Addressing Sustainable Development Goal 2:

THE GHANA ZERO HUNGER STRATEGIC REVIEW

FULL REPORT

WFP World Food Programme

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GHANA ZERO HUNGER STRATEGIC REVIEW

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CONTENT

List of Figures

List of Tables

Abbreviations and Acronyms

AAGDS	Accelerated Agricultural Growth and Development Strategy
ADB	Agricultural Development Bank
AfDB	African Development Bank
AgSSIP	Agricultural Services Sub-Sector Investment Programme
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
APR	Africa Progress Report
AU	African Union
BMI	Body Mass Index
CAADP	Comprehensive Africa Agriculture Development Programme
CHNs	Community Health Nurses
CHOs	Community Health Officers
CIDA	Canadian International Development Agency
COHA	Cost of Hunger in Africa
CSIR	Council for Scientific and Industrial Research
CVDs	Cardiovascular Diseases
CWC	Child Welfare Clinic
DAs	District Assemblies
DANIDA	Danish International Development Agency
DFID	Department for International Development
DPs	Development Partners
DVT	Deep Vein Thrombosis
ECOWAP	ECOWAS Agricultural Policy
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FASDEP	Food and Agricultural Sector Development Policy
FASDP	Fisheries and Aquaculture Sector Development Plan
FDA	Food and Drugs Authority
FNTC	Food and Nutrition Technical Committee
GDHS	Ghana Demographic Health Survey
GDP	Gross Domestic Product
GHI	Global Hunger Index
GHS	Ghana Cedis
GIZ	Gesellschaft für Internationale Zusammenarbeit
GNADP	Ghana National Aquaculture Development Plan
GPRS	Ghana Poverty Reduction Strategy
GSA	Ghana Standards Authority
GSCP	Global Social Compliance Programme
GSFP	Ghana School Feeding Programme
GSGDA	Ghana Shared Growth and Development Agenda
GSIF	Ghana Strategic Investment Framework
GSS	Ghana Statistical Services
HANCI	Hunger and Nutrition Commitment Index
HEIA	High External Input Agriculture

HEISA	High External Input and Sustainable Agriculture
HHs	Households
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IFAD	International Fund for Agriculture Development
IFPRI	International Food Policy Research Institute
IGFs	Internally Generated Funds
ILO	International Labour Organisation
IQ	Intelligence Quotient
ITN	Insecticide-Treated Net
IYFC	Infant and Young Child Feeding
JAKF	John Agyekum Kufour Foundation
JICA	Japan International Cooperation Agency
LBW	Low Birth-Weight
LEAP	Livelihood Empowerment Against Poverty
LEIA	Low External Input Agriculture
LEISA	Low External Input and Sustainable Agriculture
LRDP	Lowland Rice Development Project
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
MESTI	Ministry of Environment, Science, Technology and Innovation
METASIP	Medium Term Agriculture Sector Investment Plan
MICS	Multiple Indicator Cluster Survey
MLGRD	Ministry of Local Government and Rural Development
MM	Macronutrient Malnutrition
MMDAs	Metropolitan, Municipal and District Assemblies
MMDCEs	Metropolitan/Municipal/District Chief Executives
MOAP	Market Oriented Agriculture Programme
MoFA	Ministry of Food and Agriculture
MoFAD	Ministry of Fisheries and Aquaculture Development
MoGCSP	Ministry of Gender, Children and Social Protection
MoH	Ministry of Health
MTADP	Medium Term Agricultural Development Programme
NCDs	Non-Communicable Diseases
NDPC	National Development Planning Commission
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NHIS	National Health Insurance Scheme
NRGP	Northern Rural Growth Project
NTDs	Neural Tube Defects
PE	Pulmonary Embolism
PEM	Protein Energy Malnutrition
PHL	Post-Harvest Losses
Ppm	Part Per Million
PPPs	Public-Private Partnerships
RAPUs	Regional Agricultural Planning Units
RCCs	Regional Coordinating Councils

RCO	Regional Coordinating Office
RSSP	Rice Sector Support Project
RTIP/	Roots and Tubers Improvement Programme
RTIMP	Roots and Tubers Improvement and Marketing Programme
SAI	Sustainable Agricultural Intensification
SDG	Sustainable Development Goal
SLM	Sustainable Land Management
SNUT	Staple-Adjusted-Nutritious Diet
SSA	Sub-Saharan Africa
SUN	Scaling Up Nutrition
UN	United Nations
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WAAPP	West Africa Agricultural Productivity Programme
WARFP	West Africa Regional Fisheries Programme
WASH	Water Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organisation

Foreword

Ghana has been commended globally for significantly reducing poverty, hunger and malnutrition between 1990 and 2014. However, the Sustainable Development Goals which member countries of the United Nations adopted in 2015 require higher commitment and more detailed strategic planning, to achieve this ambitious set of goals. What actions do we need to take in Ghana to achieve Sustainable Development Goal (SDG) 2 - Zero Hunger? How can we "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" without leaving anybody behind by 2030? How do we ensure that everyone has access not just to enough food but to diets that are rich in both calories and micronutrients?

These are the questions which the Ghana Zero Hunger Strategic Review has sought to address. The review identifies the causes of hunger, food insecurity and malnutrition and proposes measures to address them. It also draws a roadmap which informs the Government and stakeholders of what needs to be done to achieve all five targets of SDG 2.

The review confirms the importance of agriculture to the country as it remains a major contributor to poverty reduction due to the significant proportion (45 percent) of Ghanaians actively engaged in it. From stakeholder consultations across the country, the review establishes that the limited increase in food production is related more to lack of markets than production constraints. It further affirms that the country is facing a debilitating triple burden of malnutrition (underweight, overweight and micronutrient deficiencies).

The World Food Programme (WFP) has been a key partner in efforts to eliminate hunger and malnutrition in Ghana. Over the years, its programmes have kept in tandem with Ghana's development. It provided food aid in the challenging 70's and 80's, evolved to local food purchases from surplus production regions to deficit areas in the past decade, and now provides cash and vouchers which are boosting markets in communities, especially in northern Ghana. WFP support to the national school feeding programme, smallholder farmers, communities affected by climate change, and the prevention of malnutrition, is well known. Currently, its innovative programme which engages private sector agro-processing firms in a market-based approach to improve food and nutrition security, falls in line with Ghana's vision to move from aid to trade.

WFP commissioned the John Agyekum Kufuor Foundation (JAKF) to undertake the zero hunger strategic review on behalf of the Government of Ghana in 2016. Under the leadership of HE John Agyekum Kufuor, former President of the Republic of Ghana, the Foundation mobilized an expert research team comprised of Prof. Matilda Steiner, Dean, School of Biological Sciences, University of Ghana, Prof. Joseph Saa Dittoh, Climate Change and Food Security Department, University for Development Studies, Dr. Sam Newton, Senior Lecturer of the School of Medicine and Health Sciences at the Kwame Nkrumah University of Science and Technology, and Prof. Charity Akotia, Dean, School of Social Sciences, University of Ghana, to conduct the review.

What is clear from this report is the need for the Government and its partners to prioritize the elimination of hunger, food security and malnutrition as a basis to achieve other developmental goals. With 13 years left to achieve Zero Hunger in 2030, there is an urgency to re-double efforts using clearly thought out actions identified in the road map of this review.

Prof George Gyan-Baffour (MP)

Minister for Planning

Acknowledgement

The Ghana Zero Hunger Strategic Review report was prepared within the framework of the Memorandum of Understanding between the World Food Programme - Ghana (WFP) and The John A. Kufuor Foundation (JAKF). Undertaken on behalf of the Government of Ghana, the review process was under the leadership of HE John Agyekum Kufuor, former President of the Republic of Ghana, who served as the lead convener, and was made possible by the institutional leadership provided by HE David Beasley, Executive Director of WFP. The government of HE Nana Addo Dankwa Akufo-Addo has been fully supportive, and so was the immediate past president, HE John Dramani Mahama, under whose auspices the process commenced. The President's Chief of Staff, Hon. Frema Osei Opare provided additional support on behalf of the government.

During the review process, the research team was guided by an advisory board made up of the Ministers of the Ministry of Food and Agriculture; Ministry of Local Government and Rural Development; Ministry for Planning; Ministry of Health; Ministry of Gender, Children and Social Protection; Ministry of Fisheries and Aquaculture; Ministry of Education; Minister of State in Charge Agriculture, the Ministry of Finance and Economic Planning as well as the National Development Planning Commission and the National Disaster Management Organization.

Immense gratitude goes to the technical team members who ensured quality control for both the methodology and field consultations. They comprised technical representatives of the aforementioned ministries, Premium Foods Limited, the Hunger Alliance, Alliance for a Green Revolution in Africa, Peasant Farmers Association, International Institute of Tropical Agriculture, Private Enterprise Federation, Food and Agriculture Organization, German Development Cooperation, Global Affairs, Canada, International Food Policy Research Institute, Forum for Agriculture Research in Africa, World Health Organisation, Institute for Food Agriculture Development, African Development Bank, and Ghana Nutrition Association.

We are also grateful for the good work of all the regional representatives of the various public institutions and companies that contributed at the regional stakeholder consultation workshops across the country. During the focus group discussions, the local communities in particular enriched the report by sharing what it really means to be hungry. We appreciate especially the communities of Nyamebekyere in the Central Region, Osabene and Basare Nkwanta in the Eastern Region as well as Kudula and Garishagu in the Northern Region for their enthusiastic cooperation.

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Finally, our gratitude goes to the staff of the World Food Programme and the John A. Kufuor Foundation for their hard work in facilitating the review process

Executive Summary

BACKGROUND AND OBJECTIVES:

Ghana, with a population of about 28,833,629 (2017 estimate), has a population growth rate of about 2.3 percent per annum. With a total land area of 23,884,245 hectares, Ghana is a naturally well-endowed country when compared to many other West African or even African countries. Ghana is a lower middle-income country with a 2016 average GDP per capita estimate of US$1513.46 (Ranging from 1,006 to 3,955 USD as of 2017) (World Bank, 2017). Ghana has performed relatively well in reducing hunger since the 1990s and particularly between 2014 and 2016. It was the first African country to meet the Millennium Development Goal (MDG) 1 of halving poverty and hunger. The FAO gave the country an award "for reducing the level of its malnourished population from 7 million in the early 1990s to less than 1 million today". Also, a 2015 population survey by USAID indicated that households suffering from moderate to severe hunger reduced by about 20 percent while stunting in northern Ghana reduced by about 23 percent between 2012 and 2015 (USAID, 2015). Hunger and poverty are, however, still problems in Ghana, especially in the Northern, Upper East and Upper West Regions, while several pockets of hunger exist in rural and urban areas in other parts of the country. About 1.2 million Ghanaians are estimated to be food insecure (MICS, 2011). Also, the north-south, rural-urban and female-male inequality gaps have been widening despite the overall decrease in poverty and hunger in the country. Child poverty is also an increasing problem (Cooke et. al., 2016).

The African Union Malabo Declaration and the United Nations Sustainable Development Goal 2 call for ending hunger, food insecurity and malnutrition, and promoting sustainable food systems by 2025 and 2030 respectively. The Global Hunger Index (GHI) and the Cost of Hunger in Africa (COHA) report specifically outline the implications of hunger in both monetary and human resources terms. The Ghana Hunger Index, which is expressed in terms of cost to the nation, has explicitly disclosed that the annual cost associated with child under-nutrition is estimated at 4.6 billion Ghana Cedis (6.4 percent of GDP). This colossal cost makes the calls by the AU and the UN for the elimination of hunger, food insecurity and malnutrition in Ghana very urgent.

The Government of Ghana is committed to the continental and global protocols for the achievement of overall sustainable development. The Government, therefore, through the John Agyekum Kufour Foundation and with the support of the United Nations World Food Programme (WFP), undertook a participatory process to produce a Ghana Zero Hunger Strategic Review for the purpose of charting a path to end hunger, food insecurity and all forms of malnutrition by 2030.

The main objective of the Ghana Zero Hunger Strategic Review was to produce a comprehensive national report and road map which the Government and its partners can use to inform their roles for the achievement of zero hunger in the country by 2030. The Report has ensured that the five principal targets of SDG 2 and the closely-related five pillars of the Zero Hunger Challenge are adequately addressed, in terms of strategic directions and monitoring mechanisms. A summary of the five targets of SDG 2 to be achieved by 2030 is as follows:

1. End hunger and ensure access by all people to safe, nutritious and sufficient food all year round by 2030.
2. End all forms of malnutrition by 2030.
3. Double agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers by 2030.
4. Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production by 2030.
5. Maintain genetic diversity of seeds, cultivated plants, and farmed and domesticated animals and their related wild species by 2020.

Cognizance was also taken of food and nutrition policies and strategies of notable international organizations such as the AU, ECOWAS, the African Development Bank (ADB), WFP, FAO, IFAD, UNICEF and others within the sub-region as well as health care systems and policies that directly or indirectly impact on food utilization.

The Ghana Zero Hunger Strategic Review team addressed the following specific questions:

1. What have been the causes of hunger, food insecurity and malnutrition in Ghana over time?
2. What are the peculiar situations of hunger, food insecurity and malnutrition across the ten regions of Ghana?
3. What role has government (at the national, regional and district levels) and development partners played in the past in attempts to tackle the problems in Ghana and what future role can they play?
4. What national and international food security and nutrition policies, strategies, programmes and projects have been implemented in the past? What are the gaps, and how can the gaps be addressed to ensure that there will be zero hunger and malnutrition by 2030?
5. What gender and social protection issues impact on hunger, food insecurity and malnutrition? What are the gaps and how can they be addressed?
6. How can prevailing food systems or combinations of them be made more sustainable, ecosystems-friendly and resilient to rapidly changing climatic conditions?

METHODOLOGY

Comprehensive desk studies as well as engagement with stakeholders at national, regional and community levels in various parts of the country were undertaken to ensure a good understanding of food and nutrition security issues at all levels of the Ghanaian society. The desk study involved reviews of published and unpublished materials on hunger and malnutrition; food and nutrition security related policies, strategies, plans, programmes and projects of the country over time; strategies of international organizations; and health care systems and policies that directly and indirectly impact on food utilization. Situational, response and gap analyses were undertaken to gain an insight into the food and nutrition security in the country and what had been done or not done about it.

FOOD AND NUTRITION SITUATION

Ghana has been commended worldwide for reducing poverty, hunger and malnutrition. Poverty reduction is important for food and nutrition security because "hunger is primarily a problem of poverty" (Parikh, 1992). Hunger in Ghana decreased by 75 percent between 1990 and 2004. The malnourished population also reduced from 7 million in the early 1990s to less than 1 million in 2015. Nevertheless, hunger and malnutrition persist in many parts of Ghana (especially the Northern, Upper East and Upper West Regions as well as many rural and peri-urban communities across the nation) and could increase given the unsustainable food production systems that continue to be practised in all parts of the country.

Hunger arises out of limited food availability, accessibility, affordability, stability and utilization, and all these situations exist in food-and-nutrition insecure areas in the country. As noted from stakeholder consultations and focus group discussions, the limited increases in food production in all parts of the country is related more to lack of markets (not to mention the lack of standard weights and measures) and low prices for the produce than low use of production inputs and production constraints. The two related problems continue to keep many farming families and their dependents poor, food-insecure and malnourished.

With regards to malnutrition, Ghana is facing the triple burden of malnutrition (underweight, overweight and micronutrient malnutrition). Nearly 20 percent of children under five in Ghana are stunted (too short for their age). This indicates chronic malnutrition. Stunting is more common in the Northern Region where about 33 percent of children are stunted and less common in the Greater Accra Region where about 10 percent are stunted. Stunting is more common among children of less educated mothers (26 percent). Wasting (too thin for height), a sign of acute malnutrition, is far less common (5 percent). Furthermore, 11 percent of Ghanaian children are underweight, (too thin for their age). The nutritional status of Ghanaian children has generally improved since 2003. There is also a disparity between males and females across the regions. Six percent (6 percent) of Ghanaian women and 10 percent of men are underweight (body mass index or BMI < 18.5) while about 40 percent of women and 16 percent of men are overweight or obese (BMI ≥ 25.0)). A recent demographic health survey in Ghana reported the prevalence of childhood obesity to be 3 Percent. Micronutrient Malnutrition (MM) is also a serious problem. Vitamin A, Iodine and Iron deficiencies are prevalent, especially among children and women of child-bearing age and this has a great bearing on the high maternal mortality associated with anaemia. One major challenge with respect to macronutrient malnutrition is the general attitude of the population not wanting to eat fruits and seeing fruits as food for the sick. Another dimension is the relatively high cost of fruits and vegetables.

With respect to the productivity and incomes of small scale food producers, the finding is that there have been modest increases in the productivity of mainly maize, rice and soybeans, the crops actively promoted by development partners. Productivity has stagnated for most of the staple food crops, and incomes have not improved. Indeed, for most farming families and others, poverty and hunger have been increasing. Cost of production continues to increase partly because several farm inputs are imported. What should be done in the agricultural sector to ensure that food and nutrition security does not continue to be a problem?

With respect to the target of sustainable food systems and resilient agricultural practices, the finding is that small farmer (local) food systems tend to be more sustainable and resilient. Furthermore, there is a need to promote the ecosystem-friendly practices which farmers are using but with difficulty. Farmers should be supported to move from Low External Input Agriculture (LEIA) to Low External Input and Sustainable Agriculture (LEISA). Also, the tendency for modern agriculture to move towards monoculture is leading to food and nutrition insecurity. There must be seed security on order to attain sustainable food and nutrition security. In the area of fisheries, unsustainable fishing practices are rampant and need to be tackled holistically. Fish provides the largest source of animal protein in the country.

Several gaps have been identified with respect to past and current food security, nutrition and social protection policies, plans, strategies, programmes and projects; and it is hoped that those gaps will be addressed during the implementation of this Strategic Review. Government monetary contributions to the largely donor-funded programmes and projects have been too insignificant over the years. Without Government commitment to significant funding of food and nutrition security future programmes and projects, zero hunger by 2030 will be impossible.

GENDER, CARE AND SOCIAL PROTECTION

Gender inequalities influence food and nutrition security in the country. Specific gender-related issues include some cultural practices that limit women's access to productive resources, administrative and other bottlenecks that limit women's access to agricultural credit and use of agricultural equipment, and the general negative perception among females of agriculture as a profession for drop-outs and people without formal education.

Social protection interventions are important for food and nutrition security. The Ghana Government has put in place some social protection interventions which have strong legal and policy backing. The major ones include the Ghana School Feeding Programme (GSFP), which provides hot meals for selected public school children; the Livelihood Empowerment against Poverty (LEAP), which provides cash transfer to the vulnerable (caregivers of school children, aged poor, and persons with severe disabilities). Additionally, the National Health Insurance Scheme (NHIS) was instituted to provide free health insurance for the aged and pregnant women, the capitation grant and free distribution of school uniforms and books to public school children, are also examples of social protection interventions instituted by the government.

In spite of these programmes, there are some gaps such as lack of coordination among the various sectors, lack of monitoring and supervision of the programmes, inadequate funding and overdependence on donor agencies for financial support. It is important that the government puts in effective coordination and monitoring frameworks that will ensure the successful implementation of the programmes. It is also important to narrow the gap between men and women with regard to food and nutrition security and also ensure that the physically challenged, orphans, the aged and mental and other patients attain zero hunger by the year 2030.

CONCLUSIONS AND RECOMMENDATIONS

- Considerable achievements have been made in ensuring food and nutrition security in Ghana. The country however still has the triple burden of malnutrition, Protein Energy Malnutrition (PEM), macronutrient malnutrition, overweight and obesity, and will require effective food-based strategies, including production of nutrient-rich foods as well as food fortification to achieve zero hunger.
- The effective implementation of any food and nutrition security strategy must begin with a commitment at the highest level. Food and nutrition security is multi-sectoral and multi-disciplinary and so important that Government needs to take all measures to ensure that its people are protected against food insecurity throughout the country. It is recommended that a food and nutrition security Advisory Board be housed in the Office of the President, and should include top representatives of relevant ministries, NDPC, development partners, research institutions, universities and civil society.

- Addressing food and nutrition insecurity in Ghana must necessarily involve bridging the rural-urban, female-male and north-south gaps. Also, it is important to expand the scope of vulnerable groups to include children, adolescents and the aged, as well as tackle infectious diseases such as Tuberculosis, AIDS etc. It has been shown that, even though Ghana is performing relatively well, these gaps are widening, which is a serious cause for concern.
- The commodity approach to food production (and the whole food system) with emphasis on improved seeds (of only a few commodities) and use of inorganic chemicals has been pursued for decades with only modest short-term successes mainly because it is not a sustainable process. It has also proved not to be a nutrition-sensitive, environmentally-friendly nor a climate-smart agricultural practice. Even with the incorporation of value chain concepts, markets for foodstuffs produced have been a challenge and a major cause of persistent low agricultural productivity. There is the need to institute strategies that incorporate local food systems and food sovereignty paradigms. A variant of the agricultural clusters model is one such strategy which allows for traditional (local) food systems to be improved rather than being replaced. The mixed cropping and mixed farming systems can be effectively improved within the agricultural clusters system. Private sector operatives such as input dealers, aggregators, processors, marketers, financiers and others are key members of agricultural clusters and if the "one district one factory" initiative becomes operational it will boost the agriculture cluster system. Standard weights and measures will, also, necessarily be an important requirement of an agricultural cluster system. Several aspects of the Government's "Planting for Food and Jobs" campaign are clearly aimed at pursuing the zero-hunger agenda. Also, if the "one district one factory" initiative is executed well it will lead to increased production by the smallholder farmers and that will enhance sustainable production and sustainable food systems.
- Effective coordination of policies, programmes and projects at all levels and in all sectors is key to ending hunger in the country. Food and nutrition security interventions should indeed be designed as integrated multi-sectoral and multi-disciplinary programmes or projects and implemented as such.
- Food and nutrition security interventions should be based on secure sustainable funding. The Government, development partners, the private sector and agencies and institutions should be engaged to provide funding for a well-structured food and nutrition security institutional set-up to oversee the implementation of interventions.
- Empowering women, providing nutrition education and promoting attitudes and behaviour change for all with partnership from the media and financial support from the Government are necessary components.
- Innovative methods based on science and technology, in food production, processing and marketing are indispensable for the achievement of food and nutrition security. ICT, for example, should be effectively harnessed to support food production, processing and marketing in all regions of the country, especially in rural areas. It is the most cost-effective way of reaching the numerous rural communities.
- By 2030, a Ghana free from hunger and all forms of malnutrition can be achieved if this is led by governments, supported by organizations and individuals. Also tapping the expertise of NDPC and donor organizations will ensure every child, woman, person with disability across the entire life stages, irrespective of age and gender, can realize their right to food and nutrition, and reach their full potential. That will inevitably promote national development.

Chapter 1: Introduction

1. 1 BACKGROUND

The Zero Hunger Strategic Review in Ghana has been a country-led, open and consultative process involving relevant stakeholders. The review has established a baseline that fosters a joint understanding of the challenges and gaps in the national response to food and nutrition security, leading to joint agreement and consensus on priority actions required to achieve the United Nations Sustainable Development Goal 2 (SDG 2). SDG 2 aims to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" by 2030. The five targets of SDG 2 are:

- By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
- By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
- By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
- By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and thus progressively improve land and soil quality.
- By 2020, maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.

The main objective/deliverable of the Ghana Zero Hunger Strategic Review has been the creation of a national report and road map to zero hunger which the Government and its partners can use to inform their roles in-country. The Report has ensured that the five principal targets of SDG 2 and the closely related five pillars of the Zero Hunger Challenge are adequately addressed, in terms of strategic direction and monitoring mechanisms.

1.2. DEFINITIONS

It is important to operationally define the keyword "hunger" and show the linkages with factors that impact on it from a multi-sectoral perspective (Figure 1).

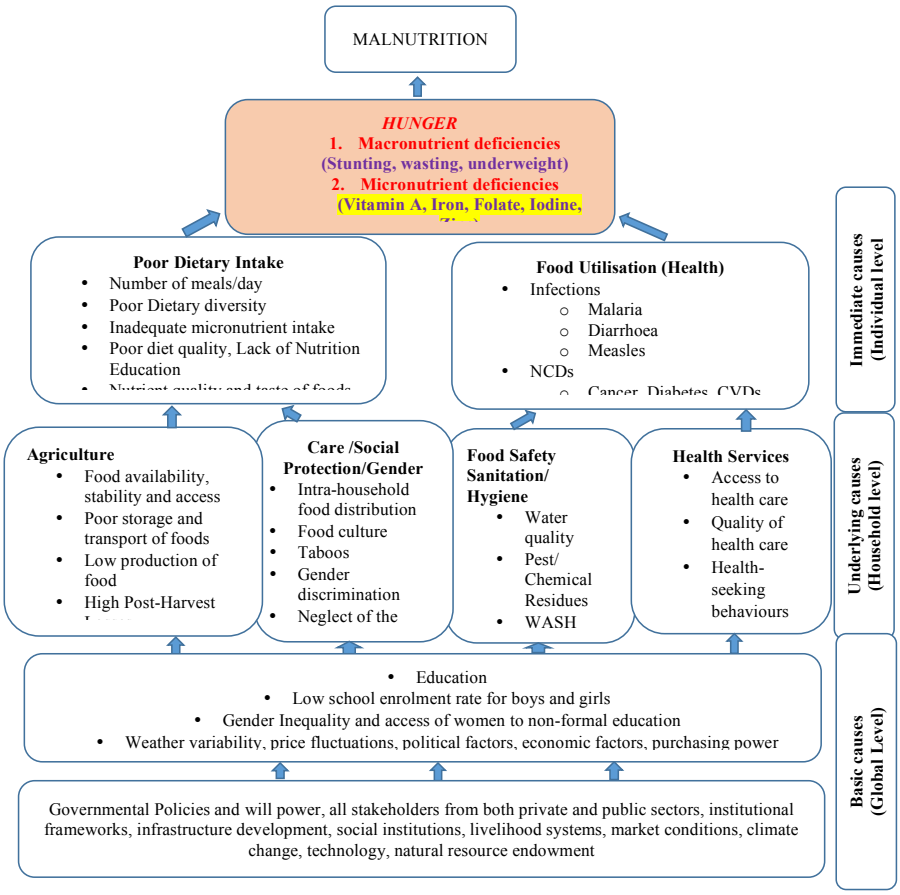

Figure 1: Relevant indicators that impact hunger and malnutrition at different levels
Source: Modified after the UNICEF Conceptual Framework of Malnutrition
WASH: Water Sanitation and Hygiene

Depending on the usage of the term, the concept hunger covers a broad spectrum from the short term physical experience of pain or discomfort through chronic food shortage to severe life-threatening lack of food. Hunger is a condition in which a person, for a sustained period, is unable to eat sufficient food to meet basic nutritional needs in terms of both macro and micro nutrients (NDPC, 2016).

Two key terms arise in the definition of hunger: food insecurity and malnourishment. Food insecurity is the lack of secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. The four main components of food insecurity are unavailability, inaccessibility, unaffordability and instability (that is unsustainability). Malnourishment, which occurs when nutrient and energy intake does not meet or exceeds an individual's requirements, is also critical and is the basic cause of hidden hunger.

