STATUS REPORT

ON THE KENYA NATIONAL FOOD SECURITY

Map of Kenya Showing the 20 Visited Counties

Kenya National Bureau of Statistics

University of Nairobi
African Women's Studies Centre

STATUS REPORT

ON THE KENYA NATIONAL FOOD SECURITY

Zero Tolerance to Hunger

Kenya Constitution Article 43 (1)(C)

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List of Abbreviations and Acronyms

ADB	African Development Bank
AEZs	Agro Ecological Zones
AFFA	Agriculture Fisheries and Food Authority
ASALs	Arid and Semi-Arid Lands
AWSC	African Women's Studies Centre
CAVS	College of Agriculture and Veterinary Sciences
CDOs	County Development Officers
CSO	Central Statistical Office
CSPRP	Census and Survey Processing System
FAO	Food and Agriculture Organization
FHH	Female Headed Households
FIDA	Federation of Women Lawyers Kenya
FNSP	Food and Nutrition Security Policy
GDP	Gross Domestic Product
GHI	Global Hunger Index
GIDD	Gender in Development Division
GoE	Government of Kenya
GOK	Government of Kenya
GRZ	Government of the Republic of Zambia
HDI	Human Development Index
HH	Household
HHHs	Household heads
IFAD	International Fund for Agricultural Development
IPC	Integrated Food Security Phase Classification
KEPHIS	Kenya Plant Health Inspectorate Services
KIHBS	Kenya Integrated Household Budget Survey
MDG	Millennium Development Goal
MHH	Male Headed Households
MK	Malawi Kwacha
NACC	National Aids Control Council
NCPB	National Cereals and Produce Board
NDP	National Development Plan
NGOs	Non-Governmental Organizations
PDS	Public Distribution System

PRSP	Poverty Reduction Strategy Papers
PWD	Persons with Disability Fund
STI	Science, Technology and Innovation
UN	United Nations
UNDP	United Nations Development Program
UoN	University of Nairobi
USAID	United States Agency for International Development
WFP	World Food Programme
WRS	Warehouse Receipting System

Definition of Key Concepts

Household: is defined as a person or a group of persons residing in the same compound, answerable to the same head and sharing a common source of food. The three important ways of identifying a household are ensuring that:

a) People reside in the same compound;

b) People are answerable to the same head; and

c) Members share a common cooking arrangement (pool and share their resources for common provisions).

Household head: is the most responsible member of the household who makes key decisions on the household on a day to day basis and whose authority is recognized by all members of the household. It could be the father, the Mother or a Child, or any other responsible member of the household depending on the status of the household.

Respondent: is any responsible member of the household who provides information to the enumerator.

Food preservation: prevention of food from decay, decomposition or spoilage.

Food storage: place where food or food item is stored.

Access: in relation to food means the physical and economic access by a person or households to food through production or purchase.

Adequate food: means the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances.

Food: means everything that originates from biological sources and water, whether processed or not, which is designated as an eatable or beverage for human consumption, including food additive materials, food raw material and other materials used in the process of preparation, processing and or the making of an eatable or beverage.

Food of acceptable quality: means food whose value of quality is determined as fit for consumption based on the criteria of food safety, nutrition content and standards specified by the Cabinet Secretary or under the Standard Act or any other written law.

Food production: means an activity or process of producing, preparing, processing, making, preserving, packing or repackaging and or changing the form of food.

Food safety: means the condition and efforts required to prevent food from possible biological, chemical-contamination and contamination by other objects which may harm or endanger the human health.

Food security: means a situation where all people, at all times have regular and permanent physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Freedom from hunger: means a situation where all persons have access to a level of food, capable of meeting the

recommended minimum dietary requirements as may be prescribed by the Cabinet Secretary from time to time.

Malnutrition: means poor nutritional status caused by nutritional deficiency or excess.

Minimum: means the amount of food required to meet the minimum nutritional needs of an individual, according to age, sex, occupation and health status, provided in-kind, in equivalent monetary value, vouchers or other prescribed form.

Food reserve: means the national food reserve established under section 43.

Right to food: means the right of every person to have regular, permanent and free access, at all times, either directly or by means of financial purchases, to quantitatively and qualitatively adequate, sufficient and safe food, corresponding to his or her cultural traditions and which ensures a physical and mental, individual or collective fulfilling and dignified life, free of fear of hunger or under nutrition.

Vulnerable persons: include infants, children, school going children, pregnant and nursing mothers, the elderly, refugees, internally displaced persons, people with disabilities, sick persons with chronic diseases such as HIV/AIDS, victims of conflict, rural people in precarious livelihood situations, marginalised populations in urban areas, groups at risk of social marginalization and discrimination and any other group that may be identified from time to time.

Acknowledgements

We would like to thank Hon. Elias Mbau and the Parliamentary Budget Committee of 2012, Parliamentary Agricultural Committee of 2012, at the time, chaired by Hon. John Mututho, for recommending to Treasury that the University of Nairobi through the African Women's Studies Centre (AWSC) undertake research on food security as part of their efforts towards implementation of article 43 (1)(c) of the Constitution. Our sincere gratitude to Treasury for expediting the transfer of the project funds, through the Ministry of Education, to facilitate the implementation of the project.

The successful implementation of this project has been made possible by the support, encouragement and goodwill of many individuals from the University of Nairobi and other institutions. While we cannot mention all the persons that were involved in this process, I acknowledge the support of the Vice-Chancellor, Professor George A.O. Magoha, the Deputy Vice-Chancellor Administration and Finance, Professor Peter Mbithi, the Finance Officer, Michael Karue, the Principal of the College of Humanities and Social Sciences, Professor Enos Njeru and the Principal of the College of Agriculture and Veterinary Sciences, Professor Agnes Mwang'ombe. The two Principals have been very supportive programme advisors, giving insightful contributions and direction whenever called upon.

The African Women's Studies Centre's Implementation Committee on Food Security has led the way with great dedication, having put in a lot of time and effort in the implementation of this research project. The members of this Committee include: Prof. Wanjiku Mukabi Kabira, Director AWSC, Prof. Tabitha Kiriti-Ng'ang'a, School of Economics, Prof. Margaret Jesang Hutchinson, Department of Agriculture, Dr. Gerrishon Ikiara, Institute of Diplomacy and International Studies, Dr. Wanjiru Gichuhi, Population Studies Research Institute and Dr. Mary Lucia Mbithi, School of Economics, as well as, Prof. Elishiba Kimani, Gender and Development Studies, Kenyatta University. The AWSC is also grateful to the members of the University community and representatives of civil society for their technical work, time and commitment to this project.

The Kenya National Bureau of Statistics (KNBS) has been fundamental in conducting the National Baseline Survey. The team led by the very able Director General, Mr. Zachary Mwangi. Mr. James Gatungu, Director of Production Statistics, Ms. Mary Wanyonyi, Senior Manager, Food Monitoring and Environment Statistics and Mr. Patrick Mwaniki, the Senior Manager, Agriculture and Livestock, were very helpful and insightful during the entire process. Great support was received from Mr. Josiah Kaara and Mr. Bernard Obasi as well as Mr. John Bore and Mr. John Mburu in analysis and sampling skills.

Prof. Patricia Kameri-Mbote, Dean, School of Law University of Nairobi, Dr. Linda Musumba, School of Law, Kenyatta University and Dr. Godfrey Musila, School of Law, University of Nairobi were very vital in

the development of the draft Food Security Bill, 2014.

The AWSC is thankful to the Women Enterprise Fund, Maendeleo ya Wanawake representatives, KNBS statistical officers, area chiefs and village guides from the 20 counties, for the mobilization of respondents during the research surveys. We acknowledge the 4,129 respondents at the household level, the opinion leaders, the representatives of government institutions dealing with food production, and the men and women leaders who participated in the debriefing meetings from the 20 counties and whose contributions made this study a great success.

The field surveys would not have been successful if it were not for the hard work and commitment shown by the lead researchers and enumerators. The full list of the research teams is appended.

Policy and intervention proposals were shared with policy makers and parliamentarians. The AWSC would like to appreciate the opportunities to share these proposals with the Majority Chief Whip of the Senate, Senator Beatrice Elachi, Chairperson and Senator, Lenny Kivuti and committee members of the Lands and Natural Resources Committee of the Senate, Chairperson of the Agriculture Committee of the Senate, Senator Kiraitu Murungi, Director of the Senate Committee Services, Mr. Njenga Njuguna, Chairperson of the Budget and Appropriation Committee of the National Assembly Hon. Mutava Musyimi and members of his committee and officials from the National Assembly, Mr. Paul Ng'etich and Mr. Kepha Omoti and the Clerk of the Senate Mr. Jeremiah Nyegenye. Apart from furnishing the Centre with information, the Vision 2030 Secretariat led by Prof. Wainaina Gituro, the Director General, was very receptive in receiving the different analytical reports related to food insecurity in the country. In addition, the Report has been shared with the Cabinet Secretary, Ministry of Education, Prof. Jacob Kaimenyi, and with Ministry of Agriculture, Livestock and Fisheries, research institutions, private sector representatives at a high level stakeholders meeting organised by the Senate Committee on Agriculture in Naivasha. We also thank the Cabinet Secretary for Devolution and Planning, Ms. Anne Waiguru for officially opening a national women's conference to share the research findings, at the University of Nairobi.

The AWSC is very grateful to the Members of the 20 county governments and assemblies where the research was conducted. These include: Nairobi, Makueni, Kajiado, Mombasa, Bomet, Baringo, Migori, Kisii, Kwale, Taita Taveta, Elgeyo Marakwet, Kirinyaga, Laikipia, Turkana, Isiolo, Kiambu, Nakuru, Bungoma, Nandi and Trans Nzoia. These county governments and assemblies, were very receptive to the findings on food security in their counties and recommendations and proposals to ensure that no person goes to sleep hungry.

The African Women's Studies Centre (AWSC) is indebted to the technical team that arduously worked in the preparation of this final report. Among them is the Director, Prof. Wanjiku Mukabi Kabira, who ably guided the team, Prof. Tabitha Kiriti-Ng'ang'a, the lead report writer, Dr. Gerrishon Ikiara, Ms. Mary Wambui Kanyi, Dr. Samuel Wakibi who tirelessly provided the quantitative data to the team and; Prof. Margaret Jesang Hutchinson, Prof. Jane Mariara, Ms. Agnes Mueni Kyalo and Dr. Mary Mildred Wanyonyi, Prof. Shellamiah Okoth Keya, Prof. Kiarie Njoroge for coordinating the team by Dr. Dorah Kilalo from the College of Agriculture & Veterinary Sciences.

We commend the Management Committee of the AWSC for consistently monitoring the implementation of the project and we are grateful to them. The team of Prof. Octavian Gakuru, Prof. Henry Indangasi, Prof. Ciarunji Chesaina, Prof. Milcah Amolo Achola, Mrs Anne Petkova Mwangi, Dr. Daniel Ichang'i and Prof. Grace Omoni contributed greatly to ensuring smooth the implementation of the project. The AWSC Secretariat consistently carried out research and ground work for the implementation of this project and preparation of the final Report. They have played a pivotal role in the writing and compilation of reports as well as organizing the various technical meetings and consultations. Appreciation goes to Mr. Gideon Muendo, Mr. Gideon Ruto, Mr. Joseph Owino, Mr. Kennedy Mwangi, Ms. Minneh Nyambura Wanjiku, Ms. Priscilla Nekipasi, Mrs Rosalyn Otieno, Ms. Wanjiku Gacheche, Dr. Jane Wambui and Mr. Reuben Waswa who have showed commitment to the success of this project.

Finally, Kenyans are entitled to the constitutional right to be free from hunger as enshrined in Article 43 (1)(c) of the Bill of Rights. The AWSC is indebted to the many individuals and institutions who, though not mentioned by name, have collaborated in this journey towards ensuring no Kenyan goes to bed hungry, and whose contributions in one way or another, have made this study a great success.

To all of you we say a big THANK YOU!!

Asanteni sana

Prof. Wanjiku Mukabi Kabira, EBS

Director, African Women's Studies Centre

University of Nairobi

Foreword

In recognition of the vital role that the University of Nairobi plays in research, I would like to commend the African Women's Studies Centre and the Kenya National Bureau of Statistics for this immense contribution in the area of food security in Kenya. Indeed, this report on the status of the national food security in Kenya gives me great pleasure and makes me proud to identify myself with this great institution.

The successful conclusion of the Baseline Survey on the Status of Food Security in Kenya, conducted by the African Women's Studies Centre in collaboration with the Kenya National Bureau of Statistics, is a landmark achievement, not only for the Centre and the Bureau but also for the entire University. The study is a clear indication that the University of Nairobi will always be a leader in research that responds to the felt needs of this country.

The African Women's Studies Centre has been in the forefront in the advocacy of the implementation of the right to food. In this spirit, the Centre advocates for legislative frameworks that will ensure zero tolerance to hunger and full implementation of Article 43 (1)(c). The Food Security Bill, 2014 is a good beginning point.

In pursuit of this as well, the Government of Kenya has shown its commitment to

research and innovation by providing the Centre with the grant to conduct this research. We are all grateful as we strive to make Kenya a food secure country. The commissioning of impressive projects such as the Galana-Kulalu project at the Coast and other initiatives will have far-reaching effects in feeding the people of this nation.

I wish to congratulate the African Women's Studies Centre which has grown steadily since its establishment just a few years ago. Their initiatives, especially in the areas of research and policy advocacy, are very commendable.

Prof. George A.O. Magoha, EBS, MBS
Vice-Chancellor, University of Nairobi

Preamble

The Kenya National Bureau of Statistics takes cognizance of this partnership with the African Women's Studies Centre in an attempt to evaluate food security in Kenya. The Bureau is the principal Government agency mandated with collecting, analyzing and disseminating of official statistics. This collaboration with the African Women's Studies Centre of the University of Nairobi was a task that we engaged in with much pleasure and much enthusiasm. Successfully conducting the survey in twenty counties in Kenya marks a major milestone in the food security assessment in the country. This great achievement was a result of the commitment, hard work and desire of the team of researchers to make a positive change in the lives of all Kenyans, wherever they may be.

The Kenya National Bureau of Statistics commends the African Women's Studies Centre for being such a worthy partner in the implementation of the Food Security Project. Indeed, the Centre has exhibited great professionalism toward this exercise. We feel privileged to be associated with the Centre.

I would also like to commend the team from the Kenya National Bureau of Statistics for their commitment to the Project. You have really done the Bureau proud and I believe you will continue with that will and determination towards goal oriented achievements.

The efforts put into the publication of this Report have been immense. The food security indicators in this baseline survey will provide valuable information to the county governments towards their policy planning processes. I acknowledge that the government has done much with regards to food security in the country. Nevertheless, it

is now my hope that this Report will be impactful enough to ensure that the full implementation of Article 43 (1)(c) of the Constitution of Kenya becomes a reality.

During the Survey, the people suggested what should be done to ensure food security in their counties. This Report outlines these recommendations and also proposes a range of measures which, if effectively implemented, will lead to food security in these counties and in Kenya as a whole.

The data collected reveals that a large proportion of Kenyans face acute food shortage. It is worth noting that indeed the most affected are the women.

It is my believe that through the concerted effort from government, the academia, the private sector and all Kenyans, zero tolerance to hunger will be achieved.

Zachary Mwangi
Director General,
Kenya National Bureau of Statistics

Preface

The Spirit of the National Food Security Report

Sessional Paper No. 1 of 1965 on *African Socialism and its Application to Planning in Kenya* promised to fight three evils: poverty, ignorance and disease. Food poverty is a manifestation of food insecurity and it has been a thorny and pressing issue in Kenya since independence. The Kenya Vision 2030, which is Kenya`s development blueprint also stresses the issue of food security as a cross cutting issue and there are now a number of programs and projects aimed at eradicating food insecurity in Kenya. This Report is one of the efforts aimed at achieving this objective of eradicating food insecurity in Kenya.

The journey has been long and challenges many; it is with strong determination that the study came into a fruitful conclusion. The research findings published in this report paint a very grim picture of the food situation on the ground. 18% of the Kenyan population is in dire need of food; a majority of Kenyans have no food to store, while those that practise subsistence farming do not produce enough to even feed themselves, let alone storing. The research findings also reveal that women are the most affected by food insecurity hence the call for the integration of women experiences and perspectives into policy formulation and implementation cannot be gainsaid.

This necessitates measures that will improve the situation and enable Kenyans to access food of adequate quality and quantity. Therefore, the study has proposed some measures that the government should take up to ensure food security in the country. These include supporting the small-scale farmers and the unemployed through family support programmes, subsidizing the essentials for irrigation, value addition to raw products at the national and county levels, as well as the establishment of strategic grain reserves at the counties. The report also proposes the empowerment of women and youth and the right targeting in the implementation of cash transfer programmes. The adoption of these recommendations will serve to make Kenya a food secure country and therefore allow accelerated development, as per the Constitution of Kenya, 2010, which is the guiding pillar in the design and execution of government policies. Specifically, Article 43 (1)(c) of the said constitution states that every Kenyan has the right to food and of acceptable quality.

This Report is organized as follows. Chapter 1 is introductory and gives the background and context of the study on food security. It also presents a situational analysis on food security in Kenya and looks into the experiences of food security in selected African countries. The Chapter also offers a conceptual framework and shares the methodology used in the study.

Chapter 2 focuses on the empirical research findings. First, it provides the household demographic characteristics of the respondents. Thereafter, it provides the food security situation by county and by various indicators. The food security score for Kenya is also calculated and provided in this Chapter. The Chapter also discusses the various methods used by the respondents in food preservation, the main sources of accessing food and the challenges faced by

the respondents in accessing food. Finally the Chapter provides a gender perspective in food security using information from key informants.

Chapter 3 provides a discussion on the research findings and emerging issues from the study.

Finally, Chapter 4 focuses on policy and program recommendations for food security in Kenya. It also outlines the proposals that if implemented would lead to food security in the counties and Kenya in general. It recommends a family support program, creation of employment, provision of water for irrigation and for domestic use, promoting women`s and youth economic empowerment, establishment of business and ICT hubs and mainstreaming of food security in all programs and policies.

Prof. Tabitha Kiriti-Ng'ang'a
Chair, Department Economic Theory
School of Economics, University of Nairobi

Executive Summary

The African Women's Studies Centre (AWSC), University of Nairobi, is a centre of excellence committed to promoting African women's experiences and worldview in scholarship, policy and institutional development. The Centre is informed by the recognition that the experiences of African women in almost all spheres of life have been invisible. The Centre therefore aims to bring women's experiences, knowledge, needs and contributions to mainstream knowledge and processes. The Centre has three broad areas of operations, which are Academic and Research Programmes; Collaboration, Links, Exchange and Attachment programmes; and Outreach and Policy Division programmes. It draws its membership from various Colleges of the University namely: College of Humanities and Social Sciences, College of Agriculture and Veterinary Sciences, College of Health Sciences, Biological and Physical Sciences, College of Architecture and Engineering and College of Education and External Studies.

In recognizing the efforts made by the Government of Kenya towards implementation of food security initiatives AWSC also realizes that more needs to be done towards enhancement of an all-inclusive countrywide food security policy and programming. It is in this regard that AWSC embarked on a project guided by principle of "zero tolerance to hunger", AWSC with an overall purpose to conduct research that would result in science-based knowledge to facilitate meaningful engagement with National and County level policy makers. The research would contribute to the current national discourse on the implementation of the Constitution of Kenya (2010) Article 43 (1)(c), which states that "every person has a right to be free from hunger and to have adequate food of acceptable quality" (Republic of Kenya, 2010). The programme involved a desk study on food security that was conducted in the year 2012. The findings and recommendations were presented to the Parliamentary Committee on Agriculture and the Parliamentary Budget Committee during the budget hearings. This prompted Parliament to allocate more finances from the 2013/2014 Budget, to enable AWSC to conduct a more comprehensive research on the situation of food security in Kenya.

The financial resources allocated enabled AWSC in collaboration with Kenya National Bureau of Statistics (KNBS) to implement the Household Baseline Survey on Food Security Project. The food security indicators addressed included: availability, access, utilization and sustainability. The broad objectives of the study were to establish the status of food security in the country, provide a forum for the participation of men and women in the development of food security initiatives; to generate evidence that would be used as a basis for advocacy for greater allocation of resources for food security initiatives; establish whether the economic, social and political pillars of Vision 2030 take into consideration food security concerns and come up with recommendations for guaranteeing the right to food for every Kenyan.

The study employed key social science conventional data collection tools for both qualitative and quantitative data, which included:

- In-depth questionnaires targeting the sampled households;
- Key informant questionnaires targeting community leaders who included women leaders, youth leaders, opinion leaders, religious leaders, among others;
- Institutional questionnaires targeting representatives of the institutions dealing with food security such as the Ministry of Agriculture;
- Focus Group Discussion guide targeting groups of community leaders for purposes of getting the collective voice on food security;
- Debriefing meetings with county level leaders whose purpose was to share the preliminary finding for their further input.[1]

The project was implemented by a team of research experts in the fields of economics, agriculture, social scientists and legal experts from the University of Nairobi in collaboration with the Kenya National Bureau of Statistics (KNBS) in the year 2013. The Household Baseline Survey on Food Security was conducted in 20 counties that were scientifically sampled from the following six agro-ecological zones and the urban counties:

- Urban Counties (Nairobi and Mombasa);
- Upper Highlands (Nakuru, Elgeyo Marakwet and Kirinyaga);
- Upper Midlands (Kiambu, Kisii and Trans Nzoia);
- Lowland Highlands (Nandi and Laikipia);
- Lowland Midlands (Taita Taveta, Bungoma, Makueni, Migori, Bomet, Kajiado);
- Inland Lowlands (Baringo, Turkana, Isiolo); and
- Coastal Lowlands (Kwale County).

A total of 4,200 household heads, from the 20 counties, were interviewed on the household food security status using a hunger module. Others, from whom information on the status of food security was gathered, included opinion leaders, representatives of government institutions dealing with food production and women leaders during the debriefing meetings.

Among the key research findings is that on average 18 per cent, which translates to 7.1 million Kenyans, are chronically food insecure being often or always hungry. The findings further show that the worst hit county in terms of hunger is Turkana County (54 per cent). Others that followed closely were Kisii (41 per cent), Migori (34 per cent) and Isiolo (29 per cent) while Kirinyaga was the least affected (3 per cent) followed by Bomet (5 per cent), Nakuru (6 per cent) and Kiambu (7 per cent). Some of the factors found to contribute to food insecurity included high cost of farm inputs, land fragmentation due to land inheritance cultural practices which makes agricultural land uneconomical among farming communities, large families particularly in the Arid and Semi Arid Lands (ASAL) areas, lack of storage and preservation facilities leading to post harvest loses, erratic climatic changes and lack of water for irrigation, insecurity and poor infrastructure in the rural areas, among others.

The findings show that own production is the main source of accessing food for counties from the rural areas such as Elgeyo Marakwet at 79.6 per cent, followed by

[1] Participants in the debriefing sessions included County Government officials, representatives of Central Government in the counties, representatives from the Ministry of Agriculture, Community Development Assistants, selected key informants (community leaders), selected respondents from Focus Group Discussions (FGDs) and household interviewees. Debriefing sessions were used to share and validate the preliminary findings on food security in each county.

Migori at 70.6 per cent and Bomet at 70.1 per cent while the main source of accessing food for the urban counties such as (Nairobi 39 per cent), (Mombasa 39.7 per cent) and (Kiambu 29.6 per cent) is from purchases with regular monthly salary.

The findings illustrate that gender and diversity are key variables affecting food security. According to the participants, women are the key food providers responsible for ensuring food security for their households. They are the ones performing most of the agricultural activities. Patrilineal land inheritance cultural practices, however, deprive women the right to own and control property, including land. This contributes to food insecurity as the key food producers cannot make strategic decisions relating to food security such as what to grow where to grow or to access loans to purchase farm inputs. The research found that where women have the power to make decisions as household heads, particularly among the agricultural communities such as Kirinyaga, their families were the most food secure.

To address the plight of the 18 per cent or 7.1 million Kenyans experiencing chronic food insecurity, AWSC came up with policy and programme proposals. These are derived from the participant's recommendations and desk reviews of best practices from countries that have implemented programmes and legal frameworks to ensure food security for their citizens. They include the establishment of a family support programme targeting the 39.4 per cent households, whose main source of accessing food, is own production. The project aims at enabling these households to access food by boosting food production though access to farm inputs, value addition of agriculture produce so as to fetch higher incomes for the farmers and attract the youth who have deserted the sector, storage and preservation facilities to reduce post harvest loses and, employment for at least one household member to enable the household to access financial resources to purchase food, establishment of social protection programmes for those suffering from food security among others. The AWSC also proposes that an institutional mechanism for implementation of the family support programme be put in place to define the roles and responsibilities of the national and county Governments and to enforce implementation of the food security programmes.

Other proposals include provision of water for agriculture, provision of adequate and ready markets for agricultural produce, development and improvement of infrastructure, especially roads, land reform for equitable land distribution and implementation of a National Land Use Master Plan and gender mainstreaming in all food security programmes, among others. The research findings are to be used in lobbying the National and County level policy makers to adopt and implement the proposals in addressing food insecurity in Kenya. Adoption and implementation of the proposed interventions will ensure that every Kenyan is food secure which will go a long way towards the realization of the Millennium Development Goals (MDGs), Kenya development blue print, Vision 2030 and above all, Constitution of Kenya, article 43 (1) (c) that guarantees every person the "right to be free from hunger, and to have adequate food of acceptable quality"

Ms. Anne Waiguru, Cabinet Secretary for Devolution and Planning at the National Conference on Food Security hosted by AWSC at the University of Nairobi

1. Baseline Survey on Food Security

1.1 Introduction

The African Women's Studies Centre (AWSC), University of Nairobi, is a centre of excellence committed to promoting African Women's experiences and world view in scholarship, policy and institutional development. The Centre is informed by the recognition that the experiences of African women in almost all spheres of life have been invisible. The Centre, therefore, aims to bring women's experiences, knowledge, needs and contributions into mainstream knowledge and processes. The Centre has three broad areas of operations, which are: Academic and Research Programmes; Collaboration, Links, Exchange and Attachment Programmes; and Outreach and Policy Division Programmes. The AWSC draws its membership from all Colleges of the University.

In recognizing the efforts made by the Government of Kenya towards the implementation of food security initiatives, the centre also realizes that more needs to be done towards enhancement of an all-inclusive countrywide food security policy and programme. It is in this regard that AWSC guided principle of "*zero tolerance to hunger*" embarked on a project with the overall purpose to conduct research that would result in science-based knowledge the facilitates meaningful engagement with national and county level policy makers. The research would also contribute to the current national discourse on the implementation of the Constitution of Kenya (2010), Article 43 (1)(c), which states that "every person has a right to be free from hunger, and to have adequate food of acceptable quality" (Republic of Kenya, 2010). The project involved a desk study on food security conducted in the year 2012 whose and findings and recommendations were presented to the Parliamentary Committee on Agriculture and the Parliamentary Budget Committee during the budget hearings.

The financial resources allocated enabled AWSC to implement the Household Baseline Survey on Food Security Project. The food security indicators addressed included: availability, access, utilization and sustainability. The broad objective of the study was to establish the status of food security in Kenya and come up with recommendations for guaranteeing the right to food for every Kenyan.

This food security baseline survey project was implemented by AWSC, in collaboration with the Kenya National Bureau of Statistics (KNBS). Data collection used conventional social sciences methodologies and tools. These included household questionnaires, Focus Group Discussions (FGD) guide, key informants guide and the institutional representative. All activities were undertaken concurrently. The quantitative data from household questionnaires was entered using CSPro programme and analysed using the Statistical Package for the Social Sciences (SPSS) programme to determine the food security situation in Kenya. The qualitative data from key informants, representatives from government institutions, FGDs and the debriefing meeting were also coded using the key thematic areas on focus to generally capture the perceptions on food security in the counties sampled.

1.1.1 Background and Context of the Study on Food Security

The AWSC in 2012 conducted a desk study on food security and presented the findings and recommendations to the Parliamentary Committee on Agriculture and the Parliamentary Budget Committee. Hon. Elias Mbau, who at that time chaired the Parliamentary Budget Committee, recommended a study on the status of food security in Kenya. This prompted Parliament to allocate more finances from the 2013/2014 Budget, to enable AWSC to conduct a more comprehensive research on the situation of food security in Kenya.

The research was part of a process to meaningfully engage stakeholders such as the local community, policy makers, leaders, County Governments and so on, and to contribute to the current national discourse on the implementation of the Constitution of Kenya (2010) Article 43 (1)(c), which states that "every person has a right to be free from hunger, and to have adequate food of acceptable quality" (Republic of Kenya, 2010). In conducting the research, the University of Nairobi, through the African Women's Studies Centre, collaborated with the Kenya National Bureau of Statistics. The research began in October 2012 and the field work was carried out between April and July 2013 in twenty counties, scientifically sampled from the six agro-ecological zones in Kenya.

1.1.2 Problem Statement

Food security has remained one of the pressing/unyielding global issues today and efforts to achieve it have remained a challenge for many countries, more so in the Sub-Saharan countries. Kenya has about 80 per cent of its population residing in the rural areas where agriculture dominates (Republic of Kenya, 2011). Out of these, over 60 per cent are women who perform most of the farming activities. Though Kenya is a signatory to the Millennium Development Goals (MDGs) of which MDG 1 seeks to reduce the number of poor and hungry people in the world by half by 2015, about a third of Kenya's population is considered food insecure. Currently, over 10 million Kenyans suffer from chronic food insecurity and between two and four million people require emergency food assistance at any given time (Republic of Kenya, 2011). About 30 per cent of Kenya's children are classified as undernourished, and micronutrient deficiencies are widespread. The 2010 Economic Review of Agriculture indicates that 51 per cent of the Kenyan population lack access to adequate food. Food security is closely linked to poverty, which is estimated at 42 per cent nationally.

1.1.3 The Objectives of the Project

The study objectives[2] were to:

i) Establish the status of food security in Kenya;

ii) Review best practices in institutional, legal and policy frameworks for implementation of article 43 (1)(c) of the Kenya Constitution and to make policy recommendations at the National and County levels;

iii) Enhance public participation in the development of food security initiatives;

iv) Use evidence based advocacy for equitable allocation of resources for food security initiatives;

v) Document women's experiences, knowledge and perception in relation to food security;

[2] Some of the objectives are achieved in other reports and are not found in this report.

vi) Generate proposals for ensuring full implementation of Article 43 (1)(c) of the Kenya Constitution 2010:
   a) Establish whether the flag ship projects of the economic, social and political pillars of Vision 2030 take into consideration food security concerns; and
   b) Evaluate Medium Term Plan 1 of Vision 2030 pillars using the research findings for their capacity and recommend actions to spur growth and probe why the growth does not reach the targeted people; and

vii) Share the research findings with the food security stakeholders (policy makers, civil society organizations and the general public) at the County and National levels.

1.1.4 Outcomes of the Project

i) Proposals on programmes and interventions at the National and County levels developed;
ii) Proposals on policy and institutional frameworks for food security developed and shared with relevant ministries, Parliament and the Vision 2030 Secretariat;
iii) Draft legal framework for implementation of Article 43 (1)(c) developed and shared;
iv) Budget proposals on food security shared with policy makers;
v) Awareness on food security programmes and interventions created among the public;
vi) Recommendations from the public used to develop proposals to be shared with the National and County level Governments (policy makers) and other stakeholders including the private sector;
vii) Women's knowledge, perceptions and experiences, with food security documented and recommendations shared.

1.1.5 Kenya's Past Efforts to Address Food Security

Kenya's first attempt to address food insecurity was through Sessional Paper No. 4 of 1981, which was later consolidated into Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth. The aim of the Policy was to maintain broad self-sufficiency in major foodstuffs and ensure equitable distribution of food of nutritional value to all citizens. This was to be achieved mainly through the Government interventions, such as setting grain prices and the state monopoly of the distribution of farm inputs.

Following the 1991–94 drought, Kenya's second National Food Policy (Sessional Paper No. 2 of 1994) promoted a market-driven approach, but on a limited scope. The National Plan of Action on Nutrition of 1994 aimed at addressing nutrition problems in the country through involvement of various sectors and was developed through a consultative process. It, however, lacked an implementation framework, with clear coordination mechanisms and commitment to fund implementation of the planned activities.

Further, to address food security, Kenya developed the Poverty Reduction Strategy Paper (PRSP) in 2001 and the Economic Recovery Strategy (ERS) for Wealth and Employment Creation, 2003–2007. The ERS was supported by the Strategy for Revitalizing Agriculture (SRA) 2004–2014 which evolved into the Agriculture Sector Development Strategy (ASDS) (2010–2020). The mission of the ASDS was to create an innovative, commercially-oriented and modern agriculture sector to ensure a food-secure and prosperous nation.

The current Constitution presents the boldest move by the Government of Kenya towards the achievement of food security and places the responsibility of ensuring food security on the Government through its provision of the right to food (Republic of Kenya, 2010). The right to food as mentioned earlier, means that the two levels of Government (National and County) must not take actions that result in increasing levels of hunger, food insecurity and malnutrition. Furthermore, the Government must use its available resources to eradicate hunger.

In 2011, Kenya developed the Food and Nutrition Security Policy (FNSP) with the aim of adding value, building synergies and guiding the implementation of food security programmes. Owing to the highly cross-sectoral nature and the multiple dimensional food security-related issues and initiatives, a very large number of relevant legislation, policies and strategies were carefully reviewed and considered, including almost all sectors of the national economy, during the formulation of the FNSP. The aim was to understand and build from existing Government and partner initiatives and rather than duplicate such efforts, identifying and building on such complementarities. The FNSP is framed in the context of the Kenyan Constitution, providing for basic human rights, child rights and women's rights, including the universal 'Right to Food' (Republic of Kenya, 2011).

The Kenya Vision 2030 is a significant government policy documents that aims to boost food security in the country through various flagship projects such as improvement of infrastructure, creation of more employment opportunities and development of irrigation schemes, among others. The Vision for the agricultural sector is to be "innovative, commercially-oriented and to develop a modern farm and livestock sector" (Republic of Kenya, 2007). If the Kenya Vision 2030 is properly implemented, it will significantly mitigate food insecurity in the country.

The Kenya Agriculture, Fisheries and Food Authority (AFFA) Act provides for the establishment of the Agriculture, Fisheries and Food Authority to administrate matters of agriculture, preservation, utilization and development of agricultural land and related matters (Parliament of Kenya, 2013). The Authority shall, in consultation with the County governments, among other things: (a) administer the Crops Act No. 16 of 2013 and the Agriculture, Fisheries and Food Authorities Act No. 13 of 2013; (b) promote best practices in, and regulate, the production, processing, marketing, grading, storage, collection, transportation and warehousing of agricultural and aquatic products excluding livestock products; (c) collect data and maintain a database on agricultural and aquatic products, excluding livestock products; (d) determine the research priorities in agriculture and aquaculture; (e) advise the National government and the County governments on agricultural and aquatic levies; (f) carry out such other functions as may be assigned to it by this Act, the Crops Act, the Fisheries Act and any written law (Parliament of Kenya, 2013).

1.2 Situational Analysis on Food Security in Kenya

1.2.1 Household Demographic Characteristics

1.2.1.1 Age and Sex

Age and sex are important demographic variables and are the primary basis of demographic classification. According to the Kenya Demographic and Health Survey 2008–2009, the household population constituted

49 per cent male and 51 per cent female. There were also more persons in the younger age groups than in the older age groups for both sexes, with those age 0–19 accounting for more than half of the population. According to the Kenya Population and Housing Census 2009, the population of Kenya stood at 38,610,097 grouped under 8,767,954 households. The population of males was 19, 192,378 (49.8 per cent) while that of females was 19,417,719 (50.2 per cent). Over 20 million Kenyans, constituting about 53 per cent, were between the ages of 0 to 19 years. Those aged 20 to 49 years accounted for just over 10 million or approximately 26 per cent.

According to the Kenya National Bureau of Statistics, in the 2013 Economic Survey, the estimated population was 39.5 million.

1.2.1.2 Household (Family) Size

According to the Kenya Population and Housing Census 2009, the mean size of Kenyan households was 5.1 members, compared to 4.4 members, recorded in the 1999 Population Census. Households in the rural areas recorded an average household size of 5.5 members, compared to that of urban households of 4.0 members. The highest average household size of 6.0 members was recorded in North Eastern Province, while the lowest of 3.8 members was registered in Nairobi province. Sub counties with the highest average household size were Mt. Elgon (7.2 members) and Moyale (7.3 members). The lowest household size was observed in Murang'a district 3.9 of member, followed by Nyeri and Thika Sub-counties, each with an average household size of 4.1 members. On average, households with seven (7) or more members account for 26.7 per cent of all households. Moyale District had more than half of its households with seven (7) or more members.

Data for household composition, according to the Kenya Demographic and Health Survey the 2008–2009 reveals that, at the national level, women head 34 per cent of Kenyan households, a slightly higher proportion than was observed in the 2003 KDHS (32 per cent). There were modest differences in female-headed households between urban (29 per cent) and rural areas (36 per cent).

1.2.1.3 Marital Status and Education

In the Kenya Demographic and Health Survey 2008–2009, 58 per cent of the women were married or living with a partner, compared with 49 per cent of the men. The proportion of men who had never married was almost equal to those in some form of union (47 per cent), but only 31 per cent of the women had never married. Whereas 4 per cent of the women were widowed and 6 per cent were either divorced or separated, less than 1 per cent of the men were widowed, and 4 per cent were divorced or separated. Nine per cent of women had no education, compared with 3 per cent of their male counterparts. Furthermore, 30 per cent of the men had completed secondary or higher education, compared with 22 per cent of the women. (See attached, the Facts and Figures, 2012, Kenya National Council for Population and Development).

1.2.1.4 Main Livelihood Activities

More than three quarters of the population lives in rural areas, and rural households rely on agriculture for most of their income. The rural economy, in turn, depends mainly on smallholder farming, which produces the majority of Kenya's agricultural output. About 70 per cent of the poor are in the central and western regions, living in areas that have medium to high potential for agriculture (IFAD, 2013).

The agricultural sector provides employment to an estimated 70 per cent of the total labor force, which derives its which livelihood from agricultural activities (KIHBS, 2005/2006). Nationally, 71.1 per cent of Kenyans were engaged in agriculture and forestry as their main economic activities. Among the rural communities, this proportion was 88.2 per cent, while in the urban it was 17.1 per cent. Majority of urban dwellers were engaged in wholesale/retail trade activities (46.8 per cent), while only 3.0 per cent of rural residents were in involved this economic activity.

In the Economic Recovery Strategy (ERS) 2003–2007, the Government identified agriculture as an important sector for the realization of the ERS objectives of creating wealth and employment. Growth in this sector has a positive impact on overall macro-economic growth, due to its inter-linkages and multiplier effects with other sectors of the economy such as manufacturing and trade. KIHBS 2005/2009 found that majority of Kenyan households were engaged in crop farming activities. Nationally 68.8 per cent of the households were directly involved in agricultural activities. This proportion was high in the rural areas (85.4 per cent), but lower in urban areas where only 13.0 per cent of households were engaged in crop farming. Farming was most common in Western and Eastern provinces where 90 and 88.4 per cent of households respectively, were engaged in farming. More than a quarter of all sub-counties recorded over 90 per cent of households engaged in farming. Only 9.5 per cent of households in North Eastern Province practise crop farming. This is because livestock keeping is the more predominant economic activity in the region.

The Kenyan economy, in particular, is based on agriculture, with 70 per cent of the Kenyan population deriving their livelihood from an estimated 3 million agricultural holdings. These are mostly small family farms of between 0.2 to 12 hectares, which contribute 70 per cent to the marketed agricultural production. Estates dominate in tea, coffee, sisal, sugar cane and other export crops, while the smallholder sector is more oriented towards food crops, vegetables and dairy production, constituting 95 per cent of all the farms. Land scarcity is a common feature of smallholder production systems particularly in the high potential areas and the average land holding size in these areas is only 1.7 hectares, with parcels being continuously subdivided – only 39.4 per cent of farming households hold title deeds to their land. Title deeds enable farmers to cultivate without fear of eviction and they can use the land as collateral against financial loans. Of significance to note is that women only hold between 1–5 per cent of land titles and therefore have almost no access to land of their own. Women, however, play an important role in agricultural production, contributing up to 80 per cent of all labor in food production and 50 per cent in cash crop production while receiving only 7 per cent of agricultural extension information. In addition to their labor contribution, women are increasingly acting as farm managers and heads of farm households. It is estimated that over 40 per cent of all smallholder farms are managed by women (Kenya Country Gender Profile, 2007 AfDB).

According to the Kenya Integrated Household Baseline Survey (KIHBS, 2005/2006), apart from agriculture, about two-thirds of the population were also involved in the wholesale/retail trade sectors. Most of the household members were engaged in wholesale and retail trade, where 61 per cent were women. In fact across all the provinces, women exceed men

in this industry. Manufacturing in non-formal low technology such as soap making was also an important livelihood activity in which household members were involved in.

1.2.1.5 Staple Food in Kenya

According to the Kenya National Food and Nutrition Security Policy (FNSP 2011), in Kenya, food availability has over time been understood in terms of cereal supply, and food security in terms of having enough maize. The Food and Agriculture Organization (FAO) (2000) also rates maize as the main staple food for Kenya, averaging over 80 per cent of total cereals (rice, wheat, millet and sorghum) produced. In Kenya, per capita food availability has declined by more than 10 per cent over the last three decades, while per capita consumption of maize has increased by 3 per cent per annum. Most Kenyans subsist on diets based on staple crops (mainly maize) that are lacking in nutritional diversity and have particularly devastating consequences on the development of children.

Many Kenyan communities grow and utilize staple foods such as maize, beans, rice and wheat and their corresponding products. This has culminated in a high demand for these commodities, and at the same time portends hunger if any of them is in short supply (Population Dynamics and Food Security in Kenya, 2011).

Olielo (2013) also found that "Ugali", which is a thick porridge made from maize flour is the main staple carbohydrate food consumed by 88 per cent of the households at least 4 times a week. Green vegetables were consumed by 92 per cent and meat, a main protein source, was eaten by 46 per cent of the sample households at least 4 times in seven days. In Kenya, the concept of balanced diet means a diet that includes a carbohydrate staple, vegetable and a protein source. Thirteen foods eaten by 46 per cent of all population at least 4 times a week include: tea, sugar, milk, bread, thin porridge with lemon (*uji)*, ugali, green leafy vegetables, beef, cooking oil or fat, salt, carrots, onions and tomatos.

