESULTS OF THE STUDY

3.1 Basic data on the surveyed households

Household size, Age and Sex

As important demographic variables, age and sex were considered as the primary basis of demographic classification in this survey. In this survey out of 3626 respondents women represented 52.3 percent (n=1896) and 47.7 percent (n= 1730) were males (Table 6), which is similar to available national data (CSO 2007).

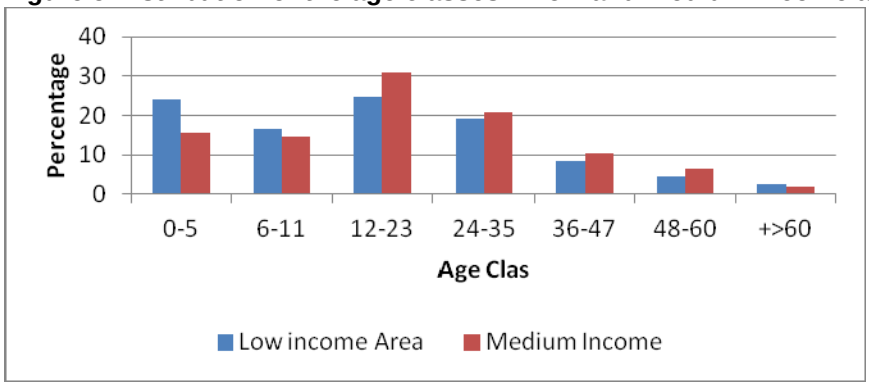
The age distribution shows that percentage children below 15 years is higher in the low income areas (48.6%) compared to the medium income areas (38.7%), while the percentage above 50 years of age is similar in both groups (about 6%). The age class 15-49 years, as a result, was 44.7 % in the low income group and 54.4 % in the medium income group.

Table 6 Distribution of household population by age in low and medium income areas

	Male		Female		Total	
Age class	**n**	**%**	**n**	**%**	**n**	**%**
Low income areas						
0-6	228	28.0	240	25.5	468	26.7
7-14	178	21.9	206	21.9	384	21.9
15-49	349	42.9	436	46.3	785	44.7
50-60	30	3.7	36	3.8	66	3.8
>60	16	2.0	22	2.3	38	2.2
Unknown	12	1.5	2	0.2	14	0.8
Total	813	100	942	100	1,755	100
Medium income areas						
0-6	184	20.0	160	16.8	344	18.4
7-14	190	20.7	189	19.8	379	20.3
15-49	469	51.1	548	57.5	1017	54.4
50-60	51	5.6	46	4.8	97	5.2
>60	19	2.1	6	0.6	25	1.3
Unknown	5	0.5	4	0.4	9	0.5
Total	918	100	953	100	1871	100
Total sample population	1,730	47.7	1,896	52.3	3,626	100

The dominant age group in the survey areas was the age class of 12-23 (Figure 5)

Figure 5 Distribution of the age classes in low and medium income areas



Household Composition

The average number of members per household in the sample areas of Kitwe were 6 in the low and medium income groups, which is high compared to the Zambia Demographic and Health Survey of 2007 (ZDHS, 2007) that established an average household size of 4.9 in the urban areas and 6 in the rural areas. According to CSO the economic resources of larger households are normally more limited (CSO 2007).

In Kitwe in the low income group 28.1 percent households headed by males and 5.9 percent headed by females and 28 percent and 5 percent respectively in the medium income group (Table 7). In Zambia female headed households are considered poorer than male-headed households (CSO, 2007).

Children who were sons and daughters of the head of the household represented the largest share of 53.8 percent and 48.5 percent in low and medium income areas, respectively. However, also the proportion of grand children was significant and a common occurrence in households of both low and medium income areas and so was the presence of brothers and sisters (Table 7). This situation may be attributed to several factors including death of parents (e.g. due to HIV-AIDS), culture of looking after one's young brothers and sisters and other factors.

Table 7 Distribution of households by relationship to the head of a household in low and medium income areas

	Low income areas				**Medium income areas**			
	males		**females**		**males**		**females**	
	n	**%**	**n**	**%**	**n**	**%**	**N**	**%**
Head	228	28.1	56	5.9	253	28	47	5
Wife/Husband/Partner	3	0.4	223	23.6	1	0	248	26
Son or daughter	442	54.4	503	53.3	475	52	433	45
Son/daughter in law	3	0.4	6	0.6	3	0	10	1
Grand child	60	7.4	58	6.2	58	6	72	8
Parent	2	0.2	5	0.5	3	0	10	1
Parent in law	1	0.1	3	0.3	33	4	39	4
Brother or sister	11	1.4	23	2.4	90	10	92	10
Co-wife	0	0.0	2	0.2	0	0	0	0
Other relative	52	6.4	58	6.2	0	0	0	0
Adoptive/step/foster	1	0.1	4	0.4	2	0	1	0
Not related	9	1.1	2	0.2	0	0	1	0
Does not know	0	0.0	0	0.0	0	0	0	0
Total	**812**	**100**	**943**	**100**	**918**	**100**	**953**	**100**

The proportion of married people in low and medium income areas was nearly the same (Table 8). The category “never married” constituted mainly of children below 14 years of age.

Table 8 Distribution of respondents by marital status in low and medium areas (%)

	Low income			Medium income			Total		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Males**	**Females**	**Total**
Missing	0	0	0	0.4	0.8	0.6	0.2	0.4	0.3
Divorced	0.4	1.5	1.0	0.2	0.7	0.5	0.3	1.1	0.7
Informal/loose	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Married	29.2	27.1	28.1	27.7	29.5	28.6	28.4	28.3	28.4
Never married	69.6	65.5	67.4	70.3	64.7	67.5	69.9	65.1	67.4
Separated	0.1	1.4	0.8	0.4	0.4	0.4	0.3	0.9	0.6
Widowed	0.7	4.3	2.7	0.9	3.7	2.3	0.8	4.0	2.5
Total	100	100	100	100	100	100	100	100	100
Number	812	943	1755	918	953	1,871	1,730	1,896	3,626

Educational level

Table 9 includes data on the highest education level attained by the respondents in the sample, showing that the proportion of people that followed more than primary education is in the medium income areas much higher (55.6 %) than in the lower income areas (31.3%), where no single respondent was found who attained tertiary education. The persons that attained education at primary level was 34.1 % in the low income areas compared to 22.5 percent in the medium income areas.

Overall, slightly more males (28.4 %) than females (26.4%) have no education in the sample areas, which contrasts with the CSO data of 2007 on the Copperbelt province (in which Kitwe is located) which indicated that 6 % of the men and 10% of the women did have no education (CSO, 2007).

Table 9 Distribution of respondents by age group and education level in low and medium areas %

	Low income			Medium income			Total		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
No education	35.6	33.8	34.6	22.0	19.1	20.5	28.4	26.4	27.4
Primary	30.5	37.2	34.1	21.8	23.2	22.5	25.9	30.2	28.1
Middle/SS	11.3	14.7	13.2	11.2	19.6	15.5	11.3	17.2	14.4
Secondary/SSS	17.5	12.4	14.8	33.3	28.6	30.9	25.9	20.6	23.1
Post secondary	2.1	0.5	1.3	4.2	3.6	3.9	3.2	2.1	2.6
Vocational	3.0	1.3	2.1	0.7	0.2	0.4	0.3	0.1	0.2
Tertiary	0.0	0.0	0.0	6.1	3.5	4.8	4.6	2.4	3.4
Unknown	0.0	0.0	0.0	0.7	2.2	1.4	0.3	1.1	0.7
Total	100	100	100	100	100	100	100	100	100
Number	812	943	1755	918	953	1,871	1,730	1,896	3,626

Religious affiliation

Table 10 shows that the distribution for religious affiliation is quite similar for both income groups with slightly more participation in Pentecostal by the low income households. In 2007 Protestants still dominated (CSO 2007) but in recent years there has been a trend towards several other religious groups.

Table 40 Distribution of respondents by religious affiliation in low and medium income areas (%)

	Low income			Medium income			Total		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Missing	0	0	0	0.5	1.0	0.8	0.3	0.5	0.4
Catholic	22.9	23.1	23.0	27.0	29.0	28.0	25.1	26.1	25.6
No religion	0.4	0.4	0.4	0.0	0.0	0.0	0.2	0.2	0.2
Other Christians	39.2	36.8	37.9	41.2	34.1	37.6	40.2	35.4	37.7
Pentecostal	17.6	18.0	17.8	8.0	8.7	8.3	12.5	13.3	12.9
Protestant	20.0	21.6	20.9	22.7	26.5	24.6	21.4	24.1	22.8
Traditional	0.0	0.0	0.0	0.7	0.6	0.6	0.3	0.3	0.3
Total	100	100	100	100	100	100	100	100	100
Number	812	943	1755	918	953	1,871	1,730	1,896	3,626

Ethnicity

Zambia is endowed with many languages and ethnic groups. In Zambia dominant languages of communication and spoken include: Bemba (38 percent); Nyanja (20.6), Tonga (13.9 percent) and North-western province languages (7.7 percent) (CS0, 2000). According to CSO (2000) languages spoken in urban areas include Bemba, Nyanja and English; they also observe that males spoke these languages more than females.

Figure 6 and 7 show the result from the sample areas in Kitwe, indicating that both areas are dominated by the Bemba (with 57 in low income and 53 % in medium income areas) seconded by Nyanja (with 17 % and 18% respectively.