Often, the definition and interpretation of hunger is skewed towards lack of macro-nutrients (energy). Nevertheless, the issue of hidden hunger (the chronic deficiency of essential vitamins and minerals – micronutrients) is critical to ensuring health, productivity and proper development. That is why in tackling hunger there is the need to place emphasis on ensuring food and nutrition security. Food and nutrition security is not only about having enough food, but having access to varied sources of food that can help ensure diet quality, so that diets are sufficient not just in calories but also in micronutrients (Meenakshi, 2016). Poor diets contribute significantly to diseases such as coronary heart disease, cancer, stroke and diabetes (Frazao, 1996).

1.3. NEED FOR MULTI-SECTORAL LINKAGES

According to the Ghana Cost of Hunger in Africa (COHA) Report, an estimated GH¢4.6 billion (or US$2.6 billion) was lost to the economy in 2012 as a result of child under-nutrition (NDPC, 2016). Poverty is one of the key causes of hunger and malnutrition. It is estimated that 48 percent of the sub-Sahara African population is below the poverty line of US$1.25 a day (UNECA et. al., 2015). According to FAO (2015), 52.0 percent of SSA's rural population and 28.8 percent of its urban population are below the poverty line. That means poverty eradication (SDG 1) is important in the achievement of SDG 2. Another major cause of hunger and malnutrition is the kinds of food systems that are promoted. Current "food systems are too focused on food quantity and not enough on quality" (Global Panel on Agriculture and Food Systems for Nutrition, 2016). Dittoh et al. (2007), have also pointed out that "food production, poverty, malnutrition and health are very intricately linked and the result of that linkage is probably the most important determinant of development" (p. 617).

Other food production related causes of hunger and malnutrition include climate change, unfavourable environment, recurring conflicts, as well as diseases such as malaria, HIV/AIDS, mental illness and others. All these affect the way food is produced in very intricate ways and farmers have over time devised ways of adapting and adjusting to situations through their dynamic farming systems. As implied above there is a need for some understanding of the different farming systems practised across the country.

Another important dimension of food insecurity and hence hunger is utilization, which addresses not only how much food people eat but also what and how they eat. It also covers the food preparation, intra-household food distribution, water and sanitation and health care practices. The vicious cycle of malnutrition and infections cannot be over–emphasized as malnutrition magnifies the effects of disease while disease and infections increase nutrient requirements. However, appetite is usually suppressed in the state of malnutrition and disease thus amounting to low/poor food intake. Malnutrition is particularly lethal in combination with infectious diseases such as malaria, measles, and diarrhoeal diseases. Infection and micronutrient deficiencies can induce immunodeficiency in otherwise healthy children, increasing susceptibility to diarrhoea and other infections. This can lead to a vicious cycle of repeated infections, reduced immunity, and deteriorating nutritional status. Thus, stunting rate, wasting rate, prevalence of diarrhoeal diseases, latrine usage, underweight, goiter, anaemia, night blindness etc. are some key indicators that can be assessed to monitor food utilization.

It is important to reiterate the point that gender equality is critical in achieving zero hunger. Women and men face different constraints and barriers that limit opportunities for women and girls. According to Karbeer (2008), the constraints are but not limited to the following:

1. Gender-specific (social norms and practices that apply to women or men by virtue of their gender)
2. Gender-intensified (inequalities between household members reflecting norms and customs on the distribution of food, health care, and access to property)
3. Gender-imposed (forms of gender disadvantages that reflect discrimination in the wider public domain)

There is therefore the need for stronger integration between the pillars that directly affect food and nutrition security i.e Agriculture, Nutrition, Health, Water, Sanitation and Hygiene, Gender, Care and Social Protection, as illustrated in the conceptual framework in Figure 1 above. An all-inclusive multi-sectorial approach to the food and nutrition insecurity situation is the way forward if the food and nutrition security issues in Ghana are to be dealt with. That is what we believe will result in a good Ghana Zero Hunger Strategic Review.

Another important area that has been neglected is the "knowledge and wisdom" of the hungry and malnourished themselves. There is a need to undertake research from the perspective of those facing hunger and malnutrition and develop sustainable models that emphasize local control of food systems. As indicated by Windfuhr and Jonsen (2005), "current mainstream answers to the problems causing malnutrition are failing and adherence to a set of central ideas or principles, based around an ever-greater concentration on trade-based food security, is inadequate to tackle the problems" (p. xi). There is the need to tackle the problem being faced from the food sovereignty perspective. Food sovereignty may be defined as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Nyeleni, 2007, p. 1). Food sovereignty "promotes community control of productive resources; agrarian reform and tenure security for small-scale producers; agro-ecology; biodiversity; local knowledge; the rights of peasants, women, indigenous peoples and workers; social protection and climate justice" (Nyeleni, 2013, p 1.). Thus food sovereignty and food systems perspectives will necessarily tackle hunger and malnutrition sustainably. According to Pimbert (2009) food sovereignty is the only way to achieve real (sustainable) food security. The beginning of this new orientation of research or interventions is to understand the several food systems and how farmers manage and control those systems from production to consumption and then develop models to better the systems.

1.4 THE ZERO HUNGER STRATEGIC REVIEW: OVERVIEW AND RATIONALE

The Government of Ghana is committed to achieving zero hunger by 2030. Several stakeholders have also committed to this goal: The United Nations, through the 2030 Agenda for Sustainable Development; African Union, through the Malabo declaration; the African Development Bank, through its "Feed Africa" strategy; and many others. In this context, the WFP and its partners facilitated the Ghana Zero Hunger Strategic Review, led by the J.A. Kufour Foundation (JAKF), to support the Government and its partners to articulate what is needed to achieve SDG 2 (zero hunger) in Ghana by 2030.

The Ghana Zero Hunger Strategic Review has:

1. Provided a comprehensive and detailed understanding of the food and nutrition security context of Ghana, including strategies, policies, programmes, institutional capacities and resource flows;
2. Identified key challenges Ghana faces in achieving zero hunger;
3. Articulated how sustainable food systems can be promoted to ensure sustainable zero hunger in Ghana
4. Discussed the role of the private sector in achieving zero hunger, including food security and improved nutrition and related fields;
5. Explored how South-South and triangular cooperation could contribute to achieving zero hunger in Ghana and how Ghana can help other countries make progress towards zero hunger in line with the 2030 Agenda;
6. Proposed actionable areas where partners can better support Ghana to make significant progress towards zero hunger; and;
7. Recommended milestones for a National Zero Hunger Roadmap.

The proposed actions clearly addressed what should be done and how the suggested actions will be carried out to ensure that:

1. Government and partners' efforts will move the country towards eliminating food insecurity and malnutrition, and thus towards the achievement of SDG 2.
2. Development partners' orientation will effectively align with Ghana's national development goals and priorities.
3. There will be effective engagement by partners of the Government of Ghana.
4. There will be platforms for strategic consultations with key stakeholders.
5. Indicators that guide the measurement and monitoring of the specific SDG 2 targets towards improved effectiveness of policies are clearly identified.

The Research Team, identified through the JAKF, used several qualitative and quantitative research techniques and tools to undertake the review. The Research Team was multidisciplinary and included experts in areas of agriculture, nutrition, health, gender, development policy and others deemed relevant by the team.

The structure of the report is as follows:

1. **Situation Analysis** – The emphasis has been on food security and nutrition trends, causes of food insecurity and malnutrition, methods used to address the problem in the past and the shortcomings of those methods, the degree to which food systems and food sovereignty perspectives have been incorporated into past strategies, etc. The analysis was presented along the SDG 2 targets.
2. **Response Analysis** – This involved analysis of the food security and nutrition policies, strategies, programmes and projects of Government agencies, Development Partners and NGOs. Institutional arrangements and capacities as well as human and financial resource allocation for food security and nutrition interventions were analysed. There was also the need to link policies, strategies, programmes and other planned interventions to implementation and achievements over the years. The response analysis thus involved the engagement of several stakeholders (policy makers, implementers, beneficiaries, etc.) at national, regional, district and community levels.
3. **Gap Analysis** – Gaps in policies, plans, strategies, programmes, projects, funding, implementation, etc., especially in relation to prevailing paradigms (e.g. "commoditization" and overdependence on imported seeds and fertilizers) were critically examined. Important as prevailing paradigms are, the continued food insecurity and malnutrition in several parts of the country suggests the need to consider the integration of other paradigms such as local food systems and food sovereignty perspectives in food and nutrition security programming. The analysis was done by taking cognisance of gender and generation so that pertinent differences between different gender and age groups will not be overlooked. It also recognized differences in population groups (poor,

marginalized groups, etc.) and geographical areas so that specific needs and priorities can be highlighted.

4. **Recommendations** – Recommendations have been made which focus on:
   - Opportunities to fill gaps in the national response through government, partner, civil society or private sector interventions, focusing on how suggested interventions would respond to the needs of different population groups (e.g. disaggregated by sex and age)
   - Opportunities to improve plans, programme design, implementation and effectiveness, coordination, institutional capacities, resourcing, etc.
   - Priority actions to be taken in the short to medium term, including targets, implementation and resourcing modalities

The recommendations centred on how to achieve equity and empowerment of identifiable groups; how to ensure environmental sustainability and resilience across agricultural landscapes; identification of new and innovative investment strategies and implementation pathways for inclusiveness; effective trade-offs between multiple livelihood benefits and food and nutrition at multiple scales; and incentives for adoption of sustainable and climate-smart agricultural practices that enhance ecosystem services and promote improved productivity and equity. The convergence of water, food, energy and trade-offs that exist and impinge on SDG 2 has also to been analyzed.

1.5 RESEARCH QUESTIONS

The main research question addressed was: What strategies or combination of strategies should be employed by government and its development partners to ensure zero hunger and malnutrition in Ghana by 2030?

Sub-research questions arising from the main one are:

1. What have been the causes of hunger and malnutrition in Ghana over time?
2. What are the peculiar situations of hunger and malnutrition across the ten regions of Ghana?
3. What role have the government (at national, regional and district levels) and its development partners played in the past in attempts to alleviate hunger and malnutrition in Ghana and what further role can they play?
4. What national and international food security and nutrition policies, strategies, programmes and projects have been implemented in the past? What are the gaps, and how can the gaps be addressed to ensure that there is zero hunger and malnutrition by 2030?
5. What gender and social protection issues impact on hunger and malnutrition? What are the gaps and how can they be addressed?
6. How can prevailing food systems or combinations of them be made more sustainable, ecosystems-friendly and resilient to the changing climatic conditions?

1.6 STRATEGIC REVIEW PROCESS, METHODOLOGY AND STRUCTURE

The discussions above clearly indicate that comprehensive desk and field studies had to be undertaken. There was also the need to formulate highly informed strategic directions towards effective actions for the achievement of SDG 2 in Ghana.

The desk study involved a review of:

1. published and unpublished documents on hunger, food security and nutrition (causes and interventions);
2. policies, strategies, plans, projects and programmes in the areas of food security, agriculture and rural development, nutrition and health, as well as gender and social protection in Ghana;
3. the targets of SDG and other related SDGs;
4. Food security and nutrition strategies of notable international organizations such as the AU, ECOWAS, the African Development Bank, FAO, IFAD and WFP and others within the sub-region.
5. Health care systems and policies that directly/indirectly impact on food utilization.

There was the need to undertake a critical analysis of implementation and coordination modalities of food security and nutrition interventions in the country. Thus, the work involved the engagement of several stakeholders at national, regional, district and community levels. The engagement was essential in obtaining the qualitative opinions of stakeholders

on the food security and nutrition issues at stake as well as obtaining expert opinions on what should be done to address the gaps and challenges in achieving zero hunger in Ghana.

"Regional" stakeholder and community level engagements were done in the Western, Eastern and Northern zones. The Western zone comprised Western, Central and Ashanti Regions; the Eastern zone consisted of Volta, Eastern and Greater Accra Regions while the Northern zone comprised of the Brong Ahafo, Northern, Upper East and Upper West Regions. The "Regional" stakeholder engagements were undertaken in Cape Coast, Koforidua and Tamale. National level stakeholders in food and nutrition security participated in the Regional Stakeholder Workshop. The community level engagement and consultations took place through purposive sampling of districts in the different zones. Two communities were purposively selected from two districts from each of the zones. They were either peri-urban or rural communities. Purposive sampling is necessary for the selection of vulnerable/food and nutrition insecure districts and communities. Focus group discussions and key informant interviews were carried out in the communities. Community engagement was necessary since the consideration of food systems and food sovereignty approaches to solving Ghana's food insecurity and malnutrition problems is gaining currency and without some understanding of the different food systems across the country it would be difficult to formulate realistic food system models for implementation.

1.7 CONCLUSION

The Research Report concludes with the following after exhaustive discussions with the Technical Team and the Advisory Board:

1. Prioritized actions, including resourcing plans, that would be required to meet response gaps and accelerate progress towards zero hunger and provide an overview of how these actions may be implemented;
2. Opportunities for development partners to contribute to the recommended actions based on their institutional mandates and the corporate strategic plans.

Chapter 2: The Hunger Situation

2.1 INTRODUCTION

Ghana, with a population of about 28,833,629 (2017 estimate), has a population growth rate of about 2.3 percent per annum is a naturally well-endowed country when compared to many other West African or even African countries. With a total land area of 23,884,245 hectares, Ghana is endowed with an extensive forest and several mineral resources including gold and petroleum. Ghana is a lower-middle income country with a 2016 GDP (purchasing power parity) estimate of US$120.8 billion (but US$42.76 billion at the official exchange rate) (CIA, 2017). The 2016 GDP per capita estimate is thus US$4,400. Poverty in Ghana decreased significantly overall within the last decade and Ghana was the first African country to meet the Millennium Development Goal (MDG) 1 of halving poverty. The national poverty level decreased from 56.5 percent to 24.2 percent between 1992 and 2013 (Cooke et. al, 2016). The 2015 population survey by USAID also showed an 18 percent reduction in poverty in northern Ghana between 2012 and 2015. Despite these achievements there are still over 24 percent of the population below the poverty line (of about US$1.25 per day) and the estimated Gini coefficient is 0.42, indicating high inequality. Studies have shown that north-south, rural-urban and female-male inequality has increased over the period of the poverty decline and that child poverty is becoming a very serious problem (Cooke et al. 2016).

Table 1 and Figure 2 show the trend of the contributions of agriculture, industry and services to Ghana's economy from 2010 to 2016 and Figure 3 gives the relative contributions of the sectors to GDP in 2016. The share of the agricultural sector declined dramatically from about 30 percent in 2010 to about 20 percent in 2016. The services sector and industry shared the loss from agriculture almost equally. The petroleum sector had been a major boost in the industry sector.

Table 1: Trend of Contributions of Sectors of the Economy to GDP (percent) (2010 – 2016)

Year	Agriculture	Industry	Services
2010	29.8	19.1	51.1
2011	25.3	25.6	49.1
2012	22.9	28.0	49.1
2013	22.4	27.8	49.8
2014	21.5	26.6	51.9
2015	20.2	26.6	53.3
2016	19.5	24.1	56.4

Source: Ghana Statistical Service, Revised 2015 Annual GDP Bulletin (September 2016) and CIA (USA) World Fact Book (for 2016 Estimates)

For an agricultural country such as Ghana with an undeveloped industrial sector, the decline in the agricultural sector share is worrying, especially because a large majority of the populace derive their livelihoods from the sector. Growth of the service sector without significant growth in the industrial sector only means Ghana is helping to market the products of other countries. The banking, insurance, telecommunication and other components of the service sector, for example, support buying and selling of imported products more than products from Ghanaian agricultural and industrial sectors. Many goods in the shops all over the country are imported and similar Ghanaian products find it difficult to compete. This affects the purchasing power and thus access to these foreign products because they are usually expensive. The average Ghanaian can therefore not afford to buy them. Also when domestic products are not promoted and sold on our shelves, most of the income generated does not come to the locals, and for this reason economic growth is not accelerated. There is obviously some degree of dumping by the country's trading partners. The risk and unsustainability of the prevailing booming service sector is obvious and dangerous.

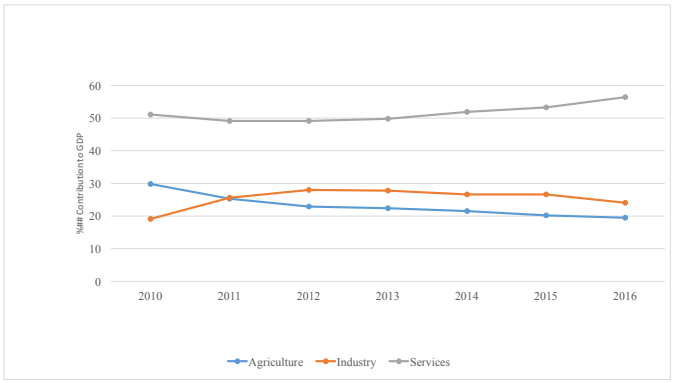

Figure 2: Trend of contributions of main sectors to Ghana's GDP (2010-2016)
Source: CIA Fact Book (2017)

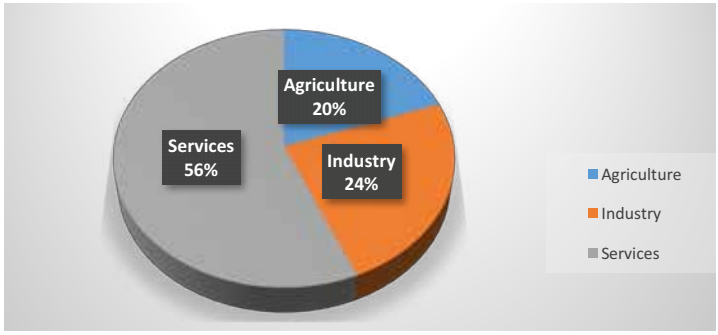

Figure 3: Sectoral Contributions to Ghana's GDP in 2016
Source: CIA Fact Book (2017)

Despite the loss in its share contribution to the GDP, agriculture is and will continue to be the mainstay of the economy because the majority of Ghanaians derive their livelihood from the agricultural sector as shown in Figure 4. About 45 percent of the population are actively engaged in agriculture. Several industries are agro-industries and some of the services exist because of agriculture. Thus, a large majority of Ghanaians derive their livelihood directly or indirectly from the agricultural sector and the agricultural sector is a major source for poverty reduction (World Bank, 2007).

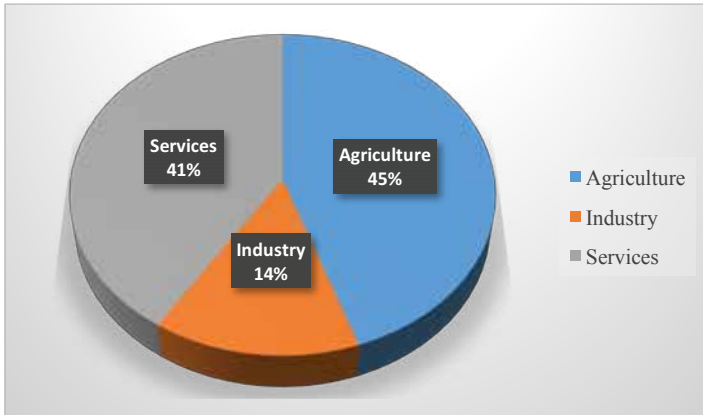

Figure 4: Occupation of labour force
Source: CIA Fact Book (2017)

2.2 SDG2 TARGET 2.1: END HUNGER

SDG Target 2.1 proposes to end hunger and ensure access by all persons to safe, nutritious and sufficient food all year round, by 2030. There is emphasis on inclusive hunger eradication. The poor and persons in vulnerable situations, including infants, are to be targeted specially. Clearly if there is no deliberate action towards these persons in society it will be impossible to eradicate hunger.

As stated earlier hunger is a condition in which a person, for a sustained period, is unable to eat sufficient food to meet basic nutritional needs in terms of both macro and micro nutrients (COHA, 2016). Thus, SDG Target 2.1 includes to a large extent Target 2.2. Target 2.2 is however more specific on the indicators of malnutrition.

According to available statistics hunger has reduced very significantly in Ghana. Hunger in Ghana reduced by 75 percent between 1990 and 2004 (Gates, 2015). Despite this and other statistics given in other parts of this report, hunger is still a serious problem in many parts of Ghana, especially the Northern, Upper East and Upper West Regions as well as many rural communities across the nation. All communities visited during this study (in rural and peri-urban areas) claimed that hunger exists in their communities. According to both men and women in Nyamebekyere, a rural community within the Cape Coast Metropolis of the Central Region and Basare Nkwanta in the New Juaben Municipal District of the Eastern Region, a situation of hunger exists when households have to "ration the available food and skip meals" and also "when you have money to buy food and the food is not available". They claim those situations are common and happen regularly during certain times in the year, especially between April and June. They also agreed that there are persons among them that do not even have the money to buy food. According to them about 30 percent of people in the hinterland can be said to be food insecure but up to 60 percent of those living along the coast (who are mainly fisher folk) are food insecure. At Garizegu in the Sagnerigu District of the Northern Region, both men and women said there is hunger because virtually every household rations household food supplies and also buys already-cooked food almost on a daily basis unlike in the past when food was abundant. They think about 90 percent of households in the community experience hunger and there is more hunger now than 10 or 20 years ago. The seemingly contradictory indication between national statistics and what farmers in the rural and peri-urban areas are saying confirms the fact that there is a widening inequality (and hunger) gap between the rural and urban areas. It is ironical that food is produced in the rural areas but the rural folk tend to be more food insecure. The rural folk are even net purchasers of food because they sell at low prices during harvests to meet critical cash requirements such as repayment of loans only to buy food later in the year at higher prices or go hungry. Indeed "hunger is primarily a problem of poverty and not of food production" (Parikh, 1992). Poverty is also a major cause of inadequate food production in quantity and quality. Income poverty does not, however, necessarily translate into food insecurity. All food insecure people are likely to be poor, but not all the income poor are food insecure.

As implied above, hunger arises out of limited food availability, accessibility, affordability and stability. Figures 5 to 10 give the trends (16 years) of areas planted to various crops as well as national food production between 2006 and 2015. Except in the case of maize there has hardly been any increase in area cultivated to other crops for over one and a half decades (Figures 5, 6 and 7). It is either that the farming population has not changed over the years despite the increase in population or that despite the increase in the farming population, the area cropped per person is decreasing. The rapid urbanization being witnessed points to severe rural-urban migration. Also there is evidence of considerable land fragmentation as a result of land tenure systems. All these lead to hunger, especially for the poor who cannot buy food that is imported from other countries.

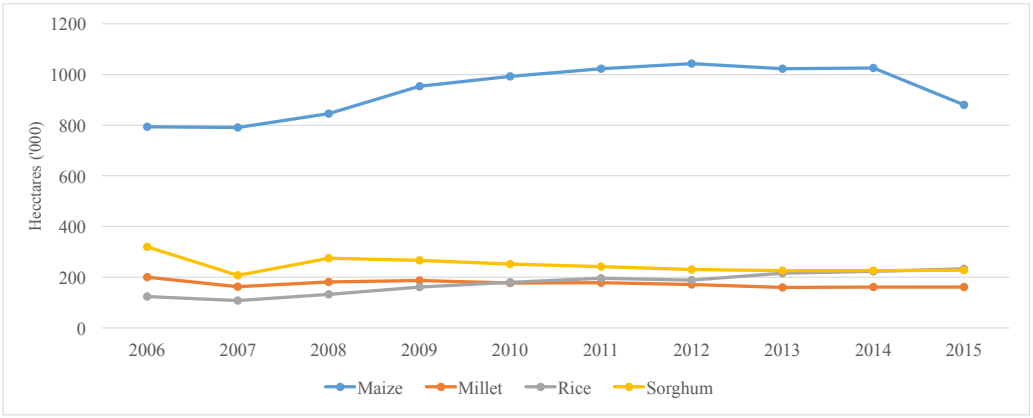

Figure 5: Trend of annual areas ('000 hectares) planted to cereal crops ('000 hectares) (2006-2015)
Source: MoFA/SRID (2016)

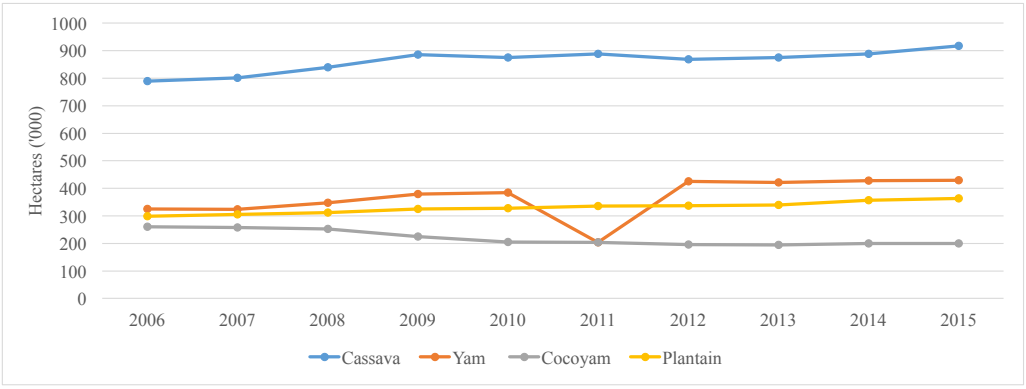

Figure 6: Trend of annual areas planted to root and tuber crops and plantain ('000 hectares) (2006-2015)
Source: MoFA/SRID (2016)

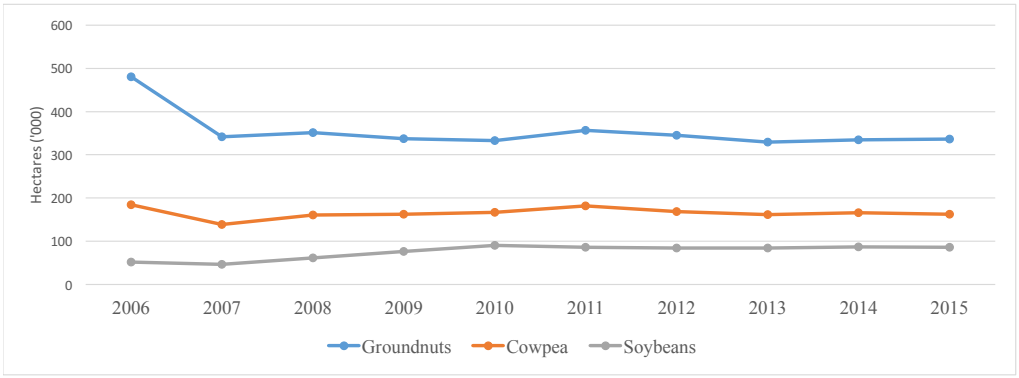

Figure 7: Trend of annual areas planted to grain legumes ('000 hectares) (2006-2015)
Source: MoFA/SRID (2016)

Even though the area planted to the various crops seemed to have been stagnant, production of crops has tended to increase over time as shown in Figures 8, 9 and 10. Farmers seem to be more interested in putting more effort in their relatively small areas (agricultural intensification) rather than spreading effort on large areas. Indeed, there are very strong arguments now for the pursuance of Sustainable Agricultural Intensification (SAI).