Traditional Kenyan foods reflect the cultural diversity and the different lifestyles of various people groups in the country. *Ugali* and meat are typically eaten inland, while the Coastal peoples eat a more varied diet. Most members of the pastoralist communities eat simple foods, relying on cow and goat by-products (such as the animal's meat and milk) While in Western Kenya, the people living near Lake Victoria (the second-largest freshwater lake in the world) mainly prepare fish stews and vegetable dishes.[3]

1.2.1.6 Main Sources of Food

In Kenya, 30 per cent of the food consumed by rural households is purchased, while 70 per cent is derived from own production. On the other hand, 98 per cent of food consumed in urban areas is purchased while 2 per cent is own production. This emphasizes the strategic role played by the rural households in the food security of many African countries. Agricultural policies formulated therefore should focus on how to increase productivity and market efficiency in the rural (FAO, 2006).

Kenya largely depends on rain-fed agriculture for its food requirements, relying on the two main rain seasons, namely the March–May long rains and October–December short rains. About 80 per cent of the land is arid or semi-arid (World Food Program, 2013).[4]

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[3] http://www.foodbycountry.com/Kazakhstan-to-South-Africa/Kenya.html Accessed June 29th 2014.

[4] http://www.wfp.org/countries/kenya/overview.

1.2.1.7 Women's Access to Land and Food Security

The 2008 global report by the Commission on Legal Empowerment for the Poor highlighted insecure access to land as a key cause of the recurrent poverty and an impediment to development. Though land title does not ensure secure access, Kenyan women hold an exceptionally small proportion of the registered titles. The impact of being denied access to land is disproportionately felt by Kenyan women, denying them not only access to economic sustenance but also leaving them socially ostracized (International Finance Corporation & World Bank, 2006; DFID, 2007).

Explanatory studies by the World Bank (2012) titled *Justice for the Poor* program (www.worldbank.org/justiceforthepoor) in Kenya, and the Legal Resources Foundation Trust (LRF) work on women's access to land in Kenyan agricultural communities, indicate that the local power dynamics in formal and informal justice systems underpins, controls and ultimately undermines the access or women in both arenas. Past formal titling initiatives have led to men holding almost all land titles in Kenya. These past initiatives permitted some informal practices, such as the patrilineal holding of land, to be extended and entrenched.

Inheritance systems, based on these patrilineal kinship structures remain strong and supported by the formal system. Since women seldom purchase land, inheritance from men remains the principal manner in which women access land. The two key groups of women inheriting land are widows and daughters. Though widows may not inherit land in the absolute sense under most patrilineal systems, they are often permitted to remain on their husbands' lands and retain a 'life interest' in essence holding land in trust for any sons who will continue the patrilineage. Widows are known to suffer land grabbing at the hands of brothers in law. Daughters are nearly universally denied access to land through inheritance because, under patrilineal systems, they are perceived as transients who will eventually marry away; they cannot inherit land because if they do it will be incorporated into their husbands' patrilineage. Thus, brothers almost always seek to exclude their sisters from a father's inheritance, even if the father explicitly listed them in his will. For example, a paralegal recounted how her father willed her and her sister the entirety of his land holdings. Her neighbors and relatives, however, intervened immediately after his death seeking to appropriate the land. Only after a lengthy and bitter court battle did she finally succeed in securing her inheritance.

1.2.1.8 Food Security Situation in Kenya

The Famine Early Warning Systems (FEWS, 2013), the Government of Kenya and World Food Programme (WFP) on the outlook of food security in Kenya from October 2012 to March 2013, revealed that the population in need of humanitarian assistance declined from 2.2 million in February 2012 to 2.1 million in September 2012. The total maize output from the long rains, was likely to be below average, and thus affect food security. The decline of the population in need of humanitarian assistance was higher in pastoral areas than in marginal agricultural livelihood zones. The majority of the food insecure households were in stress (IPC Phase 2) while about 10 per cent of the food insecure population was categorized as in Crisis (IPC Phase 3). The World Food Programme (2013) report on Kenya's food situation during the Long Rains Assessment indicated that, although production of sorghum, cowpeas and green grams (mung

beans) was above average in the south eastern and coastal lowlands, national maize output was expected to be 16 per cent below the five year average. The Greater Horn of Africa Outlook Forum (2014) report forecast suggested that, below average rainfall was likely from October through December, and it could affect crops and livestock production in some parts of Kenya.

Expected improvement in food security in south eastern marginal agricultural and coastal lowlands was slightly undermined by the persistence of well above average maize prices, destruction of roads by floods, political activities that could motivate conflict and cause displacement and market disruption, or widespread water and vector-borne diseases. Widespread maize lethal necrosis disease (MLND) in cropping areas was also likely to lead to an extreme deterioration of food security.

The FAO (2013) report on the food security situation in Kenya also noted that livelihoods vulnerable to recurrent shocks and hazards were still at risk. The FAO representative in Kenya, Dan Rugabira, while noting that agriculture and livestock remained underfunded, (under Government-led 2013 Emergency Humanitarian Response Plan for Kenya) said that, support was needed for both crop production and livestock relief and early recovery interventions. He reiterated that the focus should be on restoring and protecting the livelihoods of those still at risk, and integrating both emergency and development approaches.

According to a report in the *Daily Nation* (October 13, 2012), agricultural experts in Kenya had raised concerns about the ability of Kenya to feed its fast growing population. During a debate on World Food Day, at the Hilton Hotel, speakers criticized the country's focus on subsistence farming with many saying that agriculture should not only allow farmers to subsist but rather should be a dependable money making venture. They said the kind of farming where a farmer only focuses on planting crops and keeping animals for home consumption was to blame as it had held back the huge potential in the sector. Further, the high cost of farm inputs and lack of an organized marketing system for products were blamed for the poor performance of the sector.

Several macroeconomic factors such as fuel prices, food prices, inflation, cross-border trade, and exchange rates influence food availability and access at the national level, and consequently, at the household level. Between August and September 2013, household food access was limited by increasing fuel prices and marginal currency depreciation that continued to keep imported food prices high. There was also a significant year-on-year increase of the consumer price index (i.e., +8.3 per cent in September), as a result of the Value Added Tax (VAT) Act, which influenced food prices, e.g. substantial rises were reported for milk (+28 per cent). Compared to the 5-year average, the price of milk in Kenya went up by 63 per cent. Gasoline and diesel prices in Kenya also increased slightly by 1.4 per cent and 1.1 per cent respectively in September, compared to the previous month. With the introduction of value added tax on some food stuffs, urban dwellers, in particular, were expected to change their consumption behavior since most foods were unaffordable in view of their decreasing purchasing power (Ministry of Agriculture, 2013).

The September 2013, national average prices of various fuels, increased by between four and seven per cent across the country, compared to August. For instance, diesel, which is widely used in the transport sector, increased by at least four per cent in different parts of the country while kerosene,

which is widely used by poor households for lighting and cooking, increased at least by six per cent in both pastoral and marginal agricultural areas. Increases in the price of diesel price resulted in increases in transportation costs, which were passed on to households in the form of increased food prices.

Food markets were functioning normally, except in regions where conflict had temporarily limited physical access or increased security and other operational costs. These costs inflated food prices making them more expensive for households to purchase. These areas included markets situated along the Kenya-Somalia border in Ijara, Mandera, and Wajir Sub-counties. As supplies from the long rains maize harvest entered the market in most parts of the country, the prices of maize declined from August to September. The magnitude of the decline varied across different markets based on other costs associated with maize marketing. For example, prices remained relatively constant in Kitui in the Southeast, and marginally declined in Marsabit. In some of the markets in pastoral areas, there was no decline at all as additional operating costs associated with conflict and more limited market access kept prices high. In Mandera, Wajir, Garissa, and Lodwar markets, the maize price increased between four and six per cent, from August to September. However, even for markets that had a seasonal decline, maize prices remained significantly above the five-year September average. In major urban markets, such as Nairobi, Eldoret, Kisumu, and Mombasa, September maize prices remained at least 30 per cent above the five-year average.

From the weather outlook, for July-August 2013, although several areas in the Central Rift Valley (Nakuru, Nyahururu, Laikipia, etc) recorded enhanced rainfall of over 125 per cent of the normal July-August rainfall, most parts of the Western Highlands and Lake Victoria Basin experienced generally depressed rainfall. The Coastal strip also recorded generally depressed rainfall (less than 75 per cent of the Long Term Mean) during the season. The rest of the country remained generally dry (MOA, 2013). The outlook for October-November-December (OND) 2013 “Short Rains” Season indicated that most parts of the country were likely to experience depressed rainfall. The western parts of the country were, however, likely to experience enhanced rainfall. The distribution, both in time and space, was expected to be poor over most parts of the country. The potential impact of the OND 2013 rains was that the poor rainfall distribution could impact negatively on the agricultural activities in these regions. In the rest of the country, the “short rains” were expected to be below normal. The food security situation was therefore expected to decline especially in the Eastern and North Eastern regions during the October-December period.

1.2.2 Food Security Concerns in ASALs

The areas of concern in pastoral areas included the south-eastern pastoral livelihood zone comprising the southern part of Garissa, Tana River, and Ijara Sub-counties and the northeastern pastoral livelihood zone in Mandera District. The food security for the period October 2012 to March 2013 was at Crisis (IPC Phase 3), in the southern parts of Garissa, Ijara, Tana River, and Wajir Sub-counties and in the parts of Mandera District that border Somalia. In other pastoral areas, poor households were primarily at the Stressed level (IPC Phase 2). In these sub-counties, distances to water increased marginally between August and September, and water stress was reported in several

areas. All livestock prices, whether increasing or decreasing, remained above the five-year average for September. While livestock prices generally fell, maize prices were stable in some areas, for instance, in Mandera and Ijara Sub-counties. In other areas, maize prices increased slightly, for example, in Garissa where the price of maize rose five per cent from August to September. The trend of increasing maize prices and decreasing goat prices meant that, the goat to maize terms of trade continued to decline across the southeastern pastoral livelihood zone, decreasing household access to food from August to September.

In the South-Eastern and Coastal marginal agricultural areas, the effects of the far below average March to June long rains were evident in most parts, particularly in Makueni, Mwingi, Kitui, and Mbeere Sub-counties. Households had depleted their available food stocks and were depending on market purchases. In areas where both maize prices and market dependency continued to increase, household access to food continued to worsen. High prices of maize, far above the normal seasonal highs, were reported in Makueni District where one kilogram (kg) of maize cost Ksh. 40.00 in September. In addition, the distance to water sources for both livestock and human consumption increased by at least one kilometer (km) during September. For instance, in Makueni District, distance to water human and livestock consumption increased to just over five kilometers in September.

Livestock prices were still low due to poor body conditions, and the market supply of livestock remained high. Livestock continued to be sold to meet immediate financial demands such as to cover the purchase of agricultural inputs.

From August to September, the percentage of children 'at risk' of malnutrition increased marginally in Makueni District due to the decline in milk consumption, depletion of household food stocks, possibly poor water consumption, and limited household food access, due to high food prices. For the marginal mixed farming livelihood zone in Kitui District, the food security situation remained precarious with some proportions of the population in Kitui District still classified in Crisis (IPC Phase 3).

According to a report by Doyle and Litunya (2013), the food security situation in Turkana County varied by livelihood zone and geographical area across the County and it was classified under the Stressed phase (IPC 2). Although moderate improvements had occurred in most of the agro-pastoral and pastoral livelihood zones in the northwest, west and south, the terms of trade were unfavourable due to increased cereal prices and reduced livestock prices. Moreover, the crop performance was below normal due to unpredictable rains and flooding. In the northeast and eastern pastoral livelihood zones, food insecurity increased significantly. The affected areas received some of the lowest amounts of rains, which were also poorly distributed. Consequently, no meaningful pasture or browse regeneration occurred and distances or waiting time at water sources continued to increase for livestock and households. Access to food was limited by the migration of livestock to distant locations and very poor terms of trade, while households were increasingly employing negative coping strategies such as charcoal burning hence causing deforestation, while others ate wild fruits some of which could be poisonous. The rates of child malnutrition in parts of the northeast were among the highest in the county.

The main factors affecting food security in Turkana County were: poor rainfall performance in the successive seasons in

many parts of the county, escalation of conflicts because of grazing resources, high food prices in most markets, reduced livestock productivity and locust infestation in Turkana North and West.

1.2.3 Household Coping Strategies for Food Insecurity

According to the Kenya Food Security Steering Group (KFSSG) (2012/2013), households in various parts of the country were applying the usual lean season (when little or no food is available) strategies to cope with food shortage. Among the strategies that households were using included reduction of the quantities and frequencies of meals, borrowing and sharing of food, charcoal burning, and selling of firewood particularly in Turkana. Other coping strategies included petty trading, purchasing food on credit, and borrowing food from relatives. Some households were skipping meals while others reduced meals sizes in Tana River and Isiolo, respectively.

A report by Forensic Early Warning System (FEWS) (2013) indicated that households were using coping strategies, which were indicative of possible livelihood change. Some of the strategies being employed included increasing petty trading, seeking additional casual labor, remittances, borrowing money on credit, and charcoal burning. For instance, in Ijara, pastoralists had partly given up livestock-related, income-generating activities in exchange for additional petty trading. In Garissa, where food prices had increased, livestock prices deteriorated, and general food distribution (GFD) had been limited in August and September, households reported skipping meals and reducing the sizes of their meals.

Doyle and Litunya (2013) reported that in Turkana, households were increasingly employing negative coping strategies such as excessive consumption of wild fruits and charcoal burning. The Kenya Food Security Steering Group (KFSSG) (2013) argued that some households were employing irreversible coping strategies, some of which could have detrimental effects on food security outcomes in the short run.

1.3 Experiences of Selected African Countries in Household Food Security

The FAO (2011) states that in the developing countries, women and men in rural areas play different roles in guaranteeing food security for their households and communities. While men grow mainly field crops, women are usually responsible for growing and preparing most of the food consumed in the home and raising small livestock, which provides protein. Rural women also carry out most of the home food processing, which ensures a diverse diet, minimizes losses and provides marketable products. Women are more likely to spend their incomes on food and children's needs - research has revealed that a child's chances of survival increase by 20 per cent when the mother controls the household budget. This is because, women spend a bigger proportion of their incomes on their children’s needs, in terms of food, clothing, medicine and so on and therefore, children’s survival rate is higher when they are raised by women (Kiriti and Tisdell, 2003; 2004a; 2004b; Kiriti-Ng’ang’a, 2010). Kiriti (2003) argues that cash earnings outside the household are an important source of income for women, which can be used for food expenditures, as women are known to spend a greater proportion of their income on food than men do. Her study of Nyeri district in Kenya found that for women who were employed were contributing between Ksh.1000 and 9000 to total household income. Women, therefore,

play a decisive role in food security, dietary diversity and children's health in the district.

Kennedy and Peters (1992) cited in Kiriti and Tisdell (2003), using data from Kenya and Malawi found that food security and pre-schooler nutritional status are influenced by the interaction of income and gender of the head of the household. Not only is household food security influenced by total household income but also, the proportion of income controlled by women has a positive and significant influence on household caloric intake. They found that when the *de facto* (male) head of household is absent more than 50 per cent of the time, female-headed households had the lowest income. Despite this low income, pre-schoolers' nutritional status was significantly better than in the higher income male-headed and *de jure* (legal head of household is a woman) female-headed households. This means that improving women's incomes is vital to maintaining food security and child nutrition in families.

The FAO (2011) contends that, gender inequalities in control of livelihood assets limit women's food production. In Ghana, studies found that insecure access to land led women farmers to practise shorter fallow periods than men, which reduced their yields, income and the availability of food for the household. The report also argues that in sub-Saharan Africa, diseases such as HIV/AIDS force women to assume greater caretaking roles, leaving them less time to grow and prepare food. The importance of women's labor in agriculture is illuminated by time allocation studies. Kumar (1994) in his study on Zambia found that women are responsible for 49 per cent of the family labor allocated to crop production while, men supply 39 per cent and children supply 12 per cent. In Kenya, (Republic of Kenya, 1985) in the Rural Household Budget Survey 1981–1982 it was found that women spent 65 per cent of their time in crop production compared with 35 per cent by men.

Technological changes in agriculture have been detrimental to women. The focus of labor saving technological innovation has been on tasks performed by men (Roy and Tisdell, 1993; Kiriti, 2004). When this leads to greater land areas being cleared, (at less input for the men), the result is increased labor burden for women. Adoption of technological innovation, without attention to its impact on the gender division of labor, and the time burdens of men and women, can and does lead to substantially raising the time pressure on already overburdened women (Blackden and Bhanu, 1998). The lack of access by the majority of farmers to the most basic technology, inputs, and finance severely limits agricultural growth and output potential. Saito (1992) argues that if women enjoyed the same overall degree of capital investment in agricultural inputs, including land, as their male counterparts do, output in Zambia could increase by up to 15 per cent.

Women's access to education is also a determining factor in the levels of nutrition and child health. Studies from Africa reveal that children of mothers who have spent five years in primary education are 40 per cent more likely to live beyond the age of five (FAO, 2011).

Having an adequate supply of food does not automatically translate into adequate levels of nutrition. In many societies, women and girls eat the food leftovers, after the male family members have eaten. Women, girls, the sick and disabled are the main victims of this "food discrimination", which results in chronic under-nutrition and ill-health (FAO, 2011, Kiriti, 2003, Kiriti and Tisdell, 2004a).

Boserup (1970) observed that in Africa, the extension of the market system tended to marginalise rural women economically because males took control of cash and often assumed responsibility for activities earning cash. This view is supported by studies on cash cropping both in Africa (Kennedy and Oniang'o, 1990) and in South America (Gross and Underwood, 1971). These authors indicate that cash cropping, has reduced the opportunities for rural women to produce subsistence crops and provide food for their families especially children. It is not uncommon for women's labor, in certain tasks such as weeding, to increase to a greater extent than men's labor, when the agricultural chores associated with cash crops become particularly labor intensive (Spring, 1978).

1.3.1 Food Security in Female/Male Headed Households

According to the Kenya Integrated Household Budget Survey (2005/2006), analysis of food deprivation by gender revealed that male headed households had 52 per cent undernourishment compared to 48 per cent for female headed households. Household heads, with secondary or higher education, reported lower undernourishment levels than those with primary or special/incomplete education.

Although it has generally been considered that female-headed households are more vulnerable to food insecurity, Mallick and Rafi (2010) in a study on developing countries reported that there was no significant difference in food security between male-headed and female-headed households. The reasons advanced for female-headed household being food insecure are that; (i) the female head, who is the main income earner, faces various disadvantages in the labor market and is involved into many productive activities, (ii) she is also responsible for maintaining the household including household chores and child care in addition to working outside the home and thus she is "activity burdened," and (iii) she faces a higher dependency ratio for being the single income earner.

Barros, Fox, and Mendonca (1997), however, observed in the context of urban Brazil that, the main reason for female-headed households being poor was not the lower number of earners relative to family size but rather the lower earning power of these earners. Since males earned more than females in the same job, a household lacking male-earned income simply has a much higher probability of being poor. In addition, socio-cultural factors prohibited women's participation in the labor force. In some of the poorest areas of South Asia, cultural restrictions on women's ability to participate fully in food production activities left them particularly vulnerable, the female-headed households were more vulnerable to non-income aspects of poverty as well. Being "activity burdened," female-headed households employ additional household members including school-going children in income-generating activities (Fuwa, 2000).

There are also counter examples that female-headed households (FHHs) are no less food insecure than male-headed households (MHHs). Quisumbing, *et al* (2001) using household survey data set for 10 developing countries, found no statistically significant higher incidence of poverty among the female-headed households in two-thirds of the countries. This study has been widely used to counter the gender bias in food security. Among the exceptions is Bangladesh, where the female-headed households had consistently higher poverty levels among the bottom third of the population.

In Rwanda, according to Rwanda Gender Assessment: Progress Towards Improving Women Economic Status (2008), FHH are more likely to be food insecure (37 per cent) as compared to the MHHs (25 per cent). The report says that in Rwanda, women contribute up to 70 per cent of the labor to agricultural production and that rural women carry out a variety of tasks, both productive and household responsibilities, to support their families. Women are engaged in all forms of farming including food cash crops, and livestock, in particular small animals such as pigs and chickens. Women are also engaged in off-farm income generating activities such as basket weaving, food processing, pottery, embroidery, petty trading and paid and unpaid agricultural labor. Rural women work an estimated 14–17 hours a day. Most women are subsistence farmers, while a few are engaged in cash crop production such as coffee and tea.

The Constitution of Malawi upholds equality between men and women, and prohibits sex-based discrimination (Republic of Malawi and African Development Fund, 2005). Although women comprise 52 per cent of the total population, 67 per cent of them live below the poverty line. They provide 70 per cent of the labor for the cash crops and, 97 per cent of women are involved in subsistence agriculture. Literacy rates for women are lower (44 per cent) compared to men's (72 per cent). The health indicators reveal a high and increasing Maternal Mortality Rates (1,800 per 100,000), high Infant Mortality Rates, (104 per 1,000), a weak health sector human resource base, and deteriorating health infrastructure. Despite the supportive policy framework, within the Malawi society, gender disparities, in issues related to access to, and control of resources, division of labor, decision making patterns and an entrenched culture that reinforces gender inequalities has led to the further entrenchment of poverty. There are substantial differences in the status of poverty between males and females in Malawi whose economy is largely dependent on subsistence agriculture. Just like in other African countries, gender-based differences in access to resources results in significant disparity in welfare between men and women (Multi-Sector Country Gender Profile: Agriculture and Rural Development North East and South Region (Onar) October, 2005, Republic of Malawi, African Development Fund, 2005).[5]

Regardless of household size, women grow crops for home consumption to a greater extent than men, who are more likely to cultivate at least some cash crops. The most important cash crop in Malawi is tobacco, which is predominantly a 'male' crop. It is grown in 19 per cent of male headed households compared to just 7 per cent, of female ones (Republic of Malawi and World Bank 2007). Moreover, for food crops such as maize, men are more likely than women to utilize higher yielding hybrid strains that require fertilizer for sale, rather than the lower yielding, seed-bearing strains chosen by women for domestic use (Republic of Malawi and World Bank 2007). While women hold decision making power in female-headed households, in male headed households there is a clear division. They have little or no say on crops that require decisions on inputs such as fertilizer application. While they make decisions about inputs and planting, their role is largely limited to crops that do not require fertilizer application, and where seeds are recycled.

[5] Republic of Malawi (2005), Multi-sector Country Gender Profile: Agriculture and Rural Development North East and South Region (ONAR), (http://www.afdb.org/fileadmin/uploads/afdb/documents/project-and-operations/malawi.pdf).

They make these decisions about 50 per cent of the time on crops that do not require inputs, they only do so 10 per cent of the time where fertilizer is applied (Republic of Malawi and World Bank 2007). For cash crops like burley tobacco, cotton and vegetables that require purchasing more inputs (fertilizer, seeds and pesticides), men make almost all the decisions.

Access to extension services is biased against female-headed households: only 7 per cent of female-headed households obtained such advice, compared to 13 per cent of male headed households. Based on the decision-making patterns above, it can be presumed that within a household, lack to extension services can further this gender gap.

In Malawi, there is a clear disparity in the use of time between men and women. Women work longer hours than men. They, however, spend considerably less time on income generating activities (17 hours per week compared to 27 hours for men). The difference is made up in domestic chores, in which men devote just 3½ hours to a woman's 24½ hours per week. Actually, this disparity is likely to be even higher because it does not include child care and tending for the sick, which are traditionally female tasks. Much of the domestic work includes heavy labor such as fetching firewood and water (taking up 1½ hrs and 1 ¼ hours each day, respectively). The extra female burden also extends to girls, especially after age 10. They spend 16 hours a week on household chores compared to 10 hours for their male peers. This burden has a negative effect on girls education: among dropouts, 37 per cent of girls cited the need to work at home as the reason, compared to 23 per cent of boys.

Wage employment is not widespread in Malawi's economy, but there are gender gaps both in remuneration for the same type of job, and for the types of jobs performed by men and women. The median monthly wage for women was MK 78, as compared to MK 124 for men. For the highest paid and highest skilled jobs, men and women are remunerated roughly the same. At lower wage levels, however, women are paid less for working the same number of hours on the same task as men, notably in production, where women are paid MK 45 compared to MK 120 for men, and for laborers, where women are paid MK 48 compared to MK 70 for men. Part of this disparity can be attributed to different levels of education. These average figures mask a further disadvantage for women because of the seasonal nature of income generating opportunities during cropping time. One can therefore expect that female-headed households, depending on *ganyu* (informal off-farm labor) agricultural labor will be particularly exposed to food shortage and poverty, because of the lack of alternative opportunities the rest of the year. Moreover, the productivity of single farming women is reduced if they engage in *ganyu* to obtain some cash, rather than spending sufficient time in their own fields at cropping time, further increasing their vulnerability (Republic of Malawi and The World Bank, 2007).

Overall, men were more likely than women to receive credit, though women were more likely than men to receive loans less than MK 1000. The larger the loan, the more the likelihood that the recipient is a woman declines. While women are most likely to use their loan to start up a non-agricultural business (more than 50 per cent of women), men, on the other hand, were more likely to use credit for inputs for agricultural production, in particular for tobacco production.

Approximately 10 per cent of women owned and managed their own enterprises, compared to 16 per cent of men. Women, on spend average 20 hours per week on their enterprise, compared to 29 hours per week for men, and yet women tend to generate less profit than men (MK 160 per day compared to MK 280). The lower profit margin might be the result of women spending less time, and thus accruing less skill and opportunity for further investment in their business. It could also be related to the lower education level of women, and from the types of enterprise. However, since most enterprises for both men and women fall into 'unspecified retail', this effect could not be measured using our data.

Malawi is well placed to reach MDG 3 (to promote gender equality and empower women). Notably, good progress has been made in reaching the equality of enrollment in primary education and in reducing gender disparity in youth literacy. More progress, however, is needed in reducing the gender gap in higher education and also in increasing women's participation in the workforce and in positions of authority. Similarly, good progress has also been made towards achieving Goal 4 (to reduce child mortality), with under-five mortality projected to decrease by more than two-thirds, between 1990 and 2015. (Republic of Malawi and The World Bank, 2007)

Ethiopia is one of the poorest countries in the world with a per capita GNP estimated at about US$ 100. The UNDP 2013 Human Development Report, ranked Ethiopia as 173, out of the 186 countries in terms of Human Development Index (HDI) for the year 2012.

According to the report by the African Development Bank (2004) on Agriculture and Rural Development, the incidence and severity of poverty is largely identical amongst the three most densely populated rural regions. It is estimated that the Tigray region is the poorest, followed by Amhara region, Southern region, and Afar region in this order, respectively, with poverty index of above 50 per cent. Rural poor households have little or no access to production resources, health, education and sanitation facilities. Poor nutrition and deteriorating health conditions are evidence of poverty. The rural agricultural households are more vulnerable to poverty and suffer from low levels of agricultural technology, limited diversity in agricultural production, underdeveloped rural infrastructure, and weak access to inputs, as well as inadequate irrigation systems. The poor households are highly vulnerable to external factors such as drought and famine, increased degradation of the natural resource base, and increased occurrences of food insecurity (Africa Development Bank, 2005).

Approximately 15 to 20 per cent of poor rural households are female headed. According to the participatory poverty assessment, which was carried out by the Government of Ethiopia and the World Bank, women-headed households may be more vulnerable as they traditionally have less direct access to land and other productive resources. In urban centers such as Addis Ababa, female headed households account for 37 per cent, and about 52 per cent of these fall into the low income category. Most of these female-headed households are often immigrants from rural areas who come to live in the urban areas in search of a better life.

Furthermore, the high incidence of the HIV/AIDS pandemic is a major challenge to gender and development, which could worsen the poverty situation by reducing life expectancy and national productivity.

The findings and analysis of this study indicate some poverty causing characteristics of a household which can be identified as:

(i) Households in rural Ethiopia with high rates of illiteracy amongst men and women are limited to economic activities of primary production activities, of which 80 per cent are agriculture oriented activities. Men and women from rural households reported that it has become more time and energy consuming as well as less profitable to pursue farming given their traditional skills, knowledge, and equipment.

(ii) Households having a large family or number of dependants, it has been reported, to have direct impact on quantity and quality of food intake by each member of the family which at certain times of the year equals to one meal per day. In this case, women have reported that when the husband is not present it becomes more difficult for them to provide for such a number of dependants because they cannot do the same economic activities as the men; this was later clarified as being related to issues of access to resources. The resulting under-nourishment has led to reduced productivity, which further contributes to increased poverty particularly of female headed households.

(iii) Frequent illnesses in the family where men tend to suffer from respiratory problems and women complain mainly of bone diseases.

Agriculture is the dominant sector of Ethiopian's economy and its performance is the major determinant of overall GDP growth rate. On average, the sector contributed about 48 per cent of Ethiopia's GDP between 1995 and 2001. It equally accounted for 90 per cent of export earnings and 70 per cent of raw material inflow into agro-based industries, during the period. The agricultural sector is also the major employer, accounting for 85 per cent of total employment in the country and an estimated 70 per cent employment for rural women.

The crop sub-sector accounts for 60 per cent of the sector output, livestock has 30 per cent and forestry 10 per cent, respectively. Farm households are responsible for cultivating about 96 per cent of the cropped area and producing 90 to 94 per cent of all cereals, pulses and oilseeds. Survey data, however, reveals that around half of the country's rural population is chronically food insecure; living below the food poverty level of 2,200 K/calorie equivalent per adult per day. Agricultural production in semi-arid and drought prone areas is affected by recurrent droughts and environmental degradation, leading to increased poverty levels in these areas. In particular, women are disproportionately affected as their access to productive resources is limited and where they are the heads of households, their ability to ensure food security for the family is negatively affected (African Development Bank, 2005).[6]

In Zambia, despite some gains being made over the last two decades, the country is still one of the poorest in the world; ranked at 163 out of 186 by the Human Development Index (UNDP 2013). According to the Zambia Vulnerability Assessment, 56 per cent of the population was poor in 2002/03, of whom 62 per cent were in rural areas and 45 per cent in urban areas. The vast majority of Zambia's poor live in the rural areas (about 70 per cent), with the highest concentrations being

[6] African Development Bank (ADB) (2004), Multi-Sector Country Gender Profile: Agriculture and Rural Development North East and South Region (ONAR).Addis Ababa, Ethiopia: African Development Fund.

in Northern and Eastern Province. Mining, the driving force in Zambia's economy declined, pulling down other sectors that depended on it, while no major substitutes from other economic sectors came on-stream (Republic of Zambia, 2002/03). This has resulted in a reduction in gainful employment and in failure by the state to provide basic services such as education, health and water (Republic of Zambia, 2002/03). Moreover, in the last decade, the HIV/AIDS pandemic and other diseases have worsened the poverty situation, and at a time when resources were already low. HIV/AIDS has increased the disease burden beyond the individual level to adversely impact on the economics of the family, the health system, the working environment and greatly challenged human capital development (Republic of Zambia, 2002/03). All these socioeconomic effects have contributed to increased workload on women in the household as well as production sector, while the already weak access to resources has further weakened and affected overall livelihood negatively.

In order to address this spiralling poverty, the Government of the Republic of Zambia (GRZ) has pursued the goal of poverty reduction through its Poverty Reduction Strategy Paper (PRSP) and more recently the national development framework and strategy to achieving the Millennium Development Goals (MDG) by 2015, as spelt out in the 5th National Development Plan. As part of this planning process, the GRZ has reiterated its commitment to promoting gender equity and putting in place measures that will improve gender equity and women's socioeconomic status. The GRZ has signed several international and regional agreements on the protection of women, and has taken steps to identify the major constraints and interventions needed to achieve gender equity for sustainable human development. The GRZ is keen to ensure that gender issues are properly handled throughout the country and in all sectors, with a more comprehensive approach to speeding up the process of achieving the gender equity targets set out in the Millennium Development Goals (MDGs) and gender mainstreaming processes stated in the PRSP. The GRZ, however, has been greatly challenged in facing up to its commitments and it has acknowledged that gender inequalities and imbalances have continued to have a negative impact on economic growth, development and human wellbeing.

The socioeconomic situation in Zambia has been worsening over the years, with women and children having to deal with the brunt of this poor economic situation.

According to the Zambia Vulnerability Assessment (2002–2003), about 56 per cent of the population is classified as poor, while poverty is more pronounced in the rural areas. The national PRSP (2002–2004) indicates that about 60 per cent of Female Headed Households (FHH) are classified as extremely poor, as opposed to 51 per cent of the Male Headed Households (MHH).

This situation has worsened in terms of food poverty where 61 per cent of FHH faced food shortage compared to 52 per cent of MHH, in 2001/ 2002. The proportions of stunted children (below 5 years of age) are higher in FHH (54 per cent), than in MHH (49 per cent). According to the Living Conditions Survey (2002), 62 per cent of the people in rural areas were poor, compared to 45 per cent in the urban areas.

The overall agriculture sector contributes about 11 –16 per cent to GDP. The livestock sub-sector contributes 35 per cent to the agriculture GDP. The sector comprises of

about 85 per cent, small scale farmers, who utilise about 75 per cent of the cultivated land and 15 per cent commercial farmers who utilise 25 per cent of the land. In the face of reduced mining and exports from copper, the PRSP has identified the agriculture sector as the driving engine for economic growth and broad based poverty reduction.

Almost 72 per cent of the Zambian population are engaged in agricultural activities, of which almost 65 per cent are women. The National Agricultural Policy 2004–2015 recognizes "the dual" nature of the agriculture sector in which the majority of small scale farmers are resource poor, have low production and productivity and are food insecure up to about four months per year.

Although agriculture is considered to be one of the major revenue earners for Zambia, the country suffers from food security concerns mainly because the current policy and strategic frame work are not conducive to promoting food security as well as ensuring that the sector is competitive through empowering the farmers. According to the Republic of Zambia (2003)[7] Agriculture Analytical Report, there are about 1.08 million rural agriculture households, of which about 19 per cent are FHH (ref). The recent Government (GRZ) policies to remove agriculture subsidies and increase privatization in the sector has affected women farmers more negatively than male farmers. This is because their limited income and purchasing power was further eroded due to increased prices of farm inputs. This generally has had a negative effect on food security in FHHs. African Development Fund and Republic of Zambia (2006)[8] reveal that women are the main producers, providers and traditional managers of food production for household subsistence. They grow a wider variety of crops such as, maize, sorghum, millet, beans, groundnuts and cowpeas, that are mostly sold on local markets.

Women's lack of access to market support services places limitation on the amount of cash income that rural women can earn for themselves and their families. Soil preparation and ridging tend to be predominately done by males early in the season, while weeding and harvesting tend to be predominately women's tasks, done both in the early and at the end of the growing season, indicating that women work more than men. After harvesting, rural women are almost entirely responsible for storage, handling, stocking, marketing and processing (African Development Fund and Republic of Zambia, 2006). The time that women spend carrying out household based activities (childcare, collecting firewood and water, nursing the sick, etc) is not included in national statistics that feed into the national economy (African Development Fund and Republic of Zambia, 2006).

Due to the differences in the types of crops planted by the gender, crop management becomes key to the distribution of income within rural households (African Development Fund and Republic of Zambia, 2006). Interviews indicated that the person who manages a particular crop/produce has a larger voice in how the resulting income from that crop/produce is spent. For example, some studies indicate that women,

[7] Republic of Zambia (2003), 2001 Census of Population and Housing Agricultural Analytical Report, Central Statistical Office (CSO). Lusaka, Zambia.

[8] African Development Fund and Republic of Zambia (2006), Multi-sector Country Gender Profile: Agriculture and Rural Development North East and South Region (ONAR). https://www.google.com/?gws_rd=ssl#q=Zambia+Gender+division+of+labor+and+decision-making+process%3A+A+gender+review.

either independently or jointly manage 60 per cent of the area under local maize production (used for household consumption), but they were involved in the management of only 25 per cent hybrid maize (used for sales) area (African Development Fund and Republic of Zambia, 2006).

Moreover, the studies reveal that households headed by females were less prone to adopting farming cash/export oriented crops than households headed by males (African Development Fund and Republic of Zambia, 2006). The decision making process also varies on issues concerning storage, use of markets and marketing strategies, and use of irrigation technology, depending on the crops/produce planted. Furthermore, as a result of male control over production resources, especially land, credit and technology, men take control of the income resulting from the sales of agriculture produce, although women continuously contribute in this process (African Development Fund and Republic of Zambia, 2006). Thus, farming decisions have a high level of influence based on gender and these issues will need to be integrated into agriculture programmes for successful implementation and uptake of new technologies and crops. In rural Zambia, women's ability to participate in decisions within households is influenced by a number of factors such as their education levels, their own income generation capabilities and income contribution to the household, as well as by age. In this sense, poverty reduction interventions in the agriculture sector, must focus on influencing the factors that affect women's participation in the decision making process, as it ultimately affects access to resources and ability to generate income (African Development Bank, 2004). [9]

1.3.2 Food Security in Different Agro-ecological Zones of Kenya

According to the Kenya National Food and Nutrition Security Policy (2011), the agro-ecological diversity of Kenya poses different food security situations and hence, different interventions are required to enhance production. Some areas have relatively high production potential, but this is also where the highest absolute number of the chronically food insecure live. Continuous cultivation of soils, loss of forest cover and over-emphasis on maize production in these areas has led to a decline in soil fertility and yields (Republic of Kenya, 2011). Production potential is often unexploited due to high input costs. Irrigation and water management techniques in these areas hold great potential. In Kenya's arid and semi-arid lands (ASALs), which occupy about 80 per cent of the country have the highest rate of food insecurity. The ASALs are characterized by natural resources degradation which has resulted from unsustainable land management practices. The degradation has led to a significant loss of bio-diversity which has adversely affected traditional sources of food, income and other basic needs of many of the communities.

In urban and peri-urban areas, agriculture (crops and livestock), is increasingly being practiced and potential to improve has food access and overall food security and nutrition conditions in these areas. To date, however, there has been inadequate support, guidance and concerted effort to develop this

9 African Development Bank (ADB) (2004), Multi-sector Country Gender Profile: Agriculture and Rural Development North East and South Region (ONAR).Addis Ababa, Ethiopia: African Development Fund.

potential, enhancing urban and peri-urban agriculture (Republic of Kenya, 2011).

1.3.3 Livestock Ownership and Other Assets

According to Republic of Kenya (2007) Kenya Integrated Household Survey (KIHBS, 2005/2006), 66 per cent of all Kenyan households kept at least one kind of livestock. An estimated 84.3 per cent of rural households reared livestock, while in the urban areas, a lower proportion of 26.9 per cent of households reported keeping livestock. Out of all households who reported rearing livestock, 67 and 60.4 per cent reported keeping chickens and cattle, respectively. Other common domestic animals were goats, sheep, donkeys, birds other than chickens and pigs. Bomet, Lugari, Tharaka, Trans Mara, Mwingi and Mbeere Sub-counties recorded particularly high proportions of over 90 per cent households keeping livestock.

Nationally, 64.5 per cent of all livestock keeping households kept chicken. In almost all sub-counties, majority of the households owned 5 to 10 chickens. Nationally, 42.1 per cent of livestock keeping households had 10 or fewer chickens, while 22.4 per cent kept more than 10 chickens. The five sub-counties: Marsabit, Garissa, Mandera, Wajir and Marakwet, each recorded a high proportion of over 90 per cent of households keeping no chicken at all since their main livelihood activity is cattle and camels. Poultry farming provides an important source of food to Kenyan communities through meat and eggs. Commercial chicken rearing is also an important and easy-to-establish form of agricultural income-generating activity for small-scale farmers as this activity does not require a lot of land to hold the livestock.

According to International Fund for Agricultural Development (IFAD) (2010), women's typical role within a livestock production system, is different from region to region, and the distribution of ownership of livestock between men and women is strongly related to social, cultural and economic factors. Generally, it is dependent on the type of animals raised. In many societies, for example, cattle and larger animals are owned by men, while smaller animals, such as goats, sheep, pigs and backyard poultry, are owned by women. When the rearing of small animals becomes a more important source of family income, ownership, management and control is taken over by men. Women play an important role in livestock management, processing and marketing, acting as care providers, feed gatherers, and birth attendants. They are also involved in milk production, although not all women control the sale of milk and its products. Identifying and supporting women's roles as livestock owners, processors and users of livestock products while strengthening their decision-making power and capabilities, are key aspects in promoting women's economic and social empowerment and consequently provides a way to enable rural women to break the cycle of poverty. Women (Lo Bianco, 2007),[10] are typically responsible for milking ewes, processing and selling milk products, providing feed/fodder and water, caring for newborn lambs/kids and sick animals. Young girls are also involved in the grazing of goats and sheep, whereas married and young women are responsible for household activities. Typical male tasks include herding, cutting branches for home feeding and administering modern medicines.

[10] Lo Bianco, Andrea (2007) Agribusiness for Development: A Socioeconomic Analysis of the Milk Market Chain in the IFAD-financed Western Sudan Resource Management Programme Area. Rome: IFAD.

Despite their considerable involvement and contribution, women's role in livestock production has often been underestimated, if not ignored. Gender-blindness is the result partly of a paternalistic bias, and partly due to the attitudes of the women themselves, who may be conditioned by their culture and society to underestimate the value of their work. As a result, it is difficult to obtain information on the role of women in livestock production from existing research and project reports. In addition, women's work is rarely reflected in national statistics (Niamir-Fuller, 1994).

Jacobs and Saggers (2011) found that where asset and property rights for women are increasingly viewed as key to economic progress, women continue to own just a fraction of land worldwide, and despite laws that protect their rights to property, men and women often are unaware of their rights. Meanwhile, prevailing social norms reinforce attitudes that discourage women from owning land or other assets. Among married or cohabiting couples, responses about joint ownership revealed differing perceptions between men and women. For example, in rural Uganda, 19 per cent of women said they jointly owned a house with the male head of household, while only 3 per cent of men reported shared ownership. While comparing female-headed households and women in male-headed households, results revealed that asset ownership among women heads was comparable to their male counterparts.

In rural South Africa, 86 per cent of men and 84 per cent of women who lead households owned a home. In contrast, only 22 per cent of women in male-headed households reported such ownership. Researchers cautioned that although women who head households appeared to own assets, the survey sample may have only captured the more resilient women. Still, the findings point to the need for further understanding on how gender norms affect women's ability to own and make decisions about various assets.

1.3.4 Food Storage

Following the non-payment of their produce by the National Cereals and Produce Board (NCPB), most small-scale farmers in Kenya, have over the years had no option but to sell their maize to millers and middlemen who frequently offer lower prices. Often, farmers can hardly recover their production costs, leave alone make a profit (Organic Farmer, 2013). The NCPB has now launched an initiative to help farmers, dubbed "the Warehouse Receipting System" (WRS). Through the WRS, farmers deliver their maize to the Board for storage; and are given a receipt showing the amount of maize delivered and its value. Farmers can use the receipt as security to get loans or to pay school fees, buy inputs and meet their other financial needs while waiting for the prices of maize to improve. The NCPB later on sells the maize, during shortages, or sells to the millers to be turned into maize floor.