Figure 6 Distribution of respondents according to ethnicity in the low income areas (%)

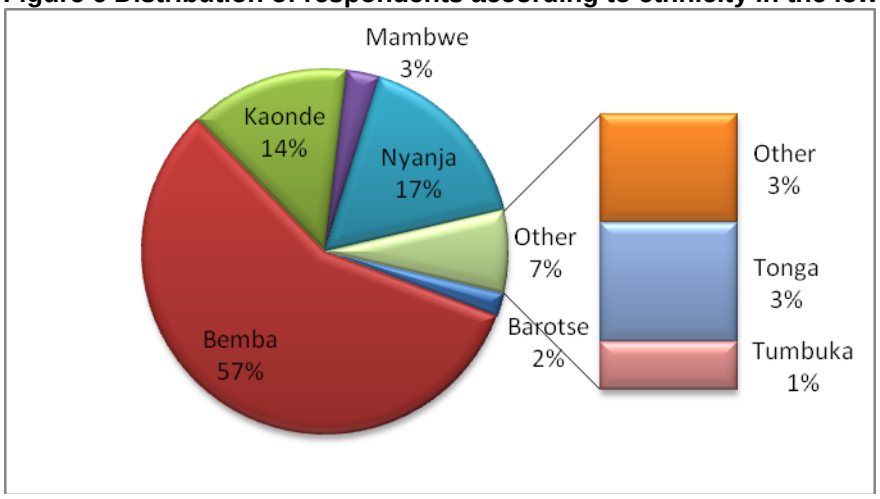
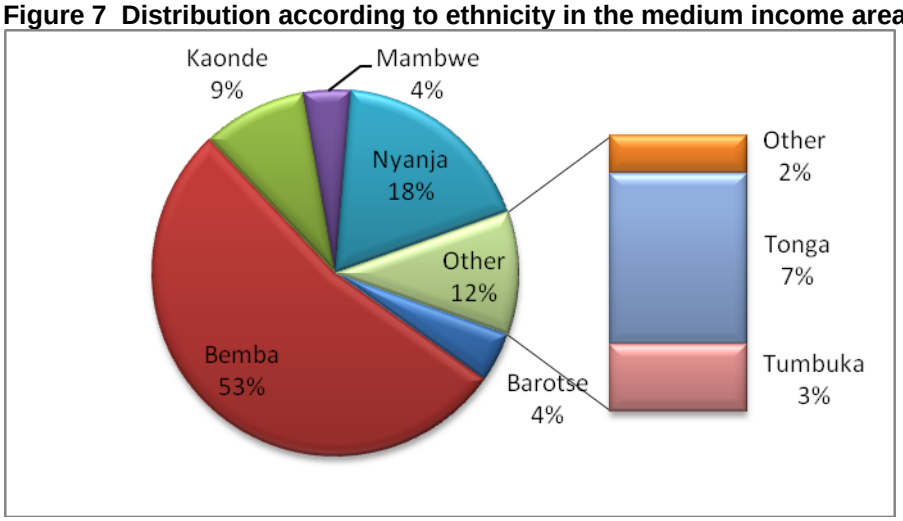


Figure 7 Distribution according to ethnicity in the medium income areas



The reason for this dominance is that Bemba has been the common language of communication in the mining industry for a long time and thus all males and few females who came to work in the mines had to learn Bemba in order to get employed. In addition intermarriages between Bembas and other ethnic groups is very common.

Employment and Occupation

Household members, both males and females, were asked whether they were currently working, whether they have done any work in the last twelve months and what their main occupation was. Table 11 shows that of the sample population of 3626 persons about 20 percent actually had regular employment (18.6 % in the low income group and 21.2 % in the medium income group).The most frequent occupation is found in sales and services (41 percent), seconded by skilled manual worker (23 percent). For males the main occupations are skilled manual (9.1 %percent) while for the females sales and services is the more dominant occupation (8.9% percent), including marketers, traders, sales persons, house maids, street vendors etc.

Table 11 Distribution of the population currently employed by occupation in low and medium income areas

	Low Income		Medium income		Total	
	n	%	n	%	n	%
Professional/Technical/Managerial	36	11	106	27	142	20
Clerical	5	2	4	1	9	1
Sales and services	140	43	154	39	294	41
Skilled manual	74	23	92	23	166	23
Unskilled manual	24	7	13	3	37	5
Agriculture and Forestry	42	13	19	5	61	8
other jobs	7	2	9	2	16	2
Working population in sample area	328	100	397	100	725	100
Total sample population	1,755	48.4	1,871	51.6	3,626	100

In the low income areas, 21.7 % of the women aged 15-49 years are currently employed and in

the medium income group this is 23.7% (Table 12). These figures are lower than found in 2007 (CSO 2007)

It was observed that the proportion of women in the sample older than 49 years who are currently working was higher (41.4 percent) in the low income areas than in the medium income areas (28.8 percent), which may be related to a stronger economic need and more need to care for grand and foster children whose parents died due to HIV AIDS or other causes in the low economic group. In the case of men, 58.7 % in low income group were working while in the medium income it was 64.3%. In both cases older working population was more than younger (less than 40 years).

Table 52 Distribution of currently employed men and women by age group in low and medium income areas (%)

	Low Income Areas				Medium Income Areas			
	Working	**Not working**	**Total**	**n**	**Working**	**Not working**	**Total**	**n**
females								
0-6 yr	0.0	100	100	240	0.0	100	100	160
7-14 yr	0.0	100	100	206	0.0	100	100	189
15-49 yr	21.7	78.3	100	437	23.7	76.3	100	548
49+ yr	41.4	58.6	100	58	28.8	71.2	100	52
Unknown	0.0	100	100	2	100	0.0	100	4
Total	12.6	87.4	100	943	15.6	84.4	100	953
Males								
0-6 yr	0	100	100	228	0	100	100	184
7-14 yr	0	100	100	178	0	100	100	190
15-49 yr	50	50	100	348	42.4	57.6	100	469
49+ yr	58.7	41.3	100	46	64.3	35.7	100	70
Unknown	66.7	33.3	100	12	80	20	100	5
Total	25.7	74.3	100	812	27.0	73.0	100	918

Respondents were also asked whether they had worked during the period of 12 months preceding the survey in order to determine the immediate impacts of the global crisis on employment. Comparing these data with the data on people actually having employment revealed that there was a reduction in employment compared to the 12 months before in both income groups (Table 13).

Table 13 Change in the percentage of respondents with work between 2008 and 2009 by age group and sex in low and medium income areas

	Low income areas		Medium income areas	
	males	**females**	**males**	**females**
0-6 yr	0.0	0.0	0.0	0.0
7-14 yr	-0.6	-0.5	0.0	0.0
15-49 yr	-2.9	-1.6	-1.7	-0.5
49+ yr	2.2	-1.7	-2.9	-3.8
Unknown	-33.3	0.0	0.0	0.0
Total	-1.7	-1.0	-1.1	-0.5

Employment for women dropped from 13.6 percent in 2007/8 to 12.6 percent at the time of survey in 2009 in the low income areas and from 16.2 percent to 15.6 percent in the medium income areas as a result of the global financial crisis. For men the change was from 27.5 percent in 2007/8 to 25.2 percent in 2009 in the low income areas and 28.1 percent to 27 percent in the medium income areas. Job losses were highest for women older than 49 years, especially in the medium income group (- 3.8 %).
In the paragraph dealing with the coping strategies (par.3.4) that the households' applied in response to loss of income and increasing food prices, it will be shown that the shrinkage in employment provided by the formal sector in Kitwe, has led to a further increase of the informal sector and many households taking up a second job in order to survive.

House and land ownership
Land in towns like Kitwe is owned by the state or municipal government and there is also some customary land (which is governed by traditional leaders on behalf of the local community). The land in informal settlements and low income areas is owned by the Kitwe City Council but part of the land is titled (leases to households or organisations for a period of 99 years). In informal settlements, community leaders often illegally allocate land without legally obtained documentation recognized by the city council. Residents allocated such land usually consider it their own. When they build a small house on such land the resident will be the owner of the house but they will formally not own the land. In other cases, the resident will sublet the land to another resident who may build a shack on it while paying rent (for the land).
Table 14 shows the relation between categories of ownership of the house and of the land (the share of each category is expressed as a percent of the 575 responding households).

Table 14 Distribution of household occupying a house of their own, renting or squatting by type of land ownership and gender (% of total # of households)

		Type of land Ownership				Total	Number
		Owns land	Leases land	Owner consent	Squatting		
Ownership of structure	***Males***						
	Owns structure (house	11.7	25.6	0.3	0.0	37.6	216
	Pays rent	0.0	32.2	0.9	0.0	33.1	190
	No rent, consent of owner	0.0	5.0	3.8	0.0	8.8	51
	No rent, squatting	0.0	0.0	0.0	2.6	2.6	15
	Subtotal	11.7	62.8	5.0	2.6	82.1	472
	Females						
	Owns structure (house)	4.7	5.6	0.0	0.0	10.3	59
	Pays rent	0.0	5.7	0.0	0.0	5.7	33
	No rent, consent of owner	0.0	0.5	0.7	0.0	1.2	7
	No rent, squatting	0.0	0.0	0.0	0.7	0.7	4
	Subtotal	4.7	11.8	0.7	0.7	17.9	103
	Total						
	Owns structure (house	16.4	31.1	0.3	0.0	47.8	275
	Pays rent	0.0	37.9	0.9	0.0	38.8	223
	No rent, consent of owner	0.0	5.6	4.5	0.0	10.1	58
	No rent, squatting	0.0	0.0	0.0	3.3	3.3	19
	Total males and females	16.4	74.6	5.7	3.3	100	**575**

The table shows that 16.3 % of all households (think they) own both house and the land on which it is build, 31.3 % owns the house but pays a rent for the land and 37.9 % of all households pays a rent for the house + land. About 13% of the households are paying no rent, of which 10% with consent of the owner.