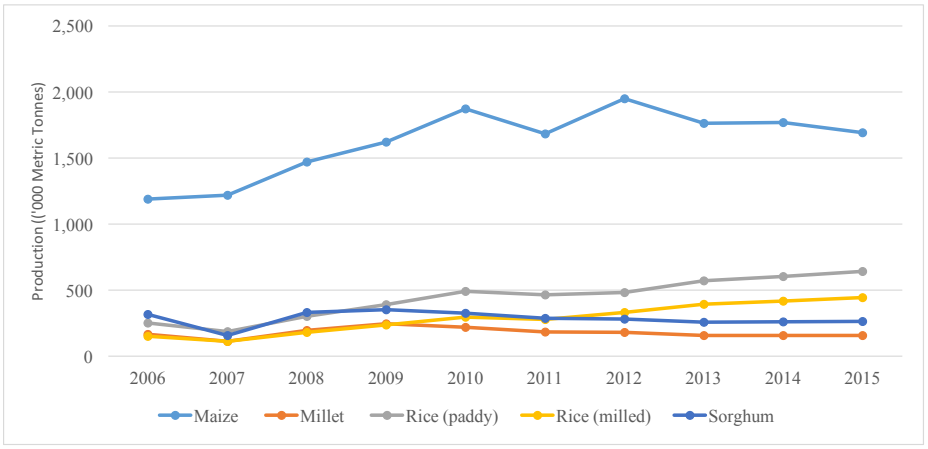

Figure 8: Trend of cereal crop production ('000 metric tonnes) (2006-2015)
Source: MoFA/SRID (2016)

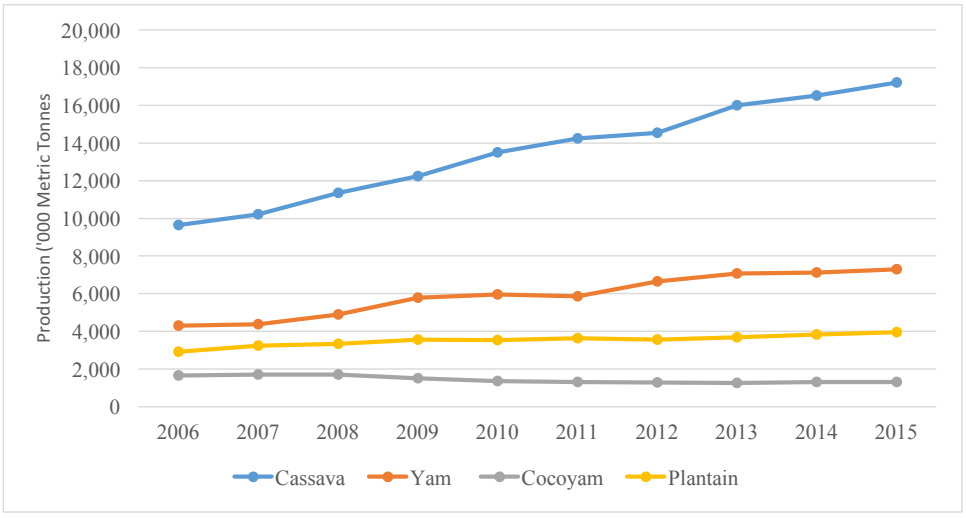

Figure 9: Production trend of roots and tuber crops and plantain ('000 metric tonnes) (2006-2015)
Source: MoFA/SRID (2016)

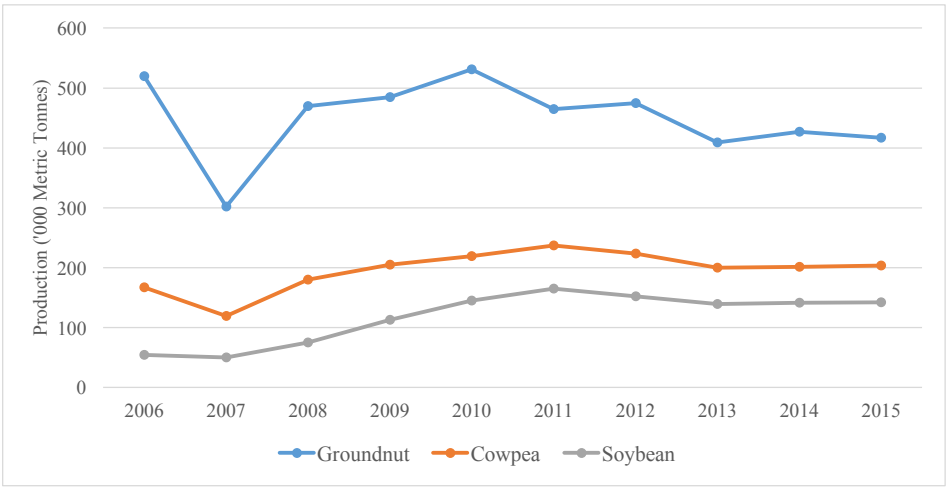

Figure 10: Production trends of legumes ('000 metric tonnes) (2006-2015)
Source: MoFA/SRID (2016)

In almost all the communities in which focus group discussions were held, women, men and the youth mentioned lack of market and wide price fluctuations of produce as their main constraints. They said with such problems "it does not

make sense for anybody to spend money on improved planting material and fertilizers". They believe if the "one-factory-one-district" policy of the current government works it could reduce the market and price problems. The women of Nyamebekyere are however not very convinced of value addition solving the market problem. According to them when they invested in adding value to cassava to produce gari, they sold to market women in Cape Coast at a price lower than their cost price. They think the market and price problems need a more holistic approach.

2.3 SDG2 TARGET 2.2: END MALNUTRITION

THE TRIPLE BURDEN OF MALNUTRITION

As stated earlier, ending hunger implies ending malnutrition. This section is thus essentially a continuation of section 2.2. Target 2.2 stresses the indicators of the triple burden of malnutrition, that is, Protein-Energy Malnutrition, Micronutrient Malnutrition and Overweight & Obesity. Target 2.2 aims specifically at zero stunting and wasting in children under five and addressing the nutritional needs of adolescent girls, pregnant and lactating women and older persons, as well as micronutrient malnutrition. Overweight and obesity problems are also to be addressed.

In Ghana, there have been declining rates of under-nutrition among children and women, who constitute the most vulnerable groups. However, the observed improvements have occurred rather slowly and unequally across the population, and as already stated, under-nutrition is still a serious problem in Ghana, despite increased food production and availability. The following are the current nutritional statistics per the most recent Ghana Demographic Health Survey (GDHS, 2014) of Ghanaian children under age five and women:

- 19 percent are stunted (short for their age), 5 percent are wasted (thin for their height), and 11 percent are underweight (thin for their age).
- Only 13 percent of children ages 6-23 months meet the minimum standards set by three core infant and young child feeding (IYCF) practices.
- Micronutrient malnutrition is highly prevalent and persistent; 66 percent of children age 6-59 months are anaemic, 27 percent are mildly anaemic, 37 percent are moderately anaemic, and about 2 percent are severely anaemic.
- About 3 percent of children are overweight (heavy for their height).
- Also, 42 percent of Ghanaian women age 15-49 are anaemic, a reduction from 59 percent in 2008. 66 percent of the surveyed households consume iodised salt and 39 percent consume adequately iodised salt (15+ ppm).

It is important to note that despite the progress at the national level there is disparity at the regional level (Figure 11). Stunting is significantly high in Northern, Upper West, Central, Volta and Western Regions while wasting is serious in Upper East, Northern and Central Regions. Overweight is gradually becoming a problem in all regions but is quite significant in Greater Accra, Central and Volta Regions.

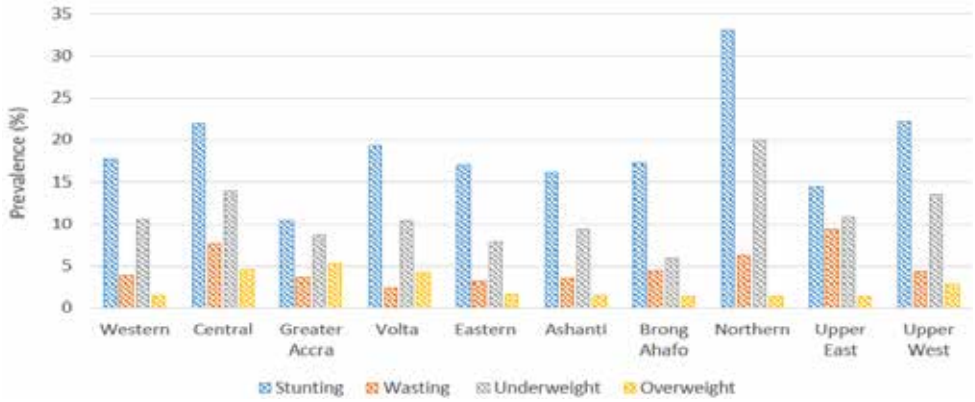

Figure 11: Undernutrition Profile in Ghana among under-five children
Source GDHS 2014

Based on the above statistics, the Hunger and Nutrition Commitment Index (HANCI), which ranks governments on their political commitment to tackling hunger and under-nutrition, rates Ghana's status as moderate (the rankings range from "very low", "low", "moderate" to "high"). Out of 45 countries, the HANCI ranks Ghana 16th on Hunger Commitment and 17th on Nutrition Commitment (Dolf and Rajith, 2014). It is however, important to reiterate the fact that the reduction in anaemia status over the years has been minimal (Figure 12). Micronutrient malnutrition (hidden hunger) is quite

prevalent in many parts of the country. Apart from iron deficiency, Vitamin A and iodine deficiencies are still prevalent, especially among children and particularly in rural areas.

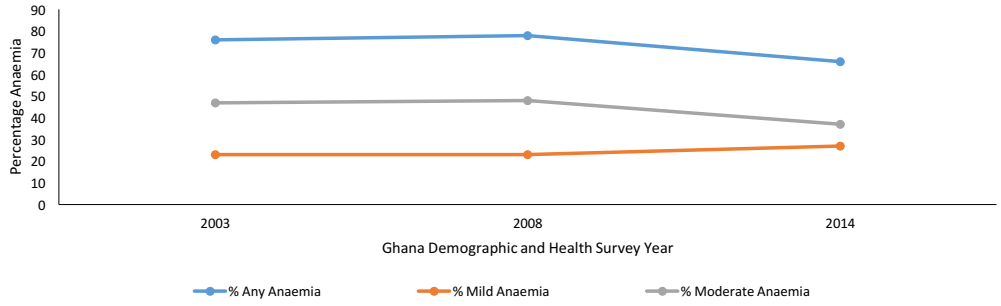

Figure 12: Trend in Anaemia Status of Ghanaian Children Under five – 2003 to 2014
Source: GDHS, 2014

PROTEIN AND MICRONUTRIENT RICH FOODS

The kinds of food produced and eaten are the main determinants of adequate nutrition. In Section 2.2 the discussion concentrated on the present situation with respect to mainly energy foods. This section continues with discussions which are more related to protein and micronutrient rich foods. Meat, milk and fish are the main animal protein foods. They also provide some minerals and vitamins. Other micronutrient rich foods are vegetables.

The situation with respect to meat and milk production is not very encouraging. A five-year average (2011-2015) of meat produced in Ghana is about 135,062 metric tonnes. Milk production is negligible. The five-year average (2011-2015) of total meat and milk imported is about 109,680 metric tonnes (MoFA/VSD, 2016). That means Ghana produces only 55 percent of its meat and milk requirements (assuming the domestic production and imports satisfy the demand). Figures 13 and 14 give the trends of livestock and poultry production in the country and Figure 15 gives the trend of domestic meat production.

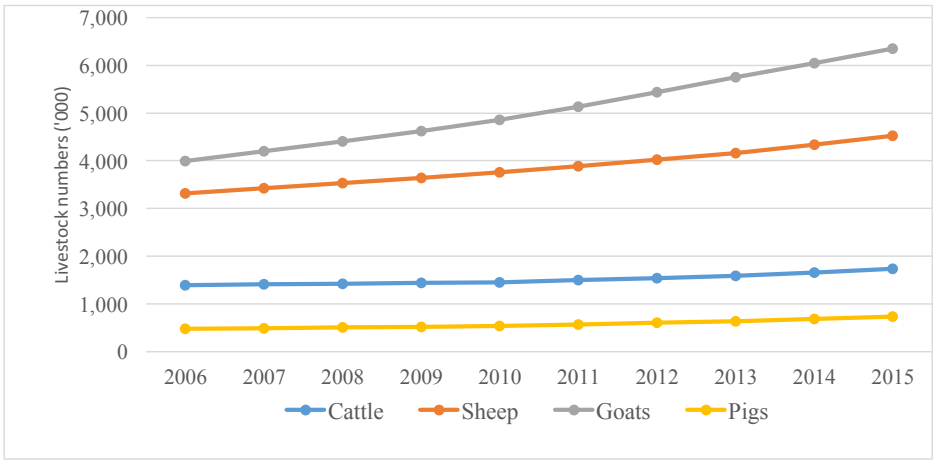

Figure 13: Livestock population trends ('000 metric tonnes) (2006-2015)
Source: MoFA/VSD, 2016

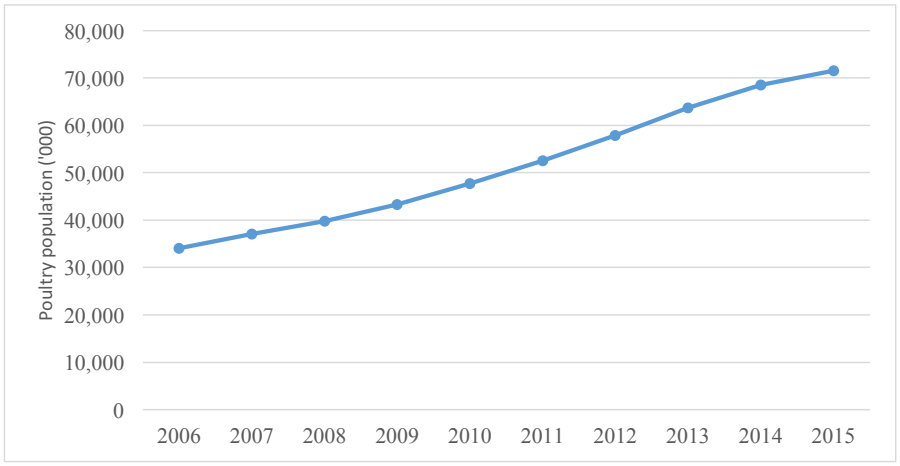

Figure 14: Poultry population trend ('000 metric tonnes) (2006-2015)
Source: MoFA/VSD, 2016

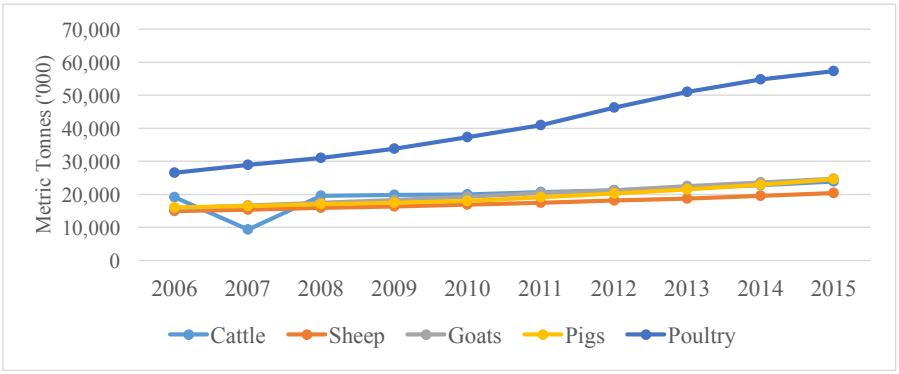

Figure15: Domestic meat production ('000 metric tonnes) (2006-2015)
Source: MoFA/VSD, 2016

Fish production, relative to imports, has been quite encouraging. While the five-year average (2011-2015) fish imports is 170,133 metric tonnes, the domestic production is about 437,531metric tonnes representing about 72 percent of fish consumption in the country. The trends in both marine and inland fisheries however indicate stagnant annual production for over 15 years (Figure 16). It is the aquaculture production trend that is very promising even though actual quantities are still low. Aquaculture production is yet to attain half of inland fisheries production (Figures 16 and 17).

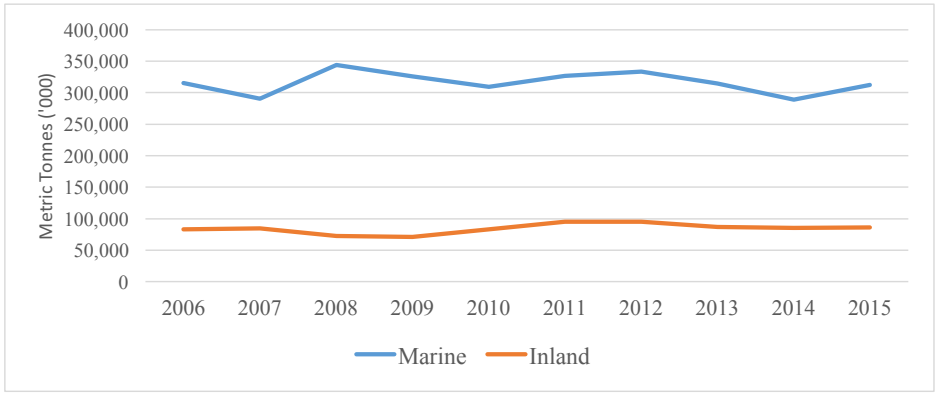

Figure 16: Trends in marine and inland fisheries production ('000 metric tonnes) (2006-2015)
Source: MoFAD (2016)

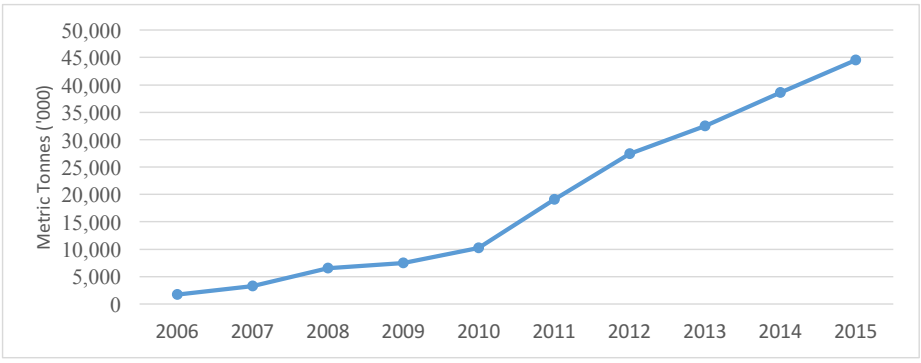

Figure 17: Trend in annual aquaculture production ('000 metric tonnes) (2006-2015)

Source: SRID/MOFA (2016)

Fruits and vegetables have not been given the attention they deserve even though they provide significant portions of the vitamins and minerals we need for adequate nutrition. Figure 18 gives the trend of areas planted to common fruit and vegetable crops. Because of the nature of the crops it has been difficult to obtain production levels. Many fruits and vegetables are grown for sale even though some are eaten by household members. Their perishable nature cannot allow them to be stored for extended periods. Many fruits and vegetables produced become unusable because of their perishable nature. Significant quantities of bananas, pawpaw, tomatoes, leafy vegetables and even peppers and onions are usually thrown away because of lack of storage, limited markets and lack of processing facilities. The farmers are again hopeful that the "one-district-one-factory" policy will be useful in addressing the problem. Figure 18 shows that the areas planted to the selected fruits and vegetables have been virtually the same for over 15 years. Several studies have also shown that productivity has not significantly improved. That means the consumption per person has continued to deteriorate. If malnutrition is to be eradicated, efforts have to be made to put some emphasis on the production and consumption of fruits and vegetables. Indeed, there is too limited horticultural research in Ghana and that is a very big constraint to the promotion of indigenous fruits and vegetables which many believe provide very significant levels of micronutrients.

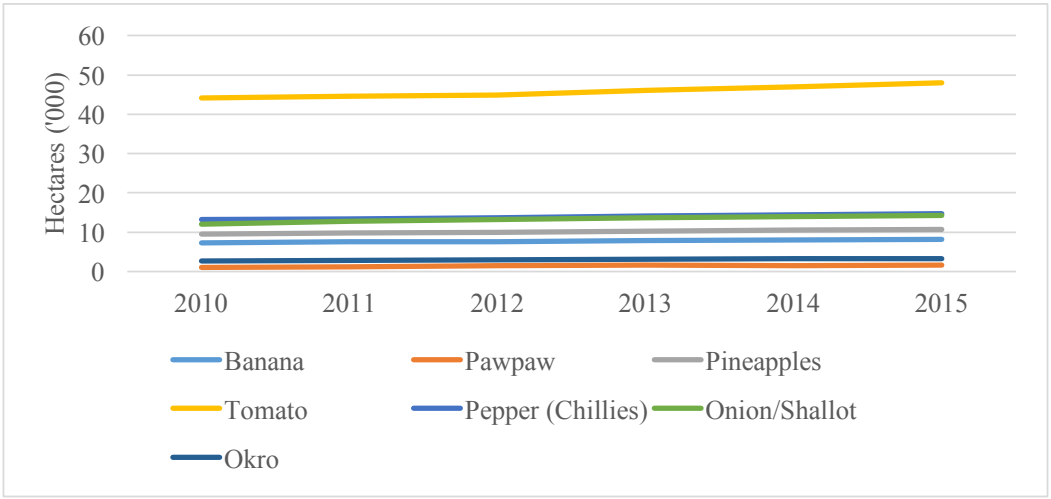

Figure 18: Trends of areas planted to some fruits and vegetables

Source: MoFA/SRID, 2016

MALNUTRITION INDICATORS

Nearly one in five children under five in Ghana are stunted (too short for their age). This indicates chronic malnutrition. Stunting is more common in the Northern Region where one-third of children are stunted and less common in the Greater Accra Region where 1 in 10 children are stunted. Stunting is more common among children of less educated mothers (26 percent). Wasting (too thin for height), a sign of acute malnutrition, is far less common (5 percent). Furthermore, 11 percent of Ghanaian children are underweight, (too thin for their age) GDHS (2014). The nutritional status of Ghanaian children has generally improved since 2003.

With respect to gender, there is disparity between males and females across the regions. The 2014 GDHS took weight and height measurements of women and men aged 15–49. Six percent (6 percent) of Ghanaian women and 10 percent of men are underweight (body mass index or BMI < 18.5). Forty percent of women and 16 percent of men are overweight or obese (BMI ≥ 25.0). Overweight and obesity increase with age; only 9 percent of women and 2 percent of men aged 15-19 are overweight or obese compared to 56 percent of women and 28 percent of men aged 40-49. Among both women and men, overweight and obesity increases (Figure 19) with household wealth. Among women, thinness (underweight) has slightly decreased since 2003 from 9 percent to 6 percent, in 2014 while overweight and obesity have increased from 25 percent to 40 percent in the same time period. There is coexistence of both under-nutrition and over-nutrition, with more men being underweight than women and women being more overweight (Figure 19).

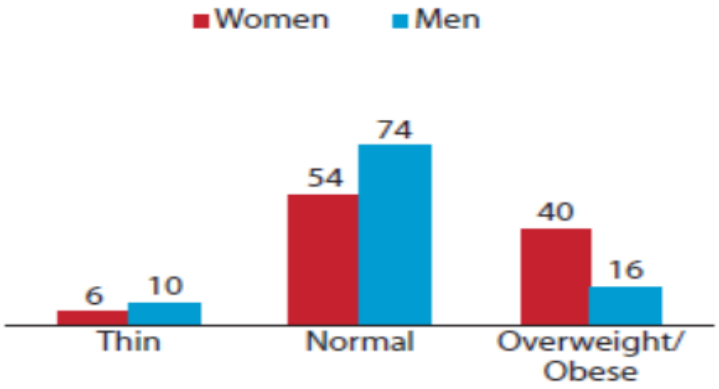

Figure 19: Nutritional status profile of women and men aged 15-49

Source: GDHS (2014)

Apart from the macronutrient deficiencies, Ghana also faces challenges with micronutrients. Micronutrient deficiencies are of public health importance in Ghana. Micronutrients are protective nutrients, while legumes, fruits and vegetables are primarily the cheapest source for the majority of the population in Ghana. The micronutrients of global health importance are iron, iodine and zinc (trace elements) as well as Vitamin A and Folic acid (vitamins). These nutrients are primarily the main culprits of hidden hunger in Ghana affecting maternal and child nutrition and health negatively. Vitamin A, iodine and iron deficiencies are prevalent, especially among children in Ghana. Using anaemia rates among children younger than five years as an indicator of iron deficiency and possibly other micronutrient deficiencies, shows unacceptably high rates although the current rates show reduction. Two-thirds of children in Ghana younger than five years are anaemic. Food insecurity, inadequate feeding practices, lack of dietary diversity, and low access to health services are among the main causes of under-nutrition in children in Ghana.

Anaemia rates, although improving, are still very high among women of child-bearing age.

However, monitoring the status of these nutrients in Ghana has been a challenge due to lack of easy-to-use field equipment; hence it is only iron status that is usually captured in national surveys. Neural tube defects (NTDs) currently occur commonly in Ghana. Current available data strongly indicate that preconception folic acid supplementation significantly reduces the prevalence of NTDs. However, due to lack of knowledge, teenage pregnancies and lack of planning of pregnancies most women enter into pregnancy at a marginal state of folic acid sufficiency, thereby predisposing the infant to NTD. It is important to note that although folic acid is given free of charge to pregnant women who visit the clinic, timing may not be appropriate since a woman "must have a good folic acid status" at least 6 weeks before pregnancy. This can be achieved through preconception folate supplementation across the nation for all women of child-bearing age.

Iron is a key component of haemoglobin, and iron deficiency is estimated to be responsible for half of all anaemia in Ghana as well as globally. Other causes of anaemia include hookworm and other helminths, other nutritional deficiencies (vitamin A, Vitamin C and Zinc), chronic infections, and genetic conditions such as sickle cell disease. Anaemia is a serious concern for children because it can impair cognitive development, stunt growth, and increase morbidity from infectious diseases. Similarly, iron-deficiency anaemia has been a major cause of maternal mortality.