Due to poor storage, there is a very high occurrence of one of the most toxic strains (types) of *Aspegilus flavus*. The high levels of aflatoxin contamination, caused by the presence of *A. flavus*, have led to frequent deaths. From 2004 to 2006, nearly 200 Kenyans died, after consuming contaminated maize.

1.3.5 Cash Transfers and Other Forms of Assistance

Cash transfers, the provision of cash as an alternative to in-kind assistance, is increasingly being used as a social protection method in situations of acute poverty, hunger and vulnerability. In Kenya, for

example, cash transfer programmes have been functioning in support of people who lack access to food sufficiently to meet their daily needs, and the large numbers of people impacted by the HIV and AIDS crisis.

In a study by Ressler (2008) in Kenya on the social impact of cash transfers, beneficiaries of the cash transfers indicated that the cash payment was most commonly used for school related expenses. While primary school tuition is free in Kenya, families faced various additional education costs which if not paid prevent children from participating in education. In addition, pre-school and secondary schools have tuition fees. Participants reported that the second major use of the cash transfer funds was for household food. Participants indicated that the cash had allowed them to have more than one meal a day, hence they did not have to sleep hungry, it was possible to send food to school with the children, and they could have breakfast. Others used the cash for rent and purchasing medicines.

According to World Bank Report (2013), the Cash Transfer to Orphans and Vulnerable Children (CT-OVC) Project in Kenya has been consistently rated satisfactory, for the last twelve months, preceding the report. As of October 7, 2013, the project had disbursed US$ 49.8 million out of the US$ 50 million credit. The CT-OVC Project had met, or was on track to meet, its targets, as detailed in the most recent Implementation Status Report (ISR). More specifically, the coverage of the Program increased from 82,371 households in Fiscal Year (FY) 2009/10 to 153,000 households in FY2012/13. Of these, 60,000 were supported by World Bank credit and were receiving regular payments.

Republic of Kenya (2012) in its evaluation of the Cash Transfer to Orphans and Vulnerable Children (CT-OVC) program hailed its impact and claims that it has had a significant positive impact on the consumption, school enrolment and health outcomes of these children and their families. The main form of safety net support offered to poor and vulnerable populations, has been humanitarian relief (often in the form of food aid, which had been mobilized by the National Government and the international community in response to crises such as drought and floods and emergency situations such as Internal Displacement of Persons (IDPs) (Republic of Kenya, 2012). Since the Kenya Government does not have a legal framework and the necessary infrastructure for safety net programmes such support has been *ad hoc* in nature, sometimes reaching the target groups too late.

1.4 Conceptual Framework and Methodology

This section presents the research methodology used in the study on the status of food security in Kenya. It explains the sampling procedures, sample size, data gathering instruments, and data analysis procedures.

1.4.1 Conceptual Framework

The following assumptions were made during the food security research:

i) The household (HH) food security indicator is 3 meals a day (breakfast, lunch and supper).

ii) The 20 counties' food security status reflects the national status as they cover all the agro-ecological zones of Kenya.

iii) Women play a key role in household food security in relation to availability, access, utilization, and sustainability.

iv) Policy plays a significant role in food security at National and County levels.

v) Public input (views) on food security is not adequately integrated in Vision 2030.[11]

vi) Food security remains a challenge even in high potential areas of Kenya.

vii) Food security initiatives are not well linked between National and County governments.[12]

viii) Resource allocations for food security are inadequate to spur 10 per cent targeted annual growth for development.

ix) Food security initiatives are not sustainable (stable).

x) Land use practices are not appropriate for future (sustainable) food security.

xi) Food safety policies are not being implemented (adhered to) on the ground.

xii) Food utilization remains a challenge due to gender issues, cultural perceptions, experiences and knowledge leading to malnutrition.

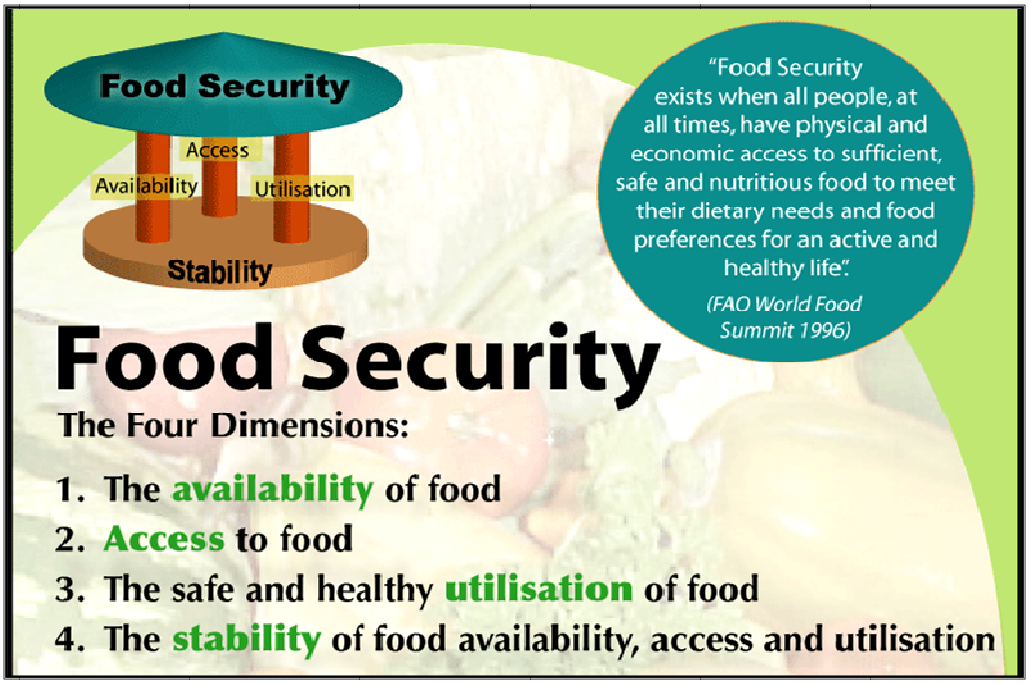
xiii) Food security is at risk as it is left to the aged due to rural-urban migration.

Conceptually, food security has three pillars: availability, accessibility and utilization. The three pillars rest on a fourth dimension of stability as illustrated in Figure 1.

Figure 1: Conceptual Framework on Food Security

Source:

FAO. 1996. Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit 13–17 November 1996, Rome.



The study employed survey-based methods adapted from The United States (US) Food Security Measurement Project. The food security measurement methods have been adapted for use in a number of other

[11] Achieving food security is one of the flagship projects of Vision 2030 Economic Pillars.

[12] When Vision 2030 was launched, there was no devolved government but with a devolved government, it is important to link National and County governments especially on food security.

countries (Coates *et al,* 2006; Health Canada, 2007). The US tool has eighteen questions (full module) about self-reported food conditions of the household as a whole and a section focusing on children. In this study, the focus was on hunger at the household level. Although other hunger indices may focus on children and malnutrition, the focus of this study did not prioritize these issues. That is why there was no special section focusing specifically on children. The questions therefore have been reduced from eighteen to eight questions. The results of using this modified food security score by AWSC are reflected in Chapter 2 (2.4) of this report.

Each question asked whether the condition or behaviour occurred at any time in the last 10 months prior to the survey. The responses to the questions were scored on a likert scale; 1=Never, 2=Sometimes, 3=Often and 4=Always.

The eight questions about food conditions of a household were as follows:

1. Did you worry that your household would not have enough food?
2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?
3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?
4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?
5. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough?
6. Did you or any other household member eat fewer meals in a day because there was not enough food?
7. Was there a time when there was no food at all in your household because there were not enough resources to go around?
8. Did you or any household member go to sleep at night hungry because there was not enough food?

The eight questions were grouped according to the pillars of food security as indicated in Table 1. The status of household food security, was measured using 8 questions (1–8), in the hunger module

Table 1: Key Questions Based on the Conceptual Framework

Food Security Dimensions	Key Questions
Availability	E03: Did you or any household member eat a limited variety of foods due to lack of choices in the market? E06: Did you or any other household member eat fewer meals in a day because there was not enough food? E08: Did you or any household member go to sleep at night hungry because there was not enough food?
Sustainability	E01: Did you worry that your household would not have enough food?
Accessibility	E04: Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food? E05: Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough? E07: Was there a time when there was no food at all in your household because there were not enough resources to go around?
Utilization	E02: Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?

Source: AWSC/KNBS Baseline Survey on Food Security Baseline June 2013.

determining food availability, accessibility, sustainability and utilization based on a scale ranging from those experiencing chronic food insecurity who were always, often or sometimes food insecure, to those who were most food secure and never experienced food insecurity.

1.4.2 Methodology

Review of Secondary Data

This research was conducted first examining published and unpublished secondary sources such as reports, thesis, dissertations, newspapers, books and journal articles on food security. A desk review of the countries with the best food security policies and programmes was also conducted in order to draw lessons that can be used to improve food security in Kenya.

1.4.3 Collection of Primary Data

Sampling of Counties

A total of twenty counties were scientifically sampled for the study to represent the forty seven counties in Kenya. Forty five counties in Kenya (excluding Nairobi and Mombasa) were first classified into six Agro-ecological Zones (AEZs) of Kenya. The AEZs are Upper Highlands, Upper Midlands, Lowland Highlands, Lowland Midlands, Inland Lowlands and Coastal Lowlands. An Agro-ecological Zone is a land resource mapping unit, defined in terms of climate, landform and soils, and/or land cover and having a specific range of potentials and constraints for land use (FAO, 1996). Since more than 80 per cent of Kenyans derive their livelihood from agriculture, classification of counties according to potential agricultural production and land use has a direct bearing on food security at county and national level.

A proportion of counties was selected from each zone depending on the number of counties in that zone. For instance, in Lowland Highlands which comprises of four counties, the proportion allocated to the zone was calculated as $\frac{4}{45}x18 = 1.6$ which was rounded off to two. Two counties were therefore then randomly picked from this zone. This formula was used to pick eighteen counties. Nairobi and Mombasa counties were in a special category referred to as "urban counties". Most residents of urban areas access food by purchasing and hence the study purposefully selected the two counties in order to examine economic access to food as a dimension in food security. This brought the total number of selected counties for the Baseline Survey on Food Security to twenty (20). The twenty counties that were scientifically sampled from the urban and the six agro-ecological zones are presented in Table 2.

Sampling of Households

The National Sample Survey and Evaluation Programme (NASSEP) V frame by the KNBS was used in sampling households for this study. The NASSEP frame has a list of households generated from a number of scientifically selected villages and estates, which represent other villages in a given region where surveys are conducted.

The data for the study was collected from a total of 4400 households, sampled from ten clusters of 22 households per county (220 households), Ten key informants, at least one Government institutional representatives such as Ministry of Agriculture, Gender and so on, two Focus Group Discussions (FGDs) and one debriefing meeting per county with a total of 20 counties selected from six agro-ecological zones and the urban counties.

Table 2: Sampled Counties in each Agro-ecological Zone

Agro-ecological Zones in Kenya	County
Urban Counties	Nairobi
	Mombasa
Upper Highlands	Nakuru
	Elgeyo Marakwet
	Kirinyaga
Upper Midlands	Kiambu
	Kisii
	Trans Nzoia
Lowland Highlands	Nandi
	Laikipia
Lowland Midlands	Taita Taveta
	Bungoma
	Makueni
	Migori
	Bomet
	Kajiado
Inland Lowlands	Baringo
	Turkana
	Isiolo
Coastal Lowlands	Kwale

Source: AWSC/KNBS Baseline Survey on Food Security Baseline, June 2013.

The HH hunger was measured using eight questions addressing availability, sustainability, accessibility and utilization (see Table 1), to which a scale ranging from most food and never experiencing food insecurity, sometimes experiencing, often experiencing and always insecure indicating chronic hunger.

1.4.4 Data Collection Tools

Research Tools

The research tools for the baseline survey on food security included the household questionnaire, key informant questionnaire, institutional questionnaire and focus group discussion guide.

Household Questionnaire/interviews

An in-depth questionnaire was used to gather information on various issues related to food security. This study tool captured information from respondents in their natural settings on a one-on-one basis. In each county, ten clusters were sampled and 22 household interviews conducted per cluster giving a total of 220 HHs per county.

Focus Group Discussion (FGD) Guide

The FGD guideline was used to gather information from respondents in a group setting. In the Baseline Survey on Food Security, the FGDs comprised of between eight to twelve respondents who consisted of the elderly, youth leaders, women leaders, religious leaders, political leaders and persons with disabilities (PWD). Food security and/or insecurity issues were discussed in the focus groups discussions. The group discussion was also useful in coming up with proposals and recommendations that can be implemented to enhance food security. Two focus group discussions were conducted in each county in different sub-counties.

Key Informant Questionnaire

The key informant questionnaire was used in interviewing community leaders on food security issues in their locality. The community leaders were interviewed on a one-on-one basis. These comprised youth leaders, women leaders, religious leaders, political leaders and leaders of persons with disabilities. Ten (10) key informants were interviewed in each county.

Institutional Questionnaire

The institutional questionnaire sought to gather secondary data on food security from County Development Officers (CDOs), formally referred to as District Development Officers. One detailed institutional questionnaire was completed in each county.

Debriefing Meeting

After gathering data, debriefing meetings were held in all the 20 counties. Participants in the debriefing sessions included County Government officials, representatives of Central Government in the counties, representatives from the Ministry of Agriculture, Community Development Assistants, selected Key Informants (community leaders), selected respondents from FGDs and household interviewees. Debriefing sessions were used to share and validate the preliminary findings on food security in each county.

1.4.5 Data Analysis

Data from household questionnaires was captured using CSPRO programme and analysed using the Statistical Package for the Social Sciences (SPSS) programme. The analysis was carried out through thematic areas reflected in the questionnaire namely: demographics, food storage, hunger, and diversity, main source of accessing food and, government/donor support programmes modules. Data from key informants who included; youth leaders, women leaders, religious leaders, and political leaders, County Development Officers (CDOs) and leaders of persons with disabilities was coded using the key areas of focus in the questionnaire and analysed using SPSS. Data from the FGDs was transcribed and key issues raised used in informing the views generated from other sources and especially policy recommendations.

This particular report was confined to descriptive statistics. Data was further analysed to compute the food security hunger index on the basis of the four dimensions illustrated in the conceptual framework. The results of the analyses are presented in Chapter 2.

Photo Gallery 1

(From left) Prof. Horace Ochanda, Deputy Principal of Kenya Science Campus, Mr. James Gatungu, Director of Production Statistics of Kenya National Bureau of Statistics and Prof. Wanjiku Mukabi Kabira, Director of African Women's Studies Centre, during the flagging off of the food security baseline survey.

Group photo of the research team after the flag off.

A section of the research team taking our oath administered by KNBS legal officer, Mr. Josiah Omosa.

Training of researchers, assistants and enumerators at Kenya Science Campus

Prof. Agnes Mwang'ombe, Principal, College of Agriculture and Veterinary Sciences and Principal advisor of the project

Mr. Zachary Mwangi Director General Kenya National Bureau of Statistics at a past event. (Photo courtesy of Daily Nation online)

A research assistant distributing bananas to children during the field work in Laikipia County

2. Research Findings

2.1 Introduction

This Chapter presents the quantitative research findings based on the interviewed household (HH) heads on the status of their respective house holds' food security; methods of food storage, main source of accessing food and, key government/donor support programmes as well as recommendations for ensuring sustainable food security. Qualitative data which was captured through Focus Group Discussions (FGDs), debriefing meeting and institutional questionnaires were used to corroborate the information gathered using the HH questionnaires. The quantitative data is presented using tables, bar graphs and pie charts whenever appropriate.

2.2 Household Demographic Characteristics

The in-depth household questionnaires were administered to a total of 4400 respondents from the 20 counties. This section focuses on the demographic characteristics of the target households. These included the age, gender, marital status and education as the principal foundation of demographic categorization. The tables that follow provide a summary of the demographic characteristics of the respondents.

2.2.1 Gender of Household Heads

The gender of the household head was look based on at the biological sex, i.e. male or female, of the household head and the findings are presented in Table 3.

The study found that a total of 67.9 per cent of households (HHs) were male headed. Trans Nzoia was leading with 80.3 per cent male headed HHs followed by Mombasa and Nakuru with 75.3 per cent and 73.8 per cent, respectively, Turkana (49.7 per cent) and Kisii (51.4 per cent) had some of the lowest proportions of male headed HHs.

The female HHs represented 26.6 per cent of the total study population. Turkana, with 47.2 per cent, had the highest proportion of female HHs followed by Laikipia and Isiolo, each with 34 per cent, Kirinyaga 33.0 per cent and Nairobi with 30.4 per cent. Counties with the lowest number of female HHs included Trans Nzoia, 16.5 per cent, Kisii, 17 per cent and Mombasa, 18.7 per cent. The urban counties had the highest proportion of male headed households with an average of 71.6 per cent. On the other hand, Inland Lowlands Agro-ecological Zone had the highest proportion of female headed households whose average was 34.2 per cent.

2.2.2 Marital Status of Household Heads

The study adopted the conventional socially accepted marriage categories among the target communities, including monogamy, polygamy, separation, divorce, staying together and never married. The findings are presented in Table 4.

Table 3: Gender of Household Head

Agro-ecological Zone	County	Gender of Household Head[13]	
		Male	Female
		per cent	Per cent
Urban Counties	Nairobi	67.8	30.4
	Mombasa	75.3	18.7
	Average	71.6	24.5
Upper Highlands	Kirinyaga	66.5	33.0
	Elgeyo	67.9	25.9
	Nakuru	73.8	23.1
	Average	69.6	27.1
Upper Midlands	Kiambu	69.2	27.6
	Kisii	51.4	17.0
	Trans Nzoia	80.3	16.5
	Average	66.3	20.6
Lowland Highlands	Nandi	68.4	28.8
	Laikipia	62.8	34.0
	Average	65.8	31.3
Lowland Midlands	Taita Taveta	66.7	27.9
	Makueni	68.2	30.0
	Migori	64.0	21.5
	Kajiado	71.4	25.7
	Bomet	73.6	20.3
	Bungoma	71.5	24.3
	Average	69.3	25.2
Inland Lowlands	Isiolo	64.2	34.0
	Turkana	49.7	47.2
	Baringo	71.4	24.9
	Average	62.8	34.2
Coastal Lowlands	Kwale	69.1	25.9
	Average	69.1	25.9
Average		67.9	26.6

Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

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[13] It is important to note that the percentages may not add up to 100% since some respondents not indicating their gender.

Table 4: Marital Status of Household Heads

Agro-ecological Zone	County	Monogamous Married	Polygamous Married	Living Together	Separated	Divorced	Widow/ Widower	Never Married	Total[14]	Total
		per cent	per cent	per cent	per cent	Per cent	per cent	per cent	Per cent	Number
Urban counties	Nairobi	51.4	1.4	9.3	6.5	2.3	4.2	23.4	100.0	211
	Mombasa	72.6	1.8		1.8	2.7	6.8	12.3	100.0	215
	Average	62.1	1.6	4.6	4.2	2.5	5.5	17.8	100.0	426
Upper Highlands	Kirinyaga	60.2	1.0		6.8	2.1	16.2	13.1	100.0	190
	Elgeyo	67.5	4.7	.5	2.4	1.4	4.2	11.3	100.0	195
	Nakuru	68.3	0.9		5.9	1.4	8.1	11.8	100.0	213
	Average	65.5	2.2	.2	5.0	1.6	9.3	12.0	100.0	598
Upper Midlands	Kiambu	60.6		5.0	4.1	1.4	8.6	19.0	100.0	218
	Kisii	53.7	5.0		.5		7.8	3.2	100.0	153
	Trans Nzoia	66.5	13.8		3.7	1.1	5.9	6.4	100.0	183
	Average	60.0	5.9	1.8	2.7	.8	7.5	9.7	100.0	554
Lowland Highlands	Nandi	54.9	5.1	4.7	2.3	.5	20.9	8.8	100.0	209
	Laikipia	56.5	2.1	2.1	6.3	3.1	12.6	13.6	100.0	184
	Average	55.7	3.7	3.4	4.2	1.7	17.0	11.1	100.0	393
Lowland Midlands	Taita Taveta	61.2	3.2		5.0	1.4	5.9	17.8	100.0	207
	Makueni	73.6	1.4		.9	1.4	15.0	5.0	100.0	214
	Migori	56.4	20.3		1.2		9.3	1.7	100.0	153
	Kajiado	71.0	8.1	.5	6.7	1.4	1.4	8.6	100.0	205
	Bomet	68.5	5.1		1.5	1.0	17.3	2.5	100.0	189
	Bungoma	57.0	15.4	.5	6.5	.5	11.2	3.7	100.0	203
	Average	64.9	8.5	.2	3.7	1.0	10.0	6.8	100.0	1171
Inland Lowlands	Isiolo	67.0	9.0		2.8	2.8	9.0	8.0	100.0	209
	Turkana	34.6	8.8	14.5	5.7	1.3	25.2	3.8	100.0	149
	Baringo	67.1	6.1		2.3	.5	12.2	9.9	100.0	209
	Average	58.2	7.9	3.9	3.4	1.5	14.6	7.5	100.0	567
Coastal Lowlands	Kwale	68.2	9.1	.5	4.1	1.4	6.8	5.0	100.0	209
	Average	68.2	9.1	.5	4.1	1.4	6.8	5.0	100.0	209
Average		62.3	5.9	1.8	3.8	1.4	10.2	9.6	100.0	3918

Source: AWSC/KNBS Baseline Survey on Food Security June 2013.

[14] The figures may not add up to 100% because some respondents did not indicate their marital status or some other marriage category not stated

According to the findings of the study, 62.3 per cent of the household heads were monogamously married while 5.9 per cent were in polygamous marriages. Makueni County had the highest proportion of household heads in monogamous marriages rated at 73.6 per cent followed by Mombasa 72.6 per cent and Kajiado County rated at 71 per cent. Turkana and Kisii counties had the lowest numbers of household heads in monogamous marriages rated at 34.6 per cent and 53.7 per cent, respectively.

The marital status category with the next largest number of households, totaling 10.2 per cent, was widows/widowers. Turkana with 25.2 per cent and Nandi rated at 20.9 per cent, had the highest number of household heads that were widows or widowers. Nairobi, Kiambu and Taita Taveta, with 23.4 per cent, 19 per cent and 17.8 per cent, respectively, had the highest number of HH heads who had never married. Migori County had the highest number of household heads in polygamous marriages rated at 20.3 per cent followed by Bungoma 15.4 per cent and Trans-Nzoia 13.8 per cent. Migori County had the least number of household heads who were never married rated at 1.7 per cent.

2.2.3 Age of Household Heads

The age of the head of the HH was considered to be an important variable in determining the status of the HH's food security. The age of the HH head was documented and the results cross-tabulated and put into broad age groups, starting with children of the age of 14 years and below, the other groups are spaced at a 10 years interval up to 64 years. The last group, representing the elderly comprised of HHs above 65 years of age. Table 5 shows the age groups of the HHs from the various counties from the different Agro-ecological zones.

On average, most of the household heads were in the age-group of 25–34 years. Nairobi County had the highest proportion of youthful household heads in the age category of 25–34 years with 39.3 per cent, followed by Kajiado and Kiambu Counties rated at 35.7 per cent and 33 per cent, respectively. Makueni 13.2 per cent, Kisii 16.5 per cent and Migori 16.9 per cent closely followed by Turkana 17 per cent, had the lowest numbers of HHs headed by youths between the ages of 25–34 years. Overall, households headed by persons aged 35–44 years were the second highest, accounting for 22.8 per cent of total households. Makueni County had the highest number of household heads in this age-group rated at 30 per cent while Kisii had the least with 13.8 per cent (Table 5).

The results indicate that most of the households were headed by persons between the ages of 25–44 years which accounted for 45.5 per cent. Kajiado County was leading with 62.8 per cent followed by Nairobi with 60.3 per cent and Nakuru with 55.7 per cent. Turkana had the highest number of household heads who were over 64 years, at 35.2 per cent. Conversely, Nairobi County with 8.9 per cent, Kajiado 9 per cent, Mombasa 11 per cent and Kiambu 11.8 per cent, had the lowest number of households headed by persons over 65 years old (Table 5).

Very few HHs across the counties, accounting for an average of 0.2 per cent, were headed by children below the age of 14 years. Turkana and Migori, each with an average of 0.6 per cent, were leading among such children HHs (Table 5).

Table 5: Age Groups of Household Heads

Agro-ecological Zone	County	0–14		15–24		25–34		35–44		45–54		55–64		Over 64		Total	Total
		per cent	N	per cent	N	per cent	N	per cent	N	Per cent	N	per cent	N	per cent	N	per cent[15]	Number
Urban Counties	Nairobi			13.1	28	39.3	84	21.0	45	12.1	26	3.7	8	8.9	19	100.0	210
	Mombasa	.5	1	6.8	15	24.2	53	27.9	61	20.1	44	7.3	16	11.0	24	100.0	214
	Average	.5	1	9.9	43	31.6	137	24.5	106	16.2	70	5.5	24	9.9	43	100.0	424
Upper Highlands	Kirinyaga			3.1	6	25.7	49	22.0	42	13.6	26	11.5	22	23.0	44	100.0	189
	Elgeyo Marakwet			9.4	20	22.2	47	19.3	41	16.5	35	10.4	22	15.6	33	100.0	198
	Nakuru			5.9	13	27.6	61	28.1	62	15.8	35	7.2	16	12.7	28	100.0	215
	Average			6.3	39	25.2	157	23.2	145	15.4	96	9.6	60	16.8	105	100.0	602
Upper Midlands	Kiambu	.5	1	10.4	23	33.0	73	17.2	38	17.6	39	7.2	16	11.8	26	100.0	216
	Kisii			4.1	9	16.5	36	13.8	30	11.0	24	11.0	24	12.8	28	100.0	151
	Trans Nzoia	.5	1	8.0	15	25.0	47	18.6	35	17.6	33	9.6	18	17.6	33	100.0	182
	Average	.3	2	7.5	47	24.9	156	16.4	103	15.3	96	9.3	58	13.9	87	100.0	549
Lowland Highlands	Nandi	.5	1	.5	1	21.9	47	23.3	50	19.5	42	14.0	30	16.7	36	100.0	207
	Laikipia			5.8	11	25.7	49	21.5	41	16.8	32	8.4	16	17.3	33	100.0	182
	Average	.2	1	3.0	12	23.6	96	22.4	91	18.2	74	11.3	46	17.0	69	100.0	389
Lowland Midlands	Taita Taveta	.5	1	5.9	13	21.0	46	15.5	34	16.0	35	16.0	35	17.8	39	100.0	203
	Makueni	.5	1	6.4	14	13.2	29	30.0	66	15.5	34	14.5	32	16.4	36	100.0	212
	Migori	.6	1	7.0	12	16.9	29	22.1	38	12.8	22	10.5	18	17.4	30	100.0	150
	Kajiado			10.0	21	35.7	75	27.1	57	13.3	28	1.9	4	9.0	19	100.0	204
	Bomet			2.5	5	19.3	38	27.4	54	16.2	32	10.2	20	22.3	44	100.0	193
	Bungoma			6.1	13	20.1	43	18.2	39	20.1	43	14.0	30	18.2	39	100.0	207
	Average	.2	3	6.3	78	21.1	260	23.4	288	15.7	194	11.3	139	16.8	207	100.0	1169
Inland Lowlands	Isiolo			8.5	18	23.6	50	25.0	53	13.2	28	7.1	15	20.3	43	100.0	207
	Turkana	.6	1	3.8	6	17.0	27	20.1	32	13.2	21	7.5	12	35.2	56	100.0	155
	Baringo			8.9	19	20.7	44	25.8	55	13.6	29	10.3	22	19.2	41	100.0	210
	Average	.2	1	7.4	43	20.7	121	24.0	140	13.4	78	8.4	49	24.0	140	100.0	572
Coastal Lowlands	Kwale	.5	1	4.5	10	22.7	50	30.9	68	14.1	31	8.2	18	15.0	33	100.0	211
	Average	.5	1	4.5	10	22.7	50	30.9	68	14.1	31	8.2	18	15.0	33	100.0	211
Average		.2	9	6.6	272	23.7	977	22.8	941	15.5	639	9.5	394	16.6	684	100.0	3916

Source: AWSC/KNBS Baseline Survey on Food Security June 2013.

[15] The figures may not add up to 100% because some respondents did not indicate their age

Table 6: Education level of Household Heads[16]

Agro-ecological Zone	Education level of Household Heads										
	County	None	CPE/ KCPE	KCE/ KCSE	KJSE	KACE/ EAACE	Certificate	Non-University Diploma	University Diploma, Degree	Post-Graduate	Total
		per cent	per cent	per cent	per cent	per cent	per cent	Per cent	per cent	per cent	per cent	number
Urban Counties	Nairobi	6.5	27.6	32.7		.9	2.3	9.3	6.5	8.4	100.0	202
	Mombasa	12.8	32.4	30.6		.5	1.4	4.1	2.3	5.5	100.0	196
Upper Highlands	Kirinyaga	20.9	31.4	22.0		.5	3.7	4.7	1.0	2.6	100.0	166
	Elgeyo	17.5	31.6	21.2	.5	.9	4.2	3.3	.9	.9	100.0	172
	Nakuru	17.6	34.4	26.2	.5	1.8	1.4	1.8	.9	3.2	100.0	194
	Average	18.6	32.5	23.2	.3	1.1	3.0	3.2	1.0	2.2	100.0	532
Upper Highlands	Kiambu	11.3	32.6	29.0	1.4	.5	5.0	3.6	2.3	6.3	100.0	203
	Kisii	14.7	20.6	15.1	.9		1.8			1.8	100.0	120
	Trans Nzoia	31.4	26.1	20.7	1.6		2.1	1.6	.5	2.1	100.0	162
	Average	18.5	26.5	21.7	1.3	.2	3.0	1.8	1.0	3.5	100.0	485
Lowland Highlands	Nandi	42.8	25.1	10.2	.5	.5	1.4	1.4	.5	.5	100.0	178
	Laikipia	21.5	40.8	13.6	.5		2.6	.5	.5	2.1	100.0	157
	Average	32.8	32.5	11.8	.5	.2	2.0	1.0	.5	1.2	100.0	335
Lowland Midlands	Taita Taveta	20.5	28.8	16.0	.9	4.6	4.1	2.3	2.3	2.3	100.0	179
	Makueni	24.1	35.5	17.3	.5		4.5	2.3	.5	1.8	100.0	190
	Migori	31.4	32.0	7.6		1.2			.6		100.0	125
	Kajiado	13.3	26.2	20.5	1.0		4.3	5.2	3.3	4.8	100.0	165
	Bomet	26.4	34.5	14.7	.5	.5	4.1	1.0	.5		100.0	162
	Bungoma	32.2	21.0	14.0	1.9		3.3	2.8	.5	2.8	100.0	168
	Average	24.4	29.5	15.3	.8	1.1	3.5	2.4	1.3	2.0	100.0	989
Inland Lowlands	Isiolo	14.6	13.2	12.7		.5	1.9	5.2	2.4	3.3	100.0	114
	Turkana	17.6	8.2	3.1		.6		1.9	1.3	1.9	100.0	55
	Baringo	15.5	23.9	19.7	1.4		2.3	3.3	1.9	2.3	100.0	150
	Average	15.8	15.8	12.7	.5	.3	1.5	3.6	1.9	2.6	100.0	319
Coastal Lowlands	Kwale	16.8	26.8	14.5			4.1	2.7	.9	.5	100.0	146
	Average	16.8	26.8	14.5			4.1	2.7	.9	.5	100.0	146
Average		20.3	27.8	18.4	.6	.7	2.8	2.9	1.5	2.7	100.0	3204

Source: AWSC/KNBS Baseline Survey on Food Security June 2013

[16] The totals may not add up to 100% since some respondents gave some type of education that was not provided for or they did not indicate their education levels.

2.2.4 Education of Household Heads

The study looked at the education level of the HH head as it is an important variable, in food security, as it improves an individual's opportunities and access to information. The findings on the level of education of respondents from the different counties from the various Agro-ecological Zones are presented in Table 6.

The study found that majority of HHs, accounting for an average of 27.8 per cent, were headed by persons who had attained CPE/KCPE level of education, Laikipia County had the highest proportion at 40.8 per cent of household heads that had attained primary level of education followed by Makueni County 35.5 per cent, Bomet 34.5 per cent and Nakuru 34.4 per cent Turkana, Isiolo and Kisii counties had low proportions of 13.2, 8.2 and 20.6 per cent, respectively, of household heads with CPE/KCPE. On average, the proportion of respondents who had secondary education was 19.7 per cent taking KCE/KCSE, KJSE and EACE and EAACE together. This is quite a small proportion with Counties such as Turkana having only 3.1 per cent of the respondents having secondary education (Table 6).

Notably, a fifth of the household heads (20.3 per cent) interviewed had not attained any level of formal education. Nandi County had the highest proportion (40.8 per cent) of such household heads followed by Bungoma with 32.2 per cent and Trans Nzoia and Migori each with 31.4 per cent HHs. On the other hand, Nairobi County had the least proportion of households heads who never attained any level of education rated at 6.5 per cent followed by Kiambu County rated at 11.3 per cent. Nairobi County recorded the highest proportion of household heads that had attained university level of education rated at 6.5 per cent followed by Kajiado County rated at 3.3 per cent. Nandi, Laikipia and Makueni Counties had the least proportion of household heads who had attained university level of education rated a 0.5 per cent each. Nairobi County also had the highest number of household heads with post-graduate level of education rated at 8.4 per cent followed by Kiambu County rated at 6.3 per cent. Nandi and Kwale Counties with 0.5 per cent each had the least proportion of household heads with post graduate education.

2.2.5 Household Sizes by County

The size of the HH based on the number of members was considered an important determinant of HH food security. The HHs were classified into three groups those with 1–3 members, 4–6 members and the largest HH size being considered as having more than six members. The study findings of HH sizes in the different counties from the various Agro-ecological Zones are presented in Table 7.

Of the households interviewed, majority, 42.8 per cent, had an average of 4–6 members while the least, 21.4 per cent, had more than six members. Among counties with 4–6 HH members, Mombasa had the highest proportion of 50.7 per cent followed by Nandi with 50.2 per cent and Turkana with 49.1 per cent. Among counties with more than six HH members, Migori had the highest number, 40.1 per cent, followed by Bomet with 38.6 per cent, and Bungoma with 32.7 per cent. The households with 1–3 HH members accounted for 34.1 per cent of which Nairobi County was leading with 64 per cent followed by Kirinyaga with 60.7 per cent and Laikipia with 52.9 per cent. Migori with 16.9 per cent followed by Turkana 17.6 per cent and Kisii with 20.6 per cent had the lowest proportion of HHs with 1–3 members (Table 7).

Table 7: Household Grouped Sizes by County

Agro-ecological Zone	County	Household Grouped Sizes by County				
		1–3 HH members	4–6 HH members	More than 6 HH members	Total	Total
		per cent	per cent	per cent	per cent	per cent
Urban Counties	Nairobi	64.0	32.7	2.8	100	213
	Mombasa	38.4	50.7	10.5	100	218
	Average	51.0	41.8	6.7	100	431
Upper Highlands	Kirinyaga	60.7	36.1	2.6	100	190
	Elgeyo	30.2	42.5	24.5	100	206
	Nakuru	35.7	48.0	15.8	100	220
	Average	41.5	42.5	14.7	100	616
Upper Highlands	Kiambu	51.1	39.4	8.1	100	218
	Kisii	20.6	46.8	22.9	100	197
	Trans Nzoia	28.7	46.3	24.5	100	187
	Average	33.8	44.0	18.2	100	602
Lowland Highlands	Nandi	23.7	50.2	26.0	100	215
	Laikipia	52.9	34.0	10.5	100	186
	Average	37.4	42.6	18.7	100	401
Lowland Midlands	Taita Taveta	38.4	41.6	18.3	100	215
	Makueni	25.0	42.7	32.3	100	220
	Migori	16.9	41.9	40.1	100	170
	Kajiado	40.5	44.8	13.3	100	207
	Bomet	21.8	39.1	38.6	100	196
	Bungoma	22.9	42.1	32.7	100	209
	Average	28.0	42.0	28.7	100	1217
Inland Lowlands	Isiolo	26.9	44.3	28.3	100	211
	Turkana	17.6	49.1	32.1	100	157
	Baringo	33.8	45.1	19.7	100	210
	Average	26.9	45.9	26.2	100	578
Coastal Lowlands	Kwale	27.7	40.0	28.2	100	211
	Average	27.7	40.0	28.2	100	211
Average		34.1	42.8	21.4	100	4056

Source: AWSC/KNBS Baseline Survey on Food Security June 2013.

Of the households interviewed, majority, 42.8 per cent, had an average of 4–6 members while the least, 21.4 per cent, had more than six members. Among counties with 4–6 HH members, Mombasa had the highest proportion of 50.7 per cent followed by Nandi with 50.2 per cent and Turkana with 49.1 per cent. Among counties with more than six HH members, Migori had the highest number, 40.1 per cent, followed by Bomet

2.3 Food Security Situational Analysis

Internationally, the Food and Agriculture Organization (FAO) of the United Nations "estimated that between 2010 and 2012, nearly 870 million people in the world lacked sufficient food" (FAO 2008). This section presents the results of the household baseline survey on food security in Kenya. Food security is said to exist when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2010). Household food security means applying this concept to individuals within the household. Conversely, food insecurity exists when people do not have adequate physical, social or economic access to food

(FAO, 2010). Chronic hunger is also a sign of food insecurity.

2.3.1 Hunger Indicators by County over the Last Ten Months

As mentioned in the methodology and in particular in the data collection section, the hunger module was used to determine the status of food security at the household level, by county, in the last ten months before the survey was done. The respondents were asked to rate the status of food security in their households based on the eight questions in the hunger module that assesses the four dimensions of food security namely availability, accessibility, utilization and sustainability. The hunger module measures household food security using a scale of never, sometimes, often and always which gauge the extent of food security based on eight questions. "Never" shows food security, "Sometimes" is a low manifestation of food insecurity, "Often" indicates a moderate manifestation of food insecurity and "Always" indicates a high manifestation of food insecurity. In each of the eight questions, therefore, a high percentage score in the scale of never shows that a household is more food secure. On the other hand, high percentages in the scales of sometimes, often and always indicate high level of food insecurity. The results of the hunger indicators in the various counties are indicated in Table 8.

About 45 per cent of the population interviewed was somewhat food insecure. Turkana stand out as one of the most food insecure County.

The overall picture that emerges from Table 8 is that Turkana County is the most food insecure with the largest proportion of HH heads responding "Always" to the 8 questions. Kisii County was the second most food insecure on the eight questions while, on average Kirinyaga, Kiambu and Kajiado counties were the most food secure. The largest proportion of respondents, for example who said their HH members always went to sleep hungry were from Turkana County at 22.2 per cent followed by Kisii County at 17.2 per cent. The highest number of respondents who said there was never a time when any member of their HH went to sleep hungry were from Kirinyaga County at 76 per cent followed by Kiambu County with 74 per cent.

2.3.2 County Hunger Module over the Last Ten Months (with often and always scale combined)

The study investigated the extent of chronic hunger in the various counties by combining and getting the average of the HHs that were often and always hungry. The combined results of respondents, from each county, who said they were either often or always hungry, in the last ten months, on the eight modules are presented in Table 9.

Tables 8 and 9 present the findings on the status of food security in the 20 counties from the most secure as illustrated by HHs that never experienced food insecurity to the most food insecure whose response to any of the 8 questions was "always". In Table 9, the hunger indicators in the scale of often and always are aggregated as they are an indication of high manifestations of food insecurity. Kirinyaga, Nakuru and Kiambu Counties were the most food secure with an average of 6.1 per cent, 11.8 per cent and 12.2 per cent, respectively. Households that were always and often food insecure included Turkana, 67.3 per cent Kisii 58.5 per cent and Migori 44.1 per cent, which were highest in the list of those counties exhibiting most hunger.

Table 8: Hunger Indicators by County in the Last 10 Months[17]

County	E01: Did you worry that your household would not have enough food?				E02. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?				E03. Did you or any household member eat a limited variety of foods due to lack of choices in the market?				E04. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?			
	Never	Some times	Often	Always	Never	Some times	Often	Always	Never	Some times	Often	Always	Never	Some times	Often	Always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Baringo	32.1	47.2	14.6	6.1	37.7	43.9	12.3	6.1	28.8	50.0	17.5	3.8	36.3	41.0	17.5	5.2
Bomet	25.9	51.3	15.2	7.6	19.4	55.1	21.4	4.1	30.5	48.7	18.3	2.5	25.9	55.8	13.7	4.6
Bungoma	18.8	50.2	21.1	9.9	16.9	49.3	29.1	4.7	26.3	54.9	16.4	2.3	20.8	50.9	21.2	7.1
E. Marakwet	25.7	57.6	11.0	5.7	23.4	61.7	7.7	7.2	29.5	58.6	9.0	2.9	28.6	57.1	9.5	4.8
Isiolo	18.4	45.8	12.3	23.6	17.5	40.8	27.0	14.7	26.4	45.8	17.5	10.4	16.0	50.9	20.3	12.7
Kajiado	42.9	39.5	12.4	5.2	32.9	48.6	15.2	3.3	41.1	36.8	15.8	6.2	33.3	51.2	12.6	2.9
Kiambu	55.6	28.5	13.1	2.8	40.5	40.9	15.3	3.3	68.4	25.6	5.6	.5	38.1	43.3	17.2	1.4
Kirinyaga	50.5	41.1	6.8	1.6	31.8	60.4	6.8	1.0	61.5	31.8	6.3	.5	38.0	52.6	8.9	.5
Kisii	9.1	31.8	27.8	31.3	7.6	24.4	37.6	30.5	11.6	25.8	36.9	25.8	8.6	20.7	42.4	28.3
Kwale	14.3	38.6	32.9	14.3	12.9	38.6	31.0	17.6	44.3	30.0	18.6	7.1	13.3	47.6	27.6	11.4
Laikipia	36.0	40.9	15.1	8.1	28.6	43.8	17.3	10.3	44.1	32.3	14.5	9.1	22.0	38.7	26.9	12.4
Makueni	24.1	47.7	19.1	9.1	21.8	40.9	22.7	14.5	44.5	34.1	8.2	13.2	22.7	43.6	20.5	13.2
Migori	9.4	37.1	27.6	25.9	6.5	37.6	31.8	24.1	25.3	43.5	14.1	17.1	5.9	42.4	26.5	25.3
Mombasa	25.6	48.4	17.4	8.7	23.7	49.8	16.9	9.6	35.2	44.3	14.6	5.9	21.9	50.7	19.2	8.2
Nairobi	26.6	47.7	15.0	10.7	15.0	54.7	24.3	6.1	56.5	24.8	14.0	4.7	22.9	43.5	27.6	6.1
Nakuru	42.5	43.4	10.0	4.1	34.8	47.1	14.5	3.6	64.3	28.1	5.4	2.3	30.3	55.7	11.3	2.7
Nandi	23.7	46.0	11.2	19.1	14.4	47.4	16.7	21.4	49.3	34.0	6.5	10.2	14.9	48.8	14.9	21.4
Taita Taveta	22.8	53.9	16.4	6.8	20.2	54.6	18.8	6.4	34.1	47.0	14.3	4.6	25.3	52.1	15.7	6.9
Trans Nzoia	17.1	41.2	21.9	19.8	10.7	34.8	33.7	20.9	27.3	37.4	19.8	15.5	11.8	40.6	32.1	15.5
Turkana	1.9	27.8	26.6	43.7	1.3	27.8	27.2	43.7	2.5	26.6	33.5	37.3	0.6	25.9	36.7	36.7
Average	26.6	43.6	17.1	12.6	21.4	45.4	21.1	12.1	38.3	38.1	15.0	8.6	22.4	46.0	20.7	10.9

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013.