Of the female headed households 4.7 % owns the house and the land and 5.6 % owns just the house and leases the land. A cross tabulation to marital status revealed that 54 percent of females who owned a house were widows (52 % in the low income group and 56 % in the medium income group), indicating that ownership was mainly obtained upon death of a husband.

3.2 Nutritional status of young children and women in the fertile age

3.2.1 The nutritional status of children 0-5 years of age

Evaluation of nutritional status of young children is based on the finding that in a well-nourished population there is a statistically predictable distribution of the height and weight of young children of a given age due to their similar genetic potential for growth. Use of a standard reference population as a point of comparison facilitated the examination of differences in the anthropometric status of a population of boys and girls aged 0-5 years in the low and medium neighbourhoods applying the US National Center for Health Statistics (NCHS) standard as recommended by the World Health Organisation (WHO). The three standard indices that describe the nutritional and physical growth status of children that were used included: Height-for-age (stunting), Weight-for-height (wasting), and Weight-for-age (underweight). Each of the three nutritional indicators was expressed in standard deviations (Z-scores) from the mean of the reference population. Deviations of the indicators below -2 standard deviations (SD) indicated that the children were moderately affected while deviations below -3 SD indicated that the children were severely affected. In Zambia the Central Statistical Office compiled such indices since 1992 to 2007 (Table 15).

Table 15 Nutritional status of children 0-5 years (3 indicators) in the Copperbelt Province 1992-2007

			Height / Age (Stunting)		Weight / Height (Wasting)		Weight / Age (Underweight)	
Year	**Age**	**n**	**-2SD**	**-3SD**	**-2SD**	**-3SD**	**-2SD**	**-3SD**
2007	0-5	791	44.2	20.4	2.5	0.6	15	2.1
2002	0-5	967	46	25	7.5	2.7	23.8	6.5
1999	0-5	15060	56.2	32.8	2.9	0.6	14.1	4.4
1997	0-5	1063	38.3	14	4.7	1.3	13	3.6
1992	0-5	1211	39.2	16.3	6.2	2.6	17.8	4.7

Source: Extracted from Central Statistical Office's national statistics (1992, 1997, 1999, 2001 and 2007)

Height for age (stunting)

Height-for-age is a measure of linear growth of children. This indicator reflects the cumulative effect of chronic malnutrition. Stunting reflects failure to receive adequate nutrition over a long period of time and may also be caused by recurrent and chronic illness. Height-for-age, therefore, represented a measure of the long-term effects of malnutrition and does not vary appreciably according to the season of data collection.

Table 16 Nutritional status of children 0-5 years (Height for Age) by sex in low and medium income areas

Area	Sex	Not stunted		Stunted -2SD		Severely stunted -3SD		Total	
		n	%	n	%	n	%	n	%
Low income	male	58	40.3	**86**	59.7	**49**	34.0	144	100
	female	80	51.9	**74**	48.1	**41**	26.6	154	100
	Total	138	46.3	**160**	53.7	**90**	30.2	298	100
Medium income	male	55	51.9	**51**	48.1	**38**	35.8	106	100
	female	67	63.2	**39**	36.8	**29**	27.4	106	100
	Total	122	57.5	**90**	42.5	**67**	31.6	212	100

Table 16 indicates that in the low income areas 59.7 percent of the 144 male children and 48.1 percent of the 154 female children are stunted. In the medium income areas, 48.1 percent of the 106 male children and 36.8 percent of the 106 female children were stunted. In 2007 (see Table 15) in the Copperbelt 44.2 percent of the children aged 0-5 years were below -2 SD (stunted) and 20.4 % were below -3 SD (severely stunted), indicating that chronic malnutrition in the sample areas is high and probably has increased since 2007.

Weight for height (wasting)

Weight-for-height measures body mass in relation to body length and describes current nutritional status. A child who was below -2 SD from the reference median for weight-for-height was considered to be too thin for his/her height, or "wasted," a condition reflecting acute malnutrition. As with stunting, wasting was considered severe if the child was below -3 SD from the reference mean. Severe wasting is closely linked to an elevated risk of mortality. Prevalence of wasting may vary considerably by season.

Table 17 Nutritional status of children 0-5 years (Weight for Height) by sex in low and medium income areas

Area	Sex	Not wasted		Wasted -2SD		Severely wasted -3SD		Total	
		n	%	n	%	n	%	n	%
Low income	male	137	95.8	6	4.2	1	0.7	143	100
	female	145	95.4	7	4.6	3	2.0	152	100
	Total	282	95.6	13	4.4	4	1.4	295	100
Medium income	male	90	87.4	13	12.6	9	8.7	103	100
	female	98	93.3	7	6.7	2	1.9	105	100
	Total	188	90.4	20	9.6	11	5.3	208	100

Table 17 indicates that in the low income areas 4.2 percent of the 143 male children and 4.6 percent of the 152 female children are wasted, while 1.4 % of all children here are severely wasted. In the medium income areas, 12.6 percent of the 103 male children and 6.7 percent of the 105 female children are wasted, while 5.3 % of all children here are severely wasted, indicating that the acute malnutrition of young children is much higher in medium income areas compared to low income areas. The latter might be explained by the fact that food pack support (high protein foods and Vitamine A) is provided to young children from more vulnerable households in the low income areas by the Public Welfare Assistance Scheme coordinated by the Department of Social Welfare under the Ministry of Community Development and Social Services with the support of UNICEF. Such services are not provided to households in the medium income group (are against payment only.

In 2007, in the Copperbelt 2.5 percent of the children aged 0-5 years were below -2 SD (wasted) and 0.6 below -3SD (severely wasted), indicating that acute malnutrition in the sample areas in 2009 is higher than in 2007. The wasting situation indicates that children did not receive adequate nutrition in the period immediately preceding the survey (the period of the financial crisis) which may be attributed to the reduced quantity and quality of food intake in the households in order to make ends meet.

Weight-for-Age (underweight)

Weight-for-age is a composite index of height-for-age and weight-for-height and, thus, does not distinguish between wasting and stunting. A child can be underweight for his age because he is stunted, wasted, or both. Weight-for-age is a useful tool in clinical settings for continuous assessment of nutritional progress and growth. Children whose weight-for-age was below -2 SD from the median of the reference population were classified as "underweight."

In this survey 18.1 percent of the young boys and 13.6 % of the young girls of the low income areas were underweight. In the medium income areas it was 16.8 percent and 8.5 percent for boys and girls respectively (Table 18). There was not much difference in terms of the number of times boy and girls had drinks and other food items and this difference is thus an area requiring further in-depth studies.

Table 18 Nutritional status of children 0-5 years (Weight for Age) by sex in low and medium income areas

Area	Sex	Not underweight		Underweight -2SD		Severely underweight -3SD		Total	
		n	%	n	%	n	%	n	%
Low income	male	118	81.9	26	18.1	10	6.9	144	100
	female	133	86.4	21	13.6	9	5.8	154	100
	Total	251	84.2	47	15.8	19	6.4	298	100
Medium income	male	89	83.2	18	16.8	5	4.7	107	100
	female	97	91.5	9	8.5	4	3.8	106	100
	Total	186	87.3	27	12.7	9	4.2	213	100

The proportions of underweight children in the low and medium income areas were 15.8 percent and 12.7 percent respectively, and the percentage of children severely underweight was 6.4 and 4.2 respectively (Table 18). Comparison with the 2007 data on the Copperbelt Province of Zambia (with 15 percent below the -2 SD and 2.1 percent below -3SD) (Table12) reveals that the low and medium income areas included in this study are severely affected).

The results presented above show that in 2009, stunting (-2SD) in low and medium income areas of Kitwe was higher than the national and provincial averages (48.0 percent compared to 44.2 percent in Copperbelt in 2007). Also wasting was higher (7.0 percent) than in Copperbelt Province in 2007 (2.5 percent) as well as the percentage of underweight children (15.8 % in 2009 against 15 % in 2007).

These figures indicate that the global financial crisis affected negatively the nutritional status of young children of low and medium income households in Kitwe.

Table 19 summarizes the main findings of the assessment of nutritional status in this study in comparison to earlier studies.

Table 19 Summary of main findings of this survey regarding the nutritional status for children 0-5 years of age versus previous anthropometric assessments of five year olds (%)

City	Location	Year	Measure	-3SD	-2SD
Height for Age (stunting)					
Zambia	National	2007	HAZ	19.2	42.9
Province	Copperbelt	2007	HAZ	20.4	44.2
Kitwe	Low Income	2009	HAZ	30.2	53.7
	Medium Income	2009	HAZ	31.6	42.5
Weight for-height (wasting)					
Zambia	National	2007	WHZ	2.4	5.2
Province	Copperbelt	2007	WHZ	0.6	2.5
Kitwe	Low Income	2009	WHZ	1.4	4.4
	Medium Income	2009	WHZ	5.3	9.6
Weight-for-age (underweight)					
Zambia	National	2007	WAZ	3.2	13.0
Province	Copperbelt	2007	WAZ	2.1	15.0
Kitwe	Low Income	2009	WAZ	6.4	15.8
	Medium Income	2009	WAZ	4.2	12.7

3.2.2 Nutritional status of women 15-49 years of age

Anthropometric data on height and weight (WHZ) collected in the ZDHS of 2007 (CSO, 2007) was used to evaluate the nutritional status of women aged 15-49 years included in this study (Table 20).