The prevalence of anaemia decreases steadily with age, ranging from a high of 79 percent among 6-11 months to a low of 53 percent among 48-59 months. Anaemia prevalence is higher in rural areas (74 percent) than in urban (57 percent) and ranges from a low of 54 percent in the Ashanti region to a high of 82 percent in the Northern region which is also a region with highest prevalence of malaria (Figure 20)

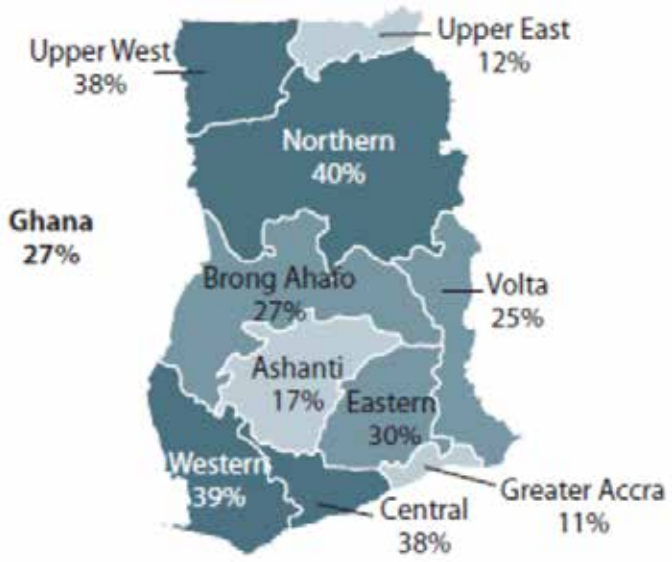

Figure 20: Anaemia prevalence among children (6-59 months) by region
Source: GDHS (2014)

INFANT AND YOUNG CHILD FEEDING

Although 99 percent of children under age 6 months are being breastfed, only about half (52 percent) are exclusively breastfed as recommended. Also, 73 percent of children of ages 6-8 months receive timely complementary foods, and four in ten (41 percent) children aged 18-23 months have been weaned. Bottle-feeding is not widespread in Ghana; only 4 percent of babies under 2 months are fed with a bottle with a nipple. This proportion increases from 5 percent at age 0-1 months to 17 percent at age 2-3 months, peaks at age 6-8 months to 29 percent and then declines. It is not surprising that under-nutrition challenges are seen during the complementary feeding period. Adherence to the minimum acceptable diet indicators which assess the proportion of children aged 6-23 months who meet minimum standards with respect to Infant and Young Child Feeding (IYCF) practices is essential for sustaining the good nutritional status attained during breastfeeding. The situation in the country is presented in Figure 21. To maintain a healthy nutritional status, children aged 6-23 months must have a minimum acceptable diet that meets all three IYCF criteria listed below. GDHS (2014) documented that only 23 percent of children 6-23 months meet the minimum acceptable diet per day.

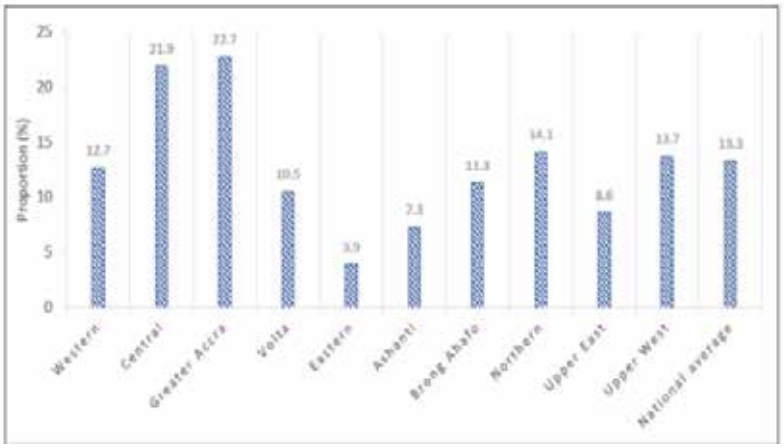

Figure 21: Percentage of children receiving a minimum acceptable diet by region
Source: GDHS, 2014

SUPPLEMENTATION AND FOOD FORTIFICATION

Iron and folic acid supplementation during pregnancy is a common practice in Ghana and all who visit the prenatal clinic are usually given the supplements to boost their nutrient intake. The GDHS (2014) data show that 59 percent of women took iron tablets/syrup for 90 days or more during pregnancy, 9 percent for 60-89 days, 21 percent for less than 60 days, and 8 percent did not take any iron supplements. Another study found that iron supplementation during pregnancy is high (89 percent) in Brong Ahafo and the northern regions (Armar-Klemesu et al. 2014). This is further supported by a study conducted in northern Ghana the previous year that found that 88 percent of women took iron supplementation during pregnancy (CARE International, 2013).

About 68 percent of mothers received Vitamin A capsules during post-partum period as part of the former national post-partum vitamin A supplementation policy in Ghana. The proportion of mothers receiving supplementation appears to be higher in urban than rural areas. Coverage was lowest in Eastern and Northern Regions (around 62 percent) and highest in Greater Accra, Ashanti and Upper West Regions (around 72 percent) (GDHS 2014).

Fortification is one major strategy to overcome hidden hunger. In Ghana, there is mandatory fortification of wheat flour, vegetable oil and salt since almost all the populace consume it in diverse food products. Salt was the first product to be fortified with Iodine in 1996. In 2007, wheat flour was also fortified with micronutrients (Vitamins A, B1, B2, B3, B9, B12, iron and zinc) and also vegetable oil with vitamin A. The road map to fortification and usage of fortified goods has not been smooth. For example, vegetable oil fortification levels appear to be good on the whole (95 percent of samples tested in 2011 were found to be adequately fortified), but fortification levels in wheat appear to fall below the standards recommended by WHO and compliance is very low (only 13 percent of samples tested in 2011 were found to be adequately fortified). Wheat is typically imported, but primarily processed and fortified within Ghana (Nyumuah et al., 2012).

The story with salt iodization puts the picture of food fortification in a better perspective. According to the 2014 DHS, 66 percent of households surveyed reported having access to iodized salt, but test results found that only 39 percent of households (HHs) use adequately iodized salt (GDHS, 2014). This is the general picture in Ghana since the iodized salt is often not properly kept in covered containers. Besides, the general population complains of the cost of the fortified salt. Furthermore, there have been some misconceptions about the use of iodized salt in food processing as well as the effects on health, such as the belief that consuming iodized salt causes one to be impotent (erectile dysfunction).

There is in-country production of different types of fortified food products and ingredients ranging from spices to complementary foods by industrial and small (kitchen) scale producers (WFP, 2015). Additionally, an ongoing public-private partnership initiative exists to fortify many more food products and ingredients with about 18 micronutrients which will carry the "Obaa Sima™" seal/symbol. For effective fortification, the Food and Drugs Authority (FDA) will have to put greater regulation, monitoring and support systems in place. In general, there is the need to monitor, regulate and improve the quality and safety of complementary foods that are produced at the kitchen-scale across the nation.

OTHER FACTORS INFLUENCING NUTRIENT INTAKE

Cultural contextual factors do play a major role in nutrient intake. For example, for children and pregnant women, the avoidance of certain foods and animal-source foods in particular (meat/eggs) are due to cultural contextual factors which do compound the already poor quality of the diet (FOSTERING Project, 2015). Armar-Klemesu et al. (2014) also found that many people try to avoid the sweet potato as they believe that it exacerbates diabetes and malaria.

Seasonality influences feeding patterns by increasing reliance on markets (rather than one's own produce), with resulting coping strategies such as reducing the quantities of food consumed per sitting, reducing meal frequency, reducing the variety of ingredients per dish, substituting less-preferred staples and sources as judged by food calendars generated for Northern, Brong-Ahafo and Eastern regions of Ghana (Afoakwa et al., 2013). They documented that in some cases men had to skip a day's meal to meet the needs of pregnant women and they survived on wild fruits. Some also in the northern sector of Ghana use millet or sorghum powder mixed with shea-butter (zomkom) to ensure satiety for longer periods. IYCF appears to be buffered to some extent from changes in household feeding patterns due to seasonality (Armar-Klemesu et al., 2014). This is supported by the LEAP study where women reported that breastfeeding helped to buffer children from the negative impact of food insecurity, but some reported that even their own milk production suffered when they were not getting enough food (MoGCSP, 2016).

The role of market prices (affordability) in influencing dietary intake cannot be overlooked since this has a huge impact on hunger and hence malnutrition. Based on data available, nutrient requirements of Staple-Adjusted-Nutritious Diet (SNUT) were modeled by WFP/GHS (2016) to show to what extent nutrient requirements were met. Greater Accra Region had the lowest rates of non-affordability (around 10 percent), while the Northern Region had very high non-affordability (34 percent for 4PH and 76 percent for 5PH). Figure 22 puts the cost disparity across the country of eating a nutritious meal in perspective and partly explains and correlates well with the under-nutrition situation in the country (Figure 23).

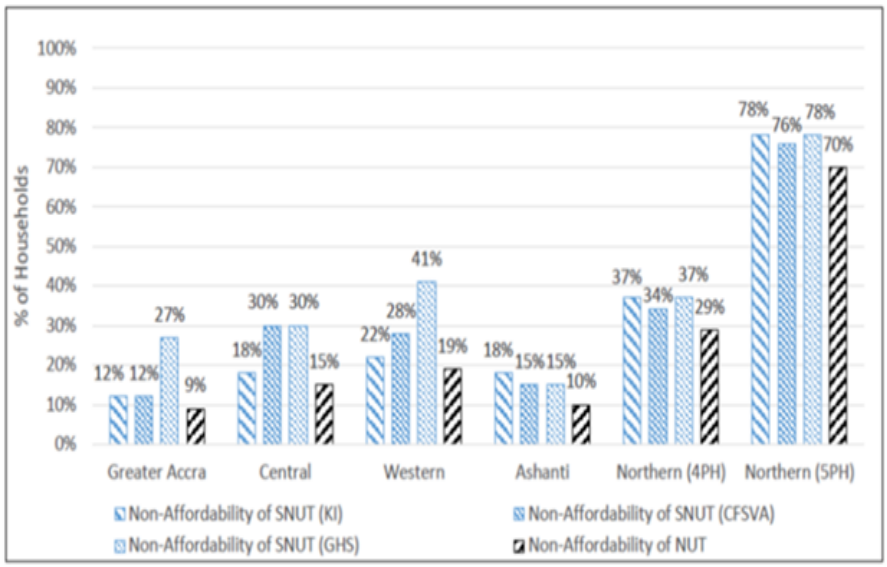

Figure 22: Percentage of households unable to afford the minimum cost of a nutritious diet by region
Source: WFP/GHS (2016)

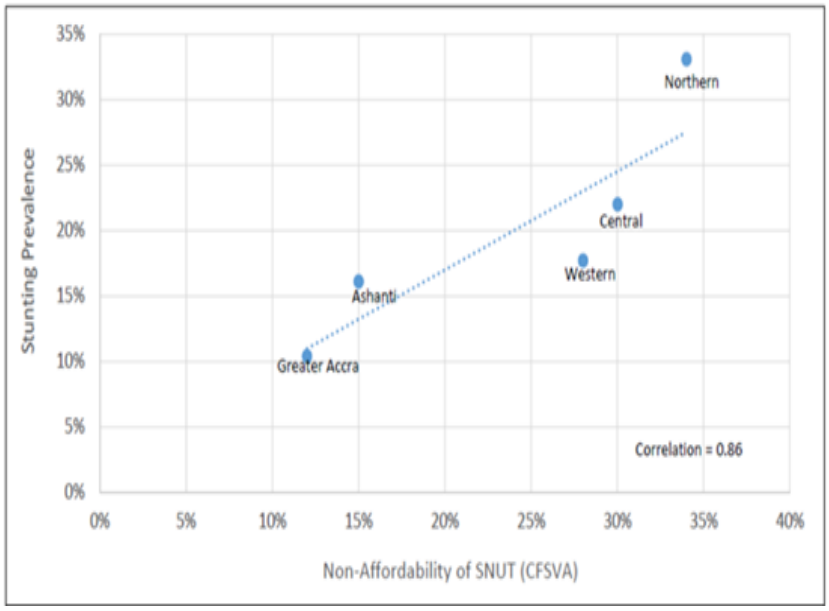

Figure 23: Relationship between stunting prevalence and non-affordability of nutritious meal by region
Source: WFP/GHS (2016)

NUTRITION-INFECTION CYCLE

Infections and worm infestations have been major issues that exacerbate hunger and the nutritional status by affecting the utilization of food nutrients. For example, higher levels of malaria have been associated with anaemia which may be linked to bed net use and sanitation. Most infections are a result of malaria, worm infestations and diarrhoeal diseases. Data show that malaria among children under five years is highest among the poorest of the population (Figure 24) and the occurrence varies across the nation. Nevertheless, the use of ITN among the same population of children under five years and pregnant women is improving (Figure 25) and this social intervention strategy can help improve and eliminate anaemia due to malaria /infection. Thus, the need for more social interventions cannot be overemphasized and that is why the free distribution of insecticide treated bed nets is a laudable intervention.

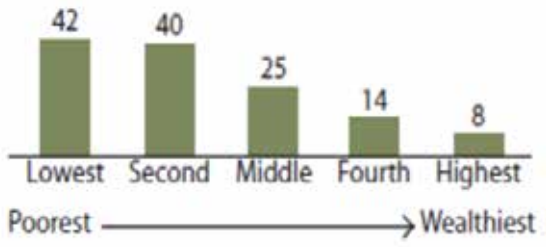

Figure 24: Prevalence of malaria by household wealth
Source: GDHS (2014)

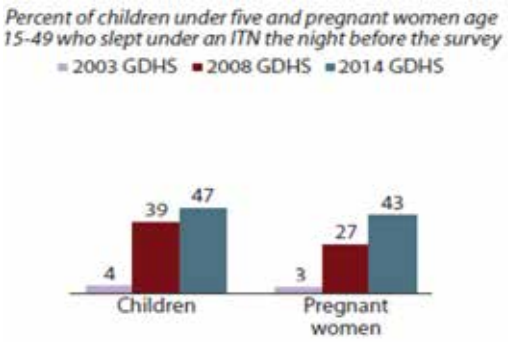

Figure 25: Trends in ITN Use by year
Source: GDHS (2014)

FOOD SAFETY, WATER AND SANITATION

Aflatoxin contamination of maize (a major staple) and groundnuts continues to be a challenge and this is due to poor methods of drying and storage, as well as unpredictable weather conditions. Aflatoxin has been implicated in the occurrence of stunting and underweight among children (Beesabathuni 2014). Also, food safety issues from farm to table as well as along the value addition chain has been recognized due to inappropriate use of farm and storage chemicals as well as wrong food handling practices such as transportation of meat products exposed in the boot of a taxi and in inappropriate containers etc. Unsafe food may cause diseases which will inevitably affect food utilization and predispose an individual to under-nutrition.

Water and sanitation continue to be a major challenge in Ghana. About six in ten households in Ghana have access to an improved source of drinking water (Figure 26) and this is skewed in favour of the rural communities due to the provision of boreholes. However, the situation is even not very good in some rural communities since some still have to depend on contaminated water sources for everyday use because of both human and animal activities.

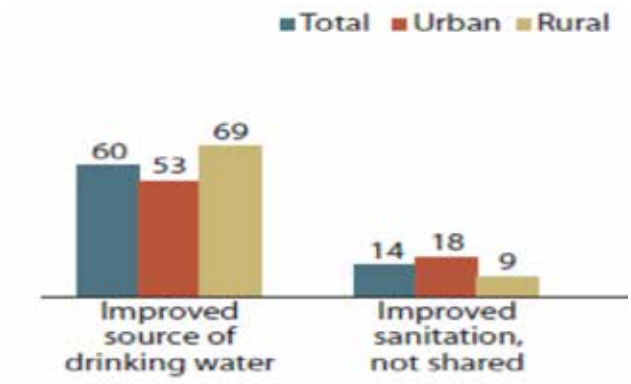

Figure 26: Percentage of households with improved water and sanitation by residence
Source: GDHS (2014)

The sanitation situation is very poor as only 14 percent of Ghanaian households have an improved, unshared sanitation facility, hence a very good source for potential contamination of water bodies, if faeces are not properly disposed of. In rural areas, 41 percent of households lack improved sanitation facilities compared to just 14 percent of households in urban areas. More than 3 in 4 households (78 percent) in Ghana have electricity. National deworming exercises in schools have been positive since almost all children in schools are reached. About 39 percent of pregnant women have benefited from deworming medication and this is a very low statistic. Regional variation in coverage of this intervention exists, ranging from 25 percent in Ashanti Region to 70 percent in Upper East Region. Nevertheless, coverage is higher in women in lower wealth quintiles (GDHS 2014).

HEALTH IMPLICATIONS OF MALNUTRITION

Malnutrition, as a result of under-nutrition or over-nutrition, is a serious public health problem that is linked to increased risks of mortality and morbidity. Women and young children bear the greatest burden of the diseases and infirmities associated with under-nutrition. An under-nourished mother is likely to give birth to a Low Birth-Weight (LBW) baby susceptible to disease and premature death, which only further undermines the economic development of the family, society and nation, and continues the cycle of poverty and under-nutrition. In Ghana, as in other African countries, millions of low-birth-weight babies are born annually who face severe short-term and long-term health consequences (de Onis, Blössner & Villar, 1998).

Generally, the level of malnutrition in the population groups is assessed by anthropometry (i.e. measurements of body size and composition), using such indicators as low birth weight in newborns, low weight-for-age in preschool children, and low body mass index in women and men. Overcoming risks for diarrhoea, malaria, measles, acute respiratory infections and other infectious diseases is important to curb malnutrition.

Disaggregated estimates (e.g. by age, sex, degree of malnutrition and general segmentation of the population in districts) can also help policy-makers identify the segments of the population most at risk to help direct resources to where they will have the greatest effect.

The nutritional status of women and children is particularly important, because it is through women and their off-spring that the pernicious effects of malnutrition are propagated to future generations. Malnourished children experience developmental delays, weight-loss and illness as a result of inadequate intake of protein, calories and other nutrients. Because orphaned and institutionalized children may experience one or several macronutrient and micronutrient deficiencies, they are at risk for a variety of short-term and long-term complications.

Because so much development occurs in the first few years of life, nutrient deficiencies can have major short-term implications in young children. Malnourishment can greatly compromise a child's immune system, making him/her more susceptible to infectious diseases. Particularly in environs where there are poor sanitary practices, children, pregnant women and the immune-compromised are vulnerable to infections from others or even caregivers. In particular, deficiencies in zinc, iron and vitamin A are commonly associated with a weakened immune function.

Further, nutrient deficiencies and gastrointestinal infections commonly present themselves among poor children. A child may contract an infection due in part to poor nutritional status. In turn, a gastrointestinal infection places the child at even greater risk for nutrient deficiencies because nutrients are unable to be absorbed properly or utilized. Consequently, nutrient deficiencies combined with infection can cause growth retardation.

Additionally, deficiency in one nutrient may lead to deficiency in another nutrient. For example, deficiencies in iron, magnesium and zinc can cause anorexia and thereby result in reduced intake of other important nutrients such as protein. Low fat intake can also affect the absorption of important fat-soluble vitamins such as vitamins A and D. Zinc and protein deficiencies can retard bone growth and development, putting a child at risk for long-term complications.

The short-term implications of malnutrition eventually give way to long-term complications, such as growth and cognitive delays and eventually affects the ability to work as an adult. Under-nutrition not only impacts growth negatively in the short term, but can also limit total bone growth. Additionally, children classified as low height-for-age (stunted) may never be able to regain lost growth potential if they continue to live in a nutritionally deprived situation. Additionally, malnutrition negatively affects brain development, causing delays in motor and cognitive development, such as:

- Attention deficit disorder
- Impaired school performance
- Decreased IQ scores
- Memory deficiency
- Learning disabilities
- Reduced social skills
- Reduced language development
- Reduced problem-solving abilities

Additionally, over-nutrition comes with its challenges that also have a negative impact on health and national development. Childhood obesity is becoming an alarming menace in Ghana. The medical complications of childhood obesity are numerous and some of these are detrimental. These complications manifest at different levels including; psychological, neurological, cardiovascular, endocrine, musculoskeletal, pulmonary, renal and gastrointestinal, to mention just a few. The figure below summarizes the health effects of overweight/obesity.

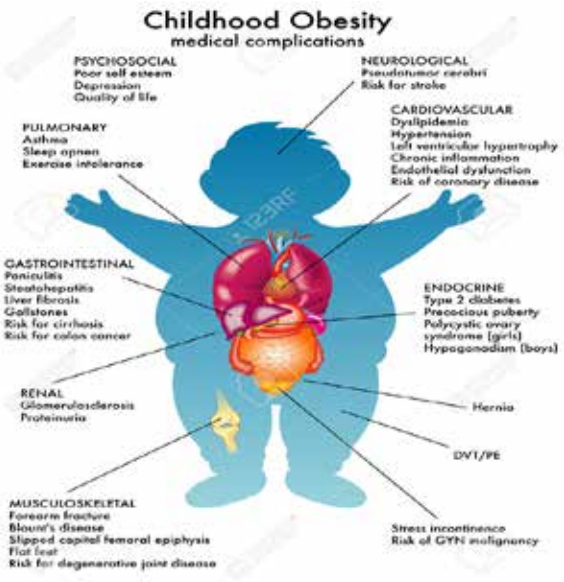

Figure 27: Health complications of overweight/obesity

Source: Dreamstime (2017)

GENDER, CARE, SOCIAL PROTECTION, AND FOOD AND NUTRITION SECURITY

Gender, care and social protection are key factors in the food and nutrition security discourse. Gender in particular affects food and nutrition security in multiple ways. However, the nature, extent and reason for the impact may be context-specific. Thus, the influence of gender cannot be generalized across contexts. There is evidence that women contribute significantly to agricultural production especially in Africa. Notable is the fact that differences exist in the gender division of labour and productivity across regions and agricultural systems. Clear links have been documented by research (Asher & Shattuck, 2016). Patel (2012) writes "it is hard to conceive a discussion about hunger without connecting the epidemiology of hunger to women's disempowerment" (p. 2). Education and gender have an impact on the nutritional landscape in Ghana. Nearly one in five women and 9 percent of men have no formal education. Women and men in urban areas are much more likely to achieve higher levels of education than those living in rural areas. Men are more likely to be literate than women. Two-thirds of Ghanaian women are literate compared to 82 percent of Ghanaian men (Figure 28) (GDHS, 2014).

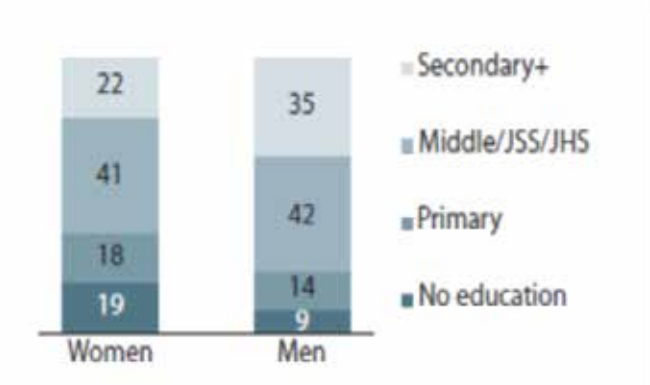

Figure 28: Percentage level of education by gender
Source: GDHS (2014)

Several factors were identified during the stakeholder engagements and focus group discussions in the communities as impacting on food and nutrition security in Ghana. Gender was one clear factor influencing food and nutrition security in the country. Others included government policies and programmes, post-harvest management of farm produce and the perception (or reality) of farming not being a worthwhile venture.

1. **Gender and cultural practices**

   Gender roles in households tend to influence household food insecurity. For example, women in most parts of Ghana are expected to be the homemakers and those who take care of household chores. They do the cooking and feeding, and take on other care responsibilities. It is only when they complete such household responsibilities that they can focus on food production. By implication, they may not be able to give of their best with respect to farming. This gendered division of labour implies that most men would not have knowledge of care and feeding practices. Hence the family suffers when the woman in the house is indisposed.

   In some farming communities in the Tamale area for example, farming is seen as men's responsibility. Thus, decision-making on food allocation after harvest tends to rest on men. The observation is that men tend to sell a substantial portion of the produce and that impacts negatively on household food security. In the Kudula farming community for example, participants indicated that usually only a small quantity of farm produce is reserved by the family head for family use while the larger portion of the produce is sold. It must however be recognized that many farmers borrow to undertake farming and the sale may be to settle debts. The critical issue is the need for farm families to receive remunerative prices for their farm produce.

   Participants at the Northern Region Stakeholder Workshop indicated that in several places in the northern regions of Ghana, men usually supply cereals (maize, sorghum, millet, etc.) after harvest to their wives while the women provide ingredients and meat for soups. Women however do not usually have their own farms and those without other sources of income will have to cook food devoid of essential nutrients and that impacts negatively on the whole family. This is to point out the need for the empowerment of the rural woman to help improve household food and nutrition security.

2. **Women's Access to food production resources**
   The most important input in food production is land and women's access to land for farming can be a challenge in many places in the country. Women (and men), particularly in the Eastern Region undertake "share cropping" a system whereby the produce is divided between the farmer and the head of the land-owning family or clan, often referred to as the "landowner". Attempts must be made to make farmland more accessible and secure to women through negotiations with traditional authorities. What destroys some of these negotiations is when mention is made of the need for women to "own" farmland. In almost all the traditional areas of Ghana, farm lands cannot be "owned" by individuals including men even though access to the use of the land can be in perpetuity by members of the land-owning family or group. Women's access to other food production resources such as credit, farm machinery, and equipment and others is usually more difficult than men even though both men and women have challenges in accessing them. To achieve zero hunger the special requirements of women (and the youth) to be able to contribute to food and nutrition security must be considered.

3. **Policies and programmes**
   Several policies and programmes have been put in place to make the country become food and nutrition secure. According to stakeholders, implementation of these often poses a challenge. Some indicated the lack of political will and commitment by governments to ensure the effective implementation of the programmes while others spoke of the incoherent nature of the programmes across sectors. Additionally, it was revealed that in terms of implementation, there is often a lack harmonization and coordination such that different sectors of the Ministries handle the issues by themselves without factoring in the role of other agencies and departments. This constitutes a big challenge and often serves as an obstacle in successful implementation of the programmes.

4. **Harvest and post-harvest management**
   Post-harvest management (such as ready market for farm produce, storage, and standards) is another challenge to Food and Nutrition security in the country. Farmers look on as their produce goes waste due to unavailability of markets. Besides, farmers do not have any influence on food prices as these are determined by market women. Additionally, lack of linkages and integrity in the entire value chain of food systems and standards also poses a challenge to food security in Ghana.

5. **Negative perception of agriculture**
   There were clear indications from the stakeholder consultations and focus group discussions that agriculture is perceived as not lucrative and only meant for the poor, school drop-outs and those without formal education. It is indeed a reality that a very large majority of farmers would have preferred other professions. Unless a conscious effort is made to make farming a preferred choice for people the zero-hunger objective may be difficult to attain. Very few children, even from the rural areas, grow up acquiring an interest in farming because they are excluded from it at home and in school by child rights regulations and school curricula that have virtually expunged agriculture.

2.4 SDG2 TARGET 2.3: DOUBLE PRODUCTIVITY AND INCOME OF SMALL-SCALE FOOD PRODUCERS

There have been modest productivity improvements in food production, particularly in the case of maize, rice, cassava, yam and soybeans in Ghana over time as indicated in Figures 29, 30 and 31. The Figures give the trends of productivity of major Ghanaian cereal, root/tuber, and leguminous crops over a period of ten years. Maize, rice and soybeans have been particularly promoted in donor-funded programmes and projects over the years in Ghana. Both maize and rice are gradually becoming staple food crops in almost all parts of the country even though substantial amounts are produced for the local market. Soybean is produced mainly for sale to oil processing industries. The stagnant or even declining productivity in traditional staple crops such as plantain, cocoyam, sorghum, millet, groundnuts, cowpeas (beans) is, however, very worrying given the critical role they play in providing adequate nutrition to both rural and urban families. Also worrying is the drastic decline in agricultural research into these crops as well as into cassava and yam. Without research, productivity improvements in staple food crops and livestock will be impossible.