[17] (Questions 1 to 4 of the hunger module)

Hunger Indicators by County for the Last 10 Months (continued)

County	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough?				E06. Did you or any other household member eat fewer meals in a day because there was not enough food?				E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?				E08. Did you or any household member go to sleep at night hungry because there was not enough food?			
	Never	Some times	Often	Always	Never	Some times	Often	Always	Never	Some times	Often	Always	Never	Some times	Often	Always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Baringo	38.4	42.2	15.2	4.3	38.4	42.2	15.2	4.3	38.4	42.2	15.2	4.3	38.4	42.2	15.2	4.3
Bomet	22.3	62.9	11.7	3.0	22.3	62.9	11.7	3.0	22.3	62.9	11.7	3.0	22.3	62.9	11.7	3.0
Bungoma	18.9	51.4	21.7	8.0	18.9	51.4	21.7	8.0	18.9	51.4	21.7	8.0	18.9	51.4	21.7	8.0
E. Marakwet	20.5	60.5	10.5	8.6	20.5	60.5	10.5	8.6	20.5	60.5	10.5	8.6	20.5	60.5	10.5	8.6
Isiolo	19.3	42.0	26.4	12.3	19.3	42.0	26.4	12.3	19.3	42.0	26.4	12.3	19.3	42.0	26.4	12.3
Kajiado	42.3	42.3	10.1	5.3	44.0	43.5	10.1	2.4	54.1	34.9	10.0	1.0	66.5	28.2	4.8	0.5
Kiambu	48.8	38.1	10.7	2.3	51.2	37.7	9.3	1.9	65.1	26.5	7.4	0.9	74.0	20.0	5.6	0.5
Kirinyanga	45.8	47.9	5.7	0.5	51.6	43.8	4.7	0.0	70.3	26.6	3.1	0.0	76.0	21.9	2.1	0.0
Kisii	10.6	27.3	37.9	24.2	13.1	23.7	33.8	28.8	25.3	27.8	27.8	19.2	41.9	22.2	18.2	17.2
Kwale	17.6	40.5	31.0	11.0	20.0	36.7	29.5	13.8	28.1	47.1	20.5	4.3	38.3	45.0	12.4	4.3
Laikipia	32.4	35.7	22.2	9.7	35.1	38.9	16.8	9.2	55.4	27.4	11.3	5.9	64.0	28.5	4.3	3.2
Makueni	21.8	44.5	20.9	12.7	23.3	45.2	19.2	12.3	36.5	42.5	15.1	5.9	47.2	34.9	12.8	5.0
Migori	6.5	46.5	27.1	20.0	7.1	47.0	26.8	19.0	17.6	46.5	19.4	16.5	26.5	41.8	16.5	15.3
Mombasa	26.0	47.9	17.4	8.7	27.9	47.0	16.0	9.1	43.1	32.6	19.3	5.0	52.8	31.2	11.0	5.0
Nairobi	34.6	36.4	24.8	4.2	36.4	37.4	22.9	3.3	58.9	21.5	17.3	2.3	58.9	21.0	15.9	4.2
Nakuru	35.7	49.3	11.8	3.2	41.6	44.3	11.3	2.7	60.2	32.6	6.3	0.9	68.3	27.1	3.6	0.9
Nandi	22.3	44.7	17.7	15.3	30.2	41.4	17.7	10.7	42.3	34.0	12.1	11.6	54.0	33.5	7.4	5.1
Taita Taveta	24.4	53.9	14.7	6.9	26.1	53.7	12.8	7.3	35.2	49.1	11.1	4.6	50.2	34.7	11.4	3.7
Trans-Nzoia	12.3	46.0	27.3	14.4	20.3	44.4	20.3	15.0	38.7	39.2	15.1	7.0	45.7	37.1	13.4	3.8
Turkana	1.3	27.2	32.9	38.6	1.9	24.1	30.4	43.7	3.2	37.3	29.7	29.7	4.4	47.5	25.9	22.2
Average	25.6	44.6	19.6	10.2	28.4	43.5	17.8	10.2	42.1	36.9	14.6	6.5	52.1	32.1	10.6	5.2

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013.

Table 9: Hunger Module for the Last Ten Months (with often and always scale combined)

County	E1: Did you worry that your household would not have enough food?	E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?	E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?	E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough?	E06. Did you or any other household member eat fewer meals in a day because there was not enough food?	E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?	E08. Did you or any household member go to sleep at night hungry because there was not enough food?	Average Manifestation of food insecurity
	per cent	per cent	per cent	per cent	per cent	per cent	Per cent	per cent	per cent
Kirinyaga	8.3	7.8	6.8	9.4	6.3	4.7	3.1	2.1	6.1
Nakuru	14.0	18.1	7.7	14.0	14.9	14.0	7.2	4.5	11.8
Kiambu	15.9	18.6	6.0	18.6	13.0	11.2	8.4	6.0	12.2
Kajiado	17.6	18.6	22.0	15.5	15.4	12.6	11.0	5.3	14.8
E. Marakwet	16.7	14.8	11.9	14.3	19.0	18.3	13.8	11.0	15.0
Bomet	22.8	25.5	20.8	18.3	14.7	14.2	6.1	3.6	15.8
Baringo	20.8	18.4	21.2	22.6	19.4	20.4	18.9	15.6	19.7
Taita Taveta	23.3	25.2	18.9	22.6	21.7	20.2	15.7	15.1	20.3
Mombasa	26.0	26.5	20.5	27.4	26.0	25.1	24.3	16.1	24.0
Laikipia	23.1	27.6	23.7	39.2	31.9	25.9	17.2	7.5	24.5
Bungoma	31.0	33.8	18.8	28.3	29.7	25.6	20.2	12.7	25.0
Nairobi	25.7	30.4	18.7	33.6	29.0	26.2	19.6	20.1	25.4
Isiolo	35.8	41.7	27.8	33.0	38.7	36.3	32.5	25.5	33.9
Nandi	30.2	38.1	16.7	36.3	33.0	28.4	23.7	12.6	27.4
Makueni	28.2	37.3	21.4	33.6	33.6	31.5	21.0	17.9	28.1
Kwale	47.1	48.6	25.7	39.0	41.9	43.3	24.8	16.7	35.9
Trans Nzoia	41.7	54.5	35.3	47.6	41.7	35.3	22.0	17.2	36.9
Migori	53.5	55.9	31.2	51.8	47.1	45.8	35.9	31.8	44.1
Kisii	59.1	68.0	62.6	70.7	62.1	62.9	47.0	35.5	58.5
Turkana	70.3	70.9	70.9	73.4	71.5	74.1	59.5	48.1	67.3

Source: AWSC/KNBS Baseline Household Survey on Food June 2013.

Table 10: Hunger Module for the Last Ten Months per Agro ecological Zone (with often and always scale combined)

Agro-ecological Zones	County	E1: Did you worry that your household would not have enough food?	E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?	E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?	E4. Did you or any household member eat food that you preferred not to eat because of lack of resources to obtain other types of food?	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough?	E06. Did you or any other household member eat fewer meals in a day because there was not enough Food?	E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?	E08. Did you or any household member go to sleep at night hungry because there was not enough food?	Average Manifesta-tion of food insecurity
		per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Urban Counties	Nairobi	25.7	30.4	18.7	33.6	29.0	26.2	19.6	20.1	25.4
	Mombasa	26.0	26.5	20.5	27.4	26.0	25.1	24.3	16.1	24.0
	Average	25.9	28.5	19.6	30.5	27.5	25.7	22.0	18.1	24.7
Upper Highlands	Kirinyaga	8.3	7.8	6.8	9.4	6.3	4.7	3.1	2.1	6.1
	Elgeyo	16.7	14.8	11.9	14.3	19.0	18.3	13.8	11.0	15.0
	Nakuru	14.0	18.1	7.7	14.0	14.9	14.0	7.2	4.5	11.8
	Average	13	13.6	8.8	12.6	13.4	12.3	8.0	5.9	11.0
Upper Midlands	Kiambu	15.9	18.6	6.0	18.6	13.0	11.2	8.4	6.0	12.2
	Kisii	59.1	68.0	62.6	70.7	62.1	62.9	47.0	35.5	58.5
	Trans -Nzoia	41.7	54.5	35.3	47.6	41.7	35.3	22.0	17.2	36.9
	Average	38.9	47.0	34.6	45.6	38.9	36.5	25.8	19.6	35.9
Lowland Highlands	Nandi	30.2	38.1	16.7	36.3	33.0	28.4	23.7	12.6	27.4
	Laikipia	23.1	27.6	23.7	39.2	31.9	25.9	17.2	7.5	24.5
	Average	26.7	33.0	20.2	37.8	32.5	27.2	20.5	10.1	26.0
Lowland Midlands	Taita Taveta	23.3	25.2	18.9	22.6	21.7	20.2	15.7	15.1	20.3
	Makueni	28.2	37.3	21.4	33.6	33.6	31.5	21.0	17.9	28.1
	Kajiado	17.6	18.6	22.0	15.5	15.4	12.6	11.0	5.3	14.8
	Migori	53.5	55.9	31.2	51.8	47.1	45.8	35.9	31.8	44.1
	Bungoma	31.0	33.8	18.8	28.3	29.7	25.6	20.2	12.7	25.0
	Bomet	22.8	25.5	20.8	18.3	14.7	14.2	6.1	3.6	15.8
	Average	29.4	32.7	22.2	28.2	27.0	25.0	18.3	14.4	24.7
Inland Lowlands	Isiolo	35.8	41.7	27.8	33.0	38.7	36.3	32.5	25.5	33.9
	Baringo	20.8	18.4	21.2	22.6	19.4	20.4	18.9	15.6	19.7
	Turkana	70.3	70.9	70.9	73.4	71.5	74.1	59.5	48.1	67.3
	Average	42.3	43.7	40.0	43	43.2	43.6	37.0	29.7	40.3
Coastal Lowlands	Kwale	47.1	48.6	25.7	39.0	41.9	43.3	24.8	16.7	35.9
	Average	47.1	48.6	25.7	39.0	41.9	43.3	24.8	16.7	35.9

Source: AWSC/KNBS Baseline Household Survey on Food, June 2013.

2.3.3 Food Security in Various Agro-ecological Zones in Kenya

The study investigated the extent of chronic hunger in the various Agro-ecological Zones by combining and getting the average of HHs that were often and always hungry. The findings of the respondents who said they were either "Often" or "Always" hungry on the eight questions are presented in Table 10.

The findings show that the Upper Highlands had on average the least manifestation of food insecurity with an overall average of 11 per cent followed by the urban counties and the Lowland Midlands with 24.7 per cent, each. The Inland Lowland covering Baringo, Isiolo and Turkana has the highest average of 40.3 per cent, of food insecure households. Individually Kirinyaga had the least number of food insecure HHs with an average of 6.1 per cent followed by Nakuru 11.8 per cent, Kiambu 12.2 per cent and Kajiado 14.8 per cent. Turkana County, with an average of 67.3 per cent was the most food insecure and the highest percentage of 74.1 per cent HHs eating fewer meals in a day, while Kisii County had an average of 58.5 per cent of food insecure HHs and the highest proportion of 70.7 per cent saying they ate foods that they preferred not to eat (Table 10).

2.3.4 Hunger Indicators by Gender of the Household Head

The study considered the gender of the HH head as a key determinant given the different roles played by men and women in regard to food security. Table 11 presents the findings of the status of HH food security based on the gender of the head of the household.

It is clear from the findings that female headed households were more food insecure than the male headed ones.[18] This situation is attributed to various factors such as gender based discrimination, which make female-headed households more vulnerable to food insecurity and poverty. Although the position of women in agricultural food chains is critical, they encounter many obstacles due to restricted land rights, inadequate education and outdated social traditions which usually limit their ability to improve food security status for their households and communities at large. Women also face different forms of discrimination, such as greater reluctance on the part of input providers to provide credit for fertilizer purchases for female headed households compared to for male headed households and less scope to borrow money or to buy food on credit. Consequently, food security experts affirm the need to support the contribution of women to food security by guaranteeing equal constitutional rights to land and property, involvement in the marketplace, and opportunities for education. Therefore, gender issues should be mainstreamed in food security programmes in terms of labor input, decision-making, access to or control of production resources, aimed at resolving food insecurity.

2.3.5 Gender and Education of HH Heads by Hunger Indicator

The study set to investigate the relationship between gender and formal educational level attained by HH head as it is widely believed that improving education for women could dramatically reduce hunger and food insecurity. The finding on the relationship between gender and education level of FHH and MHH food security are presented in Table 12.

[18] These results should be interpreted with caution because the study only presents descriptive statistics and no inferential statistics are provided which would show whether the differences are significant or not.

Table 11: Hunger Indicators by Gender of the Household Head

Question	Gender of Household Head	Never	Sometimes	Often	Always
		per cent	per cent	per cent	per cent
E1: Did you worry that your household would not have enough food?	Male Female	28.5 22.6	44.4 42.6	16.3 18.4	10.8 16.4
E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?	Male Female	23.1 18.1	46.9 43.0	19.6 23.0	10.4 15.9
E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?	Male Female	40.2 35.5	37.8 38.0	14.3 15.9	7.7 10.6
E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?	Male Female	24.0 18.8	46.8 45.3	19.6 21.9	9.6 14.0
E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough?	Male Female	27.7 21.4	45.2 43.9	18.5 20.9	8.6 13.8
E06. Did you or any other household member eat fewer meals in a day because there was not enough food?	Male Female	31.2 22.6	43.3 44.5	16.9 19.3	8.6 13.6
E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?	Male Female	44.8 36.6	36.7 37.2	13.1 17.7	5.4 8.5
E08. Did you or any household member go to sleep at night hungry because there was not enough food?	Male Female	55.6 45.1	30.9 35.1	9.2 13.0	4.2 6.7

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013.

Table 12: Gender and Education of House Hold Head by Hunger Indicator

E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?											
			Education level of HH heads								Total
			None	CPE/ KCPE	KCE/ KCSE	KJSE	KACE/ EAACE	Certificate	Non-Univ Diplo-ma	Univ. Diploma, Degree, Post-Graduate	
Never	Male	N	78	169	143	8	6	30	45	46	525
		%	14.9	32.2	27.2	1.5	1.1	5.7	8.6	8.8	100.0
	Female	N	96	258	214	8	3	35	71	38	723
		%	13.3	35.7	29.6	1.1	0.4	4.8	9.8	5.3	100.0
Some times	Male	N	90	166	78	0	2	18	12	5	371
		%	24.3	44.7	21.0	0.0	0.5	4.9	3.2	1.3	100.0
	Female	N	185	197	115	1	4	14	23	6	545
		%	33.9	36.1	21.1	0.2	0.7	2.6	4.2	1.1	100.0
Often	Male	N	49	49	25	0	1	1	4	1	130
		%	37.7	37.7	19.2	0.0	0.8	0.8	3.1	0.8	100.0
	Female	N	76	71	36	1	3	6	6	1	200
		%	38.0	35.5	18.0	0.5	1.5	3.0	3.0	0.5	100.0
Always	Male	N	33	15	4				0	0	52
		%	63.5	28.8	7.7	0.0	0.0	0.0	0.0	0.0	100.0
	Female	N	25	22	14	0	0	0	0	2	63
		%	39.7	34.9	22.2	0.0	0.0	0.0	0.0	3.2	100.0
Average	Male	N	250	399	250	8	9	49	61	52	1078
		%	23.2	37.0	23.2	0.7	0.8	4.5	5.7	4.8	100.0
	Female	N	382	548	379	10	10	55	100	47	1531
		%	25.0	35.8	24.8	0.7	0.7	3.6	6.5	3.1	100.0
	Average	N	632	947	630	18	19	104	161	99	2610
		%	24.2	36.3	24.1	0.7	0.7	4.0	6.2	3.8	100.0

Table 12: Gender and Education of HH heads by Hunger Indicator (cont.)

E08. Did you or any household member go to sleep at night hungry because there was not enough food?											
			Education level of HH heads								Total
			None	CPE/ KCPE	KCE/ KCSE	KJSE	KACE/ EAACE	Certificate	Non-Univ Diploma	Univ. Diploma, Degree, Post-Graduate	
Never	Male	N	97	215	169	7	6	39	51	45	629
		%	15.4	34.2	26.9	1.1	1.0	6.2	8.1	7.2	100.0
	Female	N	154	308	261	8	6	42	80	41	900
		%	17.1	34.2	29.0	0.9	0.7	4.7	8.9	4.6	100.0
Some times	Male	N	101	136	62	1	3	10	6	5	324
		%	31.2	42.0	19.1	0.3	0.9	3.1	1.9	1.5	100.0
	Female	N	159	181	87	1	2	11	14	4	459
		%	34.6	39.4	19.0	0.2	0.4	2.4	3.1	0.9	100.0
Often	Male	N	27	38	16	0	0	0	2	0	83
		%	32.5	45.8	19.3	0.0	0.0	0.0	2.4	0.0	100.0
	Female	N	54	44	23	1	1	2	5	1	131
		%	41.2	33.6	17.6	0.8	0.8	1.5	3.8	0.8	100.0
Always	Male	N	26	10	3	0	0	0	2	1	42
		%	61.9	23.8	7.1	0.0	0.0	0.0	4.8	2.4	100.0
	Female	N	16	14	9	0	1		0	1	41
		%	39.0	34.1	22.0	0.0	2.4	0.0	0.0	2.4	100.0
Average	Male	N	251	399	250	8	9	49	61	52	1079
		%	23.3	37.0	23.2	0.7	0.8	4.5	5.7	4.8	100.0
	Female	N	383	547	380	10	10	55	99	47	1531
		%	25.0	35.7	24.8	0.7	0.7	3.6	6.5	3.1	100.0
	Average	N	634	946	631	18	19	104	160	99	2611
		%	24.3	36.2	24.2	0.7	0.7	4.0	6.1	3.8	100.0

Source: AWSC/KNBS Baseline Household Survey on Food Security June 2013.

Amongst those that never went to sleep hungry, HH whose heads had KCE/KCSE level of education and below, FHHs were more food secure than those headed by males at the same level of education. It is worth noting that amongst households whose head had KJSE level of education and above, the MHHs were more food secure compared to FHHs whose head had the same level of education.

Households that were headed by a male with no formal education were more vulnerable to food insecurity at 63.5 per cent than HHs headed by a female with no formal education at 39.7 per cent for whom there was always no food at all for the household. The HHs headed by males with CPE/KCPE (28.8 per cent), KJSE (7.7 per cent) were less vulnerable to food security than HHs headed by females with the same level of education (CPE/KCPE 34.9 per cent) and EACE/KCSE (22.2 per cent). The HHs whose heads had attained a KJSE level of education and above were food secure with none reporting a case of "always no food" at all for the household.

2.3.5 Hunger Indicators by Marital Status of the Household Head

Household food security was analyzed in terms of marital status of the household head. Table 13 presents the overall/national findings on household food security based on the marital status of HH head.

Table 13: Hunger Indicators by Marital Status of the Household Head

Marital Status of Household Head	E1: Did you worry that your household would not have enough food?				E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?				E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?				E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?			
	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Monogamous married	28.4	45.1	16.1	10.4	22.9	47.8	18.6	10.6	40.3	38.3	13.6	7.8	23.9	47.9	19.1	9.2
Polygamous married	14.5	40.5	23.6	21.5	9.5	38.8	35.1	16.5	24.0	43.0	22.3	10.7	12.4	44.2	24.8	18.6
Living together	13.7	31.5	23.3	31.5	9.6	28.8	38.4	23.3	27.4	19.2	30.1	23.3	9.6	30.1	34.2	26.0
Separated	21.5	43.0	22.2	13.3	17.1	40.5	29.7	12.7	35.7	35.7	21.0	7.6	19.6	41.8	27.2	11.4
Divorced	26.3	50.9	10.5	12.3	21.1	50.9	17.5	10.5	40.4	40.4	12.3	7.0	21.1	45.6	24.6	8.8
Widow/Widower	26.3	50.9	10.5	12.3	14.6	41.5	24.2	19.7	33.3	37.1	18.6	11.0	15.7	44.0	23.1	17.1
Never married	38.0	43.6	11.3	7.1	32.2	45.8	14.9	7.1	45.8	39.0	9.6	5.5	31.1	46.0	16.4	6.6
Average	26.8	44.0	17.0	12.2	21.6	45.8	20.7	11.9	38.7	38.1	14.9	8.4	22.5	46.4	20.3	10.7

Marital Status of Household Head	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to buy enough food?				E06. Did you or any other household member eat fewer meals in a day because there was not enough food?				E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?				E08. Did you or any household member go to sleep at night hungry because there was not enough food?			
	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Monogamous married	28.3	45.3	17.4	9.0	31.1	43.8	15.9	9.2	45.4	36.7	12.7	5.2	56.2	31.1	8.5	4.2
Polygamous married	11.6	43.6	28.6	16.2	13.8	43.8	27.9	14.6	27.3	41.7	22.7	8.3	37.6	38.0	18.2	6.2
Living together	9.6	32.9	35.6	21.9	17.8	30.1	32.9	19.2	19.2	30.1	32.9	17.8	21.9	27.4	28.8	21.9
Separated	21.5	42.4	25.3	10.8	23.4	44.9	23.4	8.2	35.0	38.9	17.8	8.3	45.6	36.1	15.2	3.2
Divorced	28.1	45.6	14.0	12.3	28.1	43.9	15.8	12.3	45.6	38.6	8.8	7.0	54.4	31.6	5.3	8.8
Widow/ Widower	16.2	44.8	23.8	15.2	17.6	44.5	21.9	16.0	28.1	38.6	22.9	10.5	39.0	39.0	13.8	8.1
Never married	34.8	45.8	14.6	4.8	39.0	44.6	12.3	4.0	57.2	31.2	8.1	3.5	61.9	27.8	7.8	2.5
Average	26.0	44.8	19.1	10.0	28.8	43.7	17.5	9.9	42.7	36.7	14.5	6.2	52.7	32.2	10.2	4.9

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013

The findings indicate that households headed by unmarried people followed by those in monogamous marriages were more likely to be food secure while HH headed by persons in polygamous marriages were more food insecure. This could be attributed to the fact that household heads in polygamous marriages require more resources to buy enough food and other basic household needs because they often have larger household sizes compared to those in monogamous families. Large household sizes in polygamous families also require a lot of land for food production, which might not be available due to the high rate of population growth in the country. Although households headed by divorced, separated and widowed individuals are expected to be more food insecure, households where the members were living together with no marital commitment registered the highest levels of food insecurity. The possible explanation for this finding is that "living together" could be a food insecurity coping strategy by some household heads that are compelled to enter relationships due to financial constraints.

2.3.6 Hunger Indicators by Level of Education of Household Head

Education was considered a key variable in determining HH food security due to the opportunities it provides, including access to information. The study set out to investigate the relationship between the level of education of the HH head and the status of HH food security. The overall/national level findings are presented in Table 14.

The study indicates that education has a significant positive relationship with household food security. Households with relatively better educated household heads are more likely to be food secure than those headed by uneducated ones (Table 14). For example 6.4 per cent of respondents with no education always slept hungry, compared to 0.0 per cent of those with university diploma. Education is related to food security in a number of ways. First, education has a positive effect on employment and income, which in turn are essential determinants of food security. Second, education leads to awareness of the possible advantages of modernizing agriculture, increases the ability of farmers to allocate resources more efficiently and helps to develop the flexible skills needed to participate in knowledge-intensive agricultural activity. The effects of education on household food security go beyond occupational and income earning implications. For instance, education, especially of females, is a significant contributor to household food security, as educated women and girls are better equipped to care for their families and prepare nutritious meals. Thus, being literate reduces the chance of becoming food insecure in the households.

2.3.7 Hunger Indicators by Household Size

The size of the HH based on the number of members was considered an important determinant of HH food security. The HHs were put into three groups with 1–3 members, 4–6 members and the largest HH size being considered as having more than 6 members. The overall/national level findings of HH size and the status of food security are presented in Table 15.

Table 14: Hunger Indicators by Level of Education of Household Head

Highest Education Level	E1: Did you worry that your household would not have enough food?				E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?				E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?				E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?			
	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
None	14.8	48.4	19.6	17.2	11.7	48.6	23.8	15.9	33.1	41.5	15.1	10.4	12.0	48.9	23.4	15.8
CPE/KCPE	25.7	47.1	18.3	9.0	20.9	48.9	20.2	10.0	40.2	38.5	14.3	7.0	22.6	47.7	21.9	7.9
KCE/KCSE	38.8	43.7	11.5	6.1	28.9	48.7	17.2	5.3	46.4	38.7	10.7	4.2	30.4	50.1	14.6	4.9
KJSE	52.0	40.0	8.0	0.0	36.0	44.0	20.0	0.0	52.0	24.0	20.0	4.0	52.0	36.0	12.0	0.0
KACE/EAACE	25.9	63.0	7.4	3.7	14.8	74.1	11.1	0.0	44.4	40.7	7.4	7.4	18.5	70.4	7.4	3.7
Certificate	41.7	47.0	10.4	0.9	33.9	49.6	13.9	2.6	47.8	41.7	7.0	3.5	35.7	50.4	9.6	4.3
Non-University Diploma	49.2	43.3	5.0	2.5	41.7	47.5	10.0	0.8	60.0	33.3	5.8	0.8	39.2	48.3	10.8	1.7
University Diploma	51.6	43.5	4.8	0.0	41.9	50.0	6.5	1.6	63.9	27.9	8.2	0.0	45.2	48.4	4.8	1.6
Degree-Post Graduate	64.3	28.6	3.6	3.6	61.6	29.5	6.3	2.7	65.2	24.1	9.8	0.9	59.5	31.5	7.2	1.8
Average	29.5	45.8	15.3	9.4	23.5	48.3	19.0	9.3	42.3	38.5	12.8	6.5	24.7	48.2	18.6	8.4

Highest Education Level	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough food?				E06. Did you or any other household member eat fewer meals in a day because there was not enough food?				E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?				E08. Did you or any household member go to sleep at night hungry because there was not enough food?			
	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
None	13.7	48.5	24.2	13.7	15.1	49.6	21.9	13.3	28.2	44.4	18.3	9.1	39.5	41.4	12.6	6.4
CPE/KCPE	25.2	46.8	21.1	6.9	27.6	47.6	18.2	6.6	44.7	38.5	12.7	4.1	55.5	33.3	8.6	2.6
KCE/KCSE	35.3	48.0	12.0	4.7	39.9	44.0	10.7	5.4	56.4	31.8	9.0	2.8	67.7	24.7	5.7	2.0
KJSE	60.0	32.0	8.0	0.0	56.0	28.0	12.0	4.0	80.0	16.0	4.0	0.0	72.0	24.0	4.0	0.0
KACE/EAACE	25.9	55.6	18.5	0.0	25.9	55.6	14.8	3.7	37.0	48.1	14.8	0.0	55.6	33.3	7.4	3.7
Certificate	48.7	42.6	7.0	1.7	51.3	39.8	8.0	0.9	61.4	31.6	7.0	0.0	78.9	19.3	1.8	0.0
Non-University Diploma	51.7	40.0	6.7	1.7	59.2	31.7	8.3	0.8	69.2	25.0	5.8	0.0	80.0	14.2	4.2	1.7
University Diploma	56.5	37.1	6.5	0.0	59.7	32.3	8.1	0.0	79.0	16.1	4.8	0.0	85.2	11.5	3.3	0.0
Degree-Post Graduate	69.6	19.6	6.3	4.5	78.6	15.2	3.6	2.7	83.9	11.6	2.7	1.8	87.5	8.0	1.8	1.8
Average	28.9	45.9	17.8	7.4	31.9	44.9	15.9	7.3	46.9	36.2	12.3	4.6	57.8	30.8	8.2	3.3

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013

Table 15: Hunger Indicators by Household Size

Household Size	E1: Did you worry that your household would not have enough food?				E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?				E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?				E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?			
	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
1–3 members	34.6	41.6	13.5	10.2	28.6	44.2	17.9	9.3	45.1	35.3	12.5	7.1	29.7	43.7	18.3	8.3
4–3 members	25.7	45.3	16.4	12.6	19.6	47.3	20.4	12.7	37.5	38.9	14.4	9.2	20.6	47.4	20.4	11.6
More than 6 members	15.6	43.8	24.1	16.6	13.8	43.3	27.2	15.7	29.4	40.2	20.4	10.0	14.3	46.7	25.5	13.5
Average	26.6	43.7	17.1	12.7	21.4	45.4	21.0	12.1	38.4	37.9	15.0	8.6	22.4	45.9	20.8	10.9

Household Size	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough food?				E06. Did you or any other household member eat fewer meals in a day because there was not enough food?				E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?				E08. Did you or any household member go to sleep at night hungry because there was not enough food?			
	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
1–3 members	34.5	41.2	16.5	7.7	36.9	40.4	15.7	7.0	51.6	30.6	12.5	5.3	58.3	28.8	9.1	3.8
4–3 members	24.4	46.4	19.0	10.2	27.6	44.3	17.8	10.3	40.9	38.8	14.1	6.2	52.7	32.1	10.0	5.2
More than 6 members	14.1	46.0	25.5	14.4	17.0	46.2	21.2	15.5	30.1	42.5	18.8	8.6	41.1	37.5	13.9	7.4
Average	25.7	44.5	19.6	10.3	28.5	43.4	17.8	10.3	42.2	36.8	14.6	6.4	52.1	32.1	10.5	5.2

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013.

Table 16: Hunger Indicators by Age group of the Household Head

Age Group of Household Head	E1: Did you worry that your household would not have enough food?				E2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?				E3. Did you or any household member eat a limited variety of foods due to lack of choices in the market?				E4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?			
	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always	Never	Some Times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
0–14 years	22.2	44.4	22.2	11.1	33.3	33.3	22.2	11.1	44.4	22.2	22.2	11.1	33.3	33.3	22.2	11.1
15–24 years	36.3	38.5	16.5	8.8	33.0	43.2	17.6	6.2	45.1	36.6	13.6	4.8	32.6	41.8	19.4	6.2
25–34 years	31.1	43.0	15.0	10.9	23.4	46.9	19.2	10.6	44.9	35.8	12.7	6.6	25.4	48.0	17.4	9.2
35–44 years	27.3	47.6	15.7	9.4	22.8	48.0	18.9	10.3	39.5	39.9	13.5	7.1	23.0	49.0	19.2	8.7
45–54 years	24.5	45.1	17.7	12.7	20.4	46.6	21.4	11.6	38.1	37.3	16.5	8.2	20.4	48.0	20.1	11.5
55–64 years	23.1	42.4	20.8	13.7	18.0	42.4	25.6	14.0	35.1	37.4	17.8	9.7	19.5	43.7	23.4	13.5
More than 64 yrs	20.4	41.9	18.6	19.1	16.5	42.8	22.9	17.8	30.2	38.9	17.2	13.8	18.2	41.6	24.5	15.7
Average	26.8	43.9	16.9	12.4	21.7	45.7	20.6	12.0	39.0	37.8	14.9	8.4	22.7	46.3	20.3	10.8

Age Group of Household head	E05. Did you or any other household member eat smaller meals in a day because of lack of resources to obtain enough food?				E06. Did you or any other household member eat fewer meals in a day because there was not enough food?				E07. Was there a time when there was no food at all in your household because there were not enough resources to go around?				E08. Did you or any household member go to sleep at night hungry because there was not enough food?			
	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always	Never	Some times	often	always
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
0–14 years	22.2	55.6	11.1	11.1	22.2	55.6	11.1	11.1	33.3	33.3	22.2	11.1	55.6	22.2	11.1	11.1
15–24 years	35.2	41.8	17.2	5.9	37.4	39.2	17.2	6.2	53.1	30.0	14.3	2.6	62.9	25.0	10.3	1.8
25–34 years	31.3	44.0	16.9	7.7	34.6	42.3	15.5	7.5	51.2	32.3	11.6	4.9	57.7	29.5	9.1	3.7
35–44 years	27.1	46.7	17.1	9.1	29.9	46.4	15.4	8.3	42.8	39.5	12.5	5.2	55.2	32.8	8.2	3.8
45–54 years	22.8	46.0	20.6	10.7	26.5	44.9	19.0	9.6	41.3	37.3	15.3	6.1	52.9	31.4	10.4	5.2
55–64 years	22.1	42.5	23.7	11.7	23.3	43.0	21.5	12.3	33.8	38.2	20.4	7.6	46.4	33.0	13.7	6.9
More than 64 yrs	18.4	44.0	22.5	15.1	20.6	42.9	19.9	16.6	32.8	39.6	17.0	10.6	41.3	37.6	12.8	8.4
Average	26.0	44.7	19.2	10.1	28.8	43.7	17.5	10.0	32.8	39.6	17.0	10.6	52.7	32.0	10.3	5.0

Source: AWSC/KNBS Baseline Household Survey on Food Security, June 2013.

The results in Table 15 reveal that the incidence, depth and severity of food insecurity were higher among families with large household sizes than among those with small household sizes. For example, 58.3 per cent of households with 1–3 members never went to sleep hungry while 41.1 per cent of households with more than 6 members never went to sleep hungry. Only 3.8 per cent of household with 1–3 members went to sleep hungry while, almost double that number – 7.4 per cent of households with more than 6 members, always went to sleep hungry. This indicates a direct negative co-relation between household size and food insecurity.

2.3.8 Hunger Indicators by Age group of the Household Head

The age of the head of the HH was considered an important variable in determining a HH's food security. The age of the HH head was broken further into broad age groups and the results cross-tabulated and put into the subgroups, starting with children of the age of 14 years and below, the other groups are spaced at a 10 year interval up to 64 years. The last group, representing the elderly comprised of HHs above 65 years of age. Table 16 presents the overall/nation level results of this investigation.

The findings indicates that households headed by persons comprising of children below age 14 years and the elderly above 64 years, were the most food insecure as compared to those in the age brackets of 15–24 and 25–34 years since those in the 0–14 years and those over 55 years had higher percentages saying that they were always hungry in answer to most of the questions in the hunger module. Some children aged between 12–14 years were household heads due to early marriages, and some assuming the role of heads of household upon the death of their parents; hence, they were more vulnerable to food insecurity because they had little capacity to produce or access other sources of livelihood such as employment and/or business/trade. On the other hand, household heads in the age group of 15–34 years are stronger (youthful) and probably have better education which enables them to engage in various productive activities. Hence, they are more food secure than those in the age bracket of 0–14 years. To some extent, there is an inverse correlation between age of the head of the household and food security. For instance, the household heads in the age groups of 35–44, 45–54 and 55–64 years and more than 64 years are more food insecure than those in the age brackets of 15–24 and 25–34 years. This could be attributed to the fact that the youth have a greater productivity potential. Household heads in the age bracket of 55–64 years and those that are more than 64 years are the most food insecure and their vulnerability to food insecurity is not surprising when considered in the context of life for older adults. Overall, HHs headed by older persons above 64 years, were the most vulnerable to food insecurity, among those who responded that they were always food insecure to modules 1–6. They were also the second most insecure HHs in the responses to modules 7 and 8 where 11.1 per cent of HHs headed by children below age 14 years were always food insecure.

2.4 Food Security Score for Kenya

The food score is derived from the research findings. The food security measurement method has been adapted for use in Kenya (see section on methodology under conceptual framework).

The food security baseline survey asked one adult respondent in each household a series of questions about experiences,

practices, and behaviours of household members that indicate food insecurity, such as worrying that they may not have enough food, cutting the size of meals because there was no enough food, or going to sleep hungry because there was no food. The food security status of the household was assigned based on the number of food-insecure conditions reported.

Out of 4,129 households surveyed, over 98 per cent responded to all questions above. Twenty seven per cent of the households did not worry that they would not have enough food, 44 per cent did sometimes worry, 17 per cent often worried while 13 per cent always worried that they would not have enough food (Table 17).

Twenty one per cent of the household's surveyed are able to eat the kinds of foods they prefer, while 12 per cent are always not able to eat the kinds of foods they prefer because of lack of resources. Thirty eight per cent of household are able to access foods of their choices in the market while 9 per cent eat limited varieties of foods due to lack of choices in the market. Twenty two per cent of households eat food they prefer, while 11 per cent always eat what they do not prefer because of lack of resources to obtain other types of foods.

Twenty six per cent of households interviewed have enough food to eat every day, while 10 per cent of the households eat smaller meals in a day for lack of resources to obtain enough. Twenty eight per cent of the total households studied had never eaten fewer meals in a day for lack of enough food, while 10.2 per cent always ate fewer meals in a day because of lack of enough food.

Table 17: Percentage Distribution of Household Responses to the Food Security Questions

Question	Never	Sometimes	Often	Always
	per cent	per cent	per cent	per cent
E01: Did you worry that your household would not have enough food?	26.6	43.6	17.1	12.6
E02: Were any household member not able to eat the kinds of foods you preferred because of lack of resources?	21.4	45.4	21.1	12.1
E03: Did any household member eat a limited variety of foods due to lack of choices in the market?	38.3	38.1	15.0	8.6
E04: Did any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?	22.4	46.0	20.7	10.9
E05: Did any household member eat smaller meals in a day because of lack of resources to obtain enough?	25.6	44.6	19.6	10.2
E06: Did any household member eat fewer meals in a day because there was not enough food?	28.4	43.5	17.8	10.2
E07: Was there a time when there was no food at all in your household because there were not enough resources to go around?	42.1	36.9	14.6	6.5
E08: Did any household member go to sleep at night hungry because there was not enough food?	52.1	32.1	10.6	5.2

On the issue of lack of enough resources, 7 per cent of households are always without food, while 20 eight per cent have never been without food for lack of resources. Five per cent always go to sleep at night hungry for lack of enough food, while 52 per cent have never gone to sleep hungry for lack of enough food (Table 17).

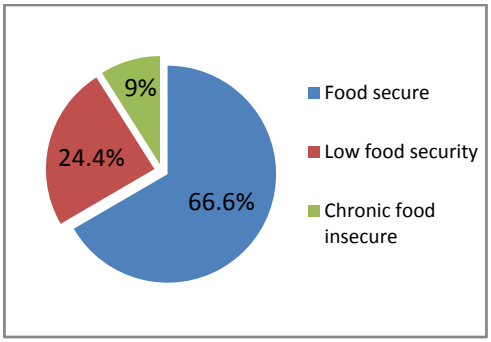
2.4.1 Food Security Status

The food security status of each interviewed household was determined by the total score of the food insecure conditions and that behaviors the household reported. Food insecure conditions are indicated by responses of "often" or "always" to a subset (questions E01, E06, E07 and E08) of the questions above. Households were classified as food secure if the total score of the four questions ranged from 4–8, low food security, if it ranged from 9–12, and chronic food insecure if total score was 13–16 points.

2.4.1.1 National Food Security Score

Four thousand and sixty households surveyed responded to the four questions selected to compute food security score for Kenya. Based on the food security score, Kenya is about 67 per cent food secure. Twenty four per cent of households suffer from low food insecurity and only 9 per cent suffer from chronic food insecurity (Table 18).

Figure 2: National Food Security Score



2.4.1.2 Agro-ecological Zone

Kenya has seven agro-ecological zones:

Urban (U), Upper Highland (UH), Lower highland (LH), Upper Midlands (UM), Lower Midlands (LM), Inland Lowlands (IL) and Coast Lowlands (CL). The Upper highland zone is the most household food secure based on the new score with over 85 per cent of the household food secure and only 2 per cent chronic food insecure as indicated in Table 19.

Lower Highlands, Urban areas and Lower Midlands zones are fairly food secure with over 69 per cent of the households being food secure. However, 10 per cent of households in Lower Highlands, 9 per cent in urban and over 6 per cent in Lower Midlands zones suffer from chronic food insecurity.

Households in the other agro-ecological zones; Upper Midlands, Inland Lowlands, Coastal Lowlands suffer elevated food insecurity. Less than 47 per cent of households in Coastal Lowlands,

Table 18: National Food Security Score

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Food secure	2702	65.4	66.6	66.6
	Low food security	991	24.0	24.4	91.0
	Chronic food insecure	367	8.9	9.0	100.0
	Total	4060	98.3	100.0	
Missing	System	69	1.7		
Total		4129	100.0		

This is shown in Figure 2.

Table 19: Agro-ecological Zone Food Security Score

	Food Secure (per cent)	Low Food Security (per cent)	Chronic Food Insecure (per cent)	N
Urban	69.4	21.5	9.0	432
Upper Highlands (UH)	85.5	12.1	2.4	620
Upper Midlands (UM)	58.8	30.7	10.5	600
Lower Highlands (LH)	70.0	20.3	9.8	400
Lower Midlands (LM)	69.4	24.2	6.4	1215
Inland Lowlands (IL)	51.1	29.8	19.1	581
Coastal Lowlands (CL)	46.9	43.1	10.0	209
Total	66.6	24.4	9.0	4057

Table 20: County Food Security Score

County	Food Secure (per cent)	Low Food Security (per cent)	Chronic Food Insecure (per cent)	N
Baringo	75.4	16.1	8.5	211
Bomet	83.7	14.8	1.5	196
Bungoma	65.4	30.8	3.8	211
Elgeyo Marakwet	76.0	20.2	3.8	208
Isiolo	47.6	37.7	14.6	212
Kajiado	80.7	17.9	1.4	207
Kiambu	84.2	15.3	.5	215
Kirinyaga	94.8	4.7	.5	192
Kisii	33.8	41.9	24.2	198
Kwale	46.9	43.1	10.0	209
Laikipia	75.7	16.8	7.6	185
Makueni	66.5	26.1	7.3	218
Migori	41.7	37.5	20.8	168
Mombasa	65.1	28.4	6.4	218
Nairobi	73.8	14.5	11.7	214
Nakuru	86.4	10.9	2.7	221
Nandi	65.1	23.3	11.6	215
Taita Taveta	74.0	20.0	6.0	215
Trans Nzoia	55.9	36.6	7.5	186
Turkana	23.4	37.3	39.2	158
Average	66.6	24.4	9.0	4060

Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

51 per cent in Inland Lowlands and 59 per cent in Upper Midlands are food secure.