Table 20 Nutritional status (based on BMI) of women aged 15-49 years in Zambia, 2007 (%)

	BMI			
	-2 SD	**-3 SD**	**Mean-score**	**+2 SD**
Thin (BMI <18.5)	8.5	2	-0.1	5.3
Normal (BMI 18.5-24.9)	5.5	2.2	0.2	8.3
Overweight (BMI>25)	3.5	1.2	0.4	8.6

Source: CSO, ZDHS 2007

The result from this study shows that of the 317 women in the low income group 6.6 percent were thinand 28.7 percent were overweight (BMI >25). In the medium income group thin women represented 6.7 percent while 45.3 percent were overweight (Table 21). There were more women with a normal nutritional status in the low income group (63.7 percent) than in the medium income group (47.7 percent). Comparison with table 20 shows that in the sample area the percentage thin women is lower than in the national CSO data of 2007 and the percentage for overweight is higher than in the CSO-2007 data

Table 21 Nutritional status (based on BMI – 2 SD) of women aged 15-49 in low and medium income areas (%)

Area	N	Thin	Normal	Overweight
		BMI<18.5	**BMI 18.5-24.9**	**BMI >=25**
Low income	317	6.6	63.7	28.7
Medium income	373	6.7	47.7	45.3

3.3 Food intake

3.3.1 Liquids

Table 22 shows that the most commonly used drink was water which was taken more than five times during the previous day or night by 43.3 percent of respondents in the low income group and 67.3 % in the medium income group. Only 11.3 % of the respondents in the low income group drank milk (fresh or powdered) at least once against 25.5 % in the medium income group. For fruit juice these figures were 7.3% and 18.1 % respectively. For “other drinks“ (soft drinks, tea/coffee, etc) the percentages were 7.3 % in low income group and 25.5% in the medium income group.

Table 22 Number of times respondents of low and medium income areas had a particular drink during the previous day/night (%)

	N	Never	Once	Twice	Three times	Four times	>Five times	Total
Low income area								
Plain water	1750	6.6	2.7	4.9	22.7	19.8	43.3	100
Commercially produced infant formula	1749	99.2	0.1	0.6	0.1	0	0	100
Any other milk powdered or fresh animal milk	1750	88.7	9.3	1.7	0.2	0.1	0	100
Fruit Juice	1750	92.7	5.9	0.9	0.5	0.1	0	100
Any other liquids	1749	92.7	5.9	0.9	0.5	0.1	0	100
Medium Income area								
Plain water	1818	2.1	0.7	3.9	12.8	13.1	67.3	100
Commercially produced infant formula	1843	99.3	0.4	0.1	0.1	0.1	0	100
Any other milk powdered or fresh animal milk	1850	74.5	20.9	4.6	0.0	0.0	0.0	100
Fruit Juice	1851	81.9	14.0	3.5	0.3	0.2	0.1	100
Any other liquids	1850	74.5	21.7	3.2	0.4	0.1	0.1	100

3.3.2 Solid foods

In both low and medium income groups, maize related meals were the main type of food usually eaten by households (94.1 percent and 95 percent respectively) (Table 23). The staple food in the sample areas is food made from maize in combination with relish from vegetables and legumes. Food supplements include sweet potatoes, cassava and groundnuts, mangoes during the rainy season and some wild fruits and vegetables.

Table 23 Type of food usually eaten by the households in the low and medium income area

	Low income		Medium income	
	N	%	N	%
Wheat related	13	4.5	13	4.4
Maize related	272	94.1	283	95.0
Sorghum related	1	0.3	1	0.3
Rice related	3	1.0	1	0.3
Cassava related	0	0.0	0	0.0
Other	0	0.0	0	0.0
Total	289	100.0	298	100.0

Households were also asked about the number of times they had eaten certain types of food during the previous day/night. Table 24 reflects that in Zambia the staple food is made largely from maize (in the low and medium income groups 72.6 % and 88.6 % respectively of the respondents ate food based on grains at least twice in the last 24 hours daily. The households in the medium income areas more frequently had more than two meals per day of grains based food. These households also ate green leafy vegetables more often than the low income households (78.0 % and 57.4 % respectively ate green leafy vegetables during the previous 24 hours at least twice). Protein rich food such as meat, chicken and fish were also eaten more (56.2 percent) by households in the medium income than by households in the low income group (39.5 percent) mainly due to difference in purchasing power.

Table 24 Number of times respondents of low and medium income areas had a particular type of food during the previous day/night (%)

Food source	Area	Never	once	twice	three times	four times	Total	N
Grains such as maize, rice, wheat, sorghum	Low income	5.1	22.7	63.4	8.5	0.3	100	1755
	Medium income	3.1	8.3	63.6	23.2	1.8	100	1859
	Mean	4.1	15.3	63.5	16.1	1.1	100	3614
Pumpkin, sweet potatoes, carrots etc	Low income	95.3	4.6	0.1	0.0	0	100	1754
	Medium Income	95.9	3.2	0.9	0.0	0	100	1855
	Mean	95.6	3.9	0.5	0.0	0	100	3614
Roots - yams, cassava	Low income	89.0	9.2	1.6	0.2	0	100	1754
	Medium income	90.7	8.1	0.9	0.3	0	100	1855
	Mean	89.9	8.6	1.2	0.2	0.1	100	3609
Green leafy vegetable	Low income	15.4	26.9	56.4	1.4	0	100	1755
	Medium income	6.9	15.1	75.4	2.6	0	100	1860
	Mean	11.0	20.8	66.1	2.0	0	100	3615
Mango, papaya, guava, other fruits	Low income	96.9	1.8	1.0	0.3	0.1	100	1755
	Medium Income	97.5	2.0	0.3	0.2	0	100	1855
	Mean	97.2	1.9	0.7	0.2	0	100	3610
Meat, chicken, fish, liver etc	Low	40.6	19.2	39.5	0.6	0	100	1755
	Medium	22.0	20.8	56.2	1.0	0	100	1871
	Mean	31.0	20.0	48.1	0.8	0	100	3626
Food made from legumes, etc	Income	72.8	14.6	12.6	0	0	100	1755
	Medium	68.7	12.4	17.7	1.3	0	100	1854
	Mean	70.7	13.5	15.2	0.7	0	100	3609
Sour milk, cheese or yoghurt	Low	97.6	1.6	0.7	0.1	0	100	1755
	Medium	97.4	1.8	0.6	0.2	0	100	1854
	Mean	97.5	1.7	0.6	0.1	0.1	100	3608
Any other solid or semi-solid food	Low	90.5	6.9	2.2	0.3	0.1	100	1755
	Medium	89.6	5.9	4.3	0.2	0	100	1871
	Mean	90.0	6.4	3.2	0.3	0.1	100	3626

Note: The study was realized during the dry season during which fruits, pumpkins, sweet potatoes and some tubers were in short supply, resulting in low consumption of these foods during the day preceding the survey.

3.3.3 Sources of food

Table 25 shows the main sources of food mentioned by the respondents indicating that for most of the households "purchasing" was the main source of food (in the low income 93.8 percent; in the medium group 95.6 percent). Few families mention "own food production" as their main source of food (in the low income area 4.5 percent and in the medium group 3.7 percent). This result indicates that poor households in urban areas highly depend on purchased food items (especially maize). However, one should take into account that many households are producing vegetables and keeping some animals in their backyards as a secondary source of food. See also the paragraph on coping strategies (par 3.4) that shows that 27.7 percent of the households report that they started producing food in the previous year in response to the financial and food crisis.

Table 25 Main source of food consumed by the households in low and medium income areas

	Low income		Medium income	
	n	%	n	%
Food is purchased	272	93.8	284	95.6
Produces own food	13	4.5	11	3.7
Own food in stock	1	0.3	1	0.3
Received gifts or aid	4	1.4	1	0.3
Total	290	100	297	100

Table 26 indicates the types of food products that households are producing themselves as indicated by the key informants: maize, vegetables and a variety of other crops (groundnuts, pumpkins, yams, sweet potatoes, cassava, fruits etc.

Table 26 Key informants' views regarding the own produced types of food in low and medium income areas (%)

Area	Maize	Vegetables	Ground nuts	Pumpkins	Other	Total	N
Low income	30	34	6	4	26	100	50
Medium income	30.2	37.7	11.3	0	20.8	100	53

In addition, many households keep some small animals, mainly poultry.

3.3.4 Changes in food prices

The price of the staple food, maize, recorded a consistent increase over the last five years with a peak in 2007 and 2008. Food inflation in Zambia increased from 5 percent in 2007 to 20 percent by December 2008. The price of the staple food, maize meal, was reported to have recorded a 50 percent to 56 percent increase in the 2007/2008 period. Drastic price increases were also reported in the price of cooking oil, beef, poultry, salt and sugar.
Table 27 indicates the average price changes for main food items at national level.