Even the modest increases in the productivity of some crops is not good enough. Many of the crops have done quite well with respect to the Medium-Term Agricultural Sector Investment Plan (METASIP) achievable yields but fall short of the potential yields as indicated in Table 2. If this scenario is looked at from the perspective of population increase, rapid urbanization, stagnant cultivated area (as seen in Section 2.3 above) and several other factors, then the prospects for zero hunger do not look bright unless there is significant "business unusual". There must be a paradigm shift in the way we pursue productivity improvements.

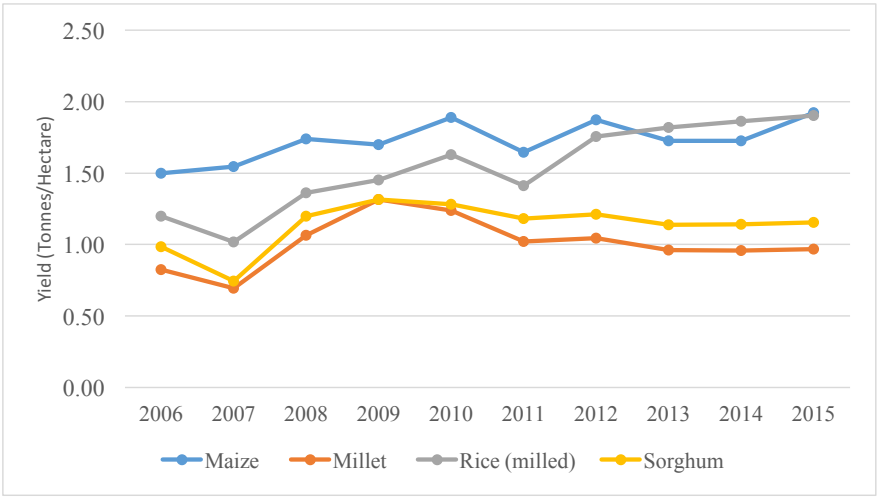

Figure 29: Yield trends of staple cereal crops (2006-2015)

Source: SRID/MOFA (2016)

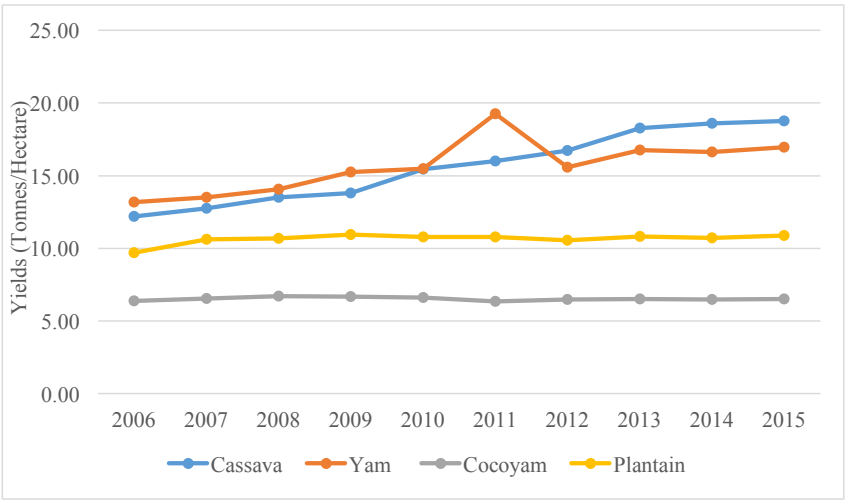

Figure 30: Yield trends of staple roots/tuber crops and plantains (2006-2015)

Source: SRID/MOFA (2016)

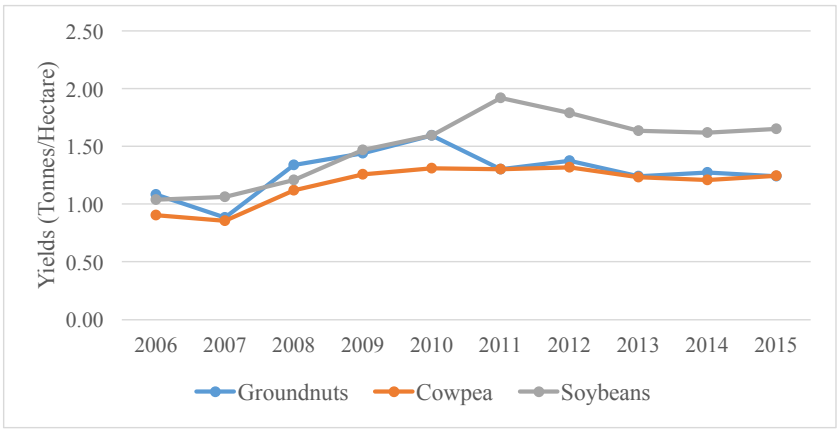

Figure 31: Yield trends of legumes (2006-2015)

Source: SRID/MOFA (2016)

Table 2: Average yield of crops (on farm, rain fed) compared to achievable and potential yields (2015 production season)

Food Crop	Average yield (rain fed)	Potential yields*	METASIP Achievable yields*	Average yield as % of potential yields	Average yields as % of achievable yields
Maize	1.92	5.50	2.50	34.91	76.80
Rice (Paddy)	2.75	6.00	3.50	45.83	78.57
Millet	1.00	2.00	1.50	50.00	66.67
Sorghum	1.10	2.00	1.50	55.00	73.33
Cassava	18.78	45.00	28.00	41.73	67.07
Plantain	10.90	38.00	10.00	28.68	109.00
Yam	16.96	52.00	20.00	32.62	84.80
Cocoyam	8.00	20.00	8.00	40.00	100.00
Sweet Potato	15.00	56.00	18.00	26.79	83.33
Groundnut	1.65	3.50	1.00	47.14	165.00
Cowpea	1.25	2.50	1.25	50.00	100.00
Soybean	1.65	3.00	1.00	55.00	165.00
Pineapple	61.80	72.00	26.00	85.83	237.69
Pawpaw	34.50	75.00	65.00	46.00	53.08
Tomato	10.00	20.00	25.00	50.00	40.00
Pepper	15.00	30.00	10.30	50.00	145.63
Garden eggs	7.90	15.00	8.00	52.67	98.75

Sources: MoFA/SRID, 2016; MoFA (2010) [See MoFA, 2010 for information on the difference]

Many reasons have been advanced for the less-than-satisfactory crop and livestock productivity situation in Ghana but it seems solutions are yet to be advanced. Stakeholders in the agricultural sector and farmers generally agree that a correct solution is yet to be found. The suggested solution since the colonial times seems to have been to replace traditional methods with modern methods. Indeed "agricultural modernization" is a main thrust of the Ministry of Food and Agriculture. If modernization means replacement of existing modes of production or food systems with Western or other modes of production then we must have been creating a much bigger problem. Experience all over the world has shown that it is not possible to replace systems. Systems develop over time in response to natural environments and can only be bettered not replaced. Thus if modernization means using Western and other ideas and technologies to improve our food systems then we are on the right track. Unfortunately, it seems over the years Ghana has been pursuing the former rather than the latter. The overemphasis on Western and other modes of food production to the neglect of food systems that the country has depended on for centuries and still depends on, is like the proverbial new wine in old bottles. A more correct solution has to be found if productivity of crops and livestock has to be doubled within the next decade and we believe the Ghana Zero Hunger Strategic Review will adequately contribute to that solution.

SDG 2 Target 2.3 also aims at doubling the income of small-scale food producers. This is clearly another difficult task. Poverty reduction, especially in rural areas, has been the goal of all governments in Ghana for several decades. As indicated earlier some progress has been achieved nationally but in rural areas it has been minimal. An assumption by policy-makers has been that an increase in agricultural productivity necessarily translates into an increase in farmers' incomes. That has been shown to be false. It has indeed been shown that, without any policy intervention, it results in an increase in real poverty, and later in lower agricultural productivity when farmers realize that their increased effort invariably results in greater poverty (the Cobweb theory). Prices of the agricultural inputs that have been promoted over the years have continued to increase at high rates while there is tendency for prices of produce to decline as shown in Figures 32, 33 and 34. As can be seen, prices of staple crops are all on the decline. Even though that may seem good for consumers it is very detrimental to production and to sustainable production, especially because the cost of inputs is on the increase in real terms. The high cost of production is a key reason for the inability of incomes of farmers to increase. Terms of trade have been very unfavourable to farmers over a long period of time.

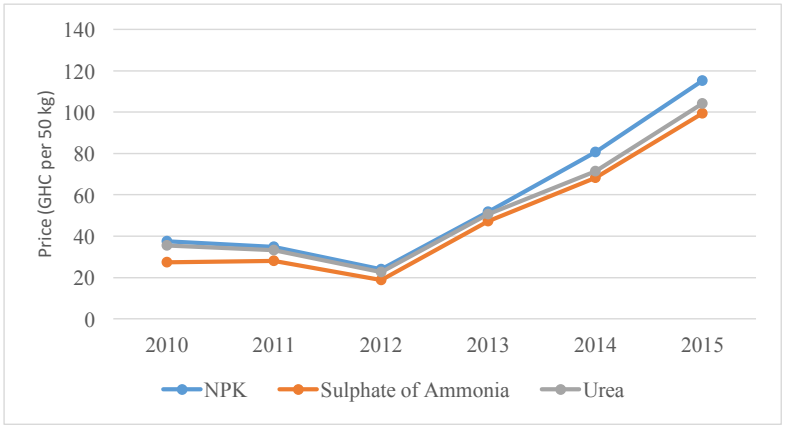

Figure 32: Trend of prices of main agricultural inputs (2010 – 2015)
Source: SRID/MoFA (2016)

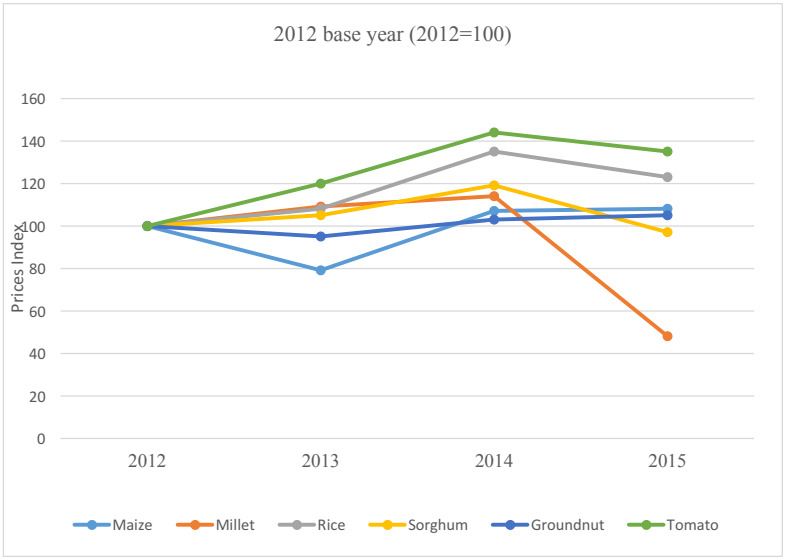

Figure 33: Trend of indices of prices of agricultural products (cereals, groundnuts and tomatoes)
Source: SRID/MoFA (2016)

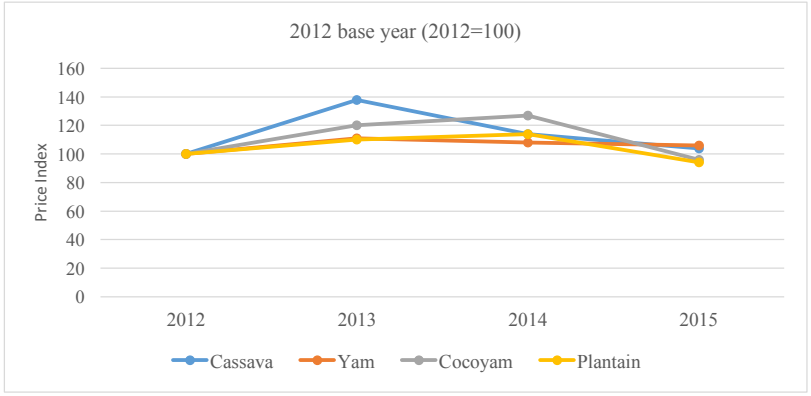

Figure 34: Trend of indices of roots/tuber crops and plantains (2012-2015)
Source: SRID/MoFA (2016).

Tables 3 and 4 give some comparative information on small holder farmers' incomes in the three northern regions of Ghana in 2015 and 2016. The results were computed from two Participatory Outcomes Assessment of the IFAD/ AfDB-funded Northern Rural Growth Project (NRGP) carried out for 2012 and 2015 production seasons (NRGP, 2015, 2016). The results clearly indicate that a greater effort has to be made if small farmers are to get out of their poverty situations. Dittoh (1981) has shown, using neoclassical analysis, that as long as agricultural production continues to be

subjected to the normal market forces, small farmers can never get out of the poverty cycle in which they find themselves. Most developed countries agree with this assertion and find ways of giving direct support to farmers. Developing countries continue to be confused about it and churn out policies that are at variance with common sense. The farmer says "when I produce I cannot sell", while the official policy favours the use of high-yielding seeds and fertilizers to increase productivity, which could worsen their situation. Farmers are not likely to comply.

Table 3: Maize Crop Productivity and Profitability in the northern regions

Region	Average maize acreage per HH	Maize production cost per HH GH□)	Yield of maize (in kg/acre)	Revenue from maize per HH (GH□)	Profit from maize per HH (GH□)	Profit per acre of maize (GH□)	Profit per hectare of maize (GH□)
Northern	5.36	1134.06	319.10	2597.49	1463.43	273.03	674.67
Upper East	3.39	1316.78	386.78	1856.51	539.73	159.21	393.42
Upper West	3.76	522.79	453.46	1824.52	1301.73	346.20	855.49

Source: Northern Rural Growth Programme (2016)

Table 4: Comparison of household revenues and profits over time (2012 and 2015 production years) in the northern regions

Production year	Revenues per hectare		Profits per hectare	
	Ghana cedis	US$ Equivalent*	Ghana cedis	US$ Equivalent
2012	851.75	457.93	331.64	178.30
2015	1,229.53	322.71	641.19	168.29
% change	44	-30	94	-6

*1US$ = 1.86 in 2012; 1US$ = 3.81 in 2015 (Average for the years)

Source: NRGP (2015) and NRGP (2016)

Doubling productivity must go hand in hand with ensuring that farmers make good profits from their efforts by accessing markets, selling their produce easily and attracting remunerative prices that compensate for their production costs. Policy-makers continue to ignore this basic problem but it has to be addressed. The West Africa Agricultural Productivity Programme (WAAPP), a World Bank-supported sub-regional initiative established in 2007 to support West African agriculture to make it more productive and sustainable and to improve regional economic integration, identified the lack of markets for cassava as its critical problem after its phase 1. WAAPP phase 2 has ended but the problem remains. The investment in cassava productivity has not achieved the desired effect and impact because the most critical but difficult problem is not being addressed.

There seems to have been a relief in the old Say's Law that supply will create its own demand. Supply has over the years not created effective demand at the right times, in the right places and in the right forms. While excess supply may be experienced in particular places at particular times, there are severe shortages in other places to the extent that a lot of agricultural products are thrown away for lack of demand, storage and/or processing. There can be increased in productivity and incomes if local demand can be created for the local foodstuffs. This can be done by a combination of policy, legislation, provision of incentives to private sector and NGO operatives and effective education on the importance of local foodstuffs for adequate nutrition.

2.5 SDG2 TARGET 2.4: SUSTAINABLE FOOD SYSTEMS AND RESILIENT AGRICULTURAL PRACTICES

The above discussion points to unsustainable food systems, especially the production aspects of food systems . The production aspect is the most critical part of a food system because without production there cannot be processing, marketing, consumption and other aspects of the system. All other components are, however, particularly important in ensuring sustainability. Whether large scale or small scale, a food production system should aim at being sustainable. Sustainability implies that the system should get better in terms of soil improvement (or the ecosystem as a whole), be

profitable (that is returns must be in excess of costs), be equitable (that is provide a reasonable livelihood to all involved) and have the potential of being resilient (that is being able to withstand climate, disease, market and other shocks). Any system that leads to ecosystem services erosion can survive only in the short run, and that has been the case in a number of situations. Also no food production system (and therefore a whole food system) will be sustainable if the farmers continue to incur losses irrespective of whether it is on a small or large scale. Again a very risky system that easily collapses with environmental or market shocks will lead to disaster because as long as agriculture depends on the weather and other aspects of the environment the unpredictable should be expected.

Additional to the issue of having sustainable food production systems, as stated above, is the fact that the food system should provide enough balanced nutrient output to meet all the nutritional needs of every person if food and nutrition security is to be achieved. Unfortunately, food systems globally do not make adequate and balanced nutrient output an explicit goal (Welch and Graham, 2000). Even the Green Revolution of the 1960s and 1970s which saved the lives of millions of people did not give much consideration to nutrition and human health, thus leading to serious problems of micronutrient malnutrition (ibid). It is important to note that aspects of the present "Planting for Food and Jobs" campaign, such as home vegetable gardens, is an important step towards improving the nutritional status of farming households.

Many reasons can be advanced for the present unsustainable food systems we are experiencing in Ghana and Africa as a whole. One that is glaring is the concept of "replacing what farmers have and know" instead of "improving what farmers have and know". What that does is to cause "breaks" or "flaws" in food systems, but as stated by WFP, broken food systems make it "difficult for the poorest to afford nutritious food, or prevent smallholder farmers from making good profits from their crops" (WFP, 2017. http://www1.wfp.org/food-systems). That philosophy of trying to "replace" rather than "improve" systems is so enshrined in the educated elite including agricultural officers, researchers and others that they refer to the hoe and cutlass as primitive. Meanwhile there is nothing more appropriate that Ghanaian scientists have developed to replace these two very valuable farm implements for the small farmer. The educated elite consider "improved seeds", fertilizers and tractor-use as the solution to the food production problem but do not explain to the farmer the disadvantages accompanying the constant and careless use of the technologies. This is applicable to all farm-size levels. Large-scale farmers get surprised that ownership of tractors does not solve their labour requirements. Indeed it tends to increase them. The tractors and their implements cannot be used in weeding and for harvesting in most cases. The point being made is that the truth about farming has to be told to farmers and potential farmers. Even potential literate large-scale farmers have often been disappointed with the half-truths told about agricultural technologies. The improper use of these inputs and the lack of adequate understanding of the soil chemistry and soil physics in fertilizer and tractor use by agricultural officers is a serious problem. Farmers seem to have a better understanding of these issues than many extension officers. That points to the serious deficiencies in agricultural training in Ghana at all levels. The training is towards the "ideal" (by Western standards) but not for practical agriculture in the country. The training emphasizes "productivity, efficiency and profitability" in the short term. Farmers' perspectives are long-term and they are more focused on "systems" and not commodities. "Systems thinking aims at understanding the underlying structure of connections, not just the individual parts" but "specialized, reductionist thinking simplifies complex ideas to the point of distorting or obscuring them" (Grubinger et al., 2010). Commoditization is too reductionist and distorts food systems. That means our agricultural training is at variance with what the Ghanaian (African) farmer wants and is doing and what can result in sustainable food systems that address food and nutrition insecurity. "Productivity, efficiency and profitability" are good but only on condition that medium and long-term perspectives are considered. If we incorporate long-term perspectives and systems-thinking into the pursuit of high productivity, efficiency and profitability, we will be moving towards the desires of both small and large-scale farmers and sustainable food systems. The point is not that "hoe and cutlass technology" must remain but more appropriate mechanization technologies that lead to practical and sustainable improvements of the food systems must be found. Fortunately, more appropriate small-scale mechanization technologies are being developed in several parts of the developing world for production, processing, storage, marketing etc. Ghana and Africa should aim at adapting some of those emerging appropriate technologies and equipment. The issue of standard weights and measures should also be given some priority because effective agricultural commodity marketing cannot be done outside the institution of acceptable standard weights and measures. The success of the WFP programme on standard weights and measures in the Brong Ahafo Region of Ghana is an indication that stakeholders in the food systems would be happy with the grading and standardization of agricultural products.

To ensure sustainable food systems and resilient agricultural practices which will help maintain and indeed improve ecosystems and strengthen capacity for adaptation to climate change, extreme weather, drought, flooding etc. (SDG 2 Target 2.4), there is the need to start looking at what farmers are doing and to try to understand why what they are doing works for them. Smallholder farmers have so far shown some resilience with respect to climate change through their ingenious farming systems. If small farmers were not undertaking some types of resilient agricultural practices our

agricultural systems would have collapsed. According to the 2015 Africa Progress Report "Power, People, Planet: Seizing Africa's Energy and Climate Opportunities", however, Africa will be hit hard by climate change, and the most severe and immediate effects will be felt by the rural poor. What is required, therefore, are actions to improve (not replace) the smallholder farmer practices. The contribution of large-scale farms to food supply in Ghana has been very low (less than 5 percent) and several investments in agriculture by potential large-scale farmers have not been successful mainly because of difficulties and disappointments encountered as a result of wrong perceptions given about farming. Well-informed and well-resourced large-scale farmers can however contribute to achieving zero hunger in Ghana.

Fisheries is a very important agricultural sub-sector that supplies about 60 percent of Ghana's animal protein. It is the most preferred (and cheapest) source of animal protein in the country. As indicated in Chapter 2, however, both marine and inland fisheries have stagnated for over 15 years. Progress in aquaculture is however very promising. The unsustainable, illegal and criminal methods used in marine and artisanal fisheries in the country is very worrying. Future availability of fish critically depends on sustainable fishing practices.

There are basically two ways of achieving sustainable farming systems: by moving from Low External Input Agriculture (LEIA) to Low External Input and Sustainable Agriculture (LEISA) or by moving from High External Input Agriculture (HEIA) to High External Input and Sustainable Agriculture (HEISA). The present policies and practices by successive Ghanaian governments have been to try to move from LEIA to HEISA, but that is impossible. It is only some NGOs which are helping farmers to move from LEIA to LEISA. Definitely some external inputs such as improved seeds, fertilizers and appropriate mechanization are necessary to move from LEIA to LEISA but dependence on them while completely ignoring the development and use of local inputs and some local knowledge and experience cannot achieve much, at least not in the medium to long term (Dittoh, 1999, and Dittoh et al., 2016 on these arguments). The WFP says, "improving the performance of food systems and their ability to cater even for the poorest will be key to achieving Zero Hunger" (WFP, 2017, p. 1). There is thus a need to "support local food systems by enhancing local access and control over productive resources — including land and territories, water, seeds and livestock breeds, biodiversity-rich landscapes and ecosystem services" (IIED, 2017). It is possible for large-scale farmers to move gradually from HEIA to HEISA but that means considerable investments and well-planned backward and forward linkages to succeed. Also, there should be concrete moves to produce most of the imported production inputs in-country. For sustainable zero hunger by 2030 it will be necessary to profile areas for different types of food systems including potential large-scale systems. According to Johan Six, the pertinent questions that should be asked under the present situation of climate change and globalization are: Will our growing population still have enough food to eat under the predicted future climate? Will multinational food manufacturers provide us with enough healthy food or should we rely on small farms? Will poor farmers be able to buy expensive seeds and earn enough to feed their families? (Six, 2014). The answers to these questions should be based on practical evidence of what has been happening in the agricultural sector since the 1950s and not on theoretical postulations and manipulations of suspicious data.

African and for that matter Ghanaian small farmers believe in mixed cropping and mixed farming. The advantages of these systems in terms of soil fertility improvement and management, management and improvement of ecosystems, less use of land to achieve comparable level of production, mix of food stuffs produced, schedule of food harvesting etc. are immense. These are the intensive and resilient systems we should promote in ways that will bring about zero hunger. Such systems will provide diversified crop and livestock products. Large-scale extensive systems can also be promoted but as noted earlier, so far their contribution to food production has been low and experiences in all parts of the country do not indicate any bright prospects of sustainable large-scale production. It must be reiterated that some improved seeds, fertilizers and appropriate mechanization will be required in small scale farms but the levels of use will be much lower, more efficient, more appropriate and less destructive. Also, small scale farmers should be supported to increase their farm sizes to more economical levels without any distortion to the holistic food systems they are accustomed to.

Technologies and techniques that can be innovatively applied in food production, processing and marketing to promote sustainable food systems and ensure zero hunger have been developed through science. And technology has developed techniques that can be innovatively applied in food production, processing and marketing to promote sustainable food systems and ensure zero hunger. ICT is a good example. ICT can be used to effectively support food production, processing and marketing in all parts of the country, especially in rural areas. It is the most cost-effective way of reaching many rural communities. Also, typical sustainable food systems are local systems requiring simple mechanical and other equipment. There is a need for innovativeness in the fabrication of such equipment at the local levels. There is also a need for innovativeness in the management of local food systems given the already established nature of the global food systems which will try to undermine local systems.

Two other factors that adversely affect attempts to achieve sustainable food systems and resilient production practices are rapid population growth and ecosystem services erosion. Ghana's population has been growing at about 2.5 percent according to the 2010 population census (GSS, 2012) compared to the world average growth rate of about 1.5 percent. The 2016 Human Development Report (UNDP, 2016) also indicates that Ghana's natural resource depletion is about 47.7 percent of the country's gross domestic product and it is a major factor adversely affecting human development. Again, a UNU INRA report estimates that more than 50 percent of Ghana's original forest area has been converted to agricultural land by clearance and 30 percent of the land is under threat of desertification (Tesfahunegen et al., 2017). Zero hunger cannot be achieved without a drastic reversal of these demographic and environmental situations.

2.6 SDG2 TARGET 2.5: GENETIC DIVERSITY

SDG 2 Target 2.5 aims at maintaining genetic diversity of seeds, cultivated plants, domesticated animals and wildlife, and the promotion of access to, and fair and equitable sharing of, benefits arising from the utilization of genetic resources and associated traditional knowledge. Genetic diversity refers to genetic characteristics in plant and animal species. It is diversity within species. It is related to biodiversity (species diversity) because diversity within species (genetic diversity) is necessary for diversity between species (species diversity) and vice versa.

There has been a tendency in agricultural science to move towards monocultures, that is limited seed varieties, planting materials and livestock breeds, for the main purpose of easy crop and animal production for "productivity, efficiency and profitability" in the short term. The move is very risky in terms of food production. Crop or animal farms can be easily wiped out by diseases and it has happened in several places in the world. The crops and animals will not be able to adapt to the changing environments. Currently groundnut and tomato production has virtually ceased in several parts of the northern regions of Ghana because of diseases. With current climate change, a number of crop and animal species no longer exist in several parts of the world because of the breeding for monocultures. Monocultures also destroy the ability to produce quality diversified products that are useful for our body systems in terms of disease resistance. The less diversified the products eaten the less the ability of the body to fight diseases.

There is a growing threat to genetic diversity and biodiversity through legislation in several countries across the world. The legislations aim to replace traditional varieties of seeds with uniform commercial varieties so that farmers will have no choice but to purchase seeds for every planting season. It is a great threat to food security because as argued above those monocultures can be easily wiped out by diseases. It is a clear case of circumventing nature and bringing hardship unto people for short term gain by individuals and corporate bodies. There is the need for clear policies towards seed sovereignty and seed security. Ghana must be able to produce all the seed it wants within the country. Indeed, farmers must have the liberty to use what types of seed they want. There must be clear national, sub-regional and continental emphasis on food sovereignty objectives, if Africa is serious about food and nutrition security. People must have the right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods. That is not possible without seed and breed security.