Forty three per cent of households in Coastal lowlands often experience food insecure conditions, 19 per cent of households in Inland Lowlands, and over 10 per cent in Upper Midlands zone suffer from chronic food insecurity.

2.4.1.3 County Food Security Score

Turkana, Kisii and Migori are the most food insecure counties in Kenya. Thirty nine per cent of households in Turkana are chronic food insecure, followed by 24 per cent in Kisii and 20 per cent in Migori. Only 23 per cent of households in Turkana County are food secure, 34 per cent in Kisii and 42 per cent in Migori (Table 20).

Kirinyaga, Nakuru, Kiambu and Bomet are the most food secure counties in Kenya. Kirinyaga is 95 per cent, Nakuru 86 per cent, while Kiambu and Bomet are 84 per cent food secure. Only 3 per cent of households in Nakuru are chronic food insecure, less than 2 per cent in Bomet, and less than one per cent in Kirinyaga and Kiambu counties. Only 1 per cent were chronic food insecure. Seventy five per cent of 211 households surveyed in Baringo County are food secure, 16 per cent are low food secure while 9 per cent are chronic food insecure.

Turkana is the most food insecure county in Kenya. Thirty nine per cent of the 159 households surveyed are chronic food insecure, while 37 per cent are low food insecure. Kirinyaga is the most food secure county in Kenya with 95 per cent of the 192 household interviewed reporting food secure and only 1 per cent were chronic food insecure. Seventy five per cent of 211 households surveyed in Baringo county are food secure, 16 per cent are low food secure while 9 per cent are chronic food insecure.

2.5 Food Storage and Preservation

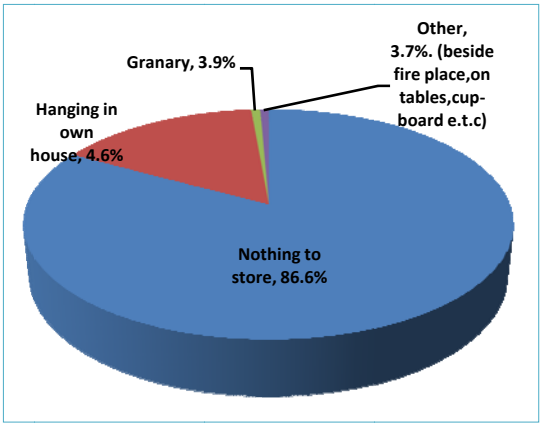
2.5.1 Food Storage Methods

Post harvest food storage is an important aspect of food security since most cereals, including maize, are produced on a seasonal basis, and in many places there is only one harvest in a year, which may be subject to failure. Seasonal production of food crops such as cereals, fruits and vegetables leads to fluctuating supply at the international, regional, national and HH levels. The fluctuating supply of these foodstuffs is in sharp contrast with their stable demand throughout the year. Therefore, storage is an important aspect of food security as it ensures availability of food throughout the year, reduces wastage, and offers preparedness for catastrophes and emergencies relating to food security.

2.5.2 Storage of Perishable Food

Given the significance of efficient and effective food storage in food security, the study investigated the various methods that the respondents used in storing perishable foods such as roots, tubers, fruits, vegetables, meat and milk. Figure 3 indicates the methods used by the respondents to store perishable foods.

Figure 3: Storage of Perishable Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

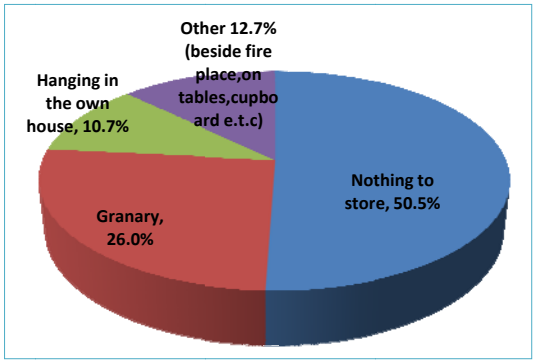
The study found that majority of those interviewed – 86.6 per cent had no perishable foods to store. Only 13.4 per cent of the HHs who had some perishable foods, including some vegetables and fruits, milk and meat to store predominantly used

traditional methods. The findings to indicate that 4.6 per cent stored the produce by hanging it in their own houses, 3.9 per cent stored in granaries while the remaining 3.7 per cent used other methods which include storing food beside the fire place, cupboard or on tables, among others.

2.5.3 Storage of Non-perishable Food

The study investigated the various methods that were used to store excess non-perishable foods such as maize, beans and other cereals. Figure 4 indicates the various storage methods the respondents said their HHs were using.

Figure 4: Storage of Non-Perishable Food by the Respondents



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

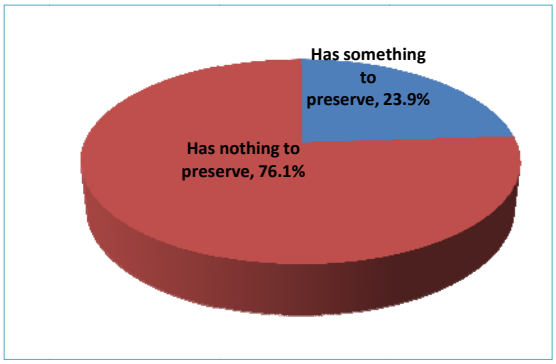
The findings reveal that 26 per cent of the respondents use granaries to store non-perishable foods, 10.7 per cent hang foodstuffs inside their houses and 12.7 per cent use other methods while 50 per cent respondents had nothing to store. These findings reveal that many people use traditional methods of food storage that are unreliable because they are either ignorant of the contemporary food storage mechanisms and/or cannot afford modern food storage equipment or facilities. It also demonstrates that many people have not adopted post-harvest technologies in food storage. Moreover, the research findings reveal that 50.5 per cent of the respondents did not have food to store. This implies that most households only had little food for immediate consumption and nothing to store for future use. This illustrates a high level of food insecurity for such households with nothing to store so soon after the harvesting season, which is a manifestation of food insecurity. This situation is partly attributed to poor crop production and limited capacity to buy and store enough food for future consumption. Lack of food to store is also caused by post-harvest losses before storage among other constraints.

2.5.4 Preservation of Perishable Food

Having something to preserve is an indicator of HH food security. Figure 5, presents the findings of HH that had or did not have any perishable foods to preserve.

The study found that 23.9 per cent of the respondents had some perishable food to preserve while 76.1 per cent did not have perishable foods to store.

Figure 5: Preservation of Perishable Food



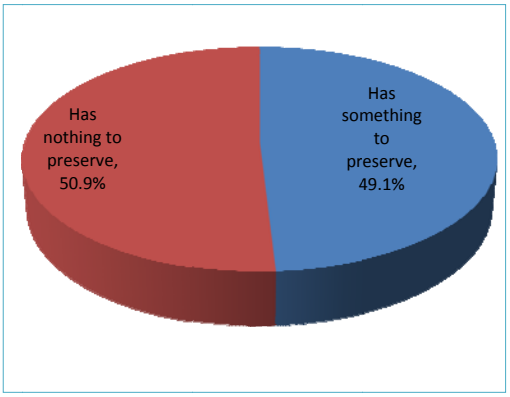
Source: AWSC/KNBS Baseline Survey on Food Security June 2013.

The high percentage of respondents not having perishable foods to preserve may be attributed to lack of effective food preservation methods as was noted by some respondents. For instance, in Mombasa and Kwale Counties, the respondents stated that due to lack of preservation and value addition for perishable foodstuffs they often abandon fruits such as mangoes and tomatoes to rot in the farms. Thus, farmers incur heavy losses during harvesting seasons for fruits and middlemen exploit them by buying their produce at very low prices. Value addition techniques should therefore be encouraged at the village level to prevent wastage of perishable food and to create employment opportunities. Moreover, value addition will enable farmers to get better returns from their produce.

2.5.5 Preservation of Non-Perishable Food

The study investigated whether the target HHs had excess non-perishable foods, such as cereals, to preserve. Figure 6 illustrates the proportion of the households that had or did not have non-perishable foods to store.

Figure 6: Preservation of Non-perishable Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

The study reveals that half (50.9 per cent) of the respondents had no non-perishable foods to preserve while the other half had. Although there are many challenges in food preservation such as attacks by pests and diseases, high cost of pesticides, change in taste of stored food among others, the fact that half of the respondents did not have non-perishables to preserve indicates that there is lack of food sustainability, which is an indicator of food insecurity in the country.

2.6 Main Sources of Accessing Food

Households have sustainable livelihoods that help them to cope with and recover from the shocks and stress of food supply (high and low food surplus) and can maintain their capabilities and assets without undermining their natural environment. Sustainable livelihood refers to people's capacity to generate and maintain their means of living, enhance their well-being and that of future generations (International Federation of Red Cross and Red Crescent Societies, 2006).

Table 21 indicates the households' main source of accessing food, 30 days prior to the date that the questionnarie was administered.

The study found that own production was the main source of accessing food and Elgeyo. Marakwet had the highest proportion at 79.6 per cent of households, followed by Migori at 70.6 per cent and Bomet at 70.1 per cent, Nairobi, Mombasa and Turkana with 2.3, 5 and 8.2 per cent respectively, had the lowest proportion of those whose main source of livelihood was own production.

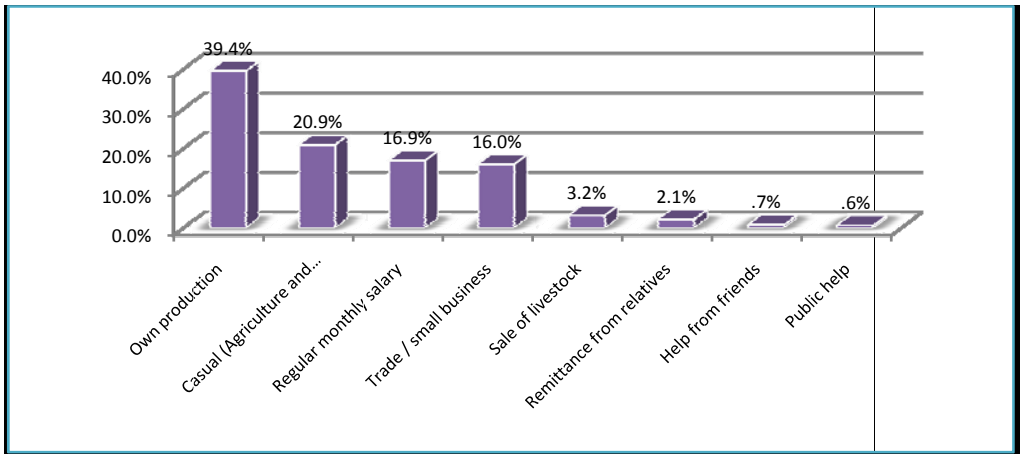
Mombasa, Nairobi and Kiambu, with 39.7 per cent, 39 per cent and 29.6 per cent respectively, had the largest proportion of

Table 21: Main Source of Accessing Food for your Household

What has been the FIRST main source of accessing food for your household over the previous 30 days?									
County	Own product-ion	Sale of lives-tock	Trade/ small busi-ness	Regular monthly salary	Casual (agricult ure and non-agricul-ture labor)	Remitta nce from relatives	Public help	Help from friends	Others
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	
Baringo	56.1	8.5	4.7	10.8	15.6	1.9	0.9	1.4	0.0
Bomet	70.1	2.0	9.1	7.6	10.2	.5	.5	0.0	0.0
Bungoma	51.4	.9	16.5	10.4	18.9	.9	.5	.5	0.0
E. Marakwet	79.6	0.0	4.3	4.3	7.1	2.4	0.0	.9	1.4
Isiolo	21.2	17.5	22.6	17.5	13.7	1.4	4.7	1.4	0.0
Kajiado	19.7	7.2	21.2	27.4	23.6	.5	.5	0.0	0.0
Kiambu	28.6	0.0	20.2	29.6	16.9	4.2	0.0	.5	0.0
Kirinyaga	57.8	.5	14.6	15.6	9.9	1.0	0.0	0.0	.5
Kisii	31.5	3.0	12.2	3.6	46.2	2.0	0.0	1.5	0.0
Kwale	22.9	3.8	22.4	18.1	29.0	2.9	0.0	1.0	0.0
Laikipia	36.8	.5	13.0	22.2	20.5	3.2	1.6	2.2	0.0
Makueni	45.5	1.8	12.7	18.2	17.3	3.6	.5	.5	0.0
Migori	70.6	2.9	9.4	3.5	11.2	.6	.6	1.2	0.0
Mombasa	.5	.5	27.9	39.7	26.9	4.6	0.0	0.0	0.0
Nairobi	2.3	.5	23.0	39.0	28.2	5.6	.5	.9	0.0
Nakuru	36.4	0.0	13.6	25.5	23.6	.9	0.0	0.0	0.0
Nandi	67.5	.9	8.5	4.7	17.0	1.4	0.0	0.0	0.0
Taita Taveta	51.4	.9	13.3	16.1	17.0	1.4	0.0	0.0	0.0
Trans-Nzoia	32.2	2.2	16.9	10.9	33.9	1.1	1.1	1.6	0.0
Turkana	8.2	11.3	36.5	5.7	33.3	1.9	1.9	1.3	0.0
Average	39.4	3.2	16.0	16.9	20.9	2.1	.6	.7	.1

Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 7: Main Source of Accessing Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

households, whose first main source of accessing food over previous 30 days prior to the survey, was a regular monthly salary.

Figure 7 indicated the overall average of the respondent's main source of accessing food in the past 30 days, prior to the interview.

The findings of this study as revealed in Figure 7, indicate that the sources of livelihood in Kenya, in order of magnitude are own production at 39.4 per cent, casual labor, 20.9 per cent, regular monthly salary, 16.9 per cent, trade/small businesses at 16 per cent. Sale of livestock, remittance from relatives, help from friends and the public were main sources of livelihood for 3.2, 2.1, 0.7 and 0.6 per cent of households respectively. These findings indicate that there are various sources of livelihood, with own production in agriculture as the most dominant source, being reported by 39.4 per cent of households. This conforms to other literature, such as Vision 2030, which states that agriculture is the mainstay of the economy and there "are more than 5 million small holders engaged in different types of agricultural activities in the country" and it contributes approximately 24 per cent of the GDP (Republic of Kenya, 2013).[19] Nonetheless, casual labor, trade and monthly salary are other main sources of accessing food in urban counties such as Nairobi and Mombasa.

Although agriculture is the main source of livelihood, its growth has been hindered over the years by a myriad of constraints. The findings of the baseline survey on food security have revealed that there are serious challenges which should be dealt with if the sector is to become competitive and boost food security. These challenges include, but are not limited to the following:

i) Water for irrigation and domestic use;
ii) Provide affordable farm inputs like improved seeds, fertilizers, and pesticides;
iii) Access to cheap credit;
vi) Storage facilities and creation of strategic food reserves, feed and water reserves;
v) Value addition of agricultural produce involving the private sector (Public Private Partnership);
vi) Provision of adequate and ready markets for agricultural produce;
vii) Creation of employment;
viii) Development and improvement of infrastructure, especially roads;
ix) Capacity building on agriculture/training on better farming methods as well as the extension services;
x) Land reform for equitable land distribution;
xi) Stringent laws and campaigns against alcohol and drug abuse;
xii) Promote science, technology and innovation;
xiii) Change of attitude and eating habits;
xiv) Gender mainstreaming in all food security programmes
xv) Creation of a conducive business environment;
xvi) Provision of security and
xvii) Full devolution of power and resources.

According to information from Key informants and FGDs, farming is the main source of livelihood, an increasing challenge of food and nutrition insecurity in Kenya is the declining agricultural production. Measures to improve food security in the country should aim at promoting crop production, which most citizens depend on as a source of livelihood. Growth in the agricultural sector is therefore expected to

[19] Republic of Kenya (2013), Economic Survey, KNBS, Government Printer, Nairobi.

have a greater impact on a larger section of the population than any other sector.

2.7 Challenges to Food Security

Study participants cited various challenges that contribute to food insecurity in their households and in their regions. Table 22 indicates the main causes of food insecurity report by opinion leaders from various counties.

The question on the main causes of food security was open ended; 95 per cent of opinion leaders from the counties, cited low unreliable rainfall as a major factor. It is only in Mombasa County where no opinion cited land size as a major cause of food insecurity. The other cause of food insecurity, most cited by opinion leaders from 90 per cent of the counties, was small uneconomical pieces of land. Mombasa, Kisii and Kirinyaga Counties had more than a half of households citing small uneconomical pieces of land as a cause of food insecurity.

The question on the main causes of food security was open ended, of which 95 per cent of opinion leaders from the counties, cited low unreliable rainfall as a major factor. It is only in Mombasa County, that no opinion leaders cited land size as a major cause of food insecurity. The other cause of food insecurity most cited, by opinion leaders

Table 22: Opinion Shapers' Views on Causes of Food Insecurity in Various Counties

County	Poor soils (per cent)	small/ uneconomical pieces of land (per cent)	Low/unreliable rainfall (per cent)	High cost/lack of inputs (per cent)	Lack of market (per cent)	Lack of sufficient funds/ unemployment (per cent)	High/ exorbitant prices of food items in market (per cent)	Lack of agricultural education (per cent)
Kiambu	8.3	20.8	8.3	12.5	4.2	20.8	4.2	8.3
Nairobi	0	22.2	11.1	0	0	33.3	11.1	0
Makueni	7.7	23.1	53.8	7.7	0	7.7	0	0
Kajiado	5.6	16.7	38.9	5.6	0	11.1	0	0
Taita Taveta	0	13.3	46.7	0	0	0	6.7	5.6
Kirinyaga	0	45.5	27.3	27.3	0	0	0	0
Bungoma	4.5	27.3	13.6	22.7	0	4.5	4.5	6.7
E. Marakwet	0	22.2	22.2	11.1	0	0	16.7	16.7
Baringo	17.6	17.6	11.8	11.8	0	11.8	0	17.6
Nandi	8.3	25.0	16.7	16.7	16.7		0	8.3
Nakuru	0	0	20.0	0	0	40.0	20.0	0
Trans Nzoia	0	38.5	15.4	15.4	0	7.7	7.7	7.7
Turkana	0	11.8	29.4	5.9	5.9	29.4	0	0
Bomet	4.5	13.6	27.3	22.7	4.5	0	0	4.5
Migori	5.3	21.1	15.8	21.1	5.3	0	0	0
Kisii	0	57.1	14.3	42.9	0	14.3	0	42.9
Mombasa	0	63.6	0	0	0	63.6	18.2	27.3
Kwale	4.3	4.3	30.4	13.0	4.3	17.4	0	8.7
Isiolo	0	4.3	30.4	0	8.7	4.3	0	0
Laikipia	0	0	35.7	14.3	0	7.1	0	7.1
Average	3.3	22.4	23.5	12.5	2.5	14.4	4.5	8.1

Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

from 90 per cent of the counties, was small uneconomical pieces of land. Mombasa, Kisii and Kirinyaga Counties had more than a half of households citing small uneconomical pieces of land as a cause of food insecurity.

2.8 Gender Perspectives in Food Security: Findings from Key Informants

2.8.1 Introduction

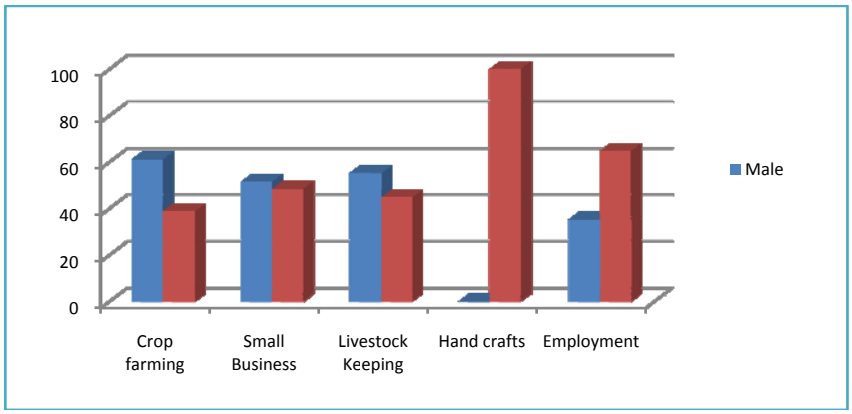
There is a strong relationship between gender and food security due to socially entrenched roles and norms. These define the different roles, sometimes complimentary, that are played by women and men in the food chain and guaranteeing Household (HH) and community food security. While men grow mainly field crops, women are usually responsible for growing and preparing most of the food consumed in the home and raising small livestock, which provides protein. It is because of this gendered approach to food security that led the researchers to gather and document information from the male and female key informants on the various issues covered in this study. This section presents the findings from the male and female key informants on identified issues in food security.

2.8.2 Main Livelihood Activities

There is a close linkage between food security and source of livelihood. This is because the means of livelihood determines the HH's food security either through own production or purchasing from the market. The sustainability of the livelihood activities have a direct impact of the sustainability of the HH's food security. The findings on the main livelihood activities are presented in Figure 8.

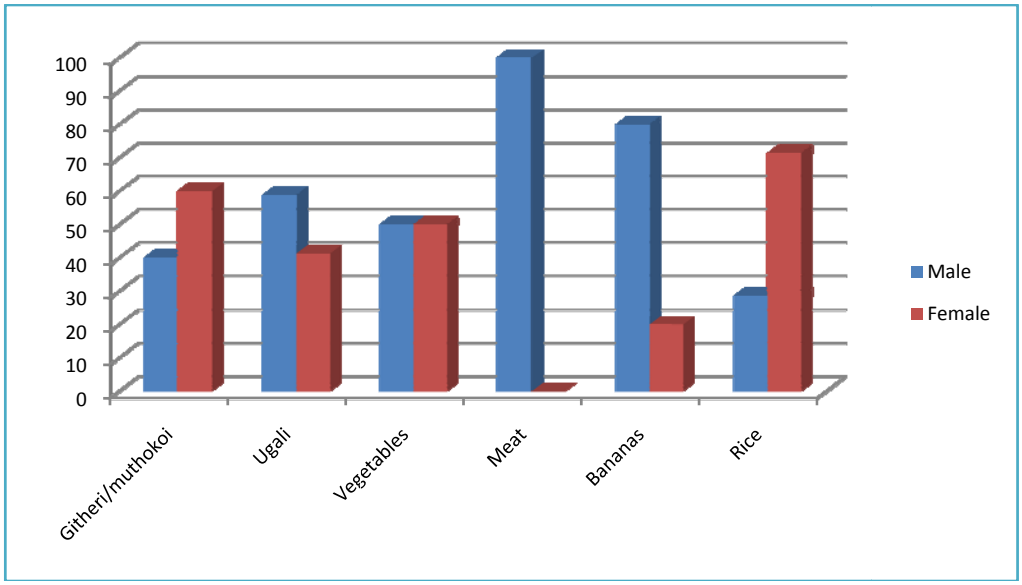
The findings reveal a distinct division of labor between men and women in regard to the main livelihood activities among the key informants. The main livelihood activities among women were: hand crafts at 100 per cent compared to 0 per cent among their male counterparts and; employment at 65 per cent compared to 35 per cent among their male counterparts. Among the men, main livelihood activities were crop farming and livestock keeping at 61.2 and 55.2 per cent respectively. The difference in the proportion of men and women engaging in small business was minimal at 51.5 and 48.5 per cent, for men and women, respectively.

Figure 8: Main Livelihood Activities



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 9: Main Food Consumed in the 20 Counties



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013

2.8.3 Main Food

There are different food consumption patterns among men and women of different ages. These are often determined by cultural traditions which dictate what is consumed by men and women of different ages and status. Figure 9 presents the research findings on the main food consumed according to the male and female key informants.

There is an apparent difference in the main food consumed among men and women. The main foods among the men were meat at 100, bananas at about 79 per cent and ugali at 58.8 per cent. On the other hand, the main foods among the women were rice at 71 per cent and; *githeri/muthokoi* (a mixture of maize and beans) at 60 per cent. Vegetables were equally a main food for both men and women. The main meal is eaten with an accompaniment. Figure 10 presents the findings on the accompaniment to the main meal, among the men and women.

The findings reveal that the accompaniment to the main meal varied among men and women. For the men, the main accompaniments included ugali at 61.9 per cent, meat at about 57.6 per cent and, vegetables at 57.6 per cent. The main accompaniments for the women were tubers at about 65 per cent and vegetables at 42.4 per cent. An equal proportion of men and women had milk as an accompaniment to the main meal (Figure 10).

2.8.4 Challenges in Engaging in Livelihood Activities

The challenges to the livelihood activities depend on the roles played by men and women. Table 23 presents the responses by male and female key responses in regard to the challenges in engaging in livelihood activities.

The men cited drug and alcohol abuse, corruption, poor farming methods and lack of storage facilities, all at 100 per cent, and

small/uneconomical pieces of land at 80 per cent, as key challenges to engaging in livelihood activities. The other major challenges cited by the men related to environmental factors, including floods at 66.7 per cent and unreliable rainfall/drought at 61.2 per cent.

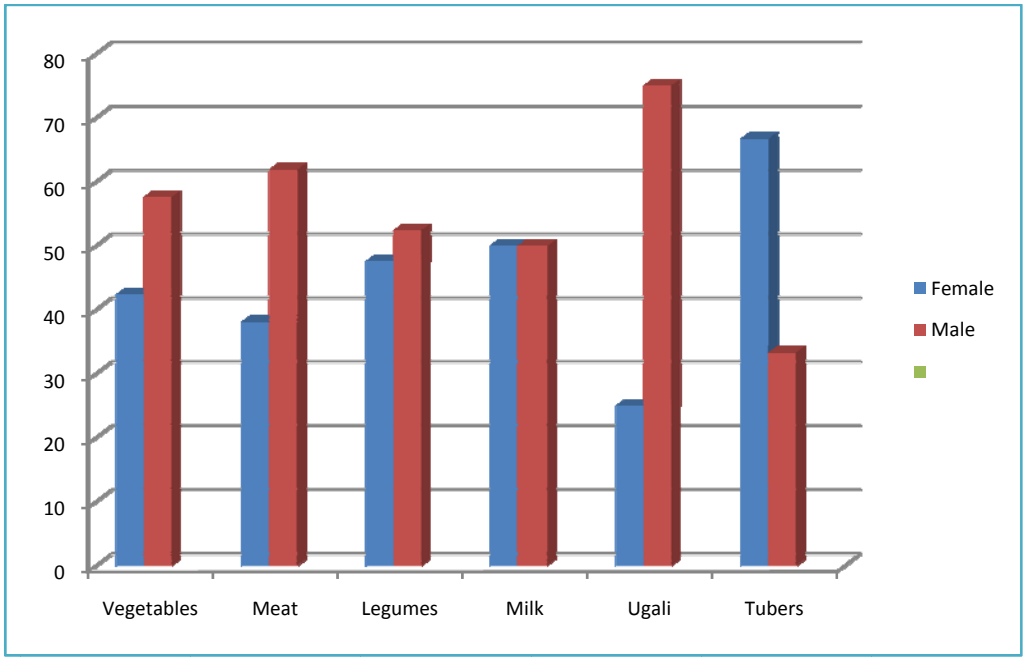
The only challenge at 100 per cent among the women was disability. The other more pronounced challenges included poor soils at 75 per cent, unemployment and poor infrastructure at 57.1 per cent each and, lack of market at 55.6 per cent. An equal number of men and women considered human-wildlife conflict a challenge to engagement in livelihood activities.

2.8.5 Access to Food

Figure 11 illustrates the responses in regard to access to food among the male and female respondents.

The findings reveal that men had better access to food, through the various options, compared to their women. Approximately 59.4 per cent and 55.6 per cent of the men accessed food through own production and aid/support compared to 40.6 per cent and 44.4 per cent among their women. The gap was slightly smaller among the men and women who accessed food through purchase, standing at 53.3 per cent for men and 46.7 per cent for women (Figure 11).

Figure 10: Accompaniment of the Main Food as Perceived by the Respondents



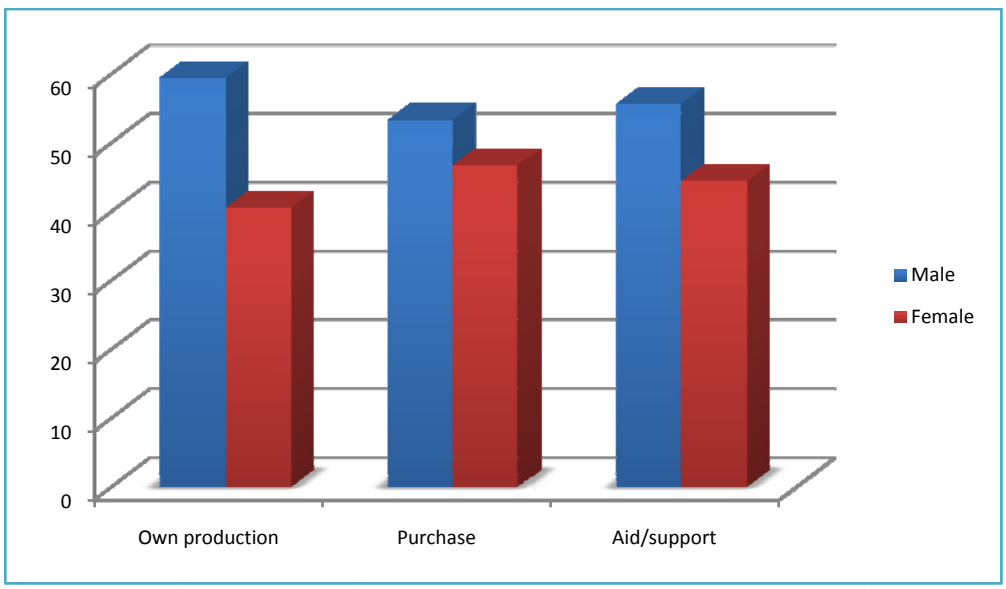
Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Table 23: Challenges in Engaging in Livelihood Activities

Challenges	Sex		Total
	Female (per cent)	Male (per cent)	
Unreliable rainfall/drought	38.8	61.2	100.0
Lack of finances	44.8	55.2	100.0
Lack of inputs/high cost of inputs	45.0	55.0	100.0
Small/uneconomical pieces of land	20.0	80.0	100.0
Insecurity	40.0	60.0	100.0
Lack of market	55.6	44.4	100.0
Unemployment	57.1	42.9	100.0
Poor soils	75.0	25.0	100.0
Pests and diseases	41.7	58.3	100.0
Floods	33.3	66.7	100.0
Corruption	0.0	100.0	100.0
Disability	100.0	0.0	100.0
Poor farming methods	0.0	100.0	100.0
Poor infrastructure	57.1	42.9	100.0
Lack of storage facilities	0.0	100.0	100.0
Human-wildlife conflict	50.0	50.0	100.0
Drug and alcohol abuse	0.0	100.0	100.0
Average	43.8	56.2	100.0

Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 11: Access to Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

2.8.6 Food Adequacy

The perception on food adequacy among men and women depends on the roles played by the different genders in regard to food provision. The responses by the male and female informants are presented in Figure 12.

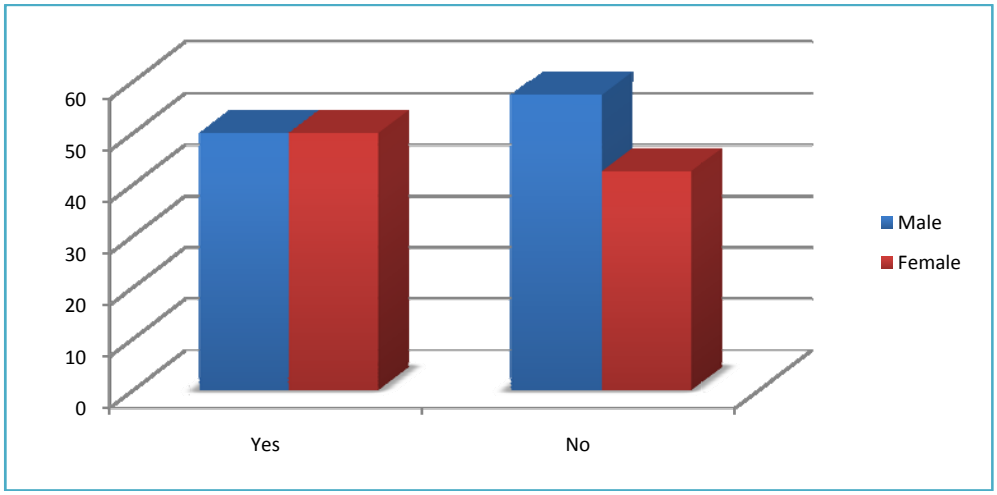
The findings reveal that an equal proportion of men and women felt that there was adequate food. More men, however, at 57 per cent compared to women at (42.6) approximately 43 per cent, stated their area had inadequate food.

2.8.7 Coping Strategies

During times of food scarcity, individuals adopt diverse copying strategies. The study embarked on investigating whether there were any difference between the copying strategies adopted by men and women. The findings on the strategies adopted by men and women are presented in Figure 13.

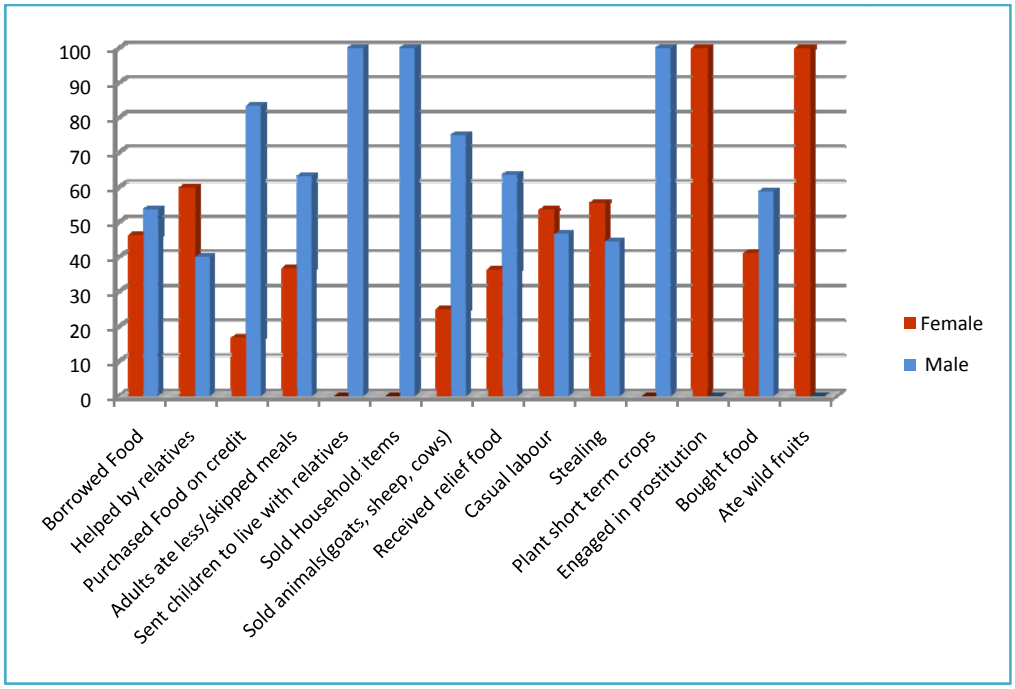
The findings reveal that, during periods of food shortages, men and women adopt different coping strategies. The main strategies adopted by women at 100 per cent each include: engaging in prostitution, and eating wild fruits while a similar proportion of the men said they plant short term crops, sell household items and, send their children to live with relatives. Other main strategies adopted by men included purchasing food on credit at approximately 82 per cent while another 74 per cent sold animals and over 50 per cent, borrowed food as a coping strategy. The proportion of women and men that engaged in casual labor so as to get food was 53.5 and 46.5 per cent respectively. About sixty per cent of women compared to 40 per cent of men were helped by relatives. The other major strategy for the women was stealing, at about 56 per cent compared to 44 per cent among men.

Figure 12: Perception of Food Adequacy by Male and Female Respondents



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 13: What Do People Do When they Don't have Adequate Food



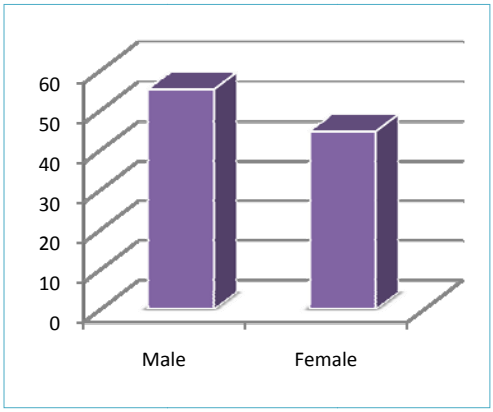
Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

2.8.8 Access to Land

The study looked at the access to land among the male and female key informants. This is because land is major resource in food production. The findings are presented in Figure 14.

The findings illustrate a large proportion of men at approximately 52 per cent compared to approximately 41 per cent of women, said that both men and women, have equal access to land.

Figure 14: Perceptions on Access to Land Among Men and Women by Key Informants



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

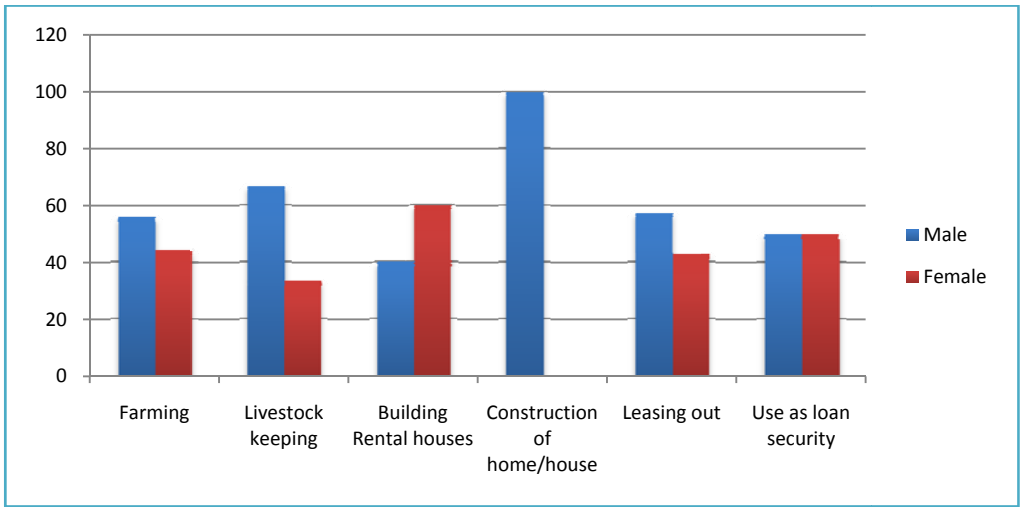
2.8.9 Land Use

There are various factors that determine land use among men and women. The study set out to investigate how men and women used land. The responses, on land use, by the male and female informants, are presented in Figure 15.

While an equal proportion of men and women cited using land as loan security, the proportions for the two genders were diverse

on all the other variables. For example 100 per cent of men used land for construction of home/house compared to 0 per cent of women using the land for the same purpose. The findings indicate more men than women, use land for the other three variables, which included livestock keeping, farming and leasing out. The only variable, where more women (60 per cent) than men (40 per cent) utilized land differently is in the building of rental houses.

Figure 15: Perceptions of Land Use by Male and Female Respondents



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

2.8.10 Availability of Markets

The informants' response in regard to availability of markets to sell produce and to buy food is indicated in Figure 16.

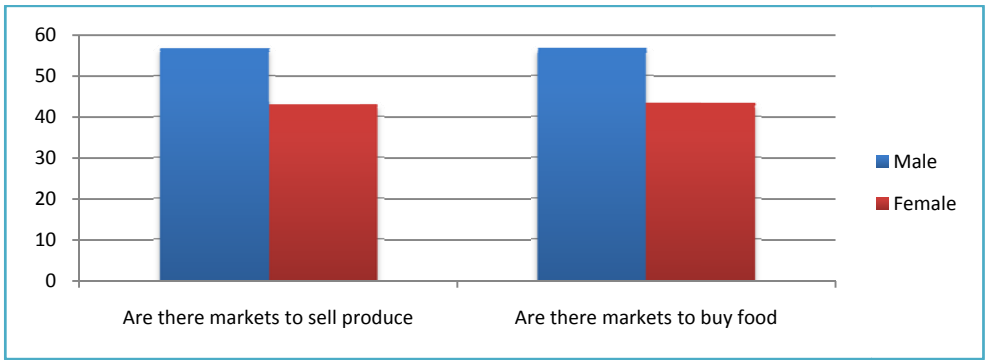
The findings reveal that a larger proportion of men than women responded on the affirmative to both questions with 56.9 per cent of men saying markets were available to sell produce and 56.7 per cent of women saying that markets were available to buy food.

2.8.11 Access to Government Food Programmes

Government food programs are some of the ways that people can have access to food during periods of food insecurity. Information from male and female key informants on this issue is indicated in Figure 17.

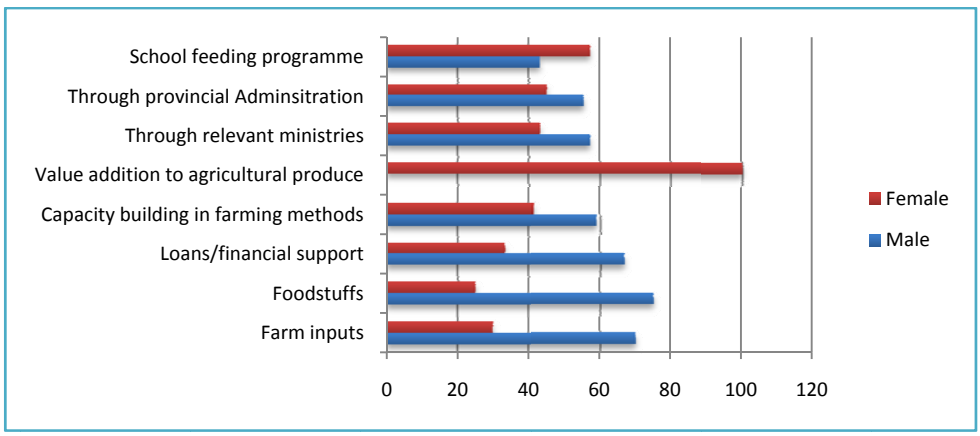
The most conspicuous finding, in figure 17, is the proportion of women, at 100 per cent compared to 0 per cent of men, who said that they received Government support in the form of value addition to agricultural produce. The largest proportion of men said that they received support in the form of foodstuffs and provision of farm inputs at approximately 75 per cent and 70 per cent, respectively. Loans/financial support at about 63 per cent and capacity building in farming methods were the other main forms of support, mainly cited by the men. On the other hand, it is only under school feeding programme where more women than men at 57.1 per cent and 42.9 per cent, respectively, received government support.