Table 27 National average price changes for selected food items (in percent)

	Dec.04 / Jan.05	Dec.05 / Jan.06	Dec. 06 / Jan. 07	Dec. 07 / Jan. 08	Dec. 08 / Jan. 09	Aug.09 / Sept.09
White Maize per 20L tin	+ 47.3	+50.2	+4.5	+ 7.2	+ 6.5	+ 3.5
Chicken per 1Kg	- 4.2			+ 1.8	+ 3.2	+ 0.1
Dry fish (bream) per 1Kg	-12.8	+6.6		- 0.7	- 0.7	- 2.6
Vegetable (Rape) 1Kg	-8.4	-9.0	+9.8	+ 24.0	- 0.6	- 5.2
Dried beans per 1Kg	+23.0	+20.5	+0.3	+ 5.6		
Beef (mixed cut) per 1Kg	-7.0		+2.5	+ 1.6	+ 1.4	+ 0.7

However, one should realize that the national average price changes are only a weak reflection of the high fluctuations in local and regional markets such as those in the Copperbelt (including Kitwe) which is usually a maize deficit area.
The high maize price in 2004 has been attributed to the impact of the Food Reserve Agency purchase programme (FEWS NET, 2004) while the low maize meal prices in 2006 were largely due to a ban on private sector maize exports (FEWS NET, 2006).
About 90 percent of the respondents had noticed changes in food prices during the last year (Table 28).

Table 28 Observation of food price changes during the last year by respondents from low and middle income areas

	Low income		Medium income	
	n	%	n	%
Noticed price change	264	91.3	261	89.8
Did not notice price change	30	8.7	25	10.2
Total	294	100	286	100

3.4 Coping strategies applied by the households

Respondents were asked how they were coping with the increasing food prices and lower incomes due to the global financial crisis. In Kitwe mining is the major industry and economic player and the reaction of the mines to the global financial crisis was to reduce labour force and suspend their expansion projects. Many employees in Kitwe lost jobs affecting their income, meanwhile food (and fuel) prices increased sharply.

Table 29 provides a summary of the coping strategies applied by the households in low and medium areas of Kitwe to the questions in response to the global financial crisis.

Table 29 Household coping strategies in low and medium income areas in response to rising food prices

	Low income		Medium income	
	n	%	n	%
Coping by taking on a second job	30	11.1	210	70.9
Coping by growing own food	75	27.7	67	22.6
Sending children to rural areas	1	0.4	15	5.1
Coping by relying on relatives	32	11.8	3	1.0
Coping by reducing food consumption	125	46.1	1	0.3
Others	8	3.0	0	0
Total	**271**	**100**	**296**	**100**

In the low income group 46.1 percent said they reduced food consumption, 27.7 percent said they started growing their own food, 11.8 percent relied on relatives for food support while other found a second job and a combination of other strategies. In the medium income group the preferred strategy to cope with the crisis was first and for all to take on a second job (70.9%) but also in this socio-economic group a substantial % of households started growing their own food (22.6%).

Participants in the Focus Group Discussions (nurses, teachers, community leaders) indicated that in their view “own food production” clearly had been the main response of these households to the crisis situation. Most of them have got home gardens and in few cases -those who have bigger plots away from their homes- involve themselves in farming for sale (Figure 8). The main crops grown include; maize, groundnuts, sweet potatoes and vegetables. Communities also rear animals for both sale and consumption. Most people in the communities rear chickens and in few cases animals such as goats and pigs are kept. Plants such as Aloe vera, Neem, Papaya and Guava are grown and used for medicinal purposes.

Figure 8 A maize and beans garden next to a garbage pit (left) and free range chickens (right) in a low income area

A second important coping strategy, according to the key informants (which is confirmed by the survey data) was: taking up part time jobs and petty trading. They also indicated that the type of secondary jobs the households from the low income areas obtained was mainly self employment in the informal sector including petty trading and street vending of grocery items, housekeeping jobs in and food growing and garden maintenance for well to do households in high income suburbs and other casual labour of various types. In the medium income trading activities dominated while households who owned cars converted them to pirate taxis.
In the low income group 22.6 percent of the households had two or more income earners while in the medium income group 29.1 percent of the households had two or more income earners.

A third important coping strategy is to reduce expenditures on food and other items (clothing, health and education). The FGD participants indicated that in the year preceding the survey, the buying of goods had reduced in most households and that the selling of household assets (e.g. cell phone, radio, bike, refrigerator) at reduced prices to earn some income had increased. Also many households have taken their children out of school to save expenses.

However, since the majority of the households are spending more than half of their income on food (Figure 9 and 10), reduction of food expenditures is the main way to reduce the household

expenditures. This coping strategy encompassed a reduction in spending on food by buying less quantity and cheaper food items of less quality, reduction of the number of meals and changes in the diet. We will discuss this in more detail in the next paragraph.

Figure 9 Proportion of household income spent on food in low income areas

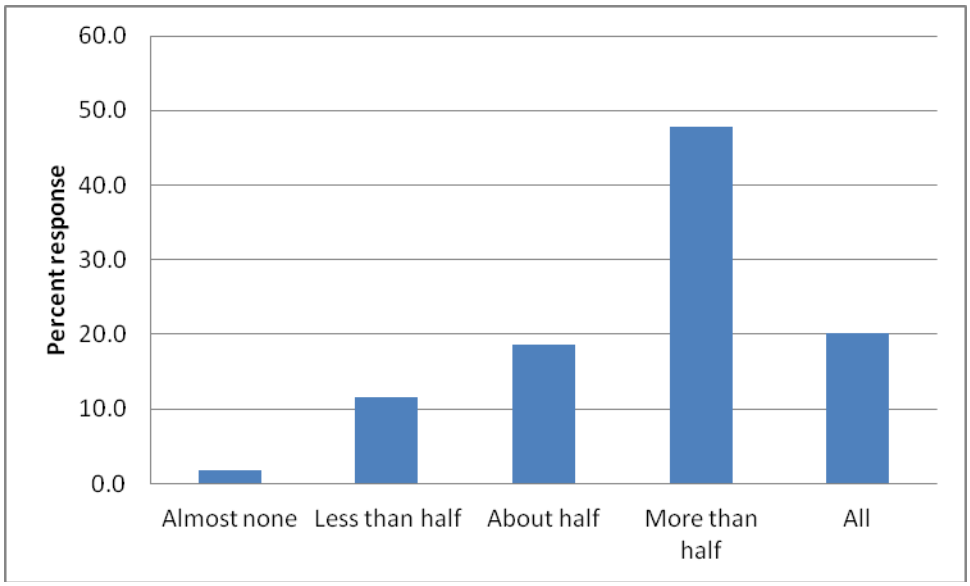
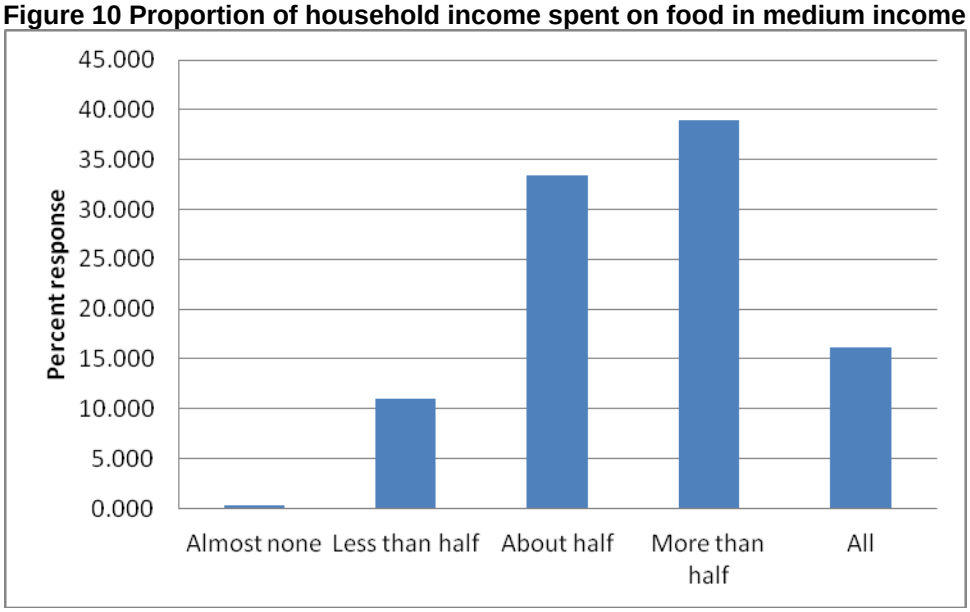


Figure 10 Proportion of household income spent on food in medium income areas



Other coping strategies mentioned by the FGD key informants are:

- Support through the extended family system (e.g. children eating with grandmother or aunt).
- Many teenagers in their community have resorted to prostitution and theft.
- Some families have migrated to rural areas as a way of surviving the crisis.
- Other households decided to put their houses on rent, or move to a smaller house or room and use the difference to buy food.

FGD participants note that most households applied a combination of coping strategies.

3.5 Changes in the diets due to the financial crisis and increasing food prices

Table 30 presents the responses of the interviewed households to the question whether they made any changes in their diet in the past year. In low and medium income areas 70.1 and 63.3 percent of households respectively have made some change in the household diet as a result of the global economic crisis.

Table 30 Households adaptation of diet in the last year in the low and medium income areas

	Low income		Medium income	
	n	%	n	%
Yes	199	70.1	189	63.9
No	85	29.9	107	36.1
Total	284	100	296	100

Table 31 shows that of the households that made changes, for 51% the change was mainly in quantity, in 40.5 % of cases there was a change in both quantity and quality and in nearly 9 percent of the cases the changes was only in the quality of the food.

Table 31 Responses to the change in quantity and food quality noticed as a result of the global crisis in the low and medium income areas

	Low income		Medium income	
	n	%	n	%
Change in Quantity	107	51.0	90	45.9
Change in Quality	18	8.6	8	4.1
Change in both	28	40.5	98	50.0
Total	210	100.0	196	100.0

In response to a question on the number meals per day the household is having nowadays compared to the previous year, 73 % of the low income group and 56.9 of the medium income group said they had reduced the number of meals; only a few households (2.5 percent and 4.4 percent, respectively) ate more often than the previous year (Table 31).