CHAPTER 3: NATIONAL RESPONSE, GAPS AND OPPORTUNITIES

3.1 INTRODUCTION

Despite economic development gains and poverty reduction, food and nutrition security challenges persist in Ghana. Hunger and malnutrition are prevalent but vary across the nation disproportionately affecting children under five years of age, women of child-bearing age and the elderly. It must be mentioned however, that a number of interventions that are linked to policies (Appendix II) have been put in place with development partners and stakeholders and these have led to Ghana's current position. The hunger and malnutrition landscape manifests itself either as undernutrition (underweight, stunting, wasting, as well as deficiencies in vitamins and minerals which result in "hidden hunger") or as over-nutrition (overweight/obesity). As indicated earlier, regional disparities in undernutrition persist: the highest stunting rates are in the Upper East, Northern, Eastern, and Central Regions and the highest rates of anaemia are in the Upper West and Upper East Regions. As many as 1.2 million Ghanaians are considered food insecure; and chronic undernutrition, though decreasing in the past five years, still affects about one quarter of Ghanaian children under five. Ghana also reduced the prevalence of underweight in children under five from 25 percent in 1998 to 13 percent in 2011 (USAID, 2014).

3.2 POLICY AND PROGRAMMATIC FRAMEWORK

Ghana has not lacked policies, plans, strategies, programmes and projects towards achieving food and nutrition security. Some successes have been achieved but the fact that food and nutrition insecurity (hunger) is still prevalent suggests that there have been failures in the policies, plans, strategies, programmes and projects. Even though it is recognized that the main problem has been lack of implementation, one is inclined to believe that some of the policies, plans, etc. also have shortcomings. Stakeholders, during the stakeholder workshops in Cape Coast, Koforidua and Tamale, referred to Medium Term Development Plans that are produced every four years as "mere academic exercises". They claimed there is hardly any relationship between the development plans and what happens on the ground.

Ghana's response to the issues discussed in Chapter 2 has been through policies, plans, strategies, programmes and projects. Policy-making and development planning are done at national, sectoral and district levels under the guidance of the National Development Planning Commission (NDPC).

National Development Plans

Since 1992, there have been five national development plans as follows:

1) Ghana Vision 2020, the first part (1996-2001);

2) Ghana Poverty Reduction Strategy (GPRS) I (2003-2006);

3) Growth and Poverty Reduction Strategy (GPRS) II (2006-2009);

4) Ghana Shared Growth and Development Agenda (GSGDA) I (2010-2013); and

5) Ghana Shared Growth and Development Agenda (GSGDA) II (2014 – 2017). The GSGDA II.

Food and nutrition security has been an important goal in all the plans.

THE SCALING UP-NUTRITION MOVEMENT IN GHANA

On 25 March 2011, the Republic of Ghana joined the SUN Movement. Since that day many positive achievements have been made towards eliminating all forms of malnutrition in Ghana under the auspices of the National Development Planning Commission (NDPC). The NDPC has provided leadership in coordinating activities which led to the development of the Ghana Nutrition Policy, established baseline of the Nutrition situation in Ghana and identified trends in nutrition financing (Figure 35).

Figure 35: Nutrition-Relevant Allocations across Government Sectors in USD Millions

The NDPC as of 2017 has been able to achieve the under-listed and the level of achievement is shown. Their experiences are an asset to be harnessed in this zero-hunger strategy:

- Bringing people together (69.0 percent)
- Coherent policy and legal framework (63.0 percent)
- Aligning programs around a Common Results Framework (65.0 percent)
- Financial tracking and resource mobilization (51.0 percent)

Furthermore, Ghana's multi-stakeholder platform (MSP) and the Nutrition Cross-Sectoral Planning Group (CSPG) work under NDPC. The CSPG works at the national level under the auspices of the National Development Planning Commission (NDPC). The three northern regions have regional nutrition MSPs, and plans are in place to extend the MSPs to all regions and districts. All SUN Networks, except a Business Network – which is currently being established – are up and running, including the recently revived SUN Donor Network.

Working together with the SUN Movement under the NDPC will further pave the way for enhancing collaboration in areas of priority that NDPC has taken the lead in, such as the formation of a media network and appointment of nutrition champions. Also, there are plans under way to achieve the following by 2018 which will further push the SDG2 agenda forward. These include:

- Create an inter-ministerial committee at the Office of the President
- Streamline SUN coordination, at all levels
- Complete a nationally-costed nutrition scaling up plan
- Complete a budget and expenditure tracking exercise, with an accompanying
- Resource mobilization strategy
- Launch the SUN Business Network
- Establish a SUN Media Network

AGRICULTURAL POLICIES, PLANS, STRATEGIES, PROGRAMMES AND PROJECTS

The agriculture, health and nutrition, and social protection sectors are key in the drive towards zero hunger. All other sectors do also support food and nutrition security in different ways. Food and nutrition security is multi-disciplinary and all sectors do have a role to play.

The main agricultural and rural development policies, plans, programmes and projects instituted as responses to the problem of persistent hunger over the years include the following:

1. Medium Term Agricultural Development Programme (MTADP) (1991-2000)
2. Accelerated Growth and Developed Strategy (AAGDS) (1996-2000)
3. The Agricultural Services Sector Investment Programme (AgSSIP) (2000-2006)

4. Roots and Tubers Improvement Programme/Roots and Tubers Improvement and Marketing Programme (RTIP/RTIMP) (1999-2005 and 2007-2014)
5. Food and Agricultural Sector Development Policy (FASDEP I and II) (2002 – 2006 and 2009 – 2015)
6. Medium Term Agricultural Sector Investment Plan (METASIP I) (2011-2015)
7. METASIP II (2014-2017)
8. Fisheries and Aquaculture Sector Development Plan (FASDP) (2011-2016)
9. Ghana National Aquaculture Development Pan (GNADP) (2012-2016)
10. West Africa Regional Fisheries Programme (WARFP) (2011-2017)
11. Northern Rural Growth Programme (NRGP) (2008-2016)
12. West Africa Agricultural Productivity Programme (WAAPP) I and II (2007-2016)
13. Youth in Agriculture Programme (on-going)
14. Ghana Commercial Agriculture Project (2014-2018)
15. Several bi-lateral supported programmes and projects by CIDA, USAID, GIZ, AFD, JICA, DANIDA and others. Examples of such programmes/projects are:
    a. CIDA FARMER Project
    b. AfDB Lowland Rice Development Project (LRDP)
    c. DFID Role of Livestock in Rural Livelihoods
    d. AFD Rice Sector Support Project (RSSP)
    e. USAID Feed the Future Projects
    f. GIZ Market Oriented Agriculture Programme (MOAP)
16. There have been other policies and plans that have considerable effects on food and nutrition security. Some of these include:
    a) National Irrigation Development Policy, Strategies and Regulatory Measures
    b) Ghana National Land Policy
    c) Ghana National Water Policy
    d) Ghana Forest and Wildlife Policy, 2012
    e) Ghana Trade Policy
    f) Ghana Industrial Policy
    g) Bank of Ghana Agricultural Policy
    h) Ghana Science and Technology Policy
    i) National Gender Policy, 2015.
    j) National Action Plan to Combat Drought and Desertification
    k) National Environmental Action Plan (NEAP)
    l) Ghana Strategic Investment Framework (GSIF) for Sustainable Land Management (SLM)

All these policies, plans, strategies, programmes and projects have had consequences on food and nutrition security. Currently the METASIP II programmes which are derived from GSGDA II objectives, and aligned to sub-regional and con-

tinental (ECOWAP and CAADP) food and nutrition goals are being pursued. They include the following:

1. Food Security and Emergency Preparedness
2. Increased Growth in Incomes
3. Marketing of Agricultural Products
4. Management of Land and Environment
5. Science and Technology in Food and Agricultural Development

Nutrition policies, programmes and projects

With respect to nutrition-specific policies almost all the national plans had long-term nutrition objectives. For example, Vision 2020 had objectives such as:

1. Achieve and maintain nutritional well-being among all socio-economic groups and in all regions of Ghana.
2. Eradicate child malnutrition.
3. Establish a socio-cultural milieu that promotes healthy behaviour, including consumption of appropriate diets, at national, community and household levels.
4. Achieve exclusive breast-feeding of infants aged 0-4 months by 95 percent of mothers.
5. Eradicate micronutrient malnutrition (iodine deficiency disorder, vitamin A deficiency and iron deficiency anaemia).
6. Establish community-based nutrition surveillance and promotion programmes in all human settlements.
7. Reduce median percentage share of food in household expenditures to 30 percent

The current Ghana Shared Growth and Development Agenda II also had several nutrition specific objectives such as:

1. Reduce under-nutrition and malnutrition-related disorders and deaths among infants, young children and women in their reproductive ages;
2. Ensure effective coordination, integration and implementation of nutrition interventions in relevant sectors; and
3. Ensure improved nutrition among all segments of the population.

SOCIAL PROTECTION POLICIES, PROGRAMMES AND PROJECTS

Social protection interventions are key to ending hunger and malnutrition. With support from development partners, several social protection programmes have been initiated by the government to address issues related to poverty, social inequality, economic crises, climate change and its related issues, vulnerability and exclusion. It is important to note that there are also some forms of informal social protection systems in most rural communities in Ghana. In all the regions, though there are no formal social protection programmes in the communities, the elderly and other vulnerable groups are catered for by their families. In addition, some other informal social protection practices such as donations of cash, food and other tangible resources to the vulnerable by religious bodies, Non-Governmental Organizations, and some individuals are also common in Ghanaian societies. Specific examples of policies and social protection programmes in Ghana are described below:

GENDER AND HEALTH POLICY

Gender has been demonstrated to influence all domains of health. Gender as a health determinant is influenced, in part, by biological and psychological variables. Age and gender are also associated with health-related behaviors (Deeks, 2009).

Understanding gender's influence on health therefore requires an understanding of the determinants of the factors that may be modifiable through intervention (Davidson, 2006). There is the need to address barriers by implementing health policies and initiatives to support the implementation of gender-based, public health systems approaches to improve women's and girls' health (Kowalczyk, 2017).

Gender inequality and the low status of women in society are major obstacles to overall development. (Hasnain, 2009). Evidence increasingly shows that poverty and gender inequalities are important determinants of health and influence the opportunity for timely and appropriate health care (Coll-black, 2007).

Gender has a great influence on the causes, consequences and management of diseases and ill-health and on the efficacy of health promotion policies and programmes. This is confirmed by evidence on male-female differences in cause-specific mortality and morbidity and exposure to risk factors. Health-promoting interventions should be aimed at ensuring safe and supportive environments, healthy living conditions and lifestyles and community involvement. There is the need for gender equality and equity in health as well as health promotion and effective and gender-sensitive policy interventions to promote health. (Ostlin, 2006)

Health Sector Gender Policy of the Ministry of Health: The Ghana Ministry of Health gender policy document seeks to recognize ways in which gender relations, roles, responsibilities, access and control of resources impact on women and men's health. Gender equality is important for the development of the health sector because it ensures that both men and women are in a position to contribute effectively to health delivery and to demand for equitable health services, by recognizing gender as one of the factors influencing roles, responsibilities, status and influence in society.

Society prescribes to women and men different roles and responsibilities within different social contexts. The different roles and responsibilities of women and men, inequities in access to resources, information and power are reflected in their health-seeking behaviour, their vulnerability to illnesses and quality of care provided to them. The health-seeking behaviour of women is generally believed to be low with the exception of women in the reproductive age group. Women's higher levels of poverty, lower literacy levels and lower levels of awareness of general information as compared to men affect them and their families adversely.

The promotion of gender equality in the health sector is crucial because gender differences and needs affect socio-economic status, including health. Ghana has committed itself to gender equality and women's promotion and this is enshrined in its constitution Article 17(2) and 26 (1 and 2). The objective of the Gender and Children's Policy, which is the guiding policy, in gender equality and mainstreaming is:

To mainstream gender concerns in the national development process in order to improve the social, legal/civic, political, economic and cultural conditions of the people of Ghana, particularly women and children

Gender mainstreaming is a globally accepted strategy or approach for promoting gender equality. Within the health sector gender mainstreaming needs to be considered in relation to access to health care, quality of care, management of the health system.

The goal of the gender policy framework is to contribute to better health for both women and men, through health research, policies and programmes which give due attention to gender considerations and promote equity and equality between women and men. To achieve the goal of the gender policy, the Ministry of Health seeks to pursue the following policy objectives:

- To reduce gender barriers in access to health care, namely financial, geographical and socio-cultural, by ensuring that women, men and children live long healthy and productive lives with reduced risk of injury and death;
- To promote professional ethics and human rights among health workers in the delivery of health care;
- To improve quality of care by fully integrating gender dimensions of health into service delivery at all levels;
- To address gender inequalities in health service delivery, outcomes and management including narrowing the gender gap in the management structure;

- To ensure that Gender HIV/ AIDS and sexual/ gender based violence issues are equitably addressed in the Health Sector;
- To promote gender equality in health financing and governance by increasing coverage, effectiveness and efficiency of programmes and intervention;
- To address gender gaps in health care delivery at the household level.

National Health Insurance Scheme (NHIS): It was launched in 2003 with the main objective of providing basic healthcare services to persons resident in the country through mutual and private health insurance schemes. The scheme was introduced to abolish the cash and carry system in which people had to pay a fee for consultation, laboratory, drugs and other services at health facilities before they received healthcare. The programme covers about 95 percent of diseases in Ghana including malaria, some types of cancer, surgical operations, maternity care, dental care, eye care and others (Laar et al., 2017). By 2010, the scheme was operational in 145 districts across the country. The NHIS also aimed to provide financial risk protection against the cost of quality basic health care for all residents and in particular, the poor and the vulnerable. Though the NHIS has yielded some positive results by increasing the utilization of health services in the country, it was predominantly designed as a standalone health service provision programme with no nutrition-specific objectives, and its main objectives and modus operandi do not make it nutrition-sensitive (Laar et al., 2017).

Ghana Growth and Poverty Reduction Strategy, I (GPRS I) 2002-2005: This was a policy framework with the primary aim of attaining anti-poverty objectives of the Millennium Development Goals (MDGs). Several social protection issues were addressed in the policy including the provision of potable water for rural communities, free basic education, provision of meals to school children, construction of small-scale irrigation schemes and many more.

Ghana Growth and Poverty Reduction Strategy II (GPRS II) 2006-2009: This was aimed at transforming Ghana into a middle-income country by 2015. Issues addressed by the policy included but was not limited to hunger, poverty, education, health, gender equality and environmental sustainability Both the GPRS 1 and GPRS II have long term nutrition objectives.

a) Livelihood Empowerment against Poverty (LEAP) 2008-2012: LEAP aimed at reducing poverty in Ghana and providing a better life for the Ghanaian populace. Basically, it focused on cash transfers and free health insurance for vulnerable people including orphans and vulnerable children such as those with extreme disability. The programme was piloted in 1654 beneficiary households in twenty-one selected districts across the country (Laars et al., 2017). As at 2013, LEAP had extended to 70, 191 beneficiary households across 100 districts nationwide as reported by the Department of Social Welfare with an annual expenditure of US$20 million. Though there are cash conditions for cash transfer to orphans and vulnerable children, transfers for the people with disability and the elderly above 65 are unconditional. The cash transfers are sponsored by the Ghana Government and supported by the World Bank, UNICEF, ILO, DFID and Government of Brazil. The transfers focus on providing financial support and health insurance to extremely poor households across Ghana. The LEAP 1000 programme was launched in 2016 and targets pregnant women and children aged less than two years in the Northern and Upper West regions of Ghana due to the high prevalence of stunting and malnutrition in these regions. The LEAP programme positively affects women, both directly as beneficiaries of social transfers and indirectly as caregivers of beneficiaries (who are overwhelmingly women) who stand to benefit from a number of complementary programmes and services (Amuzu et al., 2010). Amuzu et al.'s research (2010) indicate that the LEAP cash transfer programme is making a difference in several ways such as gendered risks, poverty and vulnerability in Ghana. Additionally, cash transfers are given to both men and women aged 65 years and above and specific attention is paid to girls who are vulnerable to child labour (Laar et al., 2017). Generally, there is evidence to indicate that the LEAP has some positive effects on some aspects of livelihood. For example, the LEAP has been shown to have a positive impact on children's schooling and health in households that are on the programme while no impact has been shown on consumption and savings (Handa et al., 2012).

b) Ghana School Feeding Programme (GSFP): The GSFP started in 2005 with the aim of helping achieve the Millennium Development Goal (MDG) of reducing hunger. The main objectives of the programme are to increase school enrolment, attendance and retention; to reduce hunger and malnutrition; and to boost domestic food production. It is an initiative of the Comprehensive Africa Agricultural Development Programme (CAADP) Pillar 3 assisted by the New Partnership for Africa's Development (NE-

PAD). It is funded by the Government of Ghana, supported by its development partners. The programme aims to provide one hot, nutritious meal for children in selected deprived public schools.

The GSFP is governed by the Ministry of Gender and Social Protection with the Ministry of Food and Agriculture, Ministry of Local Government and Rural Development and partnership from international agencies including the World Bank, WFP, UNICEF, Canadian International Development Agency (CIDA), the United States Agency for International Development (USAID) and the Dutch Embassy. For effective management, monitoring and implementation, the programme has a National Secretariat, a Regional Coordinating Office (RCO), and a District Implementation Committee chaired by the Metropolitan/Municipal/District Chief Executives (MMDCEs).

The programme started with ten pilot schools and increased to 200 schools (with 69,000 students in 138 districts in Ghana) in 2006. By March 2007, the coverage reached 975 pilot schools serving over 400 school children, with about at least two schools in each district. Currently, the GSFP provides meals for about 1.7m school pupils comprising about 38.53 percent of pupils at the basic school level.

The GSFP has seen some successes since its implementation. These include increases in general enrolment and retention rates and also a reduction in the gender gap between boys and girls and nutritional status in schools on the programme. Various documentations indicate an increase in enrolment figures for those schools that participate in the school feeding programme. There is for example a documented enrolment increase of 20.3 percent in the pilot schools as against 2.8 percent in schools without the feeding programme (Morgan & Sonnino, 2008). Furthermore, in the 2005/2006 academic year, enrolment for children between the ages of 6-11 saw an increase from 69.2 percent to 81.1 percent in the 2006/2007 academic year at the primary level. Increases have also been reported specifically in the Upper East region of Ghana. For example, Bukari and Hajara (2015) reported an increased gross enrolment rate of 24 percent among participating schools but a decrease of 7 percent in non-participating schools. In the Upper East and Upper West regions for example, girls' enrollment surged to 31.4 percent and 26.1 percent respectively when these figures were compared with the national average of 12.8 percent Martens (2007) and Buhl (2012) also reported an increase in school attendance rates and a reduction in drop-out rates in school with feeding programmes compared to those without feeding programmes.

Reduction in the gender gap between boys and girls and nutritional status in schools with feeding programmes: A report by Adamu-Issah et al. (2007) indicates that enrolment for girls increased a little more than that of boys by 18 percent to 15 percent. Thus, it appears girls made more gains by closing the gender gap after the implementation of the school feeding programme. It is also reported that the Gender Parity Index (GPI) has improved immensely for primary gross Enrolment from 0.93 in 2004/05 to 0.95 in 2005/06 (Adamu-Issah et al., 2007). School feeding in general yields educational benefits, value transfer, nutritional and health benefits that generate long-term returns through increased lifetime earnings from increased productivity, reduced morbidity, and a prolonged lifespan. This is enough justification for its continuation.

The GSFP is also nutrition-sensitive. The very nature of its objective – promoting food production and increasing school enrolment, attendance and retention, and a long-term goal of contributing to poverty reduction and food security – by itself is nutrition-sensitive (Laar et al., 2017). The programme also has a number of food and nutrition benefits for families that are vulnerable. With regard to children, it has the potential of improving dietary intake, increasing the frequency of meals and improving food security among households (Laar et al., 2017).

c) Capitation Grant: This was introduced following the abolition of school fees in 2005. It focuses on providing free registration for children in public schools in the country. Each student receives GH¢10.00 per year and the programme is supported by the World Bank. Thus, no child is to be turned away for non-payment of fees. However, though Ghana's school enrolment rates are high compared to some other African countries, a persistent 40 per cent of children between 6 and 11 years of age remained out of school as of 2003. One of the main reasons why these children did not attend school was that their parents could not afford to pay the levies charged by the schools (Adamu_Issah et al., 2007). Despite the policy of fee-free tuition in basic schools, many districts charged levies as a means of raising funds, for example, for school repairs, cultural and sporting activities. This had the effect of deterring many families, particularly the poorest, from sending their children, especially girls, to school. In spite of this, with the capitation grant, parents' need for paying their children's school fees is met halfway, leaving them some income to secure food for the household.

d) Free School Uniform, Sandals and Books programme: This programme is an initiative of the Government of Ghana and was started in the 2009/2010 academic year. It provides free school uniforms, sandals and exercise books for children in deprived public schools. The aim of the intervention is to facilitate universal access to basic education, avoid the stigma attached to poor households that cannot provide school uniforms to children and to promote the local manufacture of uniforms and exercise books. The programme is funded by the government of Ghana. The main challenges faced by the Free School Uniform Distribution programme was the irregular nature in which funding was released and also the limited supply of exercise books to poor and needy students. Nevertheless, though the intervention does not directly impact on nutrition, by merely taking the burden off parents so that they can devote more of the family income to nutritious meals, its importance cannot be overemphasized.

Despite the successes of the GSFP (e.g. increases in enrolment), it is bedevilled with some challenges which threaten the collapse of the programme. Notable among these are:

Selection of schools to include in the programme: Many stakeholders in our interviews expressed concern about the way in which vulnerable schools are selected for the school feeding programme. For example, only selected schools in poorer communities benefit from such meals and this might result in a divide of schools that are beneficiaries of the feeding programme and others that are not, particularly when they are all classified as as poor in the community.

Lack of effective coordination: Stakeholders also raised issues concerning the lack of effective coordination among the various multi-sectorial units that are involved in the programme. This may subject the implementation of the programme to abuse and neglect. Roles of the sectors for example seem to be fluid, not making it easy to know whether the District Assemblies, the Ministry of Gender and Social Protection or the Ghana Education Service that is responsible for the day to day activities of the School Feeding Programme.

Monitoring and supervisory lapses: There are some shortfalls in the monitoring and supervision of the programme. For example, District Implementation Committees' capacity to function effectively is hampered by allocation of funds for their activities.

Availability of Funds for Sustainability of the Programme: The over dependence on donor agencies in funding the programme is a source of worry. Thus, there is some concern about how to sustain the programme for an extended period.

Delay in payment of caterers: Delay in payment of caterers of the School Feeding Programme was mentioned as a challenge. Such delays compromise the goals of the programme as they have resulted in the use of sub-standard ingredients with poor nutritional value, poor meals and bad sanitation practices by the caterers.

However, there is hope for improvement in the social protection programmes and their implementation in Ghana. The government of Ghana has indicated a renewed commitment to ensuring that the programmes are well-coordinated and are successfully implemented. For example, steps have been taken to clear the payment backlog of the GSFP and to ensure that strategies are put in place to avoid delays in such payments and also to allow for a smooth implementation of the programme.

e) In September 2017, a free Senior High School scheme was rolled out, in which the government of Ghana will fund the cost of public Senior High School for all those who qualify for entry from the 2017/2018 academic year. In addition to free tuition, the government will absorb other fees such as the library fee, utility fees, science laboratory fee, examination fee and boarding fee. In addition, day students will receive a meal at school for free. It is expected that this programme will help address the shocks and stresses that result in household food insecurity.

Distinct Social Protection Schemes Targeting the Vulnerable

Over the years, children under five years and women of child-bearing age have been considered the vulnerable in society. Therefore, special nutrition care was designed for them, leaving out other population groups that fall into the "vulnerable" category. In recent times vulnerability has a wider span, including also Persons-With-Disability (PWD) (physically/mentally challenged). The well-being and nutrition of PWDs and other marginalized groups in society are crucial to Ghana attaining zero hunger. In view of this, some programmes which directly

or indirectly impact on nutrition have been designed and initiated but need to be scaled up. The following are highlights of such programmes:

1. Community-Based Rehabilitation Programme for the Disabled (CBRP)

The main aim of the CBRP is to raise awareness and mobilize resources at the village level to enable parents to be more effective in helping their children with disabilities to attend school, learn skills and participate productively in family and community life. Additionally, the CBRP aimed to establish links between service providers in health, education, community development and social welfare at district levels, to strengthen associations of persons with disabilities to enable them play a key role in the mobilization of the community, to implement village-level activities and to promote the human rights of persons with disability (Dako-Gyeke, 2017).

The programme was instituted in 1992 through the Ministry of Employment and Social Welfare (MESW) in collaboration with the Ministry of Health, the Ministry of Education, Ghana Education Service, the Ministry of Local Government, NGOs and some organizations that work with persons with disability. The programme has been implemented mainly through the employment and training of district agents in the District Offices of the Department of Social Welfare, training of community local supervisors who have been appointed and are engaged on a voluntary basis, establishment of CBRP committees to ensure commitment and local ownership of the programme, and the employment and training of teachers who are in support of inclusive education in schools.

A report by the World Health Organization (2002) indicates that only a small number of persons with disabilities, their families and communities were benefiting from the CBRP in 1996. According to the report, of the 110 districts in the country, only 10 had been reached and of these, only 86 communities had been covered. In spite of this, those who benefitted from the programme indicated positive experiences particularly regarding their self-esteem and confidence. Like several other social protection programmes, the CBRP also suffered from lack of resources and poor supervision. The programme ended in 2002/2003. However, in some communities, it was integrated into the District Assembly Common Fund (DACF) for persons with disabilities (Kuyini, Alhassan & Mahama, 2011). Though the programme had not been specifically designed to impact on nutrition, indirectly, it is nutrition-sensitive. Providing children with disability as envisaged by the intervention will enable them secure a livelihood and consequently be able to be food and nutrition secured.

2. Programme to Reduce Nutrition and Micronutrient Deficiencies

This programme was introduced in 2011 after the Partnership for Child Development (PCD) started work with the Government of Ghana (GoG) to support the Ghana School Feeding Programme (GSFP) and provide technical assistance and capacity building to the GSFP. Having identified among other things, weaknesses in the nutritional aspects of the GSFP by the PCD, the programme was introduced to help improve the nutritional intake of children living in poverty and food insecurity. Subsequently, a National Nutrition Policy (2013 – 2017) was drafted and implemented. Several objectives were set for the National Nutrition Policy including to i) re-position nutrition as a cross-cutting issue, ii) facilitate integration and mainstreaming of nutrition into all national development efforts and iii) provide the framework for nutrition services and interventions in Ghana. A study conducted to examine the impact of the programme showed a reduction in stunting among children in schools where the National Nutrition Policy and the Ghana School Feeding Programme were implemented (Gelli et al., 2016).