Figure 16: Perception by Men and Women Respondents on the Availability of Markets to Sell Produce and to Buy Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 17: Access to Government Food Support Programmes as Perceived by Men and Women Respondents



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

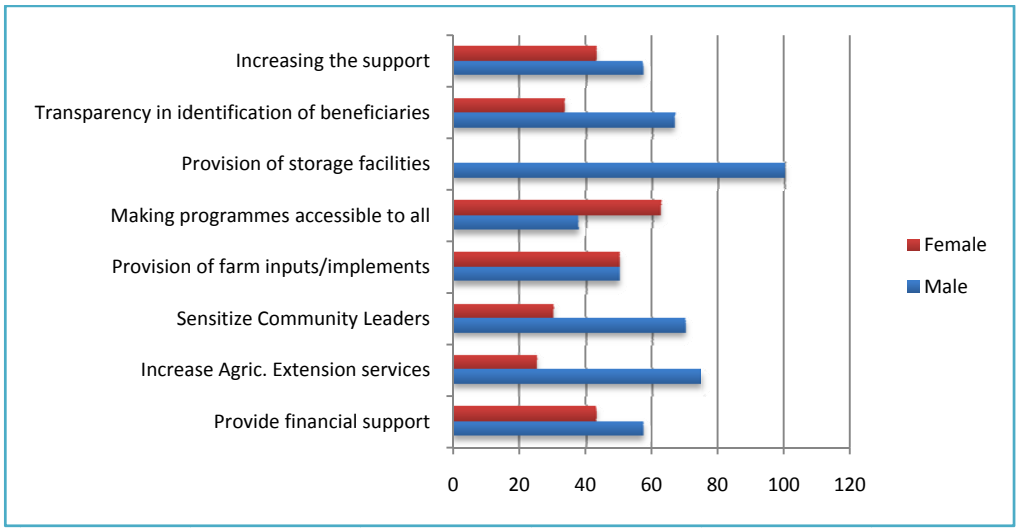
The most conspicuous finding, in figure 17, is the proportion of women, at 100 per cent compared to 0 per cent of men, who said they received Government support in the form of value addition to agricultural produce. The largest proportion of men said they received support in the form of foodstuffs and provision of farm inputs at approximately 75 per cent and 70 per cent, respectively. Loans/financial support at about 63 per cent and capacity building in farming methods were the other main forms of support mainly cited by the men. On the other hand, it is only under school feeding programme where more women than men at 57.1 per cent and 42.9 per cent, respectively, received government support.

2.8.12 Suggestions on Improving Government Food Support Programmes

The study sought recommendations of the male and female participants on how the government food support programmes could be improved. The findings on the recommendations are presented in Figure 18.

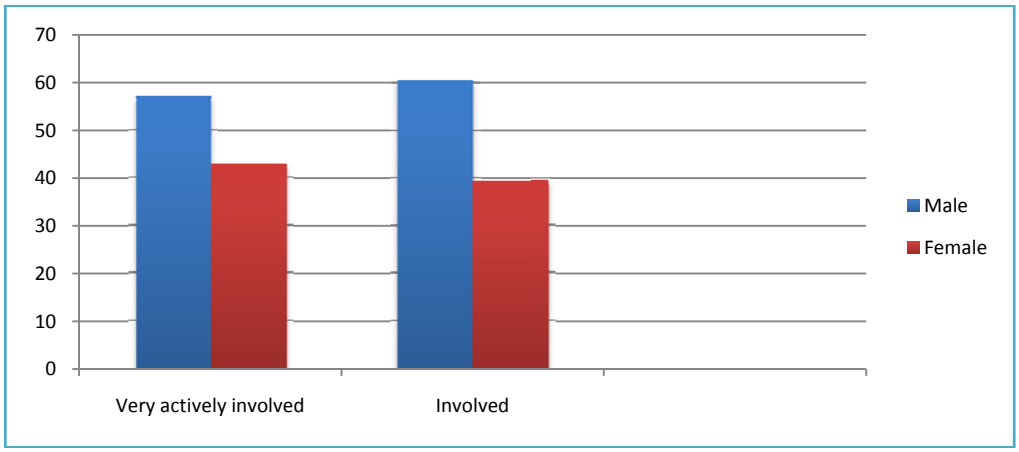
The largest proportion of men at 100 per cent compared to 0 per cent among the women, recommended the provision of storage facilities. The largest number of women at 62.5 per cent compared to men at 37.5 per cent recommended that the programmes be made accessible to all. While an equal proportion of men and women recommended provision of farm inputs/implements, the lowest proportion of women at approximately 26 per cent recommended an increase of extension services while the lowest proportion of men, at about 37.5 per cent recommended that the programmes be made accessible to all.

Figure 18: Suggestions on How Government Food Programmes Can be Improved



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 19: Level of Involvement of the Community in Ensuring Food Security



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

2.8.13 Involvement of the Community in Ensuring Food Security

Food being a critical aspect to a community's survival, the different members of the community, including men, women and children, are involved in varying degrees in ensuring food security. This study sought to capture the views of the male and female respondents on the level of community involvement in ensuring food security. The findings are presented in Figure 19.

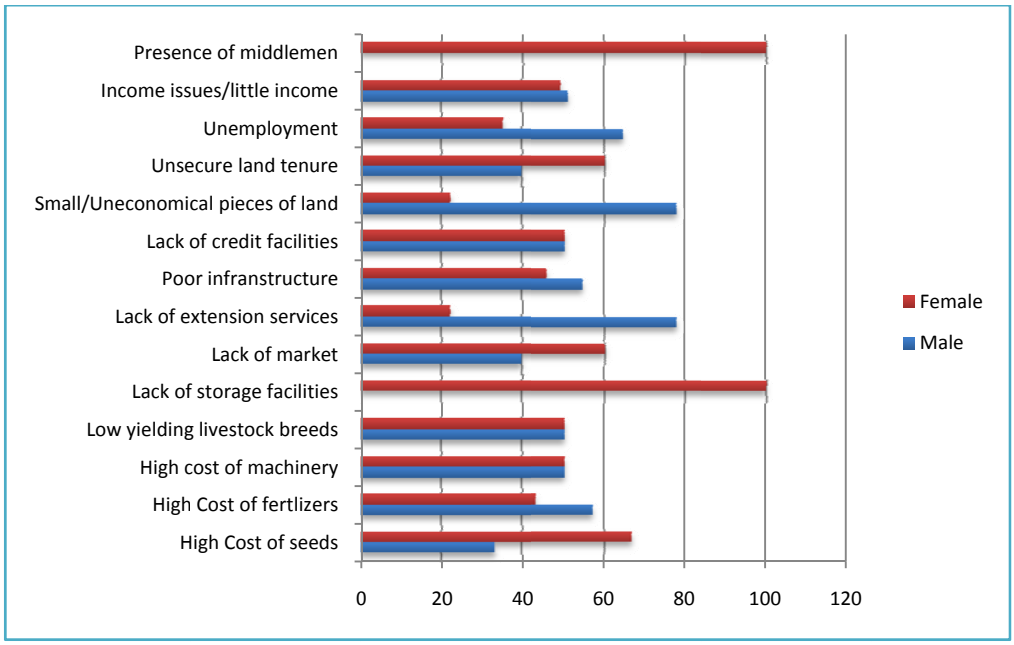
The findings show that more men at 57.1 per cent compared to 42.9 per cent of their female counterparts said the community was very actively involved in ensuring food security through doing small scale businesses, farming, retailing, working in the formal sector and so on. More men at 60 per cent compared to 40 per cent among the women, rated the community as involved in ensuring food security.

2.8.14 Economic Activities that Hinder the Achievement of Food Security

Men and women normally engage in different economic activities that have a bearing on Household (HH) food security. The study, thus gathered views from the male and female respondents on the economic factors that hinder the achievement of food security, the findings are presented in Figure 20.

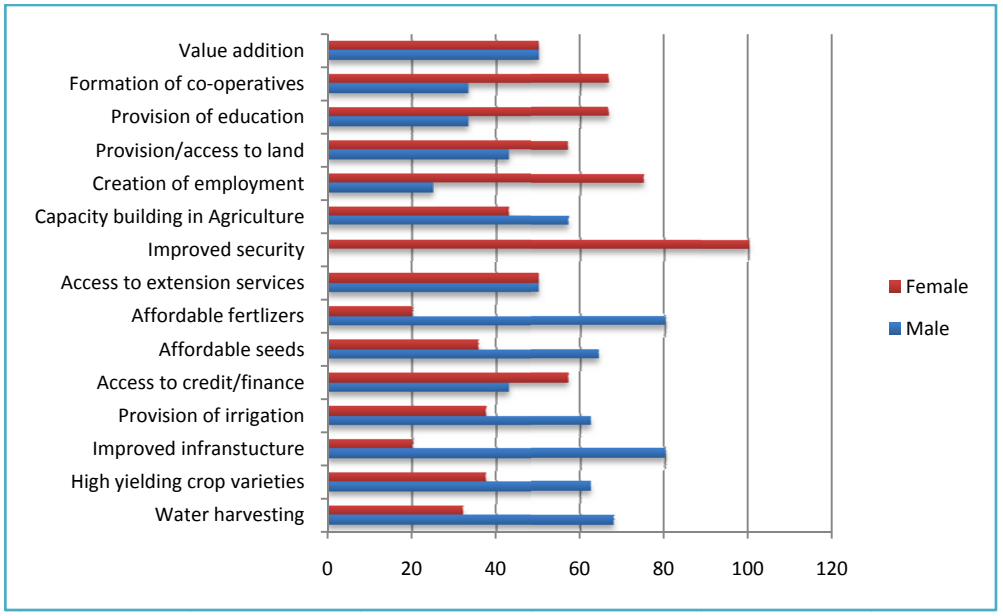
The findings illustrate that there are differences in the magnitude of responses between men and women. The largest proportion of women respondents said that presence of middlemen and lack of storage facilities, at 100 per cent each, were major hindrances to food security. The other major challenges cited by women included high costs of seeds at 66.7 per cent and unsecure land tenure and lack of market at 60 per cent each.

Figure 20: Economic Issues that Hinder the Achievement of Food Security in the Region



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013.

Figure 21: Options that Could be Used to Make Sure that Communities have Adequate Food



Source: AWSC/KNBS Baseline Survey on Food Security, June 2013

The largest proportion of male respondents cited small/uneconomical services at about 78 per cent each. An equal proportion of men and women cited lack of credit facilities, low yielding breeds of livestock and, high cost of farm machinery as hindrances to food security.

2.8.15 Options that Could be Used to Ensure the Attainment of Food Security

The study gathered views on ensuring food security, in an effort to gauge whether there were different recommendations from the male and female informants. The findings are presented in Figure 21.

The largest proportion of female respondents at 100 per cent, compared to 0 per cent among their men, recommended improvement of security. The other major recommendations among the women were creation of employment at 75 per cent, provision of education and formation of co-operatives at 66.7 per cent each and provision/access to land at 57.1 per cent. The major recommendations among the men included improvement of infrastructure and provision of affordable fertilizers at 80 per cent each, water harvesting at about 68 per cent and, provision of affordable seeds at about 65 per cent.

2.9 Summary of Research Findings

The research finding on the variables, considered in this section of the report, reveal that there are distinct gender issues in regard to food security at both the Household and community levels. This, is as a result of the gender division of labor, and the different roles, at times complimentary, that are played by men and by women in regard to food security. To comprehensively address the challenges to food security, therefore, it will be important to adopt gender responsive strategies so as to ensure the specific constraints that women face and those faced by men are addressed.

Photo Gallery 3

Cabbages rotting due to lack storage facilities.

Lack of storage facilities and accessibility to markets is a cause of food insecurity. (Photo taken by AWSC in Nakuru County)

Poor infrastructure hinders accessibility to the markets and transportation of food thus a cause for food insecurity. Photo taken by AWSC in Nakuru County.

Poor infrastructure in Laikipia County poses a challenge to food security.

A respondent in Laikipia County being interviewed.

AWSC team consulting with Prof. Kivutha Kibwana, Governor and Adelina Mwau Deputy-Governor, Makueni County.

An FGD in Makueni County conducted by (right) Dr. Mary Mbithi, and Pauline Liru.

A photo courtesy of AWSC exhibits dry spell hence the need for irrigation in Makueni.

A village elder introduces an enumerator to a household head at Kemel Elgeyo Marakwet County.

Photo of poor road network in Elgeyo- Marakwet County.

Photo of a respondent taken by AWSC against the dry terrain in Turkana County

A female respondent grinding grains in Turkana County

Participants during the 2 day conference on sharing of the research findings with scholars and other stakeholders, at the University of Nairobi

His Excellency former President Daniel Toroitich Arap Moi, , addresses the food security research team

3. Discussions of Findings and Emerging Issues

3.1 Introduction

This section highlights the key findings on food availability, access, sustainability and utilization of the Baseline Survey in the 20 counties representing the seven agro-ecological zones. The discussions focus on the key areas that were addressed by the Household survey, namely: demographic data; hunger module; sources of livelihood; livestock; and storage. Focus is on the general issues, relating to food security, raised from the various counties and that may require to be addressed by the national government. Specific issues that may require to be addressed by individual counties are also discussed.

3.2 Demographic Characteristics of the Household Heads

3.2.1 Gender of Household Head

As would be expected within a patriarchal society, a majority of the households, 67.9 per cent, were male headed and only 26.6 per cent were female headed. Although Mombasa has a high number of male headed household, the figure for Nairobi (67.8 per cent of female headed households), defies the traditional norm where urban centres are expected to have more male headed households due to rural-urban migrations. Trans Nzoia has the highest male headed households with 80.3 per cent, Nakuru 73.8 per cent, Bomet 73.6 per cent, Bungoma 71.5 per cent, Baringo 71.4 per cent, and Kajiado 71.4 per cent. These are counties where communities practice farming, have plenty of farming land and residents adhere to their traditional way of life. This means that the male heads of the households did not have to migrate to the urban centre in search of jobs. On the other hand, counties with limited land for farming, either because of aridity or population density, have the lowest numbers of male headed households. These include Turkana 49.7 per cent, Kisii 51.4 per cent, Laikipia 62.8 per cent, Migori 64 per cent and Isiolo 64.2 per cent. Among the pastoralist communities, this could be attributed to large numbers of men going out to look after the livestock while women are left behind taking care of the homes. In Kisii and Migori, which are farming communities, the farming land is too small forcing men to migrate to the urban centres in search of jobs/employment. Participants of the two Focus Group Discussions (FGDs) held at Kisii Central and at Gucha, noted that “small land holdings or small land size” was one of the challenges to agriculture and livestock farming. The participants at the FGDs in Suna, Migori County, also noted that “small parcels of land” was one of the challenges to food security.

The top five counties with the highest number of female headed Households are Turkana with 47.2 per cent, Laikipia and Isiolo with 34 per cent each, Kirinyaga 33 per cent, Nairobi 30.4, and Makueni 30 per cent. Turkana, Laikipia and Isiolo are among pastoralist communities from the Arid and Semi-Arid Lands (ASALs) and therefore is likely that the men could have gone to look after livestock leaving the women to head their Households while others could have been killed in cattle rustling conflicts, leaving wives widowed. Others could have migrated to urban centres in search of jobs. Makueni is also a semi arid county and the men could

have migrated to urban centers leaving the women to head their Households. According to a large number of opinion leaders interviewed in Kirinyaga, 45.5 per cent noted that one of the key challenges to food security was the "small/uneconomical pieces of land". This could result in men migrating to the urban centres to look for employment and leaving women to till the land.

It is worth noting that there seems to be a close correlation between the female headed households in the ASALs and poverty, which is associated with food insecurity. This explains the fact that Turkana and Isiolo are among the ten poorest counties in Kenya. The situation, however, is reversed when one considering the urban and counties in productive regions. Thus, Kirinyaga and Nairobi are among the 10 richest counties despite having a large number of female headed households. According to the Kenya Integrated Household Budget Survey: Labor Force Analytical Report (2005/2006), analysis of food deprivation by gender revealed that male headed households had 52 per cent undernourishment compared to 48 per cent for female headed households. This could be explained by the fact that in the absence of the male HH head, the woman has more control in making decisions in regard to farming activities and food production. Our conclusion is that the traditional perception, that female headed households are food insecure, cannot be applied uniformly as it depends on different contexts and different agro-ecological zones. And, when women, as HH heads, have access and control of productive resources, such as land, their Households are more food secure.

3.2.2 Marital Status of Household Head

The most food secure Households were those that were headed by people who had "never married". This category was leading, among those who responded, never insecure, on all the eight modules assessing HH food security. This was consistent with the number of persons who had never married, who indicated Household food insecurity "always" which was the lowest, among all the categories, ranging from 2.5 per cent and 7.1 per cent. This could be explained by the fact that such individuals are in total control and of the household as such they have put in place mechanisms for ensuring their that Households are always food secure.

The next most food secure Households are those living in monogamous marriages with the number of those who never experienced any form of food insecurity ranging between 22.9 per cent and 56.2 per cent and those who were always food insecure ranging between 4.2 per cent and 10.6 per cent. This could be due to the fact that such households are small in size and the partners complement each others' incomes and/or labor thereby contributing to Household food security.

Households with unmarried people living together were most vulnerable to food insecurity than the other categories. This could be due to the fact that they are not obliged to pool their resources together and their "living together" could have been a coping strategy due to financial constraints. Consequently, coming together does not necessarily change their financial status. The next most vulnerable are Households in which the head is in a polygamous relationship. The proportion of those who were always food secure ranged from 9.5 per cent and 37.6 per cent and those who were always food insecure from 6.2 per cent and 21.5 per cent. Food insecurity among HHs headed by individuals in polygamous marriages could be attributed to the fact that such households are larger in size and the

available resources have to be shared by many people, compared to those in monogamous families. Large household sizes require a lot of land for food production and farming land sizes are declining in all the counties due to high population and cultural practices of land demarcation. The larger the family size, the more the demarcation. Excessive land subdivision is leading to uneconomical pieces of land that cannot cater for the family's food and nutritional needs. Large families will also require more money to purchase land but increasing poverty levels are making such families unable to meet their basic needs, including food, which might not be available due to the high rate of population growth in the country. There is a negative correlation between food insecurity and separation and divorce. This could be as a result of lost support, which reduces the economic and other benefits, that the spouses might have enjoyed while they were living together.

3.2.3 Household Size and Food Security

Conventionally, it is believed that there is a negative correlation between household size and food security. Thus, the larger the family size, the more food insecure the household. The research findings illustrated a prevalence of food security among the households with less than three members. The findings on Table 15, strongly confirm this position. In all the eight questions used to assess household food security, the households with 1–3 members were the most food secure. For example 58.3 per cent reported that their household had never gone to sleep hungry and 51.6 per cent said there was never a time when there was no food at all in the household. On the other hand, households with more than six members had the highest score among those who reported being "always" insecure on all the eight questions of the hunger modules. This is because poor families are less educated and lack access to information on modern methods of family planning and end up with more children. And, larger family sizes contributes to higher levels of poverty and consequently to food insecurity.

Households from the rich counties, the top 10, according to the national report, such as Nairobi (64 per cent), Kirinyaga (60 per cent) and Kiambu, had the largest number of HH with (1–3) fewer members. This is because families that are well off also tend to have a better education and to adopt modern lifestyles, including family planning.

Though during the FGDs, high population was cited as a major cause of food insecurity, there was no negative co-relation between the HH size and food insecurity among the counties with the highest number of HHs with 4–6 members, which included Migori at 40.1 per cent, Bomet at 38.6 per cent and Bungoma at 32.7 per cent. These counties were also not among the 10 poorest counties in the national report. This deviation from the norm could be due to the fact these are farming communities and the family members provide free and cheap labor in the farms. They, therefore, contribute in the household food production. The same could be said of Makueni where 32.3 per cent of the households reported to having more than six members though the county is not amongst the 10 poorest.

The poor counties such as Turkana, which is the poorest of the 47 counties, was among those that reported the lowest proportion,17.6 per cent, of HHs with 1–3 members while Turkana County also reported the highest number, (49.1 per cent), of households with more than 4 members and 32.1 per cent HHs with more than six members. Isiolo County, which is in the same ecological zone and among the 10 poorest

counties, had 44.3 per cent and 28.3 per cent of the HHs with 4–6 members and above six members, respectively. During the FGD, the participants from Isiolo town and from Gucha in Kisii County noted that "population explosion" was a key challenge to food security.

The study concludes that while there is a correlation between household size and food security, it is important to compare household sizes for communities from similar ecological zones and sources of livelihoods. This is because communities living in ASALs are more likely to experience food insecurity though the family sizes may seem smaller than those of farming communities for whom the more household members will be a source of free/cheap labor in the farms.

There is an observed correlation between the household size and poverty which is a determinant of food insecurity as household members lack purchasing power particularly among the communities living is ASALs. It is, therefore, important to promote family planning and advocate for small family sizes in rural area concurrently with the promotion of modern farming technology to enhance performance of farm activities.

3.2.4 Impact of Education Level of Household Head on Food Security

Nairobi County has the lowest number of household (6.5 per cent) with no education but the highest number of those with university degree/diploma, (6.5 per cent) and post graduate degree (8.4 per cent). This is due to the rural urban migration of the educated graduates in search of white collar jobs. On the other hand, the less educated are left in the rural areas working in the fields. Nandi has the highest number of household heads with no education at 42.8 per cent followed by Bungoma at 32.2 per cent and these counties are among those with lowest numbers of HH heads (0.5 per cent) with a degree/diploma. One would have expected Turkana County to have the largest number of HH heads with no university degree/diploma. The variation can be explained as a result of the very small number of the sample N=55, compared to the other counties. Due to the poor infrastructure, coupled with insecurity and rough terrain and the migratory nature of the rural community, the researchers may have accessed more of the participants living in the urban center, which then gives a skewed picture of the County.

The study reveals a positive correlation between the level of education of the household head and food security. The higher the level of education of the HH head, the more food secure the HH with those with a certificate and above being the most food secure which accords with the Kenya Integrated Household Budget Survey: Labor Force Analytical Report (2005/2006), analysis of food deprivation among households that had secondary or higher education showed lower undernourishment levels than those with primary or special/incomplete education. Holders of KJSE, however, tend to be more food secure than those with KACE/EAACE. This may be due to the fact that those with higher levels of education, and similarly, holders of KJSE who studied a long time ago, hold better paying and secure jobs giving them purchasing power for buying food.

Formal education is important as it increases the ability of both men and women farmers to adopt new technologies and access to information on farming to improve production and; marketing, as well as

allocate resources more efficiently. It also helps farmers to develop the flexible skills needed to participate in knowledge-intensive agricultural activities as well as adopt modern practices such as family planning all of which have positive impact on household food security.

The effects of education on household food security go beyond occupational and income earning implications. For instance, education especially of women is a significant contributor to household food security, as educated women and girls are better equipped to care for their families and prepare nutritious meals. Thus, being literate reduces the chance of the HH being food insecure.

3.2.5 Age Group of the Household Head

The results of the baseline survey illustrate that older people, those who are over 55 years, reported the highest score of those who were food insecure. They also reported the lowest numbers of those who were never food insecure in all the eight questions. This is due to the older persons declining levels of energy to produce adequate food coupled with the breakdown of traditional social support systems that have left the older people very vulnerable. It is also more difficult for older people to adapt to new sources of livelihood, thus making them all the more vulnerable to social and cultural changes.

The lowest numbers of older people are found in the urban areas, Mombasa, Nairobi and the neighbouring counties of Kiambu and Kajiado. This could be as a result of migration to the rural areas upon retirement as illustrated by a 69 year old FGD participant from Migori, previously working in Mombasa for 20 years, retired as a farmer and resided in Migori. Other factors could be early deaths due to lifestyle diseases such as hypertension, HIV/AIDS and, cancer, which are the leading causes of deaths in Kenya. The National Housing and Population Census (2009) and KIHBS (2005/06) reveals that persons over 60 years were 6.7 per cent of the population. Among the rural counties, Kisii has the lowest number, 12.8 per cent, of older people. It is also worth noting that Kisii reported high levels of food security compared with other counties with similar sources of livelihood. In an assessment conducted by the National Gender and Equality Commission on the status of the elderly, 'it emerged that most of the violence is fuelled by delayed land and property succession cases as well as allegations of witchcraft. Lynching of elderly persons on suspicion of witchcraft was also noted as a vice, gaining popularity especially in Kisii County".

Elderly people are more vulnerable to food insecurity because their income is often limited as a majority of seniors are retired or too frail to work in ther farms. They are thus dependent on pensions, social security benefits, well wishers and family members. Further, older adults often experience disability or other functional limitations. In addition to lacking money to purchase food products, older adults face unique barriers such as degenerative diseases, hypertension, diabetes and so on – less often experienced by other age groups in accessing adequate food and nutrition.

Other factors affecting older persons' food security status include the deteriorating economic conditions and HIV/AIDS pandemic in the country, which have claimed the lives of parents and left the elderly to assume caretaking responsibilities of taking care of the grandchildren. The presence of children in households of the elderly have changed household composition and introduced a

different social context in which intergenerational relationships between grandparents and grandchildren have been redefined" (Muga and Onyango-Ouma, 2009).[20]

3.3 Gender and Diversity

Gender and diversity were identified as key variables affecting food security particularly during the FGDs and interviews with the opinion leaders and/or key informants. Women were identified as the key food providers, responsible for ensuring food security for their households. They were also the ones performing most of the agricultural activities. It is estimated that over 40 per cent of all smallholder farms are managed by women (Kenya Country Gender Profile, 2007 AfDB).

Despite women's critical role in food production, they do not own or have titles to the land they use to grow crops due to inheritance social cultural practises based on patrilineal kinship systems where land inheritance is along the male line. According to Smith, J, *et al*, (2008) women only own about five per cent of land.[21] Lack of land ownership deprives women off the right to make strategic decisions on land use. One woman FGD participant, from Trans Nzoia noted "we would have loved to grow other kinds of crops but husbands do not allow us to grow any other type of crop in the farms". A male participant from same FGD noted that "husbands do not allow their wives to plant any other crop and it is like they show that they are men by planting maize". Considering that 39.4 per cent of the HHs stated own production was the main source of livelihood, this highly compromises a HH's consumption pattern as they cannot grow diverse food stuffs on the farm.

Not having the right to ownership and control of land has many negative implications on food security, it limits women's ability to access credit from financial institutions, to purchase farm inputs such as fertilizer and certified seeds, modern farming technology, among others, to boost food production.

Persons with disability have unique challenges to food security based on their physical and/or mental challenges. This was illustrated by one of the FGD participants from Elgeyo Marakwet who noted that he "constantly worries about not being able to provide enough food for his family as he could not farm due to the uneven terrain and he could not afford mechanized farming".

3.4 Ecological Zones and Food Security

The study also examined the level of food insecurity in various Agro-ecological zones in Kenya. According to the Kenya National Food and Nutrition Security Policy (2011), agro-ecological diversity of Kenya, poses different food security situations and hence different interventions are required to enhance production. Some areas have relatively high production potential, but again this is where the highest absolute number of the chronically food insecure live. Continuous cultivation of soils, loss of forest cover and over-emphasis on maize production in these areas have led to a decline in soil fertility and yields (Republic of Kenya, 2011).

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[20] Geoffrey O. Muga and Washington Onyango-Ouma (2009), Changing Household Composition and Food Security among the Elderly Caretakers in Rural Western Kenya, Springer Science + Business Media, LLC 2009, www.researchgate.net/.../Onyango-Ouma...household ...elderly.../9c9605. (accessed 30th June 2014).

[21] Smith, J., Theano, C., Torbett, L. and Toussaint, J., (2008) Women's Land and Property Rights in Kenya—Moving Forward into a New Era of Equality: a Human Rights Report and Proposed Legislation, The International Women's Human Rights Clinic, Georgetown University Law Center.

According to the research findings, the Upper Highlands Ecological zone, was the most food secure with only an average of 11 per cent of HHs reporting some level of food insecurity. This zone is the most food secure because it has fertile soils and receives adequate rainfall per annum, which supports agricultural activities. The Upper Midlands agro ecological zone, comprised of Kiambu, Kisii and Trans Nzoia, also has a high production potential, but unlike the Upper Highlands zone, has become food insecure due to continuous cultivation of soils, loss of forest cover and over-emphasis on maize production leading to a decline in soil fertility and yields (Republic of Kenya, 2011). Insecurity was mentioned as negatively affecting food security, as noted by a male FGD participant from Trans Nzoia, "Insecurity is a threat because it discourages farmers, if you rear a cow there is someone waiting for it to grow and steal". Large and fallow lands are also in the hands of the rich while subsistent farming is undermining agricultural productivity through over utilization of land and excessive subdivisions making it uneconomical for agricultural activities and more so when the farmers still practise traditional methods of farming (Ndemo, 2014).

On the other hand, the Inland Lowlands agro ecological zone, comprised of Isiolo, Turkana and Baringo, had the highest average manifestation of food insecurity rated at 40.3 per cent of those who indicated that they were either always or often food insecure. The high level of food insecurity in this zone was caused by various challenges, including climatic conditions as most parts of the zone are much drier and receive very little rainfall of between 300–600 mm annually. This zone, also classified as rangelands, is unsuitable for rain fed cultivation due to physical limitations such as aridity and poor vegetation. The impact of drought caused by unpredictable weather leads to the death of livestock and humans and loss of crops. The severity of the dry season in this region leads to long periods of hunger thus exacerbating the food insecurity situation and dependence on relief food which is not sustainable. Although livestock keeping is widely practiced in this region, it has been hampered by persistent droughts, prevalence of animal diseases and lack of veterinary extension services. This zone lacked infrastructure to transport livestock and had no slaughter houses. There is generally high levels of insecurity due to recurrent ethnic conflicts among the inhabitants of this region. These armed conflicts are worsened by the proliferation of small arms from neighboring countries like Somali. Insecurity hinders economic activities in this zone; hence, people do not get enough income to buy food.

The National Food and Nutrition policy also indicates that the arid and semi-arid lands (ASALs) have the highest levels of food insecurity because natural resources in these regions are degraded by unsustainable land management practices. This has led to a significant loss of bio-diversity, which has adversely affected traditional sources of food, income and other basic needs of many rural communities (Republic of Kenya, 2011).Use of modern farming technology, including livestock farming, improvement of infrastructure and having ready markets can make the Inland Lowland zones very productive and food secure.

Each agro ecological zone has its own limits and challenges that affect food security, however, some challenges such as lack of water for irrigation, were cross-cutting and were cited by participants from different agro-ecological zones. This is because Kenya largely depends on rain-fed agriculture for its

food requirements, relying on the two main rain seasons namely the March–May long rains and October–December short rains (though). About 80 per cent of the land is arid or semi-arid (WFP, 2013). It is therefore important to understand the limits and challenges of each zone so as to address them effectively. This is in line with the Kenya National Food and Nutrition Security Policy (2011), which states that agro-ecological diversity of Kenya, poses different food security situations and hence different interventions are required. This can be done through participatory consultations with the local populations, awareness creation and training on appropriate farming activities, including technology and modern farming, improving infrastructure and service delivery and also putting in place legal frameworks and programmes to address the various challenges to food security that have left about 7.1 million Kenyans suffering from chronic food insecurity as found in this analysis.

3.5 Sources of Livelihood

Source of livelihood is an important determinant in a household's resilience to food insecurity. The participants identified diverse sources of livelihoods, which were to a large extent, determined by the agro-ecological zone as most Kenyans have not yet gained control over the natural environment. Agriculture accounts for 65 per cent of Kenya's total exports and provides employment to more than 60 per cent (Vision 2030) in the informal sector and in the rural areas. The agricultural sector, therefore, is not only the driver of Kenya's economy but also the means of livelihood for the majority of Kenya's people (Republic of Kenya, 2010). The research findings on food security in Kenya by Prague Global Policy Institute indicates that the agricultural sector, which is a source of livelihood for over 70 per cent of the population, plays a key role in the Kenyan economy. About 80 per cent of the country's population resides in the countryside and is directly or indirectly linked with agriculture. The fact that most farmers depend on rainwater poses a serious challenge to the agricultural sector. Consequently, every year, a large part of the population suffers from food insecurity and relies on food aid. Estimates of the number of people living in these conditions range up to ten million, which is almost a quarter of the population of Kenya (Prague Global Policy Institute, 2013).

The African cultural practice, where land is inherited from father to son(s) has led to the demarcation of land into small pieces that are uneconomical for agriculture. In Elgeyo Marakwet County, for example, the farmers practise subsistence farming which involves growing of food crops and livestock keeping of both indigenous and cross breeds of cattle as well as goat keeping and others carry out small businesses of selling farm produce as well as bee keeping especially at the lower valley of Marakwet River. The negative impact of uneconomical land sizes on food security was cited by key informants/opinion leaders from 18 out of the 20 counties. Ndemo (2014) notes that "subsistence farming is the cause of all our problems. The solution is that we must reduce those we call small farmers from 80 per cent to less than five per cent and increase manufacturing from its current contribution to GDP of 11 per cent to more than 40 per cent. We must move to large scale and mechanized farming in order to significantly improve on our productivity. There is a theory that with mechanization we can increase agricultural productivity with even small land sizes. Second, with planned urbanization and a move to industrialization, incomes increase

and the population need not rely on agriculture as a livelihood but rather with high purchasing power, they can still access food at reasonable prices. To achieve this, we must address land use, in this country. More than anything else we need a comprehensive land use law and to stop any further land subdivision in highly productive rural land.

The study findings illustrate that regular employment and trade/small scale business constitute the next most important source of livelihood: Regular employment, small scale business and wage earnings were cited by urban dwellers from Mombasa and Nairobi and the other smaller towns such as Nakuru, Kisii, Kiambu and Isiolo as main sources of livelihood.

The In-land lowlands, covering Baringo, Isiolo and Turkana are predominantly ASALs, with pastoralist being the main source of livelihood. This involves directly rearing the livestock in the rural areas and livestock related businesses in the urban centers such as Isiolo town. Livestock accounted for 3.2 per cent of the sources of livelihood. Pastoral activities, however, are hampered by many challenges such as lack of water and fodder for the animals, insecurity as a result of cattle rustling and attacks by wild animals renders pastoral areas most food insecure. One of the participants from Isiolo noted that "even if you have 500 animals, they can all be taken away by cattle rustlers and you remain with nothing" while erratic climatic changes which include prolonged droughts and floods result in loss of livestock due to lack of water and fodder. The predominantly pastoralist counties, such as Turkana and Isiolo, were ranked among the poorest counties; with Turkana reporting that 94 people in every 100 residents are considered poor (Daily Nation, Saturday December 17, 2011) which co-relates with the study findings where Turkana had the highest number of HHs, 48.1 per cent, that slept hungry.

Changing climatic conditions due to global warming and poor agricultural practices have led to serious crop failure in the past few years. This is due to the fact that most Kenyans have not adopted modern agriculture methods such as the use of green houses and ranches in the ASALs.

Culture and traditional beliefs were said to hinder communities from adopting new livelihood practices. For example, in Migori those keeping bees are viewed as "witch doctors or witches". Women being the ones who do "the most work towards ensuring adequate food in their homes" (Kisii) though they do not own land and have no control over land thus limiting their decision-making on land use and therefore cannot keep bees.

In counties bordering the urban centres such as Kajiado, Nakuru and Kiambu, rural-urban migration has been a major challenge to the agricultural sector due to "rapid rural-urban migration …since majority of healthy and energetic youths are being lured by the urban life". Subsequently, the elderly women and children left back on the farms are not able to produce enough food because most men do not consider subsistence farming as being worthy of their gender and they spend most of their time either drinking or hanging around shopping centers idling away.

Persons with disability encounter specific challenges as illustrated by one of the FGD participants from Elgeyo Marakwet who noted that he constantly worried "about not being able to provide enough food for his family as he could not farm due to the uneven terrain and (he) could not afford mechanised farming", (FGD Elgeyo Marakwet).

Other challenges to food security that were cited, by FGD participants, included poor

infrastructure (Makueni, Laikipia, Kajiado, Isiolo) which hinders efficient delivery of farm produce from production areas to the markets; lack of employment particularly for the youth and women in rural and urban counties reducing their purchasing power, particularly to access and utilize food, though it may be readily available, while "insecurity and stealing discourages farmers" (Nandi and Trans-Nzoia).

Whereas small and uneconomical pieces of land, was cited by opinion leaders from at least 95 per cent of the counties, unreliable rainfall, high cost of inputs, and unemployment were prevalent in Nakuru (40 per cent), Mombasa (60 per cent), Nairobi (33 per cent), Kiambu (20 per cent), and Turkana (29 per cent). With the exception of Nakuru County, most respondents cited poor infrastructure and poor/inadequate storage facilities as causes of food insecurity as shown in Figure 22.

Insecurity was cited as a key challenge to food security, particularly in Isiolo and Laikipia counties. A few participants, from various counties, also cited drugs and alcohol abuse and lack of extension services as challenges to food security. The opinion leaders' views on main sources of livelihood and challenges to sustainable food security concurred with the FGD and household survey.

Based on the aforementioned, own production is the main source of livelihood in the rural areas while wage earning is the main source of livelihood in the urban areas. There are diverse challenges to sustainable livelihoods in the various ecological zones. To address these challenges, it will require a multifaceted approach so as to promote sustainable livelihoods and food security among the various food insecure households.

3.6 Food Preservation and Storage

Preservation of post-harvest surpluses of seasonal food crops such as cereals, fruits and vegetables, is an important aspect of food security, as it makes them available and affordable during off season. According to FAO (1997), better home and community food processing, preservation and storage and access to marketing facilities can contribute to household food security by alleviating seasonal shortages in food supply and stabilizing market prices. Poor preservation and storage results in post harvest wastage and food insecurity at the

Figure 22: Lack of Infrastructure a Cause of Food Insecurity

A lorry that had come to collect cabbages, in Njoro, was stuck on the muddy road for two days.

household level. Majority of the respondents (76.1 per cent) of the households, however, had nothing to store. Also, 50.9 per cent of the households had no non-perishable food to store while 70.1 per cent of the households interviewed had perishable foods to store. The high percentage of households that do not have perishable foods to store is an indication that majority of Kenyans are living from hand to mouth and are thus very food insecure which could be as a result of low production and/or low food purchasing power due to lack of financial resources.

With the exception of Trans Nzoia where the participants noted that the large scale farmers sold their produces to the National Cereals and Produce Board (NCPB) and Kajiado where there was commercial farming, all the other counties said the food produced was predominantly consumed at household level and little was sold since as mentioned before, 86.6 per cent said they had no surplus to store.

Some of the factors that have contributed to lack of produce for storage, include, among others declining production in the rural areas due to various factors such as crop diseases (Bomet), pests and diseases (Elgeyo Marakwet), erratic changes in climatic conditions (Migori) and population pressure and cultural practices that have led to existence of small parcels of land that are uneconomical for agriculture or inadequate agricultural extension services and support, lack of access to finances to purchase inputs owing to high interest rates from financial institutions.

Only 13.4 per cent of the participants said they had surplus perishable foods to store. Unfortunately there were no modern storage facilities and they predominantly used traditional methods which included hanging in ones house, storing in the granary or using other methods such as putting it beside the fire, on the table or in the cupboard. Such storage coupled with lack of access to markets often leads to a lot of post harvest losses as shown in Figure 23.

Figure 23: Lack of Storage Facilities a Cause of Food Insecurity

Cabbages rotting, in Kuresoi, Nakuru County, due to lack of storage facilities and/or access to the market

Traditional methods of maize storage often lead to contamination and have led to the country having one of the highest levels of afflotoxin contamination in the world. The households did not have access to modern methods of preservation and storage such as refrigerators and freezers. Factors such as lack of electricity in the rural areas limit access to modern storage methods and facilities. These traditional preservation and storage methods are unreliable and short-lived leading to postharvest loses of surplus foods. During the FGDs, participants from Nandi, Bomet, Kiambu and Kisii cited post-harvest losses due to lack of storage facilities and technology. Respondents from Turkana said they lose cattle due to drought which with appropriate technology could have been slaughtered and stored for future use. Institutional representatives also noted that poor storage led to post harvest losses that contributed to food insecurity.

During the FGDs, participants from Bungoma, Nandi, Migori and, Makueni noted that there was no value addition for farm produce. This leads to loses that contribute to food insecurity at the household and community level. It is, therefore, important for the government to promote rural electrification and educate the rural communities on modern preservation and storage methods. This will reduce post harvest losses and make the food available throughout, thereby promoting household food security all year round. Modern methods for meat preservation and value addition should also be provided for pastoralist communities such as those provided by the Kenya Meat Commission (KMC) as shown in Figure 24.

The need for storage facilities can be summed in the words of a woman FGD participant from Trans-Nzoia, who said that for perishable crops, such as "irish potatoes, the farmers should be provided with storage facilities".

Figure 24: Kenya Meat Commission

KMC Slaughter House under construction at Isiolo County

There were also calls to devolve and expand the NCPB up to the ward level in maize producing areas such as Nandi County. During the FGD held at Voi, Taita Taveta County, a participant noted that "there should be a milk processing plant in Taita-Taveta" rather than milk being transported by *matatus* all the way to Mombasa. In addition to preservation and value addition for farm produce, setting up processing plants will also create the much needed jobs, and increase the purchasing power for the unemployed including the youths to enable them to buy food.

3.7 Consumption Patterns

Most of the participants (39.4 per cent) from the rural areas, reported that they normally consumed what was grown locally. In most of the counties, maize which is prepared in different forms, *ugali* in Baringo, Bomet, Isiolo, Kiambu Kisii, Nandi; *githeri*, *irio* and *Muthokoi* was the main source of food in Makueni. Olielo (2013) also found that *ugali*, which is a thick dough made from maize flour is the main staple carbohydrate food consumed by 88 per cent of the households at least four times in week. Green vegetables were consumed by 92 per cent and meat, a main protein source, was eaten by 46 per cent of the sample Households at least four times weekly. According to the FGD participants, from most of the Counties, *ugali* is consumed with locally grown vegetables. Among pastoralist communities it is eaten with milk and meat. In Bomet, for example, FGD participants stated they ate *ugali* with "vegetables and *mursik* (fermented milk). In Kisii, bananas (*matoke*) and sweet potatoes were also consumed.

Over reliance on maize as the main staple is a major challenge to food security in most parts of the country. As stated by participants from Baringo County, in the last few years, maize production has been affected by an outbreak of a maize disease, the Maize Lethal Necrosis Disease (MLND), in the area and it threatens wiping out the crop. This has in turn threatened the livelihoods of Baringo County residents. The Population

Dynamics and Food Security report state that "many Kenyan communities grow and utilize staple foods like maize, beans, rice and wheat and their corresponding products has culminated in a high demand for these commodities, and at the same time portends hunger if any of them is in short supply (Republic of Kenya, 2011).[22]

Figure 25: Women Waiting for Food Rations

An elderly woman, receives food donations from Actionaid at Ngare Mara Ward, Isiolo County

While to a large extent food consumption is determined by the ecological zone plus the cultural context, communities living in the ASALs rely heavily on relief food from donors, NGOs and the government as shown in Figure 25.