Table 32 Number of meals that households ate in 2009 compared to a year ago in the low and medium income areas

	Low income		Medium income	
	n	%	N	%
Same as last year	69	24.6	114	38.6
Less than last year	205	73	168	56.9
More than last year	7	2.5	13	4.4
Total	281	100	295	100

Regarding the types of food eaten there was not much difference as far as the main staple crop (maize) is concerned since this is the dominant food pattern is based on maize (see table 23). However, key informants reported in the FDGs' that -when the prices increased during the crisis- most households in the low income areas could not afford to buy maize meal anymore and opted to buy cheap often poor quality maize grains and produced their own home made maize meal. In the medium income areas most households, switched to buying cheaper maize meal called roller meal instead of the expensive breakfast mealie-meal.

Substantial changes took place in the supplementary foods. Table 33 and 34 indicate the situation before and after the crisis with respect to a number of supplementary food item normally eaten in combination with maize, according to the key informants. Several households

made changes in the supplementary foods. For example sweet potatoes and beans became important supplements to maize in the low income areas (35.9 percent), while fish, chicken and bread were reduced. Key informants also indicate that during the rainy season (November – March) many households also eat wild vegetables and mangos that are gathered from nearby forests to fill the gaps.

Table 33 Key informants' views regarding supplementary food types used before the crisis in the low and medium income areas

Area	Maize	Dry fish	Chicken	Beef	Rice	Bread	Other	Total	N
Low income	16.4	21.3	16.4	1.6	6.6	18	19.7	100	61
Medium income	4.3	24.6	23.2	14.5	2.9	20.3	10.1	100	39

Table 34 Key informants' views regarding supplementary food types used after the crisis in the low and medium income areas

Area	Maize	Dry fish	Sweet Potato	Vegetables	Cassava	Beans	Other	Total	N
Low income	25.6	5.1	35.9	2.6	5.1	23.1	1	100	39
Medium Income	23.9	17.4	6.5	39.1	4.3	8.7	0	100	46

3.6 Community responses to the economic and food crisis

The Focus Group Discussions, involving health workers, teachers and managers of community based organisations, revealed a number of responses by local organisations to the crisis:

- ***Health clinics distributing free ARV's***
  The local clinics in both the low and medium income areas started to distribute free ARV's to patients as many patients who were able to afford medication before the crisis are now unable to afford the medication as a result of the financial crisis.
- ***Churches distributing food and clothes***
  Churches in the low and medium income areas have come up with an initiative to establish the Women's League in these communities and to build the capacity of women in terms of livelihood. They also help the less privileged members of their churches by giving them food and clothes on a monthly basis.
- ***Schools Health and Nutrition Programme***
  The SHN is a programme that has been initiated by schools in various communities of both the low and medium income areas. This programme targets the less privileged pupils and was designed to help alleviate poverty in the community. The programme establishes food production units at the schools (to produce maize, beans, groundnuts, vegetables), cook for the kids at least once a month and give them bread. SHN has not been very effective because from the time of sowing to harvesting, pupils do not get anything, therefore its effect is seasonal. The respondents also noted that the number of school drop outs has increased because their parents are unable to afford school fees as a result of joblessness.
- ***Initiatives by Community Based Organisations***
  Community organizations have responded to the economic crisis by establishing a Malnutrition Centre, Community Based Rehabilitation Centre and the Chipata Home Care Programme (Figure 11)
  The Malnutrition Centre is a programme funded by the Catholic Church that provides meals from Monday to Friday to malnourished children -and at times adults that are unable to feed themselves- in low income areas like Chipata. The number of children that come to the centre has increased this last year from roughly 45 to 75 as a result of the financial crisis.

The Community Based Rehabilitation Centre is also sponsored by the Catholic Church and caters for children with epilepsy and those that are mentally retarded. The programme is effective and sustainable because the children are equipped with different skills from carpentry to tailoring and knitting. They are also taught social skills for their daily survival.
The Chipata Home Care Programme helps HIV/AIDS patients with free medication and voluntary counselling and testing. The programme also assists the children of patients with school fees, books and uniforms. The children who are malnourished are given nutrition support by providing them with high protein foods such as beans, soybeans, milk and kapenta (small dried fish). The programme is very effective because patients who are admitted normally go back to their homes healthy and fit.

Figure 11 Women preparing food for the malnourished children (left) and a community nutrition centre in the low income area of Kitwe (right)

The FGD participants indicated that the sustainability of most of the above mentioned programmes is uncertain due to erratic funding by the donors, although the projects that are funded by the Catholic Church are quiet stable.

Various suggestions were made by the respondents on how some of the projects can be improved and how the government can help in the different areas that are being affected by the economic crunch. The respondents suggested that less privileged children in schools should be given free books and uniforms so that these pupils are able to complete their education. They also suggest subsidizing agricultural inputs to counteract rising food prices.

3.7 Policy responses to the global financial crisis and rising food prices

The interviewed experts unanimously acknowledged that Zambia nor the city of Kitwe have taken any new policy measures or strategies to address rising hunger levels due to the global financial crisis of 2008/2009. This despite the food riots and labour conflicts that took place in 2008 and 2009 as a result of the increase in the costs of living particularly the price increases in the staple food compounded by the decline in employment opportunities resulting from the global economic crisis, which led to retrenchments in the mining sector due to the fall in copper prices.

The main policy documents that addresses hunger and poverty are the National Long Term Vision 2030, articulating alternative long-term development policy scenarios, and the Fifth National Development Plan 2006-2010 (FNDP), a successor to the Poverty Reduction Strategy

Paper (PRSP) (GRZ, 2006). However, these policy documents have not been developed as a response to the global economic crunch.

The country has recognized the fact that maintaining a safe, sustainable and secure environment for sustainable economic growth is a challenge. Therefore, the challenges, goals, and strategies for the Vision 2030 reflect Millennium Development Goals (MDGs) for which the country progress markers are tracked in the Zambia Millennium Development Goals Progress Report (GRZ, 2007). The report indicates that the target of MDG Goal 1 (eradicate extreme poverty and hunger) will potentially be met by halving the proportion of the population living in extreme poverty from 58 percent in 1991 to 29 percent by 2015.

In order to create a link between the Vision 2030 and the annual activity based budgets, the government has elucidated the Fifth National Development Plan (2006-2010) and Medium Term Economic Frameworks (MTEFs) has been developed. In order for Zambia to become a middle income state by 2030, agricultural development has been indicated as the engine of income expansion in the national economy. Other economic sectors that complement this focus, either directly or through inter-linkages are infrastructure, tourism, manufacturing, mining and energy. Government has indicated in the FNDP that sources of economic growth as identified by the above sectors constitute the economic sub-theme of the FNDP.

Arising from the Vision 2030 and the FNDP (2006-2010), Zambia has developed some strategies, discussed below, to combat hunger and reduce poverty:

a. **Food security pack under the Programme Against Malnutrition**
   The programme intends to promote food security at household level and encompasses the management of malnutrition, emergency treatment and high protein food supply as well as provision of free fertilisers and seed at no cost to vulnerable households. The programme is linked to the agriculture research station at Mount Makulu in Lusaka which carries out research in high yielding crop varieties that can perform well in specific areas. These are then recommended to farmers so as to increase crop yields and ultimately reduce hunger levels.
b. **Citizens Economic Empowerment.** The programme started in 2008.
   Under this programme, citizens of Zambia are encouraged to establish enterprises or projects in order to allow them become self sustainable and create employment by providing them loans for investment on favourable conditions.
c. **Fertilizer Support Program**
   The government provides subsidized fertilizers to people belonging to cooperatives in order to facilitate increased food production. The Ministry of Agriculture and Cooperatives also provides skills improvement to resource-poor farmers.
d. **Public Welfare Assistance Scheme (PWAS)**
   The PWAS is a community based programme that is coordinated by the Department of Social Welfare under the Ministry of Community Development and Social Services with the support of UNICEF. Local communities particularly in poor neighbourhoods are provided with support to enable them to care for the destitute and vulnerable within their neighbourhoods. The programme started in 1993. High protein foods are provided to children less than five years, demonstrations are conducted on how to prepare food to mothers with malnourished children, under fives are screened for diseases and malnutrition and vaccinated to prevent communicable diseases. Vitamin A is also administered to the children. Other initiatives under this strategy include the marketing of breast milk substitutes, complementary feeding program and promotion of feeding (0-6 month old infants).
e. **Livestock and fisheries restocking**

The program is administered by the Ministry of Agriculture and Cooperatives to restock fishing grounds that have been depleted of fish resources. Areas that are traditionally pastoral are also targeted to assist in restocking livestock.

In all these national programmes, the Zambian government receives financial and technical support from cooperating partners and non-governmental organisations. Key amongst the NGOs is CINDI that deals with children that are in crisis. Multilateral bodies such as UNICEF and WFP are supportive in this respect.

The FNDP and the Vision 2030 have had an insignificant impact in eradicating poverty as the economic and revenue base has been poor. The positive steps that Zambia made up to July 2008 are revealed in the reduction of inflation to below 10 percent in 2007 which had not happened in the past 30 years. The onset of the global crisis combined with the death of the former head of state, saw inflation shooting back to above 15 percent, and led to a decline in the price of copper to below US$3,000, withholding of investments, and an increase in unemployment. These factors, amongst others, have made it difficult to have any noticeable impact on poverty reduction and reducing hunger levels. In effect they have not even moderated the effects of the global economic crunch on household food security.