3. The Ghana Luxembourg Social Trust Project

The Ghana Luxembourg Social Trust (GLST) project was started in 2009. Its main objective was to collect evidence about the impact of maternal and child health status of a cash transfer that is conditioned on the recipient taking up a certain number of reproductive and child health-related services (Dako-Gyeke, 2017). Thus, generally, it aimed at improving the maternal and child health status of low-income groups. The target group was extremely poor pregnant women. The cash benefit was on the basis that beneficiaries will: i) utilize pre- and post-natal care ii) access skilled delivery iii) ensure birth registration iv) immunize their children v) ensure periodic health check-ups for the child and vi) register with the National Health Insurance Scheme.

The five-year cash transfer programme was designed and implemented alongside LEAP to reduce poverty and improve child-health related issues in some selected communities in the country. The GLST project ended in August, 2014.

4. Labour Intensive Public Works Programme

The Labour Intensive Public Works (LIPW) programme started in 2010 and is under the Ghana Social Opportunities Project (GSOP). It aims to increase access to employment and cash-earning opportunities for beneficiary communities and improve productive capacities of rural social infrastructure and other community assets. It is a nationwide programme with special focus on the Northern Region of the country (29 of the 49 targeted households are located in the three northern regions). The target group for the project are poor rural households and eligible households are the poorest within the selected districts. The Ministry of Local Government and Rural Development, in collaboration with the World Bank, has oversight responsibilities over the LIPW programme. The LIPW had 30,042 and 7, 814 beneficiaries in 2014 and 2015 respectively (World Bank, 2016).

An impact evaluation conducted on the project by the Institute of Statistical, Social and Economic Research (ISSER) indicated a decrease in unemployment rates in the intervention communities by 18.5 percent as compared to non-beneficiary communities. Overall, the impact evaluation exercise recorded 78 percent beneficiary satisfaction of the delivery of the LIPW.

5. Elimination of the Worst Forms of Child Labour

The Elimination of the Worst Forms of Child Labour was established in Ghana in 2000. The policy sought to withdraw and/or prevent children from child labour and other forms of work that are considered hazardous or exploitative. In furtherance of this, a National Plan of Action was developed which includes the establishment of systems and the development of instruments and guidelines aimed at helping to combat child labour. The programme aims at eliminating the worst forms of child labour by building capacity and sensitizing employers, inspectors and parents about child labour. It also aims to establish poverty reduction programmes for parents and to provide support for rehabilitation and reintegration of children who are withdrawn from child labour. The target population is all children under 18 years who are involved in the worst forms of child labour. The programme is centred on sectors such as cocoa plantations, mines and quarries, where child labour is endemic.

An analysis conducted by the United States Department of Labour (2016) on the programme to eliminate the worst forms of child labour in Ghana indicates that there is a moderate advancement in efforts, although there are still some challenges in some pockets of the country. One major underlying factor that causes many parents to subject their children to working under conditions that are detrimental to their health is poverty. Nonetheless, with more children getting educated there is the likelihood of eliminating poverty, which is a major drag on food and nutrition security

The following recommendations are made for effective implementation of the programmes:

1. Sensitization to help all stakeholders understand the programme is key to its successful implementation. It is imperative that local community members and indigenes are also well-informed about the programme and their roles in implementation. Additionally, it might be useful to include beneficiaries in programme design, implementation, monitoring and evaluation.

2. Effective management should be enforced by, for example, strengthening the units that monitor and supervise the programme. Such units must be encouraged to keep records of their activities with regard to the School Feeding Programme and must also be financially resourced to carry out their work effectively.

3. There is a need to strengthen the linkage between the School Feeding Programme and local farmers in the community to ensure that local foods are used for the meals.

4. Careful selection of schools and pupils as beneficiaries of the school feeding programme is essential. For example, when poor communities are selected, all deprived schools in the community should be included rather than only a few of such schools in the community.

5. Budgetary allocations for the programme should be beefed up to allow for improvements in the nutritional value of the foods/meals that are given to the school children.

6. All programmes should have a special section targeting the most vulnerable in the society such as the PWDs. Special efforts should be made to locate them in the districts and communities. There should be linkages between the Ministry of Gender, Children and Social Protection and the Organisation for Persons With Disabilities to ensure enrolment of all PWDs.

Government response on the gender front

There are clear indications that gender impacts on food and nutrition insecurity. A number of programmes have therefore been put in place by the government and other agencies to narrow the gender disparity with regards to food security. The creation of the Gender, Children and Social Protection Ministry and the Department of Social Welfare is a step in the right direction to help women and children. Other international agencies involved in bridging the gender gap in food and nutrition insecurity include Technoserve, ActionAid, World Vision, WFP and local NGOs such as MATANTU in the Northern Region.

The Ghana National Social Protection Policy of 2015 focuses on gender mainstreaming and gives consideration to disability with regard to social protection and care. The policy directs attention to all issues concerning disability and provision of assistance to the vulnerable. Additionally, the policy focuses on providing an enabling environment for such persons to actively participate in productive ventures. The government has also mandated all MMDAs to allocate 2 percent of the District Assembly Common Fund to persons with disability. In 2016, however, the fund was increased to 3 percent of the Common Fund.

The Ghana National Social Protection Policy also emphasizes gender mainstreaming, equality and empowerment in all spheres of life. This, accordingly will enable women have access to their rights and to livelihoods. To this effect, the policy also emphasizes the use of gender-sensitive measures in the design of programmes, monitoring, data collection and evaluation. Like other social protection programmes/policies however, the gender protection policies also suffer from poor coordination, monitoring and supervisory challenges. Based on these challenges, the following priority actions are recommended:

1. Education to help stakeholders understand the policies and programmes is needed. A concerted effort should be made to sensitize stakeholders on gender-sensitive measures in the design of programmes, monitoring and evaluation.
2. An effective way of disbursement of funds to the needy including women and the physically challenged should be developed. The use of ICT could help monitor the implementation of the programmes.

3.3 GAPS AND OPPORTUNITIES

The main identified gaps in the national and sectoral level policies, strategies and plans include the following:

1) Inadequate understanding of national policies, strategies and plans by those who are expected to implement them at the regional and district levels due mainly to inadequate sensitization and engagement with actors at these levels.

2) Inadequate capacity in terms of numbers and quality at the district level to implement policies, plans and programmes.

   From 1 and 2 there is the opportunity to right the wrongs by undertaking intense sensitization and retraining of district level implementers of programmes and projects. The adequate building of the capacities of local level implementers of food and nutrition security policies, programmes and projects is critical for the achievement of zero hunger.

3) Evidence usually used to formulate food and nutrition security policies is weak and unbalanced mainly because it is not based on rigorous information gathering, checking, rechecking and cross-checking as well as field evidence.

4) Policies, strategies or plans do not indicate geographical or locational targeting to reduce hunger. Effective targeting reduces cost of implementation of food and nutrition security programmes and projects. Targeting must be considered a critical step in programme and project implementation.

   Points 3 and 4 imply the need for adequate time and resources to be devoted to information gathering either from secondary sources or from the field and rigorous analysis for policy-making and development planning. It is from good information that effective targeting can be done.

5) Inadequate funding of plans, projects and programmes. Government funding of food and nutrition security plans, programmes and projects has been dismal over the years. Almost all food and nutrition security programmes and projects undertaken in Ghana have been largely donor-driven and donor-funded. Ghana cannot continue to rely on Development Partners (DPs) for the initiation, funding and implementation of programmes and projects and expect to achieve zero hunger.

6) Many of the bilateral programmes and projects are four or five-year "technology transfer" programmes and projects and seem to be performing well although the programmes or projects last but do not usually have any long term impact. They are also usually within enclaves (a few communities in a few districts of some regions) and are thus limited in coverage. They have proved to be clearly unsustainable. There is a need for the different levels of government to own such interventions to ensure sustainability.

Points 5 and 6 clearly indicate that if sustainable zero hunger is to be achieved in Ghana, the Ghana Government must commit considerable resources to food and nutrition security. Present and future governments must show commitment to SDG 2 by funding food and nutrition security programmes and projects adequately. Government agencies and the Ghanaian private sector should drive programmes and projects and should contribute substantially to the funding of food and nutrition security programmes and projects.

7) Local (indigenous) knowledge has been ignored to a large degree in food and nutrition security programming. Research has over the years shown the importance and usefulness of incorporating relevant local knowledge into programmes and projects for effectiveness and sustainability. A case in point is in food preparation where indigenous methods tend to maintain nutrients while "modern" methods virtually destroy the nutrients in foods.

8) There has also been no emphasis placed on strong agriculture-nutrition-social protection linkages at production and consumption levels. Food production is principally for consumption to nourish the body. That basic knowledge is being replaced with food production for money, so that even if the food produced is not good enough to nourish the body it could still bring in some money which in their opinion is appropriate. That is certainly unacceptable in the zero hunger drive. Only wholesome food can result in zero hunger.

Points 7 and 8 call for very effective capacity building of agriculture and nutrition actors at district and community levels and for governments to enact laws to prevent the production and sale of unwholesome foodstuffs. The capacity of food and nutrition security policy-makers and planners must be built with regard to nutrition-sensitive agriculture and how to incorporate nutrition concerns in agriculture plans, programmes and projects and vice versa. Food-based approaches for nutrition adequacy will continue to be the most cost-effective and feasible option in Ghana

9) The importance of gender is always stated in the various policy plans, programmes and projects. There however does not seem to be a good understanding of what roles the different genders are expected to play and the consequences of those roles. The understanding of "gender" by many policy-makers and planners is questionable. Gender must be understood and applied objectively towards improvements in the roles of both women and men in agriculture and agribusiness.

10) Generational concerns have also not been adequately taken into consideration in the formulation and development of food and nutrition security policies, plans, strategies, programmes and projects. Special attention needs to be paid to youth concerns with respect to agriculture. Farming is not a naturally attractive profession and thus there is the need to create a special enabling rural environment which narrows the difference between living conditions in urban and rural areas. Also, as pointed out by farmers in the communities visited in the course of this study, children grow up having no interest in agriculture because child rights laws and child labour concerns are preventing children from learning simple rudiments of farming and developing some attachment to farming. Without that, children naturally grow to dislike farming even as a hobby. Child labour must be clearly distinguished from apprenticeship and training on the job.

Points 9 and 10 call for a greater understanding of gender and generational issues relating to food production, processing marketing and consumption and to let those concerns be reflected in food and nutrition security policies and plans.

11) There is inadequate attention paid to micronutrient malnutrition, which is "hidden hunger". The cost of hidden hunger to the nation, households and individuals is too high to be taken lightly.

12) Over-nutrition and obesity problems are also beginning to become public health concerns.

Points 11 and 12 suggest that there are other important areas of "hunger" that must be adequately taken on board immediately for the achievement of zero hunger.

3.4 PRIVATE SECTOR ROLE

The Ghanaian private sector is very crucial to the achievement of food and nutrition security. Small-holder farmers must however be regarded as key constituents of the private sector. Ghanaian small farmers, who produce over 90 percent of the food we consume, are often ignored when discussions are being made with respect to the private sector. Small-holder farmers are those who almost completely depend on private resources to operate. The fact that they work closely with other private sector operators such as input dealers, aggregators, processors, marketers, financiers and others is the way to achieve zero hunger within the shortest possible time. The value chain concept needs to be applied practically in the form of agricultural clusters to ensure equity and trust between value actors and sustainability of the cluster process. (See Chapter 4, where an agricultural clusters model is proposed as a strategy for promoting sustainable food systems and achieving sustainable food production for food and nutrition security as well as income.)

The persistence of poverty and hunger within the farming population as a result of lack of markets and of low prices has been alluded to. Private sector operators such as aggregators, processors and marketers as well as the public procurement system hold the key to solving this problem. There are now many several food processing and marketing companies that are ready to buy local foodstuffs, add value and source markets within the country and in neighbouring countries. Given the nature of agribusiness and the risks involved, the lack of grades and standard measures, poor infrastructure and other limitations, these local agribusiness concerns will need assistance packages as incentives. Public procurement for schools, hospitals, prisons, etc., as well as private procurements for hotels, guest houses and restaurants can be from local sources as long as some incentives can be given that make the alternative procurement sources unattractive. The suggested agricultural clusters model for the various commodities involve identifying large, medium and small-scale aggregators, processors, marketers as well as financiers and transporters to be part of the clusters. Industrial processors such as the breweries, oil mills, feed mills and others can have representatives in the clusters. As cluster members, they will determine their requirements together with farmers and extension personnel at various cluster platforms. Since industrial processors require large quantities they can be members of several clusters (see Chapter 4).

3.5 RESOURCE FLOWS

As mentioned earlier, government funding for food and nutrition security has been dismal for several years. That means agricultural extension services to farmers and nutrition advocacy and promotion activities have been almost non-existent for a long time. Even funding for several of the social protection programmes is from donor sources. The poor funding of food and nutrition security programmes and projects by governments over the years was emphasized very strongly as a very critical problem in the three stakeholder workshops held in Cape Coast, Koforidua and Tamale. There has however been government capital investment in agriculture and health through programmes and projects as well as general infrastructure such as roads. Private sector financing of food and nutrition security is mainly by small-holder farmers. Financial institutions are generally resisting extending loans to small farmers for several reasons. The Northern Rural Growth Project (NRGP) however initiated a cashless credit model for extending loans to its farmers and it has shown considerable promise. It involves input dealers, financiers, farmers and produce buyers agreeing to make all transactions through the banking system so that loans are for example used to directly purchase inputs, and repayment of loans is done without farmers handling the money. If the cluster model idea is adopted the cashless credit model can fit perfectly.

3.6 INSTITUTIONAL AND COORDINATION FRAMEWORKS

Institutional and coordination frameworks and mechanisms for agriculture, health and social protection sectors are all complex. In the case of the agriculture sector, MoFA, MoFAD and cognate ministries, institutions and agencies (at the national level) make policies and develop plans. Responsibility for implementation lies in the hands of the Regional and District Departments of Agriculture, who are responsible to the Regional Agricultural Planning Units (RAPUs) of the Re-

gional Coordinating Councils (RCCs) and the District Assemblies (DAs) respectively. The DAs are responsible to the RCCs as well as to the Ministry of Local Government and Rural Development (MLGRD). In the case of nutrition, the Nutrition Department is situated within the Ministry of Health and Ghana Health Service; and policy, programme and project implementation is by Regional and District Nutrition Officers. There are also direct links with the Development Partners in nutrition. The Ministry of Gender, Children and Social Protection (MoGCSP) is responsible for several of the social protection programmes such as the GSCP and the LEAP. The Ministry has regional and district branches. The biggest constraint in all the Ministries' establishments identified during the stakeholder workshops is funding for implementation of policies, programmes and projects at all levels. There are also human capacity challenges at the district level in particular. The establishment of regional nutrition multi-stakeholder platforms, Cross-Sectoral Planning Groups (SCPG) in the Northern, Upper East and Upper West Regions, and the establishment of others in all the regions of the country through the Scaling Up Nutrition (SUN) movement, will assist greatly in nutrition advocacy and education as well as coordination, monitoring and evaluation.

CHAPTER 4: PRIORITY ACTIONS AND KEY FINDINGS

4.1 INTRODUCTION

Ending hunger and malnutrition cannot be achieved without critically improving on the agricultural sector in all spheres as well as harnessing the efforts of all sectors of government that directly or indirectly affect food production from farm to table in both quantity and quality. Having enough food must however be coupled with nutrition education and behavior change communications for zero hunger and malnutrition to be achieved. People must be able to make healthy food choices and apply preparation methods that will conserve nutrients.

It is a fact that if Ghana must end hunger, food insecurity and malnutrition in all its forms by 2030 the people to target are small scale farmers, the poor in both rural and urban areas, rural women, people living under severe environmental conditions, the disabled and the aged. However for food value chains to function so that value can be added to the produce of farmers and the produce can find markets there is a need for well-designed support to local entrepreneurs such aggregators, food processers, marketers, financiers and others to facilitate the production, processing, marketing and consumption processes.

4.2 SDG TARGET 2.1: END HUNGER

To end hunger by 2030 the following priority actions have to be taken:

1) Poverty eradication (SDG 1) is critical for ending hunger, but SDG 2 will be very important for the eradication of poverty especially in rural areas and the reduction of north-south, rural-urban and female-male inequalities. National statistics indicate that there has been significant poverty reduction nation-wide yet in the rural and peri-urban communities all groups interviewed felt poverty and hunger had increased over time. That clearly indicates a widening rural-urban inequality and hunger gap. Government has to show greater commitment to SDG 2 targets in terms of provision of resources to support actions being suggested here. If Government does not show commitment by action, development partners will be lukewarm in their support.

2) Small-holder farmers are largely the poor and their poverty arises mainly from lack of markets as well as the low prices. They however produce over 90 percent of the food of Ghanaians. There is therefore need to innovatively create markets for foodstuffs being produced by them. Many suggestions were made with respect to this issue during the country-wide stakeholder consultations. They included the need for a drive to promote the consumption of locally made foodstuffs and to incentivize the private sector to purchase local foodstuffs for processing or for onward sale to areas of need. The public procurement system should also enable schools, hospitals, prisons and other organized institutions to purchase local foodstuffs. There was also a suggestion to create farmers' markets across the country where farmers can once in a week sell their produce directly to consumers. As stated earlier, effective marketing cannot take place without grading and standardization of the produce. Methods such as those used by WFP in parts of the Brong Ahafo Region should be replicated across the country.

3) Apart from market creation within Ghana, there is a need to look beyond the country to the Sahel countries and even to countries outside West Africa. There should indeed be greater South-South cooperation in the area of agricultural trade to redress this problem of wastage in the developing countries. A priority action is for the various agricultural and trade ministries in countries interested in the idea to start discussions and drawing up plans to start the process.

4) Many stakeholders at all levels have also called for the promotion of small and medium-scale irrigated agriculture, especially in the drier parts of the country. That is certainly necessary and helpful for the eradication of hunger, especially in the rural areas. At our current level with irrigated agriculture in Ghana (less than 5 percent of total cultivated area) and given the level of investments required in irrigated agriculture, sustainable irriga-

tion development can only be undertaken gradually, within a long term plan. The promotion of sustainable rain-fed agriculture should be the short, medium and long-term priority (see 4.5 below).

4.3 SDG TARGET 2.2 END MALNUTRITION

Ending malnutrition means starting from the beginning of the life cycle, that is maternal nutrition should be given a lot more attention because a malnourished mother will give birth to a malnourished child, and the cycle will continue. The NHIS is available but it does not meet all the needs of the pregnant woman. There are also programmes by the government and other agencies to ensure proper child care and feeding practices in Ghana. Pro-poor programmes include the LEAP, which targets poor households and pregnant and lactating women. Exclusive Breastfeeding and Complementary Feeding, School Feeding Programme, Infant and Young Child Feeding (IYCF), free NHIS and others are other government programmes that support child nutrition. However, due to several factors including the lack of resources, the programmes are not very effective.

Challenges of food and nutrition security programmes

The following are some of the main challenges of food and nutrition security programmes:

- Inadequate funding of food and nutrition security programmes at all levels: national, regional, district and community; has been a chronic problem.
- Human resource capacity of districts for nutrition activities is woefully inadequate. Most districts have 2-3 nutrition officers in charge of all nutrition programmes so there is hardly any Nutrition Technical Officer at the point of service delivery.
- There is weak inter-ministerial collaboration. food and nutrition security is multi-sectoral and so without strong collaboration of the relevant ministries and agencies very little can be achieved.
- There is lack of proper documentation on what segments of the population are food insecure and what foods are considered as food by the people.
- Disproportionate attention is paid by partners to nutrition programmes in different districts even within the same region.
- There is very inadequate supervision and monitoring of programmes.
- The process of selection of schools for school feeding is an issue in several places. In some regions the right schools have not been selected and therefore the meals are not provided for those who are in need. Additionally, the amount of money spent on each child in the School Feeding Programme (GHS 0.80 per child per day) is grossly inadequate. This tends to influence the kind of meals given to the school children. This therefore defeats the purpose of the programme. Also meals provided by the school feeding programmes are substandard partly due to lack of nutrition personnel to help with meal planning. The school feeding caterers are also not using fortified food ingredients.
- IYCF has some major gaps:
    - Exclusive breastfeeding is not done by a majority of mothers due to time constraints as well as the duration of maternity leave, which is only for 3 months.
    - There is sub-optimal complementary foods and feeding practices coupled with shortfalls in minimum dietary diversity standards for IYCF.
- Women and children do not meet nutrient requirements for micronutrients of public health importance (Vitamin A, Folic acid, Iron, and Iodine) partly due to lack of knowledge, poverty and seasonality issues.
- There is lack of dietary diversity due to limited education on the subject to farm families.
- Though males form the largest percentage of farmers, they have not been involved in many of the educational

programmes of proper care and feeding practices. This limits their understanding of nutrition security and their ability to ensure that children and other vulnerable groups are well cared for and fed.

- Poverty is the backbone of hunger and malnutrition but support systems for farmers to increase production to ensure food security is not efficient partly due to inadequate agricultural and nutrition extension.
- There is very inadequate promotion of bio-fortified foods such as orange-flesh sweet potatoes and yellow-flesh cassava.

Health care delivery challenges that indirectly impact on nutrition

Other challenges related to health care delivery that indirectly impact on nutrition include the following:

- There are inadequate staff at health facilities.
- There is also inadequate monitoring and supervision of the work being done by health workers.
- There are very poor health worker attitudes. (Health workers these days, especially the nurses enter the profession because of the benefits they will get and not the passion they have for it).
- There are very inadequate rehabilitation centres to manage malnourished children.
- There is also inadequate health education. (Instead of doing house to house education in the communities especially the CHNs/CHOs, they rather do static education at one point.)
- There are inadequate logistics for health workers to carry out their work.
- Access to water (for personal hygiene and sanitation) in most health facilities is a big challenge. Most of the facilities do not have access to clean water making it difficult for staff and clients to use toilet facilities.

Nutrition specific areas that need action

For the above challenges, the following actions are suggested:

- food and nutrition security is so important that government funding of food and nutrition security programmes must be ring-fenced and provided at the times required.
- There should be nation-wide nutrition sensitization since many people at all levels lack a good understanding of nutrition. Hidden hunger (micronutrient deficiency), for example, is not well known to the generality of the population and that explains why many people do not regard fruits and vegetables as "food". Also, foods that are fortified are not popular among the populace due to lack of information. Besides, adolescents constitute a key subgroup for special nutrition attention since early pregnancies are high and the young would-be mothers need special nutrients.
- There should be greater inter-ministerial collaboration on food and nutrition security issues and by knowledgeable members of the ministries and agencies.
- Civil Society Organizations and community-based organizations should be empowered to supervise and monitor food and nutrition security programmes and in particular ensure that children are cared for at all times.
- Males should be encouraged to attend ANC/CWC with their wives.
- Cooking and housekeeping should be taught to both male and female children so that when the males grow up they can also cook and take care of the home when the women are not available.
- The amount given for the School Feeding Programme per child must be drastically increased.
- Nutritionists at the district and community levels should be tasked to monitor schools under the School Feeding Programme and to advise on meal planning and preparation of quality foods.
- Government needs to partner with the private sector to strengthen the school feeding programme.

- The number of months of maternity leave for working mothers should be increased to enable them practise exclusive breastfeeding for six months.
- Nutrition calendars which profile food shortages by region/districts/sub-districts should be produced to make it possible to direct food to places that need particular foods most.
- There should be mandatory standardization of food fortification and market prices.
- Food quality and safety regulation need strengthening at all levels along the food value chain and food path to the homes. Particular attention should be paid to aflatoxin contamination, which is a persistent concern for maize and groundnuts, major sources of energy and proteins respectively for the poor.
- Local/traditional food processors/vendors need constant and tougher regulation and monitoring.
- Nutrition-sensitive agriculture should be enhanced and backed by nutrition communication/education via the mass media (national and local radios) and at durbars.

4.4 SDG TARGET 2.3 DOUBLE AGRICULTURAL PRODUCTIVITY AND INCOMES OF SMALL-SCALE FOOD PRODUCERS

Doubling agricultural productivity implies removing the factors that constrain agricultural production. That is also closely related to the actions to be taken to end hunger (Target 2.1). As mentioned earlier, there is adequate available technology to double agricultural productivity in both the short term and long term. The problem is the socio-economic environment that does not allow farmers to reap gains in proportion to their hard work. The inelastic demand for food and the perishability of foodstuffs make farmers worse off when they produce a lot. The more they produce the larger the fall in price (in a market economy) and the worse off the farmers are. This is even a more serious problem when one considers that farmers sell their produce cheaply immediately after harvest because they must repay loans and find money for some basic needs, only to buy back their food needs at a later date at very high prices. Many staple crops such as cassava, some varieties of yam, plantains and others cannot be kept for long after harvest. Farmers are actually net buyers of food in terms of money spent in purchasing food. Also there are high post-harvest losses especially in the absence of markets. That means without secure markets and surety of secure remunerative income, any increase in productivity will always be short-lived (unsustainable). Some suggestions have already been advanced in section 4.1 on how to deal with the market problem.

Table 5 gives the 2015 productivity levels of the main Ghanaian food crops and the expected productivity levels by 2020, 2025 and 2030, while Table 6 shows priority actions required to achieve the productivity and income targets as well as target regions for crop production improvements within farming systems. Stand-alone crop production improvements have consistently failed because the concept does not conform to farmers' ways of thinking and acting. Farmers' systems methods help them to reduce environmental, production, marketing and other risks and thus ensure sustainability. The mixed cropping and mixed farming systems have to be embraced as very scientific and important for promotion to enhance the zero hunger agenda. Table 5 shows that doubling food crop productivity is feasible since it is only in a few cases, (sorghum, soybeans, pineapple and garden eggs) that the potential yields are exceeded. It is not surprising that for roots and tubers, even when yields are doubled, they still fall short of potential yields. Much more yield can be obtained from roots and tubers with more ecosystems-friendly soil and water management practices.