This means that pastoralist communities do not have a lot of control over their HH consumption since to a large extent they rely on the food donations from the donors and the government.

3.8 Government and Donor Support Programmes

The widespread food insecurity in the country has seen the establishment of various social protection programmes by development agencies including the Kenya Government and local and international donors. The aim of such programmes is to promote household resilience to food insecurity of people who lack access to sufficient food to meet their daily needs. The population of HH in need of such support is often higher in pastoral areas than in marginal agricultural livelihood zones. Certain categories of society, among them orphans and vulnerable children (OVCs), people living with HIV and AIDS, persons with disability and, the elderly, however, require support irrespective of the community and/ecological zones they are to be found.

The research participants were familiar with many such social protection programmes. Some of the donor programmes mentioned included International Fund for Agricutural Development (IFAD) and National Agriculture and Livestock Extension Programme (NALEP) (Trans Nzoia) which are implemented through the Ministry of Agriculture. Other donors mentioned included World Vision, which had been actively involved in food security programme through educating farmers on modern farming methods and directly helping them by providing seedlings of avocados and mangoes as well as beehives (Elgeyo Marakwet) and Actionaid International and World Food Programme (WFP-UN) food for work programmes in the

[22] Republic of Kenya (2011), Population Dynamics and Food Security in Kenya, Policy Brief No. 19, June 2011, *A publication of the National Coordinating Agency for Population & Development and UNFPA.*

ASALs, including Isiolo and Turkana. The GOK has initiated a number of programmes among them, *Njaa Marufuku* programme, mentioned by participants from Bomet, Kiambu; fertilizer distribution implemented by the GOK among poor subsistence farmers; and HIV/AIDS programmes by NACC which was the most widespread and was said to be implemented through Community Based Organizations (CBOs) in Kwale, Kajiado, Nakuru and Bomet. Other GOK programmes mentioned included cash transfer which involves the provision of cash as an alternative to in-kind assistance, which are increasingly being used as a social protection methods in situations of acute poverty, hunger and vulnerability for Offshow and Vulnerable Children (OVCs) and elderly persons – was cited by participants from Baringo, Nakuru and Mombasa. Under the Presidential declaration in 2013 the number of recipients of cash transfer have been scaled up to 500,000 nationally; This includes Persons with Disability Fund (PWDF), food rations in Kajiado and Isiolo and in Mombasa, a family support programme in which poor families receive KES 2,000 per month, was initiated in 2012. In his paper on Cash Transfers in Southern Africa, Devereux notes that "there is convincing evidence that cash transfers have significant positive impacts on the lives and livelihoods of the poor" (Devereux 2006).

It is, however, noted that these social protection programmes are not evenly distributed throughout all the counties with some counties such as Kisii receiving support from almost all the GOK programmes while others have very few. Where these programmes were available, the support was rated as inadequate. Another challenge noted, for example of IFAD and NALEP, which are implemented through the Ministry of Agriculture, is that their implementation is almost shrouded in secrecy without involvement of the communities especially in identifying the beneficiaries and other processes that make their implementation vulnerable to corruption and inefficiency.

While the participants recommended the establishment of social protection programmes to provide immediate relief from the symptoms of food insecurity for household members, they recommended that the community be involved in the implementation, particularly the identification of the beneficiaries to ensure that available resources reach the target.

Based on the challenges noted, the participants from Migori recommended that there should be a transparent mapping of beneficiaries which should involve every stakeholder of the community while those from Kirinyaga and Kwale recommended that clear distribution structures and systems including monitoring be put in place. Majority of the participants recommended that the support should be scaled up to enable recipients to cater for daily food needs. There is also need to make use of modern technologies to make the transfer more effective and efficient.

There were also more specific recommendations such as the settlement of Internally Displaced Persons (IDPs) in areas such as Nakuru that had been affected by the post election violence to enable them graduate from dependence on the social support programme. Most of the participants from the FGDs and the institutional representatives were also of the opinion that recipients of such programmes should be facilitated to gradually graduate from social protection programmes and to become self sufficient in food security.

3.9 Gender Perspectives in Food Security: Findings from Key Informants

3.9.1 Main Livelihood Activities

The major livelihood activities often vary between men and women as it is normally determined by the gendered socialization for boys and girls. This study showed a very clear demarcation on the main sources of livelihood between men and women. For the men, crop farming and livestock keeping were the main sources of livelihood. As illustrated throughout the study, men own and have title to land which gives them, as Mulama notes, "the power to control household resources, including land, lies with men" (Joyce Mulama, 2008), they also own cash crops which is a key source of income. Men also own and are key decision makers of large livestock such as cows and camels which are other key sources of income. On the other hand, women do not normally own and or make key decisions on land use, cash crops and livestock. The crops they grow are normally for household consumption. This explains the differences, among men and women, on land use for crop farming and livestock keeping at 61.2 and 55.2 per cent, respectively, for men compared to 38.8 and 44.8 percents respectively for women, as major sources of livelihood.

While legally men and women have freedom of movement, practically, men are free to travel out of the homes while women are more confined to their homes performing reproductive roles. This explains the fact that more men than women, engaged in small business as major source of livelihood at 51.5 and 48.5 per cent respectively while 100 per cent of the women were involved in handicrafts. While 0 per cent of the men were involved in handcraft.

In regard to employment, more women at 65 per cent than men at 35 per cent appear to be engaged in employment. This concurs with the proportion of women and men who said they engaged in casual labor as a copying strategy at 53.5 and 46.5 per cent, respectively.

3.9.2 Food Consumptions Patterns Among Men and Women

Different communities eat different staple foods. Based on the socialization process, there are differences in the consumption patterns among men and women which determines what each gender considers the main food. This explains the different responses on the main food among men and women. Rice and *githeri/muthokoi* are the two main foods for women at 71 per cent and 58.8 per cent, respectively. Men, among most communities own livestock and when they slaughter the animals, there are cultural predetermined parts they eat, men eat the main cuts while women and children eat the left-overs and inner parts such as intestines and the tongue. This explains the research findings in which 61.9 per cent and 38.1 per cent of men and women, respectively, said meat was their main food. An equal proportion of men and women said vegetables were their main food. This is because the main meal is normally served with vegetables among most households, vegetables are a major source of nutrients and this reflects the consumption of a healthy diet among both men and women.

Among most communities, the main dish is often served with an accompaniment. As with the main dish, the consumption patterns of the accompaniment dish often varies between men and women. For the men, the main accompaniments are ugali, meat and vegetables while for the women tubers, legumes and vegetables were the

main accompaniments. This could possibly be because most men when they have financial resources, eat at the local hotels where these are the dishes most served. On the other hand, women considered tubers, legumes and vegetables as the accompaniment. These are the crops grown by the women for household consumption. Equal numbers of men and women considered milk as a main accompaniment to the main dish. This reflects the household consumption patterns where tea, which is a mixture of boiled water and milk, is an accompaniment for most meals.

3.9.3 Challenges to Livelihood Activities

The challenges to livelihood activities, for men and women, are closely linked to the activities they engage in based on the traditional gender roles. Thus, for the women, who normally grow seasonal food crops that must be disposed soon after harvest to prevent post harvest loses, the main challenges were poor infrastructure at 57.1 per cent which is critical in transporting the produce and lack of market at 55.6 per cent for the produce. Poor soils was also a major challenge for the women and could be linked to the feminization of poverty and women's lack of financial resources to purchase farm inputs such as fertilizers to improve the soil fertility. Disability was the greatest challenge for the women, at 100 per cent. Women are the key food producers and, therefore, any form of disability that affects their ability to work in their farms, could have far reaching impact on their source of livelihood.

On the other hand, the major challenges among the men had to do with the lifestyle and culture which included drug and alcohol abuse, corruption and poor farming methods all at 100 per cent each. Since men own and control land, they often cultivate large chunks of land and grow large quantities of crops for sale, and as such lack of storage facilities and poor farming methods at 100 per cent each and pests and disease at 58.8 per cent, were some of their challenges. Small/uneconomical pieces of land due to land fragmentation was another major challenge for the men.

3.9.4 Access to Food

Due to cultural factors such as ownership and control of productive resources including land and financial resources, gender roles tend to favor men in regard to access to food as compared to women. Thus, more men are able to grow their own food as well as purchase food when the need arises. Men also tend to be more mobile than women, which could explain the fact that more men than women, access food through aid/support. This is because when they are away from the home, they may come across food being given and/or friends who give them food, unlike the women who are more confined to the homestead due to their reproductive roles.

3.9.5 Opinion on Food Adequacy

Among most communities, women play a critical role in the production and preparation of the food that is consumed within the household. Sometimes when the food is inadequate the women supplement it with other sources, such as those listed under the section on copying strategies which include eating wild fruits, among others. Few men, as illustrated in this study, consider these as alternative as copying strategies which may explain the fact that more men (57 per cent) compared to women (42.6 per cent) considered their area as not having adequate food.

3.9.6 Coping Strategies

This study found that men and women adopted different coping mechanisms during food deficit periods for vulnerable Households. Looking critically at the quantitative data, men predominantly adopt more conventional strategies such as planting short term crops, sell household items, and send the children to live with relatives, all at about 100 per cent. Other mechanisms, adopted by the men, reflect the differences in socioeconomic empowerment and ownership and control of productive and financial resources among men and women, which include, buying food on credit at about 82 per cent, sell livestock at about 74 per cent and buying food at about 58 per cent. On the other hand, women, given their socioeconomically disadvantaged position in the society, tend to adopt more non-conventional copying strategies which include eating wild fruits at about 100 per cent, engaging in prostitution at about 100 per cent, stealing at about 55 per cent and, about 60 per cent received help from relatives. It is worth noting that only about 15 per cent of the women purchased food on credit; the reflects the systematic disadvantaged socioeconomic status of women within the community which make them unworthy for credit.

3.9.7 Access to Land

Among most communities, land is owned and controlled by the men. Women, however, are guaranteed land use rights, normally as a wife, daughter or sister to the male land owner. This explains the high percentage of male, over 50 per cent and female 44.7 per cent respondents in the study, who stated that both men and women have access to land in their respective areas.

3.9.8 Land Use

The power relations between men and women often determine ownership and utilization of resources, including land. According to Wangui, “Land use and labor allocation decisions are made within the context of intra-household power differentials between husbands and their wives. This presents gendered struggles over land use options and labor processes, which become visible through gendered landscapes” (Wangui 2003). Since, among most Kenyan communities, men are the land owners while women only have user/access rights, the land use is often determined by this gendered traditional right to land. Thus, men, as land owners are more secure and have more control over the land. This explains the research findings where 100 per cent of the men compared to 0 per cent of women, said they used the land for the construction of home/house. More men than women also use the land to keep livestock at 66.7 per cent compared to women at 33.3 per cent and about 58 per cent, used land for leasing. Though women do not normally inherit ancestral land, which is inherited from father to son, they are free to purchase land in the urban centers where land is sold to willing buyers. This explains the fact that more women, at 60 per cent, used land to build rental houses, phenomenon which normally occurs in the urban centers.

3.9.9 Availability of Markets

Markets and trade are crucial for boosting productivity and availability of food as they increase access to food. The markets serve as a medium for producers to sell their surplus produce to the consumers. The markets, therefore, play a dual role as they enable the farmers to sell their produce and generate income as well provide an avenue to ensure

food is available and accessible for Households for whom the market is the main or partial source of food. Various factors, such as security, infrastructure, among other, affect availability and access to food markets.

It is worth noting the differences in opinion on the availability of markets to sell produce and to buy food, between the male and female respondents. On both questions, more men, 56.9 per cent and 56.7 per cent responded in the affirmative, compared to 43.1 per cent and 43.4 per cent among the women. The difference in opinion could be due to the mobility of men and women in the community, with men being able to travel long distances away from home while women are more confined to a distance closer home due to their reproductive gender roles such as the care of young children. Where there is no public transport, men may have means of transport such as bicycles and motorbikes and also have money for transport unlike women who might have to walk to the market to sell surplus farm produce and/or buy food stuffs. The means of accessing the market could result in the different opinion on the availability of markets between the male and female respondents.

3.9.10 Access to Government Food Programmes

Most government support is often given to Households rather than to individuals. The HHs are often registered in the name of the HH head which is normally the man. This could explain the fact that more men compared to women, stated they received various forms of government support, with the exception of the school feeding programme and the value addition to agricultural produce.

Though, more women than men, stated that they accessed support through the school feeding programme, since they themselves do not go to school, it can be interpreted to mean they received the support, by extension, through their school going children. Value addition is a major challenge for most small holder farmers in Kenya leading to great post harvest losses. 100 per cent of the female respondents, compared to 0 per cent of the male respondents, say they received support in the form of value addition to agricultural produce.

Jam making, indigenous vegetable preservation, mango drying, utilization of cassava, sweet potatoes in different forms other than boiling, grinding legumes into powder or omena into flour, etc, are some of the value addition activities mentioned.

3.9.11 Suggestions on Improving Government Food Support Programmes

The opinion by key informats on the improvement of government food programmes could be determined by different factors including the gender roles played by men and women within the community as well as the level of awareness of such programmes. Thus, men who own land and cultivate large chunks of it to produce food proposed the provision of storage facilities (100) by the government. Most studies have found that men have more access to information either through the media and/or from other men when they encounter each other in public places than their female counterparts who are often confined to the homestead due to the reproductive roles. Thus, the male respondents, in this study seemed more knowledgeable of the government food programmes and how they could be improved more than the female respondents. This may explain the fact that

women were only leading on making the programmes accessible to all was important at 62.5 per cent compared to men at 37.5 per cent.

3.9.12 Opinion on Community Involvement in Ensuring Food Security

The community comprises of men, women, youths and children. The response as to who is involved or not involved in ensuring food security must, therefore, take into consideration all these categories. This study and other studies also found that it is predominantly adult women who perform most of the farming activities. Women, are therefore, more aware and informed, on who is and who is not involved in ensuring food security than their men who may go to the farm only to inspect how much work has been done. This may explains the differential responses for men and women in regard to the level of community involvement in ensuring food security with men exhibiting more ignorance on the matter.

3.9.13 Social Economic Factors that Hinder the Achievement of Food Security

Traditionally, there have been widespread economic inequalities among men and women. While women have been systematically economically disadvantaged, men own the productive and financial resources. These economic gender inequalities are bound to impact on the opinion of men and women on the socioeconomic factors that hinder the achievement of food security among communities living in the different agro-ecological zones covered by this study. In addition to socioeconomic factors, cultural practices, such as land owners and gender roles, would also impact on the opinion given by men and by women.

The main challenges given by the women include the presence of middlemen and lack of storage facilities at 100 per cent respectively. Due to their reproductive gender roles, women may not travel far from home in search of markets to sell their surplus produce. As a result they depend more on middlemen to sell their produce. They are, therefore, more vulnerable to exploitation by middlemen. For the remaining surplus for the household consumption, they face the challenge of storage facilities that result in widespread post harvest losses. On the other hand men, who are involved in farming, may carry their produce to the market and thereby avoid the exploitation of middlemen. While men may have better negotiation skills, they may also be better informed about the market forces which puts them in a better situation to negotiate for better prices for their product with the middlemen. Lack of storage facilities may not be a major challenge for the men as the small scale farmers may sell all their produce while the large scale men farmers sell their produce to the society. Women on the other hand have to store certain amounts for household consumption which makes storage a major concern.

Other challenges cited by women were high cost of seeds at 66.7 per cent, unsecure land tenure at 60 per cent and lack of market at 60 per cent These are challenges that are linked to the disadvantaged socioeconomic status in society that deprive them of purchasing power to buy seeds, deprive them the right to own land and so they have to lease and deprive them of mobility to travel to travel to distant markets away from their homes.

Among the male respondents, the highest challenges are small uneconomical pieces of land and lack of extension services at about 78 per cent each. This is because land sizes

have continued to decrease due to land fragmentation while the change in the agricultural from a service driven to a demand driven sector has continued to deprive small scale farmers of extension services. Other challenges cited by the men, worth noting include unemployment at about 63 per cent.

3.9.14 Recommendations for Ensuring Food Security

A lot of studies on conflict situations have shown that in times of insecurity, women suffer more due to their reproductive gender roles, including the care of children and other vulnerable groups. This could explain why majority of the female respondents at 100 per cent compared to 0 per cent of the male respondents, were concerned about the improvement of security. Other concerns by the women were creation of employment at about 77 per cent and provision of education at about 67 per cent. This reflects the cultural practices, among most of the Kenyan communities, where women do not have equal access to education which disadvantages them in the job market due to lack of marketable skills. Women are normally marginalized in existing co-operatives where membership is often derived from land ownership. Thus, their recommendation that formation of co-operatives, at about 67 per cent, could ensure attainment of food security.

Studies have shown that irrigation water is often a resource under the control of men. As such "in the irrigated zone, men's labor dominates cash crop production, and men's crops occupy parts of the family farm that have more favourable moisture regimes (the floor of irrigation basins). Women's food crops are planted in areas with less favourable moisture regimes (on the elevated ground between irrigation basins)", (Wangui 2003). This may explain the finding where more men than women were of the opinion that water harvesting and provision of irrigation, at about 68 per cent and about 62 per cent, respectively, could contribute towards the improvement of food security. Men, as the land owners, cultivate larger pieces of land compared to women who only have user rights and no control of land, and this means that the men may have more challenges in purchasing adequate fertilizers for their farms. Thus, a large proportion of men at 80 per cent compared to 20 per cent of women, cited provision of affordable fertilizers as a factor that will contribute to food security.

It is also worth noting that about 80 per cent of the men cited improvement of the infrastructure as a key factor in ensuring food security. As noted, in other sections of this report, men are more mobile and travel far from the homestead; many of them also own means of transport such as bicycles and carts, compared to their female counterparts, which exposes them to infrastructure challenges.

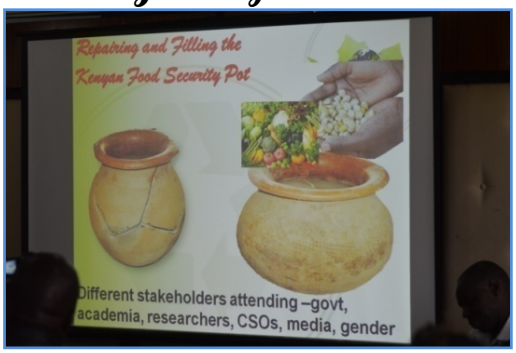
3.10 Summary of Research Findings

The findings indicate that there are distinct gender roles, among men and women, in regard to matters relating to food security. This has resulted in distinct, gendered opinions and perceptions on food security among men and women. These opinions and perceptions are often informed by their experiences based on their culturally ascribed gender roles. Thus, women's experiences during times of insecurity, their gender roles in caring for the vulnerable members of the community, their confinement within the home area, lack of ownership and control of productive resources, including land and finances,

inform their opinion and perceptions on how food security can be improved.

What this section clearly illustrates is that to adequately address the chronic food insecurity challenges facing more than 7.1 million Kenyans, according to this study, it will be critical to address the challenges experienced by men and women in their pursuit to ensure food security. Some of the interventions may include enhancing equitable access to resources such as land, finances and opportunities, among men and women, among others. This calls for the mainstreaming of gender in all food security interventions, including equitable participation of men and women in the process of formulation of food security policies and programs. A gendered approach to food security challenges will ensure a comprehensive approach to food for the chronic food insecurity facing 7.1 million Kenyans and guarantee every Kenyan the right to food and the realization of their constitutional right as enshrined in Article 43: 1(c) of Kenya Constitution.

Photo Gallery 2



A sneak preview of the presentations made during the 2 day conference on sharing of the research findings with scholars and other stakeholders at the University of Nairobi

Ms. Anne Waiguru, Cabinet Secretary for Devolution and Planning during the 2 day conference on sharing of the research findings with scholars and other stakeholders at the University of Nairobi

AWSC consulting and sharing the food security research findings with the Director of Vision 2030 Secretariat Prof. Gituro Wainaina (Left). (From Right) Dr. Godwin Siundu, Ms. Wambui Kanyi, Mr. Reuben Waswa and Prof. Octavian Gakuru

AWSC team (From Left) Prof. Octavian Gakuru, Dr. Jane Wambui and Dr. Mary Mbithi when they paid a courtesy call on Hon. Joseph K. Ndathi, Governor Kirinyaga County (2nd right) to share the research findings in Kirinyaga County

His Excellency, Daniel Toroitich Arap Moi, Retired President, addresses the food security research team led by Prof. Margaret J. Hutchinson.

AWSC team Dr. Rayya Timammy (left) and Mr. Gabriel Mbugua (right) when they paid a courtesy call on Hon. Eng. John Mrutu, Governor, Taita Taveta County (middle) to share the research findings in Kirinyaga County

Participants follow the proceedings of a debriefing session in Nakuru County.

A participant giving his views on the research findings in Kiambu County at a debriefing session. Looking on (standing) is Prof. Elishiba Kimani from Kenyatta University and lead researcher.

Group photo of the participants after the workshop.

A respondent with her children outside their home in Turkana County

4. Policy and Programme Recommendations and Proposals on Food Security

4.1 Policy and Programme Recommendations

The recommendations for food security policies and programmes presented in this section are derived from both the baseline survey quantitative data from the Household questionnaires and, qualitative data from the FGDs, institutional representatives, and testimonials and, from the debriefing meetings on food security, held with stakeholders. From the research, it is clear that the different Households will require different strategic interventions to enable them to be food secure. The policy and programme interventions, therefore, should be tailored so as to target the different needs of each HH based on their strategic needs. The following recommendations are drawn from the study findings:

1. **Water for irrigation and domestic use:** Ninety five per cent of opinion leaders from the counties cited lack of irrigation water as one of the key challenges to food security as farmers heavily relied on direct rain water despite the fact that rainfall had increasingly become very unreliable. Climate change due to global warming has been a major cause of declining food production in Kenya with rain fed agriculture leaving 3.5 million people annually in need of food relief with most of them in arid and semi-arid areas where rains have largely failed. Respondents from ASALs areas including Makueni, Kajiado, Baringo, Isiolo and Turkana counties and farming communities such as Nakuru, Nandi amongst others attest to this. Many of the respondents who grow their own food and who are food insecure (40 per cent) recommended irrigation as a solution to food insecurity. In addition, the high cost of water harvesting equipment and poor technologies are inhibitive. The government has demonstrated commendable efforts towards boosting irrigation in Kenya as illustrated by creation of the largest irrigation scheme in the history of Kenya, the one million acre Galana-Kulalu in Coast region. To fully exploit alternative sources of water, there is urgent need by the Government to carry out a number of measures which will help counties such as Turkana, Baringo, Isiolo, Kwale, Makueni and Kajiado achieve food security. In addition, to promote Rain Water Harvesting (RWH) methods among the farmers. These measures include:

   a) **Subsidization** of equipment/materials for water harvesting such as tanks, pipes, water pumps, borehole drilling machinery, gutters etc.

   b) **Construction of dams and water pans:** As highlighted in the Agriculture Sector Development Strategy 2010–2020, Kenya has about 4100 small dams and water pans which provide only 5.3 m^3 per capita per year which is among the lowest water storage rates in the world equivalent to only 3 months use (ASDS, 2010). Thus, construction of dams and water pans to store

water, harvest flash floods for irrigation, livestock and domestic use is key to Kenya's food security.

c) **Tapping into aquifers/drilling of boreholes and other existing water sources**: The recent discovery of several billion cubic meters of water in Turkana County offers a window of opportunity to alleviate high food insecurity in Turkana and the region at large. The Government should take this initiative and bear the initial cost of drilling so that the entire community benefit from this important discovery.

d) Promotion of RWH methods in farmers fields to conserve and utilize rainfall water that is poorly distributed.

2. **Provide affordable farm inputs like improved seeds, fertilizers, pesticides**: The recent reduction in fertilizer prices, following the start of long rains, will boost food security and the government's effort is commendable. However 8 per cent of the HH respondents suggested that more inputs be provided. This was reiterated by FGD participants from Kapsowar, Elgeyo Marakwet who proposed that the Government should subsidize farm inputs as stated by the FGDs participants "subsidized fertilizers and certified seeds…..would drastically reduce the cost of farm inputs and subsequently increase their profit margins" (FGD Marakwet). Opinion leaders from 15 out of the 20 counties (75 per cent) noted that high cost/lack of inputs was a key challenge to food insecurity.

   In addition to subsidizing farm inputs, interventions should be put in place to enable farmers' access cheap credit which is a crucial factor in the development of the agricultural sector. Agricultural producers rely on credit facilities to raise the capital required to initiate and sustain production activities. The role of credit in agricultural production is crucial because inputs such as seeds and fertilizers and machinery are purchased at the beginning of the production season, but returns are realized only at the end of the season. Most of the respondents proposed that there should be low interest credit facilities that are tailor-made for the farmers to enable them access funds for improvement of investment in farming activities, including purchasing of farm inputs and production. Participants also recommended that mechanisms should be put in place to enable individuals who are not in self-help groups to access such credit. Mechanisms should also be put in place to enhance transparency and accountability in the management of such funds.

3. **Access to cheap credit** is a crucial factor in the development of the agricultural sector. Agricultural producers rely on credit facilities to raise the capital required to initiate and sustain production activities. The role of credit in agricultural production is crucial because inputs such as seeds and fertilizers and machinery are purchased at the beginning of the production season, but returns are realized only at the end of the season. Most of the respondents proposed that the amount of money given should be increased; mechanisms be put in place to ensure access to low interest loans for small scale business; and investment in farming; and they should be given enough time to repay the loans. There is also lack of transparency and accountability. They

also added that individual loans for those who are not in self-help groups should be introduced.

4. **Storage facilities and creation of strategic food reserves, feed and water reserves:** Wastages and losses incurred as result of attack of produce by diseases and pests, poor weather, destruction by wild animals and lack of adequate storage facilities during surplus production has resulted in massive post harvest wastage which contribute to food insecurity. Most respondents recommended that they should be provided with better food storage facilities like silos and cereal stores. Lack of capacity of the National Cereal and Produce Board (NCPB) to hold farmers' produce as experienced in Trans-Nzoia late 2013 resulted to huge losses. As shown by the findings, participants relied heavily on traditional methods of storage, such as the granary, hanging in a cupboard and putting on the table, for both the perishable and non-perishable foods. The respondents urged the government to provide storage facilities for both perishable produce and cereals e.g. cold rooms/coolers for horticultural produce such as fruits, milk and vegetables storage before they are sent to the market and silos for maize storage whenever there is a bumper harvest. They should also be educated on the proper preservation and storage methods for both perishable and non-perishable produce.
5. **Value addition of agricultural produce involving the private sector (PPP):** During the Focus Group Discussions (FDs), it strongly came out that value addition in agricultural products will unlock the potential of many counties including Makueni, Baringo, Elgeyo Marakwet and Kajiado among others, and transform agriculture into agri-business which will also attract the youth. This could include construction of processing and storage facilities. There should be establishment of small scale organic food processing plants and non-traditional crop production units which county residents can run to transform agricultural commodities to a more valuable state to increase the economic value and consumer appeal. Through this, buyers will be willing to buy the products at a higher price and the food processing plants will create employment for the residents.
6. **Provision of adequate and ready markets for agricultural produce:** From the research findings, a sizeable number 59 per cent of respondents derive their livelihoods from agriculture and business related activities, provision of adequate and ready markets for agricultural produce will therefore increase their income which will enhance food security. Farmers fall victims of middle men who often exploit them by purchasing their produce at very low prices.
7. **Creation of employment:** Provision of employment especially to youth and women at the national and county level should be promoted, while the youth should be sensitized to take farming as a source of livelihood. Hence, the National and County Governments should explore ways of creating employment and ensuring that each of the poor families, living below one dollar per day, have at least one person with a regular income/ employment. According to the Agricultural Sector Development Strategy, irrigation for example can create jobs at the rate of 15 persons per acre directly and indirectly (Republic of

Kenya, 2010)[23]. The government has demonstrated commendable efforts in provision of employment to the youth and women through availing funds. The Uwezo and the Women Fund are a clear testimony of. The government, however, should ensure that it incorporates and supports the use of ICT to enable women and youth fully utilize the fund. ICT will create a platform for the women and youth to make their goods and services visible and hence widen their markets. The fund will go an extra mile to support the 21 per cent engaging in casual labor as well as increase the capacity of those engaged in own production. The government contract tendering should in addition to others target the 16 per cent involved in trade/small business.

8. **Development and improvement of infrastructure, especially roads:** The major problems that hinder agricultural development in Kenya are poor roads especially in agricultural productive areas, and poor transport facilities. Most of the roads in the counties are impassable, especially during the rainy season. The farmers also incur losses due to wastage, as the produce cannot get to the market. The poor road network increases the transportation costs for inputs and output thereby reducing profit margins of the farmers. In Elgeyo Marakwet 58 per cent, Bungoma 55 per cent, Bomet 48 per cent and Baringo 50 per cent of respondent sometimes had limited variety of food due to lack of choices in the market.
9. **Capacity building on agriculture/training on better farming methods as well as the extension services:** There is need to train and support local farmers to embrace modern farming methods in order to achieve food security. This will entail transforming the sector from being demand driven to service provision, and enable the small scale farmers access services from the agricultural extension officers. With such training farmers can will train farmers to increase their agricultural production through the use of modern farming techniques as well as using current information on improved seed varieties, pesticides, green houses, fertilizers, irrigation, crop diversification, machinery and artificial insemination. Findings indicated that most of the respondent's 14.9 per cent proposed capacity building as one way to improve food security.
10. **Land reform for equitable land distribution**: Land is the main asset in agricultural production and generally, limited availability of productive land is a major constraint to increased agricultural production. Some of the causes of food insecurity in Kenya include low agricultural productivity, inadequate access to productive assets such as land and capital, inadequate infrastructure, limited well-functioning markets and high population pressure on land. With the exception of participants from the ASALs, land size was cited by the majority of the participants as a key challenge to food security. If the country is to become food secure, it is important to effect land reforms to address, among others the land use cultural practices such as demarcation which renders it uneconomical for agricultural practices. The proposed development of a National Land Use Master Plan, in Vision 2030, will contribute towards this goal.

[23] Republic of Kenya (2010), Agricultural Sector Development Strategy 2010–2020, http://www.ascu.go.ke/DOCS/ASDS%20Final.pdf.

11. **Stringent laws and campaigns against alcohol and drug abuse:** This will address the plight of the youth who no longer provide labor for food production. In Elgeyo-Marakwet, Isiolo, Kiambu, Mombasa and Nandi research findings show that most of the youth have resorted to drug and alcohol abuse as well as other social ills. One woman in Mombasa during an oral testimony narrated how 'unga' (hard drugs) has spoilt many young men turning them into dependent criminals.
12. **Promote Science, Technology and Innovation:** Science, Technology and Innovation (STI) is a fundamental issue in increasing agricultural productivity. Malawi's food security surveillance system has enabled it to digitally monitor the effectiveness of food security programmes in the country. In Elgeyo Marakwet the respondents noted that "Pannar 961 maize seed" performed well in the region, but it was, however, only in circulation for one season. The knowledge and experiences of farmers on food production should be tapped in order to enhance food production and the government should be able to provide information to farmers according to appropriate seeds and expected weather conditions. Research could also guide farmers on issues of viability and markets of their produce. During the survey, pest and diseases were cited among the leading causes of food insecurity. In Bomet and Nandi, for example, respondents noted that they were particularly affected by a maize disease that had attacked the crop in recent years and had made them vulnerable to food insecurity. Therefore, integrated pest and disease management will offer sustainable and viable control of pests and diseases by enhancing the capacity of Kenya Plant Health Inspectorate Services (KEPHIS) and agricultural research institutions.
13. **Change of attitude and eating habits:** The residents of the various counties should be encouraged to appreciate eating of non-traditional foods and engage in diverse economic activities. For example, Kiambu residents be encouraged to appreciate eating of non-traditional foods like fish; while women in Bungoma and Kwale should be empowered to engage in business instead of viewing "the business ventures as belonging to people from other communities." All this will help in boosting food security by diversifying sources of food and earning more income. The government could put in place strategies to diversify and demystify the attitudes on non-traditional foods.
14. **Gender mainstreaming in all food security programmes:** It emerged, from all the counties, that women play a critical role in food security as they are the ones who are responsible for ensuring their HHs are food secure. Patriarchal cultural practices' relating to land use and ownership and control of productive resources, however, hampers their effectiveness. The women do not own and have no control over productive resources, such as land and finances. This contributes to feminization of poverty which has a direct correlation to HH food security. It is important, therefore, to mainstream gender for effective and efficient targeting of interventions aimed at enhancing food security, such as policies and programmes and budgetary allocations. Gender mainstreaming remains a critical strategy in ensuring

food security and therefore needs to be considered in policy formulation, strategy development, implementation and monitoring of the same. The national and county governments should, therefore, put in place policies and programmes that guarantee women the right to own and control land. This will enable them have control over utilization of the land under agriculture and what should be grown and how to use the farm produce.

15. **Creation of a conducive business environment:** Trade/small business is the main source of livelihood for a majority of those living in the urban areas such as Nairobi and Mombasa as well as other smaller towns such as Nakuru. Participants from Nairobi noted that "they would want the City County to desist from harassing them on daily basis demanding payment of rates. They would like to pay the rates, but the City County should establish offices within the residential areas where they operate from and pay these rates on daily basis or weekly basis (and) the City County *askaris* should treat them in a humane manner."
16. **Insecurity:** Due to high insecurity, incidences as a result of both human conflicts and human-wildlife conflict, enhanced security will be key if food security has to be realized This study found that wild animals posed a great challenge to food security as was reported by participants from Isiolo, Taita Taveta, Baringo, Elgeyo-Marakwet and Kwale while stealing of food in the *shamba* (farm) or in the store was a challenge in Nandi and Kiambu, among other counties. Participants recommended the beefing up of security as well as promotion of reconciliation and good neighborliness efforts. Also stringent measure should also be put in place by County governments, in partnership with the Kenya Wildlife Service (KWS), to reduce human-wildlife conflict.
17. **Full devolution of power and resources** is deemed critical in order to realize food security. Schedule IV of the constitution of Kenya gives the responsibilities of animal husbandry, plant and disease control, trade and development including market, statistics for planning and development among other functions to the county governments. This study recommends that for food security initiatives to work, clear implementation of legislative and policy frameworks with clearly defined roles for the national and county government should be put in place and enforced.

4.2 Key Policy Proposals

This study reveals that many Kenyans who are often and always worried about not having food at the household level were on average 30 per cent, with the highest worried community being Turkana (70 per cent), Kisii (59 per cent), Migori (53 per cent), Kwale (47 per cent), Trans-Nzoia (42 per cent) and Isiolo at 35 per cent. The implications of both hunger and worry for over 30 per cent of Kenyans have an impact on their individual development, health of families and communities and therefore on the overall national development. The study, therefore, proposes that measures be put in place to ensure that at least 7.1 million Kenyans be removed from this dehumanizing situation of chronic hunger. In implementing the Constitution of Kenya, the Government must declare zero tolerance to hunger as enshrined in Article 43 (1) (c).

This section highlights key policy and programme proposals for addressing food insecurity for the 7.1 million Kenyans, whom, the study found are either always and/or often food insecure. They are derived from the participant's recommendations. Additional proposals are derived from best practices from countries that have implemented programmes and legal frameworks to ensure food security for their citizens. The proposals prioritize 7 critical areas that will have maximum impact on food security if fully adopted. This has great implications especially for children and the development of their potential. In the implementation of article 43(1)(c) on the "right to be free from hunger, and to have adequate food of acceptable quality", Kenya has the advantage of learning and harnessing the best practices from the experiences of other countries, in the region, that have implemented institutional, legislative and programmatic food security interventions. The following are proposals towards the realization of food security for all Kenyan citizens.

4.2.1 Family Support Programme

The level of food insecurity in all the counties is indicated by the fact that on average at least 18 per cent of the population, which translates to 7.1 million are often or always hungry. This study reveals that the main source of accessing food for the rural communities is own production, Elgeyo Marakwet County had the largest proportion, 79.6 per cent, followed by Migori 70.6 per cent and Bomet 70.1 per cent, of those whose main source of accessing food was their own production. Nairobi, Mombasa and Turkana with 2.3 per cent, 5 per cent and 8.2 per cent, respectively, had the lowest proportion of those whose main source of livelihood was own production. Given the climatic conditions and lack of water for irrigation, most Turkana County residents are not able to produce their own food. The urban areas had the largest proportion whose main source of accessing food was regular monthly salary with Mombasa and Nairobi and Kiambu, leading with 39.7 per cent, 39 per cent and 29.6 per cent, respectively.

The national government, through county governments, should establish a family support programme for those severely affected by hunger. Following the example of India and Brazil, the Kenyan Government can directly focus on the households and ensure that they have access to food either through increased production or through cash transfers. The majority of the 7.1 million who are often and always food insecure are those whose main sources of food is their own production. As in the case of India, in order to ensure efficient, transparent and strategic targeting of the food poor households, this report recommends the establishment of a clear legal framework. This will ensure the implementation of family Support Progamme that will address the food and nutritional needs of this category of Kenyans who are chronically food insecure, implementation of article 43 (1)(c) of Kenya Constitution, and the realization of the MDG 1 to eradicate extreme poverty and hunger by the year 2015. This will demonstrate that Kenya is truly committed to zero tolerance to hunger and will set the pace in the region. The following are proposals to effect the Family Support programme.

4.2.1.1 Targeting small scale own producers (39.4 per cent)

According to the Baseline Survey, the largest source of livelihood for majority of Kenyans, particularly in the rural areas, is own production. To address the challenges to

food insecurity, therefore, it will be strategic to implement policy and programmatic interventions that target the "own producers" in the rural areas to overcome rural food insecurity. This will require a multifaceted approach aimed at increasing food production as well as empowering the food-insecure households to sustainably have access to adequate food and nutrition. Any proposed interventions for a Family Support Programme, should ensure that households that rely on own production as the main source of accessing food, have farm inputs, information and markets, among other considerations.

4.2.1.2 Provide affordable farm inputs including certified seeds, fertilizers, pesticides

The high cost of farm inputs, including fertilizers, certified seeds and livestock insemination, were cited as some of the key challenges to food security. Opinion leaders from 15 out of the 20 counties (75 per cent) cited high cost of farm input as a challenge to food security. This explains the high percentage of house-holds that do not have perishable or non-perishable foods to store which was 86.6 per cent and 50.5 per cent, respectively, an indication that majority of Kenyans are living from hand to mouth and are thus very food insecure due to low production and/or low food purchasing power due to lack of financial resources.

The Kenya Government can learn from best practices, for example, the Govern-ment of Malawi which in 2005 launched a Fertilizer Subsidy Programme which aims at raising household and national food security through increased access to farm inputs. The programme targets 1.5–1.7 million farmers each year. Farmers are provided with two coupons to buy fertilizer at a subsidized price.

The own producers could be provided with low interest loans for small scale producers for investment in farming activities. The loans should be tailor made to allow the farmers to repay with the farm produce for which the loan was borrowed. The County and National Government should also subsidize the farm inputs including the fertilizers, certified seeds, animal insemination, animal feeds, and merchandise among others.

4.2.1.3 Government should involve the Private Sector Partnership (PPP) in value addition of agricultural produce

Lack of value addition and storage, coupled with lack of market, leads to high levels of exploitation as farmers sell their raw produce at throw away prices to middlemen. In Mombasa and Kwale counties, for instance, the respondents stated that due to lack of preservatives and value addition for perishable foodstuffs, they often abandon fruits such as mangoes and tomatoes, to rot in the farms.

During the focus group discussions, it strongly came out that value addition will unlock the potential of many counties including Makueni, Baringo, Elgeyo Marakwet and Kajiado among others, and transform agriculture into agri-business which will also attract the youth. This could include milk processing plants, construction of processing and storage facilities. There should be establishment of small scale organic food processing plants and non-traditional crop production units which county residents can manage to transform agricultural commodities to a more a valuable state to increase the economic value

and consumer appeal. Through this, buyers will be willing to buy the products at a higher price and the food processing plants will create employment for the residents.

The government can also subsidize the processing machines for fresh juice from fruits and vegetables[24] for concentrate juice production line.

4.2.1.4 County storage and strategic food reserves

Preservation of post-harvest surpluses of seasonal food crops such as cereals, fruits and vegetables, is an important aspect of food security, as it makes them available and affordable off season. According to FAO (1997), better home and community food processing, preservation and storage and access to marketing facilities can contribute to household food security by alleviating seasonal shortages in food supply and stabilizing market prices. Poor preservation and storage results in post harvest wastage and food insecurity at the household level.

The need for storage facilities can be summed up in the words of a woman FGD participant from Trans Nzoia, who said for perishable crops, such as "Irish potatoes, the farmers should be offered storage facilities" and there were calls to devolve and expand the National Cereals and Produce Board (NCPD) up to the ward level in maize producing areas such as Nandi County.

We estimate that on average the counties will require about 850,000 bags of grains. We propose the establishment of County Strategic Food Reserves in each county. Resources should be allocated to buy the surplus food from the farmers. The farmers should be able to purchase the food at more or less the same price that they sold to the County Cereals Board (CCB) rather than the exorbitant prices sold by the middlemen who bought their produce at throw away prices during bumper harvests. The producers should also be educated on the proper preservation and storage methods for both perishable and non-perishable produce. This will enable the households that rely on their own production to access food throughout the year.

4.2.1.5 Stabilizing farmer's income

County governments should prioritize the buying of food from farmers to ensure minimum guaranteed returns for the farmers and to protect farmers from exploitation from middlemen/brokers who purchase their produce at very low prices. Mechanism should also be put in place to ensure that there are adequate and ready markets for agricultural produce. From the research findings, a sizeable number 59 per cent of respondents derive their livelihoods from agriculture and business related activities, provision of adequate and ready markets for agricultural produce will therefore increase their income which will enhance food security.

4.2.1.6 Provide at Least One Job for Every Poor Household

Some countries have put in place legislative frameworks to guarantee the employment of the poor so as to increase their purchasing power. In India, for example, the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA) is the main poverty alleviation programme. India has managed to make many of its poor people food secure by guaranteeing them a hundred days of employment for every household per year in green jobs every financial year (Amita, 2005).

[24] (http://www.alibaba.com/product-gs/792362328/concentrate_mango_juice_processing_machine.html)

The Governments should develop a policy that allows both the County and National Governments to identify the poor. This will cater for 18 per cent of the population of chronically food insecure households. The ultimate objective of this project is to create employment for at least 200 days for one person in a poor family per year for households with no one with wage employment. In ASAL areas, such as Isiolo and Turkana counties, where food insecurity is very high, the Government should identify and provide employment for at least two persons per household.

The beneficiaries can be engaged in activities such as green jobs which include: water conservation and water harvesting; drought-proofing (including afforestation and tree planting to increase forest cover to 10 per cent); irrigation canals, including micro and minor irrigation works; provision of irrigation facilities, horticulture plantation and land development facilities, road construction and maintenance of Government buildings and other structures.