According to the Central Statistical Office, overall poverty remained at 64 percent and extreme poverty at 51 percent in 2008 (Table 35). The increase in poverty particularly in urban areas between 1993 and 2008 is ascribed to the economic restructuring programme that the Zambian government embarked on which resulted in the loss of employment for those employed in parastatal (government owned) companies while alternative employment opportunities in the formal sector were not available.

Table 35 Poverty trends in Zambia (in percent)

		1993	1996	1998	2004	2006	2008
Total Poor	National	84	78	72.9	68	64	64
Extremely poor	National	76	66	58	53	51	51
Total Poor	Rural	92	80	83	78	80	
Total Poor	Urban	8	11	17	22	34	

Source: Central Statistical Office national statistics (1991-2008)

Also the available anthropometric data indicate that these programmes have not been effective as evidenced from the fact that stunting has continued to rise from 1999 up to today.
Therefore, it be can concluded that more needs to be done in terms of policy, national socio-economic planning and implementation if the rising hunger levels are to be dealt with adequately.

Policies have meaning only when they are translated into profitable actions that yield benefits for the citizenry at household level. The interviewed experts acknowledged the fact that short term strategies such as the Food Pack and Fertiliser Support Program have been effective only when the necessary funds were available to implement them and confirmed that this was hardly the case during the financial crisis due to the decreasing resources of national government due to the financial crisis. They also observe that the strategies that the government of Zambia has implemented to address poverty are mainly financed externally. while domestically designed and financed socio-economic policies and strategies are seen as more effect and more sustainable over the longer term.

The following actions have been recommended by the interviewed experts as measures to the fluctuations in the prices of food items:

- Formulation and implementation of workable poverty reduction strategies that will guarantee food security
- Prices of agriculture inputs are constant and predictable
- Provision of subsidies to small scale (rural and urban) producers and timely supply of inputs
- Reduce taxes -such as VAT- on foods items
- Reduce dependence on rain-fed agriculture and promotion of alternative crops such as cassava, sorghum and millet
- Government to be involved in the purchase of maize from poor farmers; ensure that producers are paid in time for their agriculture produce
- Reserves of maize should be constant throughout the year
- Diversify the economy from the current dependence on copper mining
- Government to regulate the price of the nation's staple food, maize
- Provide agricultural loans at affordable interest rates
- Parallel petroleum pricing system which specifies lower prices for farmers than other consumers of petroleum products.

4. CONCLUSION

This study has generated useful data regarding the consequences of the global financial crisis on food security and nutrition of households from low and medium income areas in the city of Kitwe, Zambia. The nutritional status of most young children was compromised as parents reduced spending on food (both quantity and quality) due to food price increases and the other effects of the global crisis such as job and income losses).

In the effort to cope with the crisis most male household heads took up second jobs in the informal sector such as carpentry, block making guarding and other casual work while the majority of females sought some income by engaging in petty trading at markets and street vending. But this could not compensate for the loss of income and rising food prices and most households were compelled to reduce spending, also on food.

It was found that the majority of the households in low and medium income areas spend more than 50% of their income on food. Income spent on food items per month ranged from USD50 to USD110 per household of six in the low income group and from USD50 to USD 277 per household of six members in the medium income group.

The global financial crisis compelled the households to reduce the quantity and quality of food consumed in both low income and middle income areas. The number of meals taken in a day was slightly reduced and more so the quantity of food in each serving and with such low incomes many households did not have a wide choice of food items to purchase and shifted to cheaper and lower quality food items. As a consequence the diet is often not balanced and largely dependent on carbohydrate based food items such as maize meal and this greatly affected children's health (more than the mothers) in the short term while the long term effects are yet to be determined. As a consequence of household's inability to purchase food that is both sufficient and nutritious, children of 0-5 years of age in Kitwe showed increased stunting (48 percent) and wasting (7.0 percent) but a small reduction in underweight (14.3 percent) than previous years of 44.2, 2.5 and 15 percent, respectively.

In the view of experts, government did not take any specific additional measures in response to address the effects of the global crisis on poverty and hunger in Zambia with exception of some policy measures in the financial sector taken by the Bank of Zambia aimed at regulating the foreign exchange transactions..
The existing policies have not been capable to counteract the effects of the global crisis, which has resulted in rising poverty levels (in the cities) and increasing malnutrition.

The experts that were interviewed, recommend to adopt poverty alleviation and anti-hunger strategies that are designed and mainly financed nationally and that include measures like: subsidies for agriculture inputs, introduction of farmer-friendly agriculture loan scheme, maize price controls and promotion of irrigated agriculture, amongst others.

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ANNEX 1: QUESTIONNAIRE

Good morning, afternoon or evening!!, Please my name is …….. and I am from the Copperbelt University/Kitwe District Health Board/Central Statistical Office/other . We are currently working together with IDRC, UN Habitat, and RUAF Foundation (all international organizations) to conduct a research into the effects of the global financial crisis on food security of poor urban households. Your household was selected for this project and we will be grateful if you could kindly allow us a few minutes to ask you some questions concerning members of your household, your food among other things. We will also measure the height and weight of children (under 6) and women between age 15-49. Thank you

2009 CHILD NUTRITION SURVEY QUESTIONNAIRE

IDENTIFICATION	
PROVINCE/REGION* _____	☐
DISTRICT	☐☐
LOCATION/TOWN(LOCALITY)	☐☐☐
SUBLOCATION/WARD(EA) _____	☐☐☐
HOUSEHOLD NUMBER_____	☐☐
NAME OF HOUSEHOLD HEAD	☐☐

INTERVIEWER VISITS		
DATE (***DD/MM/YY***)		
INTERVIEWER'S NAME	_____ (FIRST VISIT)	_____ (SECOND VISIT)
	_____	
		TOTAL ELIGIBLE CHILDREN +---+ | | | +---+

SUPERVISOR			OFFICE EDITOR	KEYED BY
NAME	+---+ | | | +---+		+---+ | | | +---+	+---+ | | | +---+
DATE				

SECTION 1 HOUSEHOLD SCHEDULE

Now we would like some information about the people who usually live in your household or who are staying with you now.

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household	What is the relationship of (NAME) to the head of the household?*	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUMBER OF ALL CHILDREN UNDER AGE 6
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			M F	YES NO	YES NO	IN YEARS	
01			1 2	1 2	1 2		01
02			1 2	1 2	1 2		02
03			1 2	1 2	1 2		03
04			1 2	1 2	1 2		04
05			1 2	1 2	1 2		05
06			1 2	1 2	1 2		06
07			1 2	1 2	1 2		07
08			1 2	1 2	1 2		08
09			1 2	1 2	1 2		09
10			1 2	1 2	1 2		10

*CODES FOR Q.3
RELATIONSHIP TO HEAD OF HOUSEHOLD:
01 = HEAD
02 = WIFE/HUSBAND/PARTNER
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = CO-WIFE
10 = OTHER RELATIVE
11 = ADOPTED/FOSTER/STEPCHILD
12 = NOT RELATED
98 = DOES NOT KNOW

LINE NO.	EDUCATION	MARITAL STATUS	PLACE OF ORIGIN	ETNICITY	RELIGION
LINE NO.	What is the highest educational level of (NAME)?	What is (NAME's) current Marital Status?	What town/village does (NAME) come from? (Write the name of community and region of community)	Which Ethnic group does (NAME) belong?	What is (NAME's) religious affiliation?
(9)	(10)	(11)	(12)	(13)	(14)
01				IN YEARS	
02					
03					
04					
05					
06					
07					
08					
09					
10					

CODE for Q10
1= No Education
2 = Primary
3= Middle/JSS
4= Secondary/SSS
5= Vocational/Technical/Commercial
6=Post Secondary (Agric/Nursing/Teacher Trg)
7= Tertiary (University/Polytechnic/Professional)

CODE for Q11
1= Never Married (Single)
2= Married
3= Informal/ Loose Union/ Living Together
4= Separated
5= Divorced
6= Widowed

CODE for Q13
01= Akan
02= Ga/ Adangme
03= Ewe
04= Guan
05= Gruma
06= Mole/ Dagbani
07= Grusi
08= Mande
09= Other (Specify) ----------

CODE for Q14
1= Catholic
2= Protestant
3= Pentecostal/ Charismatic
4= Other Christians
5= Islam
6= Traditional
7= No Religion
8= Other (Specify)----------

SECTION 2 WEIGHTS AND HEIGHT MEASUREMENT OF WOMEN AND CHILDREN

CHECK COLUMNS (8) (2) AND (7): RECORD LINE NUMBER, NAME AND AGE OF CHILD UNDER AGE 6.