Table 5: Current (2015) and planned future crop productivities towards ending hunger

Food Crop	Average yield (rain fed) (2015) (Mt/Ha)	Potential yields* (Mt/Ha)	Expected yields (Mt/Ha)			Percentage of potential yield at double productivity
			2020	2025	2030	
CEREALS						
Maize	1.92	5.50	2.40	2.88	3.84	69.82
Rice (Paddy)	2.75	6.00	3.44	4.13	5.50	91.67
Millet	1.00	2.00	1.25	1.50	2.00	100.00
Sorghum	1.10	2.00	1.38	1.65	2.20	110.00
ROOTS/TUBERS and PLANTAIN						
Cassava	18.78	45.00	23.48	28.17	37.56	83.47
Plantain	10.90	38.00	13.63	16.35	21.80	57.37
Yam	16.96	52.00	21.20	25.44	33.92	65.23
Cocoyam	8.00	20.00	10.00	12.00	16.00	80.00
Sweet Potato	15.00	56.00	18.75	22.50	30.00	53.57
Taro	7.00	20.00	8.75	10.50	14.00	70.00
LEGUMES						
Groundnut	1.65	3.50	2.06	2.48	3.30	94.29
Cowpea	1.25	2.50	1.56	1.88	2.50	100.00
Soybean	1.65	3.00	2.06	2.48	3.30	110.00
FRUITS & VEGETABLES						
Pineapple	61.80	72.00	77.25	92.70	123.60	171.67
Pawpaw	34.50	75.00	43.13	51.75	69.00	92.00
Tomato (rain fed)	10.00	20.00	12.50	15.00	20.00	100.00
Pepper	15.00	30.00	18.75	22.50	30.00	100.00
Garden eggs	7.90	15.00	9.88	11.85	15.80	105.33

Source: MoFA/SRID (2016) [computations based on field investigations]

Table 6: Crops, priority actions for double productivity and suggested focus regions

Food Crop	Priority Actions	Focus Regions
CEREALS		
Maize	Reduction in post-harvest losses (PHL); market creation; significant value addition; links to the poultry, piggery and brewery industries; drying and warehouse facilities; organized export to Sahel countries.	All regions (It has become a staple crop in all regions.)
Rice (Paddy)	Increased irrigated production; Sustainable intensification (small area, high production) using animal manure and fertilizers; reduction in PHL; market creation for local rice	Upper East, Northern, Western, Volta and Greater Accra Regions
Millet	Intensive ecosystems-friendly farm management practices; value addition and market creation (promotion of millet-based products – koko, yoghurt)	Upper East, Upper West and Northern Region
Sorghum	Intensive ecosystems friendly farm management practices; value addition and market creation (links to breweries – legislation to use sorghum in breweries);	Upper East, Upper West and Northern Region
ROOTS/TUBERS and PLANTAIN		

Cassava	Market creation (and value addition – Gari for institutions etc.); links to industry (starch and breweries); Farmers' markets in all growing areas; reduction in PHL.	Western, Central, Ashanti, Eastern, Volta and Brong Ahafo Regions
Plantain	Market creation; farmers' markets in all growing areas; organized private sector marketing to non-producing areas.	Western, Central, Ashanti, Eastern, Volta and Brong Ahafo Regions
Yam	Market creation; support for the north-south yam trade to be more efficient; reduction in PHL.	Upper West, Northern, Brong Ahafo, Ashanti and Eastern Regions
Cocoyam	Market creation; farmers' markets in all growing areas; organized private sector marketing to non-producing areas.	Western, Central, Ashanti, Eastern, Volta and Brong Ahafo Regions
Sweet Potato	Promotion of production and consumption of orange-flesh sweet potato; reduction in PHL.	Central, Upper East, Volta and Greater Accra Regions
Taro	Market creation; Farmers' markets in all growing areas; organized private sector marketing to non-producing areas.	Central, Ashanti, Eastern, Volta and Brong Ahafo Regions
LEGUMES		
Groundnuts	Intensive ecosystems friendly farm management practices; value addition and market creation; reduction in PHL	Upper West, Upper East and Northern Regions
Cowpea	Intensive ecosystems friendly farm management practices; value addition and market creation; reduction in PHL.	Upper West, Upper East and Northern Regions
Soybean	Intensive ecosystems friendly farm management practices; value addition and market creation; reduction in PHL.	Upper West, Upper East and Northern Regions
FRUITS & VEGETABLES		
Pineapple	Production of better varieties; financial support; export promotion; appropriate storage facilities	Central, Eastern, Greater Accra and Volta Regions
Pawpaw	Support for storage and transport to non-producing areas; export promotion	Ashanti, Eastern and Brong Ahafo Regions
Tomato (rainfed)	Support to eradicate disease problems; processing support; support for organized marketing	Brong Ahafo, Northern, Upper East and Upper West Regions
Pepper	processing support; support for organized storage and marketing	Brong Ahafo, Northern, Upper East and Upper West Regions
Garden eggs	processing support; support for organized storage and marketing	Brong Ahafo, Northern, Upper East and Upper West Regions

The emphasis on market creation as opposed to new technology adoption is because there is overwhelming evidence that when farmers are given incentives in the form of good prices, they respond quickly. Also to the farmer, increased production should lead to increased income else there will be no need for the extra effort to increase production. Any increase in farm production and productivity is critically determined by what profit can be made from sale of the market surplus.

As discussed in other places, mixed farming (crop-livestock) systems should be promoted. A majority of farmers in all parts of Ghana, but particularly in the northern savanna and transition ecological zones, practise mixed farming. They are systems which, if promoted by adequate science and technology input, are environmentally friendly and soil nutrient-enhancing, socio-culturally satisfying and a provider of nutrient-rich products within farm settings. Small ruminants (sheep, goats), pigs and local poultry (including guinea fowls) can be easily promoted with mixed farming systems if there are secure markets. Medium-scale poultry establishments should also be promoted and specifically linked to the maize value chain. Poultry feed as well as limited market for eggs and poultry meat have been the main constraints of the industry.

Fisheries production from marine and inland sources faces daunting challenges and extra effort is required to increase production from those sources. Doubling aquaculture production is however much easier as shown by the production trend in Chapter 3.

4.5 SDG TARGET 2.4 SUSTAINABLE FOOD SYSTEMS AND RESILIENT AGRICULTURAL PRACTICES

It is a misnomer to refer to food production units being promoted in Ghana currently as "systems" as argued earlier (section 2.5). They are commodity units very "focused on food quantity and not enough on quality" (Global Panel on Agriculture and Food Systems for Nutrition, 2016). Current production focus is on commodities (maize, rice, soybeans, cassava, cattle, poultry, fish etc.) produced on unit areas of land (which are regarded only as inputs) rather than food systems within landscapes in which various products are obtained with a focus on sustainable production to provide adequate nutrition for health and development. "Systems farmers" usually think of how to produce various crops and livestock interactively within landscapes without destroying the land and water bodies and to ensure resiliency by using crop varieties that are naturally suited to their environments. Commodity producers on the other hand are more concerned about how to obtain high yields and make profits per unit area in the short term (see section 2.5 for the distinction between "systems thinking" and "reductionist thinking"). Systems farmers are thus climate-smart and resilient, and concentrate on the use of inputs (including seeds) and resources within their own environments and landscapes. Commodity producers are always waiting for "improved seeds and fertilizers" from outside before they can produce. Systems farmers regard processing, marketing, consumption and the well-being of farm families as a part of the farming or food system. Commodity producers look up to "outsiders" to undertake other aspects of the value chain.

There is constant misrepresentation of small farmer production. It is not subsistence production because there is hardly any small farmer who does not sell his/her produce. That is how it happens that over 95 percent of Ghana's domestic food supply is from the small farmer. If they were truly subsistence there would be no food in the markets. In other words, small farmers can be made more commercial by making them produce more for the market through secure markets and better pricing. That presupposes a pricing mechanism that will not be left completely to the forces of supply and demand. There should be public and private sector processes put in place to ensure secure markets.

Relevant food systems must focus on the nutrition, health and overall well-being of farm families and others. As argued by Bellotti (2017), food system activities (production, processing, marketing consumption and others) must lead to desirable food system outcomes (food and nutrition security, social welfare and environmental welfare). Thus sustainable food systems must result in nutritionally adequate and sustainable diets. Specialization (a basic neoclassical economic theory) may lead to "efficiency" in the short term but does not ensure sustainability of any type. The SDGs were arrived at to balance the overemphasis of "productivity, efficiency and profitability" in the short term, which naturally leads to unsustainable production and consumption, environmental degradation of all types, inequality, social upheavals etc. in the medium to long term.

The concept of agricultural clusters, which is based on value chain analysis, seems to be a good marriage of "specialization for efficiency" and "food systems and sovereignty for sustainability and nutritionally adequate diets". An agricultural cluster refers to a group of agricultural actors: farmers (aggregatees), produce aggregators and suppliers of goods and services (financial, processing, marketing, extension etc. services as well as physical inputs) in a geographical area (maybe within a landscape) who agree to be governed by a business model that ensures fair relationship between the cluster actors. The arrangement ensures that: 1) farming systems within the geographical area (landscape or community) are maintained and farm decision-making is done by the farm families; 2) farm families have access to goods and services they require for production in adequate quantities and on time for effective and efficient production; 3) there is equitable sharing of added value. Such an arrangement will naturally lead to food and nutrition security because the food systems and sovereignty philosophy is not tampered with. The farmers are encouraged by well-informed extension system to undertake ecosystem-friendly practices while obtaining other inputs such as fertilizers as appropriate. The above analysis implies a non-conventional approach to food and nutrition security programme implementation and thus all involved in implementing the Zero Hunger agenda will need an extensive reorientation of thinking and practice. It also implies an extensive multidisciplinary approach.

The "seed-fertilizer green revolution" has not been shown to have had a great sustainable impact in rain fed situations in Africa so there is a need to tread cautiously in trying to impose the model on our situation as has been the case for many years. There are many ecosystem-friendly farming practices all over Ghana which farmers know and use, albeit at their knowledge and resource levels. Those ecosystem-friendly farming practices are climate-smart, resilient and based on low external inputs. Some of them include organic manuring (including the use of farm-yard manure), use of compost, non-burning/crop residue incorporation, mulching, use of stone and soil bunds, contour ridging and others. These are simple ecosystem friendly farmer methods that need to be improved upon. A scientific combination of these methods with the conventional "seed-fertilizer" methods will ensure sustainable zero hunger by 2030. Farmers have stated that organic/inorganic fertilization has always had greater efficacy and is very cost effective, and research has confirmed that

to a large extent. It is surprising that our institutions, especially MoFA, are not putting any emphasis on what works.

The small-holder farmer model of ending hunger and malnutrition is realistic because the small holders' mixed cropping and mixed farming methods ensure access to safe and nutritious food for all household members and for sale to others. What is required is good organization of the production, processing, marketing, consumption and other processes for desirable outcomes, namely food and nutrition security, social welfare and environmental welfare (i.e. the food system) to benefit all actors.

A critical requirement for sustainable food production is a good and predictable climate, especially rainfall. Climate change and its unpredictability is rather now the norm. That calls for concentration on climate-smart and resilient agricultural production systems and methods. The several identified ecosystem-friendly farming practices (Agula et al., 2017; Dittoh et al., 2016) being used by farmers need to be actively promoted. The impact of climate change is not limited to only food production but consumption patterns of individuals and nations as well. Findings from many studies have shown that weather variability can affect calorie consumption through its impact on food security, especially from drought. The cumulative effect is a change in dietary diversity and decrease in food consumption with their consistent stunting of growth (WFP, 2012). The impact of the weather extremes is predicted to decrease the amount of harvested foods, which may result in the rise of food prices and lead to a reduction in food consumption. This could increase the number of people suffering from malnutrition, especially the vulnerable (Springmann et al., 2016).

4.6 SDG TARGET 2.5 GENETIC DIVERSITY

The main priority action required under SDG Target 2.5 is to plan and legislate to ensure seed security. It is impossible for any country to attain sustainable food and nutrition security if it does not have seed, planting material and animal breed security. The recent Ghana Biosafety Bill falls far short of what is required to attain seed security. The genetic and biodiversity erosion in Ghana and other African countries has been alarming and it needs rapid continental, sub-regional and national-level interventions to ensure that people outside our farm families are those who will determine whether we will be able to eat or not. Genetic and biodiversity erosion is also a major cause of disasters in the form of complete crop failures and crop and livestock diseases. Our knowledge institutions must address this issue from the standpoint of our survival as a nation and a people.

4.7 ROLE OF OTHER SDGS IN ENDING HUNGER, FOOD INSECURITY AND MALNUTRITION AND ENSURING SUSTAINABLE AGRICULTURAL PRODUCTION

Almost all the other 16 SDGs have contributions to make towards the eradication of hunger and malnutrition. The attainment of zero hunger and malnutrition (i.e. food and nutrition security) requires a multidisciplinary, multi-sectoral and multidimensional approach so that all actions for development contribute to food and nutrition security. SDG 1 for example is very crucial in the zero hunger agenda as mentioned above. As indicated, poverty is a cause and a consequence of hunger and malnutrition. Also all the priority actions for zero hunger and malnutrition can help to eradicate poverty. Poverty is however a complex issue. Poverty reduction for food and nutrition security must be looked at from both the absolute and relative dimensions. There is a "single market for the rich and the poor" and so addressing absolute poverty without addressing inequalities within societies can lead to greater food and nutrition insecurity. The study by Cooke et al. (2016) on inequality in Ghana clearly points to serious problems of food and nutrition security if inequality and the increasing child poverty are not adequately addressed.

It is easy to see the importance of healthy lives and well-being (Goal 3), inclusive and quality education (Goal 4) and gender equality and empowerment of women (goal 5) in ensuring and promoting the eradication of hunger and malnutrition. All the other SDGs have their relevance in the zero-hunger agenda. The real essence of food and nutrition security is to ensure healthy lives and well-being. However healthy lives and well-being in turn support the attainment of zero hunger. A sick and troubled person cannot produce food and therefore cannot contribute to zero hunger. Quality education has several contributions to zero hunger. Nutrition education is very much enhanced with quality education. Also, agricultural productivity is much higher on farms of educated persons. Also educated persons are those who effectively facilitate the input delivery, aggregation, processing, marketing, financing, etc. of the commodity value chains. Quality education is critically important for the achievement of SDG 2. The important role of gender in the attainment of zero hunger has been discussed in various parts of the report. The empowerment of women and men in the areas they have greater aptitude enhances the move to zero hunger. Women as the main managers of kitchens actually are the determinants of what is eaten in households and hence the nutrition of the members of households. Therefore their empowerment in the knowledge and the resources required to attain zero hunger facilitates the attainment of zero hunger.

CHAPTER 5: GHANA ZERO HUNGER ROAD MAP

5.1 INTRODUCTION

Ending hunger and malnutrition relies heavily on sustainable food systems and resilient agricultural practices. Additionally, genetic diversity in seeds, livestock/fingerling breeds are crucial for agriculture and food systems. Good nutrition that is backed by social interventions that allow the elimination of poverty and creates a platform for gender equity is necessary to eliminate hunger and malnutrition. Thus, the right to quality food (adequate and sustainable diets) by all people at all times can be achieved only through an integrated multidisciplinary and multi-sectoral approach with budgetary lines that would directly or indirectly promote food and nutrition security (See Appendix III). It is important that this is taken as a top national priority by the secretariat situated at the Presidency. Food and nutrition security is critically tied to national survival, and because of its multidisciplinary and multi-sectoral nature, it cannot be led by any sector. It cannot also be entrusted to donors and well-wishers. The current situation of almost total dependency on development partners and donors for food and nutrition security interventions cannot result in zero hunger. There is a need for adequate governmental budgetary allocations for food and nutrition security to all relevant sectors.

The following is a summary of the implementation strategy of the Zero Hunger agenda:

1) Map out food-insecure groups and groups susceptible to falling into food insecurity across the country.

2) Establish community, district, regional and national-level "innovation platforms" for effective dialogue with the people, sensitization, advocacy and other interactions. The regional platforms will serve as coordinating and advocacy bodies of the district platforms whilst the national serves as a policy, advocacy and funding platforms.

3) Develop a national framework, with indicators, for measuring progress towards zero hunger and work systematically with community and district people towards the zero-hunger goal. Localization of SDG 2 is important in hunger eradication. All involved in eradicating hunger and malnutrition must work in the regions and districts/sub-districts.

4) Undertake continuous surveillance, monitoring and evaluation throughout the implementation processes. Food and nutrition advocacy which incorporates all aspects of the UNICEF framework clearly defines all parties who need to work together with the backing of government and development partners to achieve zero hunger, alleviate all forms of malnutrition and to promote national development.

5.2 GHANA ZERO HUNGER ROAD MAP (RELATING TO DELIVERABLES IN SDG 2)

Table 7: Zero hunger road map

Target 1: End hunger and ensure access by all people, in particular the poor and people in vulnerable situations including infants, to safe, nutritious and sufficient food all year round by 2030.			
Gaps	**Priority action**	**Time frame**	**Key Partners**
Lack of a defined understanding of hunger and poverty in the different social groups and geographical locations	1) Map out food-insecure groups and groups vulnerable to falling into food insecurity in all parts of the country. 2) Work with the people to determine appropriate interventions required to reduce poverty and hunger 3) Information system mapping	2018 – 2021: 50% Reduction 2022 – 2025: Further 25% reduction 2026 – 2029: Zero poverty	Government of Ghana NDPC Research Universities and other institutions Development Partners (WFP, USAID, UNICEF) Ministry of Food and Agriculture (MoFA) Ministry of Education Ministry of Employment and Labour Relations Private sector NGOs SUN MLGRD GSS
There is inadequate dietary energy and consumption of micronutrient-rich foods.	1) Map food and nutrition-insecure areas and determine the people's dietary needs. 2) Work with the people to design intervention measures 3) Nutrition profile should be collected at the hospitals 4) nutrition in school should be added to the curriculum from basic schools to the tertiary schools	2018 – 2021: 50% Reduction 2022 – 2025: Zero hunger	Government of Ghana Ministry of Food and Agriculture (MoFA) Research Universities and other institutions Development Partners (USAID, WFP, UNICEF) Ministry of Gender, Women, Children and Social Protection Ministry of Education Private sector NGOs SUN NDPC
Food consumption systems that will eliminate child and adult overweight and obesity are inadequate	1) Promote food and nutrition counseling through primary health care centres and private sector clinics to control obesity. 2) Sensitize people to alleviate all forms of malnutrition through healthy food and drink choices. 3) Promote healthy habits for optimal weight management before and during pregnancy to prevent obesity.	2018-2030: This must be a continuous process subject to evaluation every 4 years.	Government of Ghana Ministry of Food and Agriculture (MoFA) Ministry of Education Research Universities and other institutions Development Partners (USAID, UNICEF) Ministry of Employment and Labour Relations NDPC Media Private sector NGOs SUN

There is inadequate cultivation and consumption of nutritious local foods by households.	1) Provide incentives for production of nutritious local foods. 2) Ensure stable and sustainable availability, access and utilisation of food within the framework of climate change.	2018-2025: Incentives firmly in place	Ministry of Food and Agriculture (MoFA) Ministry of Education Research Universities and other institutions Development Partners (USAID, UNICEF) NDPC Media Private sector NGOs SUN
There are gaps in the infant and young child feeding intervention hence breastfeeding and child malnutrition remains a challenge.	1) Promote the 1000 days concept and intensify EBF for six months sensitization 2) Institute a programme to monitor the first 1000 days of all children and take appropriate actions if required 3) Form breastfeeding support groups. 4) Promote optimal complementary feeding (age specific, diversified, quality and frequency feeding) with continued breastfeeding up to 24 months or beyond. 5) Strengthen social behaviour change communication strategies. 6) Coordinate capacity building for adoption/adaptation of the Global Strategy on Infant and Young Child Feeding comprehensively including community health workers. 7) Institute advocacy programmes on exclusive breastfeeding as was done in the past. 8) Design an advocacy programme on complementary feeding 2018-2020: Exclusive breastfeeding and complementary feeding fully back on the agenda.	2021 – 2025: 75% exclusive breastfeeding 2018 – 2021: Institution of programme 2022 – 2025: Zero wasting, stunting and underweight Ministry of Health (MoH)	Ministry of Education Research Universities and other institutions Development Partners (WFP, USAID, UNICEF) Ministry of Employment and Labour Relations NDPC Media Private sector NGOs SUN

Consumption of micronutrient-rich foods especially by women of reproductive age and children is inadequate.	1) Ensure fortification of staples during processing (micronutrient fortification and blending products) 2) Institute programmes to encourage the consumption of micro-nutrient rich foods (e.g. eggs, meat/fish, leafy vegetables, fruits) by children and women of reproductive age especially in rural areas. 3) Promote optimal foetal nutrition during pregnancy.	2018-2025: Should be implemented county-wide	Ministry of Food and Agriculture (MoFA) Ministry of Education Ministry of Health Ghana Standards Authority (GSA) Food and Drugs Authority (FDA) NDPC Media Private sector WFP UNICEF NGOs SUN

Target 2: End all forms of malnutrition, including achieving by 2025 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons by 2030.

Gaps	Priority action	Time frame	Key Partners
Maternal nutrition before and during pregnancy is inadequate.	1)Promote the consumption of foods from all the food groups 2) Promote supplementation of iron, folic acid, zinc, vitamin A and Iodine 3) Enhance nutrition education 4)Promote regular visits to antenatal clinics 5)Promote food safety, sanitation and hygiene practices (Pica, hand washing, alcohol intake,)	2017- 2030	MoFA/ WIAD MoH/ Ghana Health Services Research Universities and other institutions Development partners (WFP, UNICEF, USAID) NGO Private sector SUN
There is unequal access to social health, education services.	1) Identify factors that cause inequality with respect to access to social services within and among different sectors of society. 2) Work with the people to determine appropriate interventions	2018 – 2021: 50% Reduction 2022 – 2025: Further 25% reduction in inequality 2026 – 2029 : Equal access to all social services	MoH Ministry of Education NGOs SUN

Inadequate lifestyles and food consumption systems that control overweight, obesity and diet-related non-communicable diseases	1) Publicize the importance of healthy lifestyles. 2) Facilitate the creation of "healthy lifestyle clubs" at work places and in schools. 3) Sensitize employers on importance of allocating times for physical exercise, rest and holidays.	2018-2021: Active publicity of healthy lifestyles using all styles and systems and sensitization of employers.	MoH NDPC Ministry of Education Research Universities and other institutions Development Partners (USAID, UNICEF) Media NGOs SUN
No comprehensive nutrition advocacy programme for all sectors of the society	1) Promote best practices in production through extension services; 2) Facilitate documentation and sharing of best practices on incentives and empowerment of women and youth in food and nutrition security mentorship and skills development.	2018-2030: A continuous process with monitoring and 4-year assessments	MoH NDPC Ministry of Education Research Universities and other institutions Development Partners (WFP, USAID, UNICEF) Media NGOs SUN
No institutional system with adequate funding to build capacity of food and nutrition security personnel.	1) Facilitate discussions on the suggested institutional structure, modify it and institutionalize it with an appropriate legislation. 2) Institute sustainable mechanisms for funding food and nutrition security interventions at national, regional and district levels.	2018-2030: food and nutrition security Institutional Structure established and adequate sustainable funding sources identified.	NDPC Ministry of Education Research Institutions and Universities Development Partners (USAID, UNICEF) Media NGOs Private sector SUN
Lack of funding for nutrition-related issues in all sectors that are directly/indirectly linked with nutrition issues	All sectors which are directly involved with nutrition should have budget lines for food and nutrition security (including MoH/FDA, MoFA, Local Government, Education, Ministry of gender, women and social protection, Trade and Tourism)	2017-2030	MoH/FDA MOFA Local Government Ministry of Education, Ministry of gender, women and social protection, Ministry of Trade and Industry Ministry of Tourism Research Institutions and Universities SUN Development Partners (USAID, UNICEF)

Lack of a well-structured Nutrition Education Strategy	1. The need to craft a standardized communication strategy that is manned by technical people and experts in the field of nutrition 2. Sensitization on all the dimensions of food and nutrition security like food safety, dietary quality and quantity rather than only focusing on food production and availability 3. NE making clear and addressing what really is food, and the dimensions of hunger 4. Attitudinal/cultural dimensions to post-harvest losses with regard to food wastage and taboos 5. The need to boost sensitization through media and use of innovative technology 6. Have radio & TV shows with phone-in sessions and incorporate listeners' contributions 7. NE being gender balanced; for instance, though the vulnerable group is important, men should not be sidelined	2017-2030	NDPC MoH/FDA MOFA Local Government Ministry of Education, Ministry of gender, women and social protection, Research Institutions and Universities Development Partners (USAID, UNICEF) Media NGOs Private sector SUN

Target 3: Double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment by 2030.

Gaps	Priority action	Time frame	Key Partners
Food crop productivities, especially of legumes, are not optimum.	1. Undertake participatory identification of nutrient rich crop varieties (indigenous and improved) suitable for different ecological zones 2. Promote their cultivation for home consumption and the market using a combination of fertilizers and SLM practices 3. Promote standard measures for marketing produce.	2018 – 2021: Revamp country's Agriculture extension system. Train AEAs in farmer-based SLM practices	Government of Ghana Ministry of Food and Agriculture (MoFA) Research Universities and other institutions Development Partners (USAID, UNICEF) NDPC Lands Commission Ministry of Education

Production of backyard vegetables by women has been on the decline.	1. Sensitize women farmers on the importance of what they had been used to, i.e. cultivation of backyard vegetables. 2. Promote backyard vegetable production for home consumption (in line with the "Planting for food and jobs" campaign)	2018 2018-2030	MoFA Women farmers Research Universities and other institutions Development Partners
There is limited knowledge by extension personnel and farmers on the changing soil chemistry and soil physics as a result of use of chemicals and farm machinery.	1. In-service training of extension personnel and agricultural officers on the soils of different areas and their required amendments 2. Extension personnel to engage farmers on the same topics	2017. Capacities of extension built 2018. Capacities of farmers built	Government of Ghana Ministry of Food and Agriculture (MoFA) Research Universities and other institutions Development Partners (USAID, UNICEF) NDPC Lands Commission Ministry of Education
Soil fertility amendment using both organic and inorganic fertilizer needs to be institutionalized.	1) Provide adequate extension information on the soil amendments and the usefulness of organic and inorganic fertilizers. 2) Improve farm lands by use of proven sustainable land management (SLM) practices 3) Encourage the rearing of small ruminants and poultry and the use of animal manure in composting and use on farms.	2018 – 2021: Increase yields by 2% to 5% annually and production by 4% to 7% annually. 2022 – 2030	Government of Ghana Ministry of Food and Agriculture (MoFA) NDPC Lands Commission Ministry of Education Research Universities and other institutions Council for Scientific and Industrial Research (CSIR)/ Crop Research Universities Development Partners (USAID, UNICEF)
Women and youth access to land for farming is an issue	Engage traditional authorities and household heads as well as District Assemblies on land access issues	2017-2018. Traditional rulers sensitized.	Regional Houses of Chiefs DAs Women and youth
Small-scale irrigated agriculture is not given due attention.	1) Work with people to identify constraints in the specific irrigation areas and determine appropriate interventions with the people 2) "One village one dam" concept of the Government should be encouraged.	2018-2021: Provide basic small-scale irrigation equipment to small irrigators 2022-2025: Expand irrigation acreage by 20% 2026-2030: Further expand area by 25%	Ministry of Food and Agriculture (MoFA) NDPC Lands Commission Ghana Water Company GIDA/Water Resources

There is no proper attention to sustainable nutrition-sensitive food production systems such as mixed cropping and mixed farming.	1) Increase investments in fisheries and aquaculture 2) Profile areas suitable for fisheries and aquaculture 3) Provide an enabling environment for private sector investment 4) Give attention to local production of fish feed 5) Encourage mixed cropping and mixed farming	2018: Profile areas suitable for inland fisheries and aquaculture. 2018-2021: Provide basic infrastructure for inland fisheries and aquaculture 2019-2025: Expand aquaculture by 25% Self-sufficient with feed by 2025	Ministry of Food and Agriculture (MoFA) Ministry of Fisheries and Aqua-culture Development NDPC Lands Commission Ghana Water Company Research Universities and other institutions CSIR Development Partners (USAID, UNICEF) Private sector
Small ruminants and poultry (including guinea fowl) value chains	1) Identify actors along the value chains in areas with comparative advantage 2) Promote Public-Private Partnerships (PPPs) in the value chains	2018-2021: Active establishment of value chain PPPs. 2021-2025: Production increases by 25%. 2025-2030: Increase by further 25%.	Ministry of Food and Agriculture (MoFA) /Animal Husbandry division Research Universities and other institutions Development Partners (USAID, UNICEF) NDPC