4.2.1.7 Cash Transfers

The widespread poverty and food insecurity calls for the establishment of various social protection programmes by development agents, including the Kenya Government, at national and devolved levels. The aim of such programmes is to promote household resilience to food insecurity for people who lack access to sufficient food to meet their daily needs. There are various forms of social protection programmes and cash transfer is one such programme. Cash transfer involves the provision of cash as an alternative to in-kind assistance in situations of acute poverty.

Cash transfer is the recommended social protection programme for the vulnerable groups such as Orphans and Vulnerable Children (OVCs), vulnerable elderly, people with disability, persons living with HIV/AIDS and households suffering chronic food insecurity as it enables the recipients to easily access available foods in the local market. The programme is not sufficient and from the research findings, only 2.4 per cent of the respondents were the beneficiaries and yet and almost all of the respondents stated that it was inadequate.

From the research findings, it is evident that the participants were familiar with the deliberate efforts taken by the Government of Kenya to cushion the orphans and vulnerable children, persons with disabilities, persons living with HIV/AIDS, the elderly in the society, widows, albinos and other vulnerable persons in the society; providing them with monthly stipends and feeding programmes. Over the last three years, the Government has been doubling the allocation to the cash transfer. In 2014, President Kenyatta launched, the *Inua Jamii* initiative where 454,000 older persons in the society are set to benefit from 12 billion shillings. The Labor Committee has recommended the involvement of local, political and religious leaders in the identification of vulnerable households.

Though this is a commendable gesture towards the achievement of food security by the most vulnerable, 86 per cent of the respondents, recommended that proper mechanisms be put in place, to ensure community involvement in such programmes and to promote accountability and transparency in the allocation of funds, thus ensuring that such funds reach the right target, monitoring and evaluation.

4.2.1.8 Institutional mechanism for implementation of the family support programme

The African Women's Studies Centre (AWSC) proposes that a legislative framework be developed that will enforce food security programmes including family support programmes, cash transfer and other initiative aimed at implementation of article 43 (1) (c) of the Constitution. This will facilitate the Government to establish a food security authority that would oversee the establishment and implementation of family support programme. The authority will work closely with the County Government to establish the mechanisms for identifying the needy households, family representatives, their contacts, etc, negotiate with private sector, business community, farmers among others to ensure that this programme works. In addition, the county governments will develop a data bank of the most food insecure families in the counties, keep monitoring progress and giving feedback to the authority. The work of this authority and that of the social security assistance that deals with cash transfers could be merged. This is in line with best practices in other countries such as Columbia, Mauritius, South Africa and India.

4.2.2 Creation of Employment

Provision of employment at the national and county level especially for the youth and the women should be promoted, while the youth should be sensitized to take farming as a source of livelihood. Hence, the National and county governments should explore ways of creating employment. The Government of Kenya has shown commendable efforts in provision of employment to the youth and women through availing funds. The Uwezo and the Women Fund are clear testimony to this. The Government should, however, ensure that it incorporates and supports the use of ICT to enable women and youth fully utilize the fund. ICT will create a platform for the women and youth to make their goods and service to be visible and hence widen their markets. The fund will go an extra mile in supporing the 21 per cent engaging in casual labor as well as increase the capacity of those engaged in own production. The Government contract tendering should in addition to others, target the 16 per cent involved in trade/small business.

4.2.3 Water for Irrigation and Domestic Use

Over 80 per cent of the land area in Kenya is classified as Arid and Semi-Arid Land (ASAL) and a majority of this area is affected by moderate to severe land degradation and desertification. About 10 million people (30 per cent of Kenya's population) live in the ASALs and over half of these live below the poverty line. From our study, most of the respondents from the ASAL areas which included Kwale, Isiolo, Elgeyo Marakwet, Laikipia, Taita Taveta, Makueni, Kajiado, Turkana and Baringo proposed the introduction of/or scaling up of irrigation. Opinion shapers from the counties noted that inadequate and unreliable rainfall was a major challenge to food security. While appreciating the great effort by the Government, the challenge of changing climate was cited in almost all the 20 counties. The Government should put in place policies that will enhance rain water harvesting in farms, schools, health centres, urban centres and subsidize equipment and materials for water harvesting such as tanks, pipes, water pumps and, borehole drilling machinery.

If Kenya is to achieve food security, then it needs to rely heavily on irrigation rather than

rain-fed agriculture. In Kenya, rain fed agriculture leaves 3.5 million people annually in need of food relief with most of them in arid and semi-arid areas where rains have largely failed. Respondents from most of the counties including Makueni, Baringo, Isiolo and Turkana attest to this. Many of the respondents, who grow their own food and who are food insecure, recommended irrigation as a solution to food insecurity citing to the high cost of water harvesting equipment and technologies, which should be made available. To fully exploit alternative sources of water, there is urgent need by the Government to carry out a number of measures which will help counties like Turkana, Baringo, Isiolo, Kwale, Makueni, Kajiado achieve food security. The AWSC proposes the following in order to meet the great demand of water for irrigation in the various ecological zones:

i) **Subsidization** of equipment/materials for water harvesting such as tanks, pipes, water pumps, boreholes, drilling machinery, gutters, etc.

ii) **Construction of dams and water pans:** As highlighted in the Agriculture Sector Development Strategy 2010–2020, Kenya has about 4100 small dams and water pans which provide only 5.3m^3 per capita per year which is among the lowest water storage rates in the world equivalent to only 3 months use (ASDS, 2010). Thus, construction of dams and water pans to store water, harvest flash floods for irrigation, livestock and domestic use is key to Kenya's food security.

iii) **Tapping into aquifers/drilling of boreholes and other existing water sources**: The recent discovery of several billion cubic meters of water in Turkana County offers a window of opportunity to alleviate high food insecurity in Turkana and the region at large. The Government should take this initiative and bear the initial cost of drilling to make the entire community benefit from this important discovery.

4.2.4 Promoting Women's and Youth Economic Empowerment

The Government's effort to provide employment especially for the youth and women are indeed commendable. The various initiatives like the Women Enterprise Fund, Youth Enterprise Fund and *Uwezo* Fund (when commissioned) will contribute and make it possible for many women and youth to engage in gainful employment as well as invest in business and trade. From the FGDs, it was clear that women are the key food providers amongst the largest proportion of households. Empowering women economically, therefore, will give the purchasing power to buy food for their households. The laws governing the access to the Women Enterprise Fund should make it possible for women from the 18 per cent or so households that experience chronic food insecurity to afford food.

Majority of youth remain unemployed and some even revert to social ills as a means of livelihood. Our research findings indicated that 30.3 per cent of the respondents from our study were youth between the ages of 15–34 years, and the increasing the fund will make it possible for them to engage in meaningful employment. The Youth Fund should be increased and more youths trained on how to utilize the funds to avoid mismanagement and default on the same.

4.2.5 Business and ICT Hubs

To foster sharing of information related to government activities that are geared towards improving lives of women and youth

as well as the general public. This will support and promote digitization which will market youth and women enterprise through advertising and sharing of available opportunities as well as development of ICT products that will market goods and services

4.2.6 Mainstreaming Food Security as a Cross-Cutting Policy Issue

Food security is a basic cross cutting issue, with its implementation of relevant strategies cutting across different policies on macroeconomic policies including trade, health, water, agricultural development, land, environmental and infrastructural development policies, regulations on products including food standards. South Africa's integrated food security strategy is a good example of how to mainstream food security in all national development policies. This means that for every policy that is being developed its implication for food security must be assessed.

References

African Women Culture: African women's role in Society and ... africanwomenculture.blogspot.com/...womens-role...and.html Cached.

Agnes, R., Quisumbing, Lynn R, Brown., Hilary Sims Feldstein, Lawrence Haddad and Christine Pena: Women: The Key to Food Security. Food Policy Report. The International Food Policy Research Institute. Washington, D. C. pp.1 –14 (1995).

Agriculture Sector Development Strategy 2010–2020, Government of Kenya

Amita, S. (2005). *The Mahatma Gandhi National Rural Employment Guarantee Act.*

Andrew Harrington 2010: Women's Access to Land in Kenya. Justice for The Poor. Vol. 4 Issue

Assessment reveals worrying status of the elderly www.ngeckenya.org/...reveals-worrying-status-of-the-elderly Cached.

Barros, R., Fox, L., & Mendonca, R. (1997). Female-headed households, poverty, and welfare of children in urban Brazil. Economic Development and Cultural Change, 45(2), 231–257.

Bitange Ndemo: A nation of Gamblers and an Unemployment Crisis, Daily Nation, Feb 14, 2014.

Bitange Ndemo: A nation of Gamblers and an Unemployment Crisis Daily Nation, February 17, 2014.

Boserup, E. (1970), *Woman's Role in Economic Development*, New York: St. Martin's Press.

Campaign To Protect Women's Land Rights

Central Bureau of Statistics, Kenya Demographic and Health Survey (1998, 2003, 2008/9).

Daily Nation: Population growth outstrips food harvests (DN, October, 13/2012).

Differentiating Livelihood Strategies among the Luo and ... www.academia.edu/846021/Differentiating_Livelihood... Cached.

Doris Becker Pham Ngoc Tram Hoang DinhTu, 2009: Value Chain Promotion As A Tool For Adding Value To Agricultural Production.

Doyle, B.L. and Litunya, A.A. (2013). Turkana County Long Rains 2013 food security assessment report, 29th July – 9th August 2013.

Effects of Family Size on Household Food Security in Osun ... ideas.repec.org/a/asi/ajosrd/2012p136-141.html Cached.

Famine Early Warning Systems Network. 2013. Kenya Food Security Outlook, October 2012 to March 2013.

FAO. (2013): Food Security Improves in Kenya. http://www.fao.org/emergencies/fao-in-action/stories/stories-detail/pt/c/176235/

FAO. (1996). Agro-Ecological Zoning: Guidelnes. Natural Resources Management and Environment.

FAO. (2010). The State of Food Insecurity in the World: Addressing food insecurity in protracted crises. Rome: FAO.

Food and Agricultural Organization of the United Nations, 2000: Special Report on Crop and Food Supply Situation in Kenya

http://www.fao.org/docrep/004/x7697e/x7697e00.htm/

Food and Agricultural Organization of the United Nations, 2011: Women play a decisive role in household food security, dietary diversity and children's health.

http://www.fao.org/gender/gender-home/gender-programme/gender-food/en/.

Food and Agricultural Organization of the United Nations: Food Security Committee Report, 2006.

Food preservation and security at household level in rural... www.agrosciencejournal.com/public/agro9o2-8.pdf.

Food security and gender-eldis Www.eldis.org/index.cfm?objectid=35a4056c-ed7c-6417... Cached.

Food Security and Markets - World Food Programme documents.wfp.org/stellent/groups/public/documents/ena/…Gender-Kenya: Renewed

Food Security in Kenya - World Food Programme one.wfp.org/operations/vam/documents/ken_sit_an_Report.doc.

Food-Security Assessments In Emergencies: A Livelihoods Approach Www.forcedmigration.org/sphere/pdf/food/odi/food...

Full list of top ten richest and bottom ten poorest counties ... www.kenyan-post.com/2013/...top-ten-richest-and-bottom.html Cached

Fuwa, N. (2000). The poverty and heterogeneity among female-headed households revisited: The case of Panama. World Development, 28(8), 1515–1542.

Gender | International Food Policy Research Institute (IFPRI) www.ifpri.org/book-20/ourwork/researcharea/gender Cached

Gender and food security - Wikipedia, the free encyclopedia en.wikipedia.org/wiki/Gender_and_food_security Cached.

Gender and Marital Status Clarify Associations between Food...jn.nutrition.org/content/137/6/1460.full

Gender Equality and Food Security—Women's Empowerment as ... www.adb.org/.../gender-equality-and-food-security-womens... Cached.

Gender: Food security - Food and Agriculture Organization www.fao.org/gender/gender-home/gender-programme/gender-food Cached.

Global food crises, food insecurity and measuring hunger ... journalistsresource.org/studies/environment/food... Cached.

Gross, Rainer, Hans Schoeneberger, Hans Pfeifer, Hans-Joachim A. Preuss: The Four Dimensions of Food and Nutri-tion Security: Definitions and Concepts (2000)

Household Food Security among Women in Groups in Kaiti .. www.maxwellsci.com/print/ajas/v6-1-5.pdf.

Influence of Family Size, Household Food Security Status, and... www.ajol.info/index.php/ajrh/article/viewFile/67846/55940

International Development Association, 2013: Cash Transfer for Orphans and Vulnerable Children Project in Kenya, October 8, 2013. A Project Paper on a Proposed Additional Credit. World Bank Report No: PAD731, 2013

International Federation of Red Cross and Red Crescent Societies. (2006). *How to conduct a food security assessment: A*

step-by-step guide for National Societies in Africa. Geneva.

International Fund for Agricultural Development, 2010: Gender and Livestock: Tools for design. http://www.ifad.org/lrkm/factsheet/genderlivestock.pdf/

International Fund for Agricultural Development, 2013: Enabling poor rural people to overcome poverty in Kenya. http://www.ifad.org/operations/projects/regions/pf/factsheets/kenya.pdf/

Jacobs, K. and Saggers, M, 2011: Advancing Women's Asset Rights: ICRW's Research & Programming June 23rd, 2011.

Kennedy, E. and Oniang'o, R. (1990), "Health and Nutrition Effects of Sugarcane Production in South-western Kenya", *Food and Nutrition Bulletin*, Vol. 12, pp. 261–167.

Kennedy, E. and Peters, P. (1992), "Household Food Security and Child Nutrition: The Interaction of Income and Gender of Household Head", *World Development*, Vol. 20, No. 8, pp. 1087–1099.

Kenya National Bureau of Statistics. Kenya Integrated Household Budget Survey, 2005/2006. Basic Report.

Kenya National Bureau of Statistics. Kenya Integrated Household Budget Survey, (2005/2006). Labor Force Analytical Report Key livelihood and gender issues in livestock

Kiriti, T. (2005), "The Impact of Globalization on Women, Agriculture and Poverty in Kenya", In Clem Tisdell (eds), *Globalization and World Economic Policies: Studies Highlighting Effects and Policy Responses of Nations and Country Groups,* Part IV*,* Delhi, Serials Publications, pp. 496–510.

Kiriti, T. and Tisdell, C. (2003), "Agricultural Commercialization in Developing Countries, Household Food Consumption and Nutrition: A Kenyan Case Study", In C. A. Tisdell, U. Sankar and M. Srivastava (eds), *Leading Economic Issues: Essays in Honour of Professor Chandra Srivastava*, Vol. 1, New Delhi: B. R. Publishing Corporation.

Kiriti, T. and Tisdell, C. (2004a), "Commercial Agriculture, Marital Status and other Influences on Food Availability: A Kenyan Case Study", *Journal of Food, Agriculture and Environment*, Vol. 2, No. 3&4, pp. 140–147.

Kiriti, T. and Tisdell, C. (2004b), "Commercialization of Agriculture in Kenya: Case Study of Policy Bias and Food Purchases by Farm Households", *Quarterly Journal of International Agriculture,* Vol. 42, No. 4, pp. 439–457.

Kiriti, T. Tisdell, C. and Roy, K. (2003), "Female Participation in Decision-making in Agricultural Households in Kenya: Empirical Findings", *International Journal of Agricultural Resources, Governance and Ecology*, Vol. 2, No. 2, pp. 103–124.

Kiriti-Ng'ang'a, T. (2008), "Economic Growth in Kenya: How does Gender Inequality Matter? In *Gender Inequality in Developing Countries*/ edited by Siddhartha Sarkar and Tabitha Kiriti-Ng'ang'a. New Delhi: Arise Publications and Distributors.

Kiriti-Ng'ang'a, T. (2008), "Gender Inequality and Agricultural Commercialization: Results from a Case Study in Kenya", *in Gender and Development: An Afro-Indian Study*, Edited by Siddhartha Sarkar and John V. Mensah, New Delhi: Arise Publications and Distributors.

Kiriti-Ng'ang'a, T. (2008), "Institutions and Women Empowerment in Kenya". In

Institutions and Gender Empowerment in the Global Community. Pp. 151–192. Edited by Kartik, C. Roy, Cal Clark, and Hans C. Blomqvist. Singapore/London: World Scientific Publishing Co (WSP)/ Imperial College Press.

Kiriti-Ng'ang'a, T. (2010), "Economic Development and Food Security in Kenya: The Shamba System", in *Globalization and Development: Country Experiences*, Edited by Kartik Roy and Anita Medhekar, Nova Science Publishers, New York: USA, pp, 147–160.

KNBS. (2005/6). *The Kenya Integrated Household Budget Survey (KIHBS).* Nairobi.

Kumar, S. K. (1978), "The Role of Household Economy in Child Nutrition at Low Incomes: A Case Study in Kerala", *Occasional Paper* 95. Department of Agricultural Economics, Ithaca, New York: Cornell University.

Kumar, S. K. (1983), "A Framework for Tracing Policy Effects on Intra-household Food Distribution", *Food and Nutrition Bulletin*, Vol. 5, No. 4, pp. 13–15.

Kumar, S. K. (1994), *Adoption of Hybrid Maize in Zambia: Effects on Gender Roles, Food Consumption, and Nutrition*, Research Report No. 100, Washington, D. C.: International Food Policy Research Institute.

Land accessibility the burden on socio – economic ... www.slideshare.net/ AlexanderDecker/land-accessibility... Cached

Livelihood and food security issues www.fao.org/docrep/005/Y4632E/y4632 e0i.htm Cached

Lo Bianco, Andrea. 2007. Agribusiness for Development: A Socioeconomic Analysis of the Milk Market Chain in the IFAD-financed Western Sudan Resource Management Programme Area. Rome: IFAD.

Mallick, D and Rafi, M (2010): Are Female-Headed Households More Food Insecure? Evidence from Bangladesh. World Development Vol. 38, No. 4, pp. 593–605

Manuel, J. C. (2011). Transcript: Social and Economic Rights and the Colombian Constitutional Court. *Texas Law Review*, Vol. 89:1699.

Measuring Household Resilience to Food Insecurity: An ... www.foodsec.org/fileadmin/user_upload /eufao-fsi4dm/docs/...

Ministry of Agrarian Development. (2011). *The Zero Hunger Programme: The Brazilian Experience.*

Ministry of Planning and National Development. (2003). *This Economic Recovery Strategy for Wealth and Employment Creation.* Nairobi: Goverment Printer.

Monitoring access to food and household food security1 www.fao.org/docrep/U8050T/u8050t02. htm Cached

More distinct food intake patterns among women than men in ... www.nutritionj.com/content/8/1/12 Cached

Mwaniki, Angela, Achieving Food Security in Africa: Challenges and Issues; Cornell University, U.S., Plant, Soil and Nutrition laboratory.

Niamir-Fuller, M. 1994. *Women Livestock Managers in the Third World: A Focus on Technical Issues Related to Gender Roles in Livestock Production.* IFAD Staff Working Paper 18. Rome: IFAD.

Nzomoi, J. (2008). *Agricultural Commodity Price Fluctuation, Poverty and Food Insecurity in Kenya.*

Olielo T, 2013: Food Security Problems in Various Income Groups of Kenya. African Journal of Food, Agriculture, Nutrition and Development.Vol.13 No. 4

Olumakaiye, M.F and A.O Ajayi: Women's Empowerment for Household Food Security: The Place of Education (2006)

Pala, A. (1978), "Women's Access to Land and Their Role in Agriculture and Decision-Making on the Farm: Experiences of the Joluo of Kenya", *Discussion Paper* No. 263. Institute of Development Studies, University of Nairobi.

Parliamentof Kenya. (2013). *Agriculture, Fisheries and Food Authority Act (No 13 of 2013).* Nairobi: Parliament of Kenya.

Prague Global Policy Institute. (2013). *Food Security and Agricultural Trade in Kenya: The Impact of the Economic Partnership Agreement on Food Security of Poor Kenyans.*

pt.slideshare.net/ILRI/presentation-2-key-livelihood-and... Cached

Quisumbing, A. R., Haddad, L., and Pen˘ a, C. (2001). Are women overrepresented among the poor? An analysis of poverty in 10 developing countries. Journal of Development Economics, 66(1, October), 225–269.

Republic of India. (2013). *The National Food Security Bill, 2013.*

Republic of Kenya (1985), *Kenya Rural Household Budget Survey (1981–1982): Preliminary Report.* Nairobi: Central Bureau of Statistics and the Ministry of Planning and National Development.

Republic of Kenya 2013. Ministry of Agriculture, Livestock and Fisheries. State Department of Agriculture. Food Security Situation as at 31st August 2013.

Republic of Kenya, 2003: Economic Recovery Strategy (ERS) 2003–2007

Republic of Kenya, 2012: Kenya Social Protection Sector Review. Executive Report.

Republic of Kenya, 2013: The 2012–2013 Short Rains Season Assessment Report. Kenya Food Security Steering Group (KFSSG).

Republic of Kenya, National Food and Nutrition Security Policy, 2011. Agricultural Sector Coordination Unit (ASCU).

Republic of Kenya. (2010). *Agricultural Sector Development Strategy 2010–2020.* Nairobi: Government Printing Press.

Republic of Kenya. (2010). *The Constitution of Kenya2010.* Nairobi: Government Printer.

Republic of Kenya. (2011). *National Food and Nutrition Security Policy.* Nairobi: Government Printer.

Republic of Kenya. Economic Review of Agriculture, 2008, pp.17–20 & 2007, pp.18–21.

Republic of Kenya. Ministry of Agriculture. Food Security in Kenya. August 2009.

Republic of Malawi and World Bank, (2007) *Malawi Poverty and Vulnerability Assessment, Investing in our Future*.

Repulic of Kenya. (2007). *Kenya Vision 2030: A Globally Competitive and Prosperous Kenya.* Nairobi: Government Printer.

Ressler, P. 2008: The Social Impact of Cash Transfers. Regional Network on AIDS, Livelihoods and Food Security. International Food Policy Research Institute. http://www.ifpri.org/sites/default/files/publications/kenyacashtransfers.pdf/

Roles of agricultural biotechnology in ensuring adequate food security in developing societies Nicholas Ozor and E. M. Igbokwe Department of Agricultural

Extension, Faculty of Agriculture, University of Nigeria, Nsukka, Enugu State, Nigeria.

Saito, K. (1992), *Raising the Productivity of Women Farmers in sub-Saharan Africa: Overview Report*, World Bank, Women in Development Division, Population and Human Resources Department.

Saito, K. Mekonnen. S. Spurling D. (1994), "Raising the Productivity of Women Farmers in sub-Saharan Africa", *Discussion Paper* 230 Washington, D.C.: World Bank.

Sharma, K. R. (2000a), "Agricultural Commercialization, Women's Time Allocation, and Children's Health and Nutritional Status in Rural Nepal: An Application of a Household Production Model", *Mimeo*, University of Hawaii.

Sharma, K. R. (2000b), "Farm Commercialization and Nutritional Status of Children: The Case of Vegetables, Fruits and Cash Crops (VFC) Program in Western Nepal", *Mimeo,* University of Hawaii.

Sorensen, A. (1990), "The Differential Effects on Women of Cash Crop Production: The Case of Smallholder Tea Production in Kenya", *CDR Project Paper 90.3.*

Spring, A. (1978), *Women in Ritual Symbolic Roles*, New York: Plenum Press.

The Department for International Development (DFID) of the United Kingdom, 2007. Land: Better Access and Secure Rights for Poor People.

The Organic Farmer.http://www.theorganicfarmer.org/category/storage/

The Republic of South Africa. (2002). The Integrated Food Security Strategy for South Africa (IFSS). Duban: Department of Agriculture.

The Role of Markets and Trade in Food Security | Center for ... csis.org/publication/role-markets-and-trade-food-security Cached

The role of rural women in natural resource management in Kenya. www.ammado.com/nonprofit/50795/articles/7325 Cached

The role of rural women in natural resource management in Kenya. Published by: Volunteers For Africa (14 Apr 2009)

The Social Impact of Cash Transfers - International Food ... www.ifpri.org/sites/default/files/publications/kenyacash...

Tibaijuka, A. (1994), "The Cost of Differential Gender Roles in African Agriculture: A Case Study of Smallholder Banana-Coffee Farms in the Kagera Region, Tanzania", *Journal of Agricultural Economics*, Vol. 45, No. 1, pp. 69–81.

Udry, C. (1995), "Risk and Savings in Northern Nigeria", *American Economic Review*, Vol. 85, No. 5, pp. 1287–1300.

Udry, C. (1996), "Gender, Agricultural Production, and the Theory of the Household", *Journal of Political Economy*, Vol. 104, No. 5, pp. 1010–1046.

UN report: Women''s education key to food security | EurActiv www.euractiv.com/...gender-education-equal-news-518186 Cached

United Nations Rule of Law 2008: Making the Law Work for Everyone. Commission on Legal Empowerment of the Poor.

USDA (1981), *Food Problems and Prospects in sub-Saharan Africa: The Decade of the 1980's,* Washington D. C.: USDA.

Von Braun, J. (1996), *Food Security and Nutrition*, Food and Agricultural Organization: World Food Summit Technical Background Document No. 5.

Von Braun, J. and Kennedy, E. (1994), "Conclusions for Agricultural Commercialization Policy", In *Agricultural Commercialization, Economic Development, and Nutrition*, Baltimore and London: Johns Hopkins University Press, pp. 365–376.

Von Braun, J. and Kennedy, E. (1994), *Agricultural Commercialization, Economic Development, and Nutrition*, Baltimore and London: Johns Hopkins University Press.

Von Braun, J. Bouis, H. and Kennedy, E. (1994), "Conceptual Framework", In *Agricultural Commercialization, Economic Development, and Nutrition,* Baltimore and London: Johns Hopkins University Press, pp. 11–33.

Von Braun, J. de Haen, H. and Blanken, J. (1991), *Commercialization of Agriculture under Population Pressure: Effects on Production, Consumption, and Nutrition in Rwanda*. Research Report No. 85, Washington D.C.: International Food Policy Research Institute.

Von Braun, J. Hopkins, F. Puetz, D. and Pandya-Lorch, R. (1993), *Urban Malnutrition in Developing Countries: Trends, Policies, and Research Implications*, Washington D.C.: International Food Policy Research Institute.

Wangui, Elizabeth Edna: Land Use Change Impacts and Dynamics (LUCID): Links between Gendered Division of Labor and Land Use in Kajiado District, Kenya

Whitehead, A. (1990), *Rural Women and Food Production in sub-Saharan Africa in the Political Economy of Hunger*, Oxford: Clarendon Press.

Wolfe, D. M. (1959), "Power and Authority in the Family", In Cartwright (eds), *Studies in Social Power*, Ann Arbor: University of Michigan.

Women of Kenya Denied Law's Land Entitlement by Husbands ... www.bloomberg.com/news/2012-10-25/women-of-kenya-denied... Cached

Women: Still the Key to Food and Nutrition Security www.ifpri.org/sites/default/files/pubs/pubs/ib/ib33.pdf

Women's Work and Economic Empowerment: Promoting Gender ... www.unfpa.org/gender/empowerment1.htm Cached/

Working Paper Series No 23 Nairobi Kenya: International Research Institute.

World Bank (1989), *Kenya: The Role of Women in Economic Development. A World Bank Study*, Washington, D.C.: Oxford University Press.

World Bank, 2006. Voices of Women Entrepreneurs in Kenya. IFC Gender Entrepreneurship Markets & Foreign Investment Advisory Service IFC & World Bank.

World Food Programme (2013). Overview of Food Security Situation in Kenya, November, 2103. http://www.wfp.org/countries/kenya/food-security/overview

www.globalissues.org/news/2008/12/16/65 Cached by Joyce Mulama (Nairobi) Inter Press Service.

Appendices

Appendix 1: Reports Related to this National Report

African Women's Studies Centre. (2014). *Status of food security in Nandi County, Kenya.* Nairobi, Kenya: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Baringo County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Bomet County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Bungoma County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Elgeyo Marakwet County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Isiolo County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Kajiado County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Kiambu County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Kirinyaga County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Kisii County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Kwale County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Laikipia County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Makueni County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Migori County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Mombasa County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Nairobi County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Nakuru County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Taita Taveta County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Turkana County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Status of food security in Trans Nzoia County, Kenya.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Mombasa County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Kiambu County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Laikipia County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Baringo County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Nandi County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Taita Taveta County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Elgeyo Marakwet County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Bungoma County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Kajiado County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Trans Nzoia County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Nakuru County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Migori County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Makueni County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Kwale County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Kisii County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Turkana County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Isiolo County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Kirinyaga County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Food Security Research Findings in Nairobi County: Policy brief.* Nairobi: University of Nairobi Press.

African Women's Studies Centre. (2014). *Conference proceedings on Women and Food Security in Kenya.* Nairobi: African Women's Studies Centre.

African Women's Studies Centre. (2014). *Proceedings of Consultations with Chairs of the Agriculture Committees from the Counties.* Nairobi: African Women's Studies Centre.

Appendix 2: List of Research Coordinators

	Name	Role
1.	Prof. Wanjiku Mukabi Kabira	National Coordinator
2.	Zachary Mwangi	National Coordinator
3.	James Gatungu	Deputy National Coordinator
4.	Dr. Gerrishon Ikiara	Deputy National Coordinator
5.	Prof. Tabitha Kiriti-Ng'ang'a	Deputy National Coordinator
6.	Prof. Margaret Jesang	County Consultations coordinator
7	Dr. Mary Mbithi	County Coordinator
8.	Mary Wanyonyi	County Coordinator
9.	Patrick Mwaniki	County Coordinator
10.	John Bore	County Coordinator
11.	Bernard Obasi	County Coordinator

Appendix 3: Team of Principal Investigators and Advisors

	Name	Role
1.	Prof. Agnes W. Mwang'ombe	Principal, College of Agriculture & Veterinary Sciences & Project Advisor
2.	Prof. Enos H. N. Njeru	Principal, College of Humanities & Social Sciences & Project Advisor
3.	Prof. Wanjiku Mukabi Kabira	Project leader
4.	Dr. Gerrishon Ikiara	Principal Investigator
5.	Prof. Tabitha Kiriti-Ng'ang'a	Principal Investigator
6.	Prof. Margaret Jesang Hutchinson	Principal Investigator
7	Dr. Wanjiru Gichuhi	Principal Investigator
8.	Dr. Mary Mbithi	Principal Investigator

Appendix 4: Report Writers

	Name	Role
1.	Prof. Tabitha Kiriti-Ng'ang'a	School of Economics, UoN - Lead report writer
2.	Prof. Wanjiku Mukabi Kabira	Director AWSC - Co-Writer
3.	Dr. Gerrishon Ikiara	Institute of Diplomacy & International Studies, UoN - Co-Writer
4.	Ms. Mary Wambui Kanyi	Assistant report writer
5.	Dr. Samuel Wakibi	Population Studies & Research Institute, UoN, Assistant report writer
6.	Mr. Reuben Waswa	Assistant report writer
7	Mr. Joseph Ogutu Owino	Assistant report writer
8.	Mr. Gideon Ruto	Assistant report writer

Appendix 5: Reviewers of the Report

	Name	Institution
1.	Prof. Jane Wanjiku Mariara	Director, School of Economics, UoN
2.	Prof. Margaret Jesang Hutchinson	Head, Crop Science Section, Department of Plant Science & Crop Protection, CAVS, UoN
3.	Ms. Agnes Mueni Kyalo	National Programme Coordinator, Kenya Census of Agriculture, Ministry of Agriculture
4.	Dr. Faith Jebet Toroitich	Department of Plant Science and Crop Protection, CAVS, University of Nairobi
5.	Ms. Mary Mildred Wanyonyi	Senior Manager Kenya National Bureau of Statistics
6.	Dr. Dorah Kilalo	Department of Plant Science and Crop Protection, CAVS, University of Nairobi
7	Prof. Shellamiah Okoth Keya	Land Resource Management & Agricultural Technology (LARMAT), UoN
8.	Prof. Kiarie Njoroge	Senior Lecturer, Dept. of Plant Science and Crop Protection, UoN

Appendix 6: Media Campaign Coordinators

	Name	Role
1.	Prof. Henry Indangasi	Coordinator
2.	Dr. Godwin Siundu	Coordinator

Appendix 7: List of Field Research Teams

	Name	Role
	Kiambu County	
1.	Prof. Elishiba Njambi Kimani	Lead Researcher
2.	Mary Njeri Kimani	Rapporteur
3.	Paul Nderitu	Supervisor
4.	Diana Muthoni Ndung'u	Supervisor
5.	Daisy Wanja Gathiga	Enumerator
6.	Kennedy Waithaka	Enumerator
7	Grace Mburu	Enumerator
8.	Judith Wanjiku Thuo	Enumerator
9.	Zakaria Mbuthia Mwangi	Enumerator
10.	Maina Diana Waruguru	Enumerator
	Taita Taveta County	
11.	Dr. Rayya Timmamy	Lead Researcher
12.	Veronica Waeni Nzioki	Rapporteur
13.	John Makau	Supervisor
14.	Joyce Kanze Nzovu	Supervisor
15.	Esther Wanjala	Enumerator
16.	Mary Wambua	Enumerator
17	Japheth Mwamburi Mulongo	Enumerator
18.	Hilton Mwabili	Enumerator
19.	Noel M. Kasololo	Enumerator
20.	Leah Jackline Nduku	Enumerator

	Name	Role
	Nairobi County	
21.	Dr. Margaret Kirimi	Lead Researcher
22.	Grace Mwawuda	Rapporteur
23.	Stanley Wambua	Supervisor
24.	Godfrey Shitsugane	Supervisor
25.	Paul Waweru	Enumerator
26.	Emma Lillian Chitere	Enumerator
27	Claire Gazemba	Enumerator
28.	Irene Gachuiri	Enumerator
29.	Stella Nabwire Mollen	Enumerator
30.	Ronald Omwenga Kemoni	Enumerator
	Kirinyaga County	
31.	Prof. Octavian Gakuru	Lead Researcher
32.	Christopher Kiboro	Rapporteur
33.	Daniel Kinithio	Supervisor
34.	Faith Wairimu Wakibia	Supervisor
35.	Peter Njoroge	Enumerator
36.	Purity Wawira Njeru	Enumerator
37	Hottensiah Wangui Kiriko	Enumerator
38.	Joseph Waithuke	Enumerator
39.	Judy Ngethe	Enumerator
40	Bernard Githinji Migwi	Enumerator
	Mombasa County	
41.	Dr. Jane Wambui	Lead Researcher
42.	Kennedy Kamau Mwangi	Rapporteur
43.	Josiah Kaara	Supervisor
44.	Erick Achola	Supervisor
45.	Neema E. Weche	Enumerator
46.	Shamsa Ibrahim	Enumerator
47	Daniel Muia	Enumerator
48.	Gona David Charo Katana	Enumerator
49.	Nancy Njeri	Enumerator
50.	Zipporah Gachemi	Enumerator
	Kwale County	
51.	Dr. Alex Wanjala	Lead Researcher
52.	Gideon Muendo	Rapporteur
53.	Peninah Kamau	Supervisor
54.	Mary Kithei Waila	Supervisor
55.	Francis Ruwa Kilumo	Enumerator
56.	Rosebell Asiri	Enumerator
57	Elizabeth Mwikali Nthusi	Enumerator
58.	Judy Mwaniki	Enumerator

	Name	Role
59.	John Kisangau	Enumerator
60.	Safari Damaris Redson	Enumerator
	Makueni County	
61.	Dr. Jared Siso	Lead Researcher
62.	Gabriel Mbugua	Rapporteur
63.	Silvestor Maingi	Supervisor
64.	Eunice Mbithe Kivuva	Supervisor
65.	Humphrey Mwenda	Enumerator
66.	Anthony Mutua	Enumerator
67	Faith Mwende Mulwa	Enumerator
68.	Ann Meliki Mutisya	Enumerator
69.	Eric Muoki Kyuvi	Enumerator
70.	Shadrack Mutua	Enumerator
	Migori County	
71.	Prof. Milcah Amolo Achola	Lead Researcher
72.	Rosalyn Otieno	Rapporteur
73.	Alphonse Orang'o	Supervisor
74.	Daniel Obala Obungu	Supervisor
75.	Ronnie Midigo	Enumerator
76.	Billy Obiero	Enumerator
77	Florence Atieno Odhiambo	Enumerator
78.	Rosebella Adhiambo Angir	Enumerator
79.	Gachenge Margaret Gesege	Enumerator
80.	Orinda Shadrack Okumu	Enumerator
	Kisii County	
81.	Dr. Iribe Mwangi	Lead Researcher
82.	Benjamin Momanyi	Rapporteur
83.	Tabitha Weru	Supervisor
84.	Manono Julius Ombasa	Supervisor
85.	Ochora Ogendi Douglas	Enumerator
86.	Peris Kwamboka Ogoti	Enumerator
87	Nelson Nyaachi	Enumerator
88.	Catherine Kerubo	Enumerator
89.	Linet Moracha	Enumerator
90.	Meshack Otieno Jobaye	Enumerator
	Bomet County	
91.	Mabel Isolio	Lead Researcher
92.	Joseph Owino Ogutu	Rapporteur
93.	Dominic Oduge	Supervisor
94.	Daisy Rutto Chepkorir	Supervisor
95.	Kibett Bill Gilbert	Enumerator
96.	Emily Chepchumba	Enumerator

	Name	Role
97	Caroline Jemutai Koima	Enumerator
99.	Isiah Leting	Enumerator
99.	Wanza Ruth	Enumerator
100.	Chepkoech Vivian	Enumerator
	Trans Nzoia County	
101.	Prof. Hellen Mwanzi	Lead Researcher
102.	Mugeni Ojiambo	Rapporteur
103.	Donatus Ndubi	Supervisor
104.	Leah Mugehera Khasoha	Supervisor
105.	Allan Ijaa Ikamari	Enumerator
106.	Asher Deborah Sang	Enumerator
107	Amos Omulama Washiali	Enumerator
108	Christina Machio	Enumerator
109.	Kennedy Andrew	Enumerator
110.	Joseph Kipkirui Rono	Enumerator
	Nandi County	
111.	Dr. Godwin Siundu	Lead Researcher
112.	Yusuf Omete	Rapporteur
113.	Alex Muyera	Supervisor
114.	Kirui Kennedy	Supervisor
115.	Kipserem Laban	Enumerator
116.	Edgar Kipkosgei Birgen	Enumerator
117	Beatrice Chepkurui Cheruiyot	Enumerator
118	Mutai Bethuel Kipkoech	Enumerator
119.	Thomas Sitienei	Enumerator
120.	Penninah Lilan	Enumerator
	Turkana County	
121.	Dr. Wanjiru Gichuhi	Lead Researcher
122.	Josephine Wanjiru Kagucia	Rapporteur
123.	William Nyong'o	Supervisor
124.	David Lomuria	Supervisor
125.	John Paul Kikalamu Bileti	Enumerator
126.	Mary Kanyaman Ekai	Enumerator
127	Fredrick Ejore	Enumerator
128	Naomi Lemuya	Enumerator
129.	Daniel Lowoyapua Maru Ekal	Enumerator
130.	Naboikut Patrick	Enumerator
	Baringo County	
131.	Dr. Faith Toroitich & Prof. Margaret Hutchinson	Lead Researchers
132.	Daudi Rotich	Rapporteur
133.	Christopher Kyangu	Supervisor

	Name	Role
134.	Kipng'etich Paulo Koech	Supervisor
133.	Kimosop Elkanah Kipserem	Enumerator
136.	Naomi Jelimo Kiptukyo	Enumerator
137	Kipchumba Keitany	Enumerator
138.	Felix Kirwa Kirui	Enumerator
139.	Wilcox Chesum Kandie	Enumerator
140.	Kimosop J. Mercy	Enumerator
	Nakuru County	
141.	Prof. Ciarunji Chesaina	Lead Researcher
142.	Marciana Nafula Were	Rapporteur
143.	Willie Ndungu	Supervisor
144.	Millicent Anyanda	Supervisor
145.	Joseph Ngei Muendo	Enumerator
1414.	Oscar Maina	Enumerator
147	Ann Nyambura Mwangi	Enumerator
148.	Daniel Okoo	Enumerator
149.	Kenny Paul Waweru	Enumerator
150.	Ernest Githiru	Enumerator
	Kajiado County	
151.	Francis Kimani	Lead Researcher
152.	Joseph Odawa Ogola	Rapporteur
153.	Joel Nkiramba Nasieku	Supervisor
154.	David Muthami	Supervisor
155.	Doreen Naneu Kamoye	Enumerator
156.	John Mugu	Enumerator
155.	Lydia Joinato Kasae	Enumerator
158.	Catherine Wangoi Kaberia	Enumerator
159.	Meleji Evans Sarbabi	Enumerator
160.	Haroun Ironde Esese	Enumerator
	Bungoma County	
161.	Mr. Reuben Waswa	Lead Researcher
162.	Pauline Liru	Rapporteur
163.	Sophie Chelangat	Supervisor
164.	Anyango Bernard Francois	Supervisor
165.	Sophie Olem	Enumerator
166.	Gideon Wafula Wekesa	Enumerator
167	Stephen Mulayi	Enumerator
168.	Robert Ndiema	Enumerator
169.	Akiso Matrona Mbendo	Enumerator

	Name	Role
	Isiolo County	
170.	Mary Wambui Kanyi	Lead Researcher
171.	Benard Omari Moset	Rapporteur
172.	Christopher Mwangi	Supervisor
173.	Edin Hussein Allio	Supervisor
174.	James Epur	Enumerator
175.	Kalla Diba	Enumerator
176.	Kimathi Henry Karuti	Enumerator
177	Gideon Kennedy Juma	Enumerator
178	Lalampaa Kushi Priscilla	Enumerator
179.	Kevin Budi Guantai	Enumerator
180.	Priscilla Nekipasi	Enumerator
	Laikipia County	
181.	Beatrice Kamau	Lead Researcher
182.	Ruth Momanyi	Rapporteur
183.	Leah Wambugu	Supervisor
184.	Phillip Odhiambo	Supervisor
185.	David Waruinge	Enumerator
186.	Grace Wambui	Enumerator
187	Mugo Edwin Waweru	Enumerator
188	Dorcas Njambi Kibuchi	Enumerator
189.	Thomas Kagiri Kimunyi	Enumerator
190.	Sharon Wangeci Mwaniki	Enumerator
	Elgeyo Marakwet County	
191.	Mr. Kimingichi Wabende	Lead Researcher
192.	Gideon Ruto	Rapporteur
193.	Loyford M. Riungu	Supervisor
194.	Joan Chepkurui Ruto	Supervisor
195.	Geoffrey Ruto	Enumerator
196.	Martin Kiplangat Maritim	Enumerator
197	Judy Chepkemoi	Enumerator
198	Luka Kangogo	Enumerator
199.	Vincet Kipkemoi Kigen	Enumerator
200	Jebet Mary	Enumerator