WOMEN 15-49				WEIGHT AND HEIGHT MEASUREMENT OF WOMEN 15-49			
LINE NO. FROM COL.(8)	NAME FROM COL.(2)	AGE FROM COL.(7)		WEIGHT (KILOGRAMS)	HEIGHT (CENTIMETRES)		RESULT 1 MEASURED 2 NOT PRESENT 3 REFUSED 6 OTHER
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
		YEARS					

CHECK COLUMNS (8) (2) AND (7): RECORD LINE NUMBER, NAME AND AGE OF CHILDREN UNDER AGE 6

CHILDREN UNDER AGE 6				WEIGHT AND HEIGHT OF CHILDREN BORN IN 2003 OR LATER			
LINE NO. FROM COL (8)	NAME FROM COL.(2)	AGE FROM COL.(7)	What is (NAME)=s date of birth? (Check Health card/ birth cert)	WEIGHT (KILOGRAMS)	HEIGHT (CENTIMETRES)	MEASURED LYING DOWN OR STANDING UP	RESULT 1 MEASURED 2 NOT PRESENT 3 REFUSED 6 OTHER
			DAY MONTH YEAR			LYING STAND.	
				0		1 2	
				0		1 2	
				0		1 2	
				0		1 2	
				0		1 2	
				0		1 2	

TICK HERE IF CONTINUATION SHEET USED

SECTION 3 HOUSEHOLDS COPING STRATEGY TO THE CRISIS

LINE NO.	EMPLOYMENT/ OCCUPATION		
	Is (NAME) currently working?	Has (NAME) done any work in the last 12 months?	What is (NAME's) occupation, that is, what kind of work does he/she mainly do?
(23)	(24)	(25)	(26)
01	YES NO 1 2	YES NO 1 2	
02	YES NO 1 2	YES NO 1 2	
03	YES NO 1 2	YES NO 1 2	
04	YES NO 1 2	YES NO 1 2	
05	YES NO 1 2	1 2	
06	YES NO 1 2	YES NO 1 2	
07	YES NO 1 2	YES NO 1 2	
08	YES NO 1 2	YES NO 1 2	
09	YES NO 1 2	YES NO 1 2	
10	YES NO 1 2	YES NO 1 2	

LINE NO.	In total how many times yesterday during the day/night did (NAME) drink (ITEM) (No of times)				
	Plain water	Commercial Produced Infant Formula	Any other milk such as tinned, powdered, or fresh animal milk?	Fruit juice?	Any other liquids?
(27)	(28)	(29)	(30)	(31)	(32)
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					

Now I would like to ask you about the types of foods (NAME) ate over the last 24 hours.

LINE NO.	In total, how many times yesterday during the day or at night did (NAME) eat (ITEM)?				
	Any food made from grains, like maize, rice, wheat, porridge, sorghum, or other local grains?	Pumpkin, red or yellow yams or squash, carrots, or yellow sweet potatoes?	Any other food made from roots or tubers, like white potatoes, white yams, arrowroot, cassava, or other local roots or tubers?	Any green leafy vegetables?	Mango, papaya, guava?
(33)	(34)	(35)	(36)	(37)	(38)
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					

LINE NO.	In total, how many times yesterday during the day or at night did (NAME) eat (ITEM)?				
	Any other fruits and vegetables like bananas, apples, green beans, avocados, tomatoes, oranges, pineapples, passion fruit?	Meat, chicken, fish, liver, kidney, blood, termites, seafood, or eggs?	Any food made from legumes, e.g. lentils, beans, soybeans, pulses, or peanuts?	Sour milk, cheese or yoghurt?	Any solid or semi-solid food?
(40)	(41)	(42)	(43)	(44)	(45)
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					

46	How long has your household been living continuously here	Below one year……..…..……1 Between one and two years……..…. …2 Three years or more……3
47	Does your household own this structure (house, flat, shack), do you rent it, or do you live here without paying?	Owns……..…..……1 Pays rent/lease……2 No rent,with consent of Owner……3 No rent,, squatting……..4
48	Does your household own the land on which the structure (house, flat, shack) sits?	Owns……..…..……1 Pays rent/lease……2 No rent,with consent of Owner……3 No rent,, squatting……..4
49	What is the main source of food you consume?	Purchases……1 Own produces ……..…..……2 Own stock……3 Gifts or Aid ……..…..……..4 Other (specify)……5
50	Which of the following food types does your household usually eat?	Wheat related food…..…..……1 Nshima related food……..…..……..2 Sogamu related food……..…3 Rice/ related food……..……..4 Cassava related food…..…..……5 Other Specify ……..……6
51	Has your diet and food bracket changed in the past year?	Yes……..1 No…… .2 Skip to 53
52	If yes what type of change did you notice?	Change in quantity……..…..1 Change in quality……2 Change in quantity and quality…..…..…..3 Introduce new food items……4
53	Compared to one year ago, are you eating the same number of meals per day?	Same……1 Less……2 More……3
54	On average, how many meals do you eat per day?	Once……1 Twice ……..2 Three times……..3 Four or more……4
55	Compared to one year ago, are you eating the same type of food?	Yes……1 No……2
56	Did you notice any change in the prices of products in the past one year?	Yes……1 No……2 skip to 58
57	(If yes) With increase in food prices, how do you take care of yourself?	Got a second job……..1 Growing own food……2 Sending children to rural areas……..3 Taking children out of school……..4 Relying on relatives……..5 Have reduced consumption of other goods…..…..…..…… 6 Other (specify)……7
58	How many income earners do you have in your household? (Cross check from Q 24)	……
59	Taking into consideration the number of income earners in your household, what is the total income of your household (in Kwacha)?	……
60	On average, how much of your household income is spent on food?	Almost none……..1 Less than half……..…..2 About half……3 More than half……..4 All……5 None, His income is all saved……..6

Supplementary questionnaire

Good morning/afternoon. My name is……..and I am from the Copperbelt University. We are collecting addition information on food security and employment in Kitwe with regards to the financial crisis that occurred last year. We will take a few minutes only.

District
Locality
Ward
Name of informant (s)
Date
Interviewers name

1. With increase in food prices how do households take care of their families?.....
   ……
   ……
   ……
   ……
   ……
2. What proportion of neighbours in this locality has a second job?
   ……
   ……
   ……
   .....
   .....
   .....
3. What secondary jobs are householders engaged in?.....
   ……
   ……
   ……
   ……
   ……
   ……
   ……..
4. Has the food diet in most households changed in the past year?

a. Yes
b. No

5. What were the common food items used by most households before the crisis……..……
   ……
   ……
   ……
   ……
   ……
   ……
   ……..

6. What are the common food items used by most households after the crisis……..……
   ……
   ……
   ……
   ……
   ……..
7. What food quality is often used by most households compared to the past year……..
   ……
   ……
   ……
   ……
   ……
   ……
   ……
   ……
   …..
8. What food types were own produced by households as a way of coping with the crisis…….
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9. What food Supplements are used by households as a way of coping with the crisis……..
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10. What goods have householders reduced consumption on…….
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ANNEX 2 DEFINITION OF TERMS

Bias:	An error that consistently results in an over or under estimation of a value of a measurement. Bias can result from problems with how the sample was selected. Use of a random and/or systematic sampling process may help prevent this "selection bias."
Cluster:	A naturally occurring group of individuals that is likely to include a specified number of individuals from a population group of interest.
Cluster sampling:	A method of sampling population clusters rather than individuals, then interviewing a certain number of individuals within each cluster to achieve the desired sample size.
Confidence interval (limits):	Indicates the range of possible values that the sample estimate will fall within a certain percentage of the time. *Confidence limits* are the highest and lowest values within that range, and are usually calculated at a level of 95 percent. That is, there is a 95 percent chance that the actual rate or proportion being estimated in the study falls within the confidence interval.
Cumulative:	Increasing a sum by continuing to add to it. For example, assume there is a list of three communities. Community A has 40,000 people, Community B has 60,000 people, and Community C has 50,000 people. The cumulative population of Community A and Community B is 100,000 (40,000+60,000). The cumulative population of Community A, Community B, and Community C is 150,000 (40,000+60,000+50,000).
Formal employment	Those working businesses that are registered where employees are entitled to paid leave, pension, gratuity and social security
Informal employment	Those working businesses that are not registered and run from homes, streets pavements, or other informal arrangements and where employees and not entitled to paid leave, pension, gratuity and social security
Household	Individual (s) who dwell under the same roof and compose a family
Household head	An individual in one family setting who provides actual support and maintenance to one or more individuals who are related to him r her through adoption, blood or marriage.
Lot Quality Assurance Sampling (LQAS):	A special form of stratified sampling that allows projects to identify areas with levels of coverage that are at or above expectation versus those that are below expectation.
Multi-stage sampling:	A process involving more than one step of sampling before reaching the ultimate unit of interest. For example, with cluster sampling, projects first sample clusters from the population, then households within clusters, and finally, mothers/caregivers within sample households.
Probability proportional to size (PPS):	A sampling principle that ensures that the sample's distribution mirrors the population's distribution. Communities with larger populations have a proportionately greater chance of having clusters located in those communities than communities with smaller populations.
Random sample:	A method of selecting a sample that ensures that each unit in the population has an equal chance of being selected.
Random number:	A number that is selected (by chance) from many numbers. Each number has an equal chance of being selected.
Sample:	A group of units (such as individuals or households) selected from the general population.
Sample area:	Community (cluster, lot) selected from the general population for a study.
Sample size:	Number of units (individuals, households) selected from the population for

	inclusion in a study.
Sampling unit:	Usually the same as the unit of analysis. It is the unit from which information is collected in a survey. For KPC surveys, the sampling unit is usually the individual or the household. However, these units can sometimes be aggregated to reflect community-level phenomena.
Sampling frame:	List of every possible sampling unit within the target population from which a sample will be drawn.
Sampling interval:	The total population size (N) divided by the sample size (n). Used as part of systematic sampling to select units from a sampling frame
Standard error:	Also known as *sampling error.* It is a statistical measure that indicates the precision of a sample estimate, and is used to calculate the confidence limits of that estimate.
Systematic sampling:	A sampling approach that involves calculating a *sampling interval* based on the required sample size. A random starting point is chosen, and then cases are selected from the sampling frame at a sampling interval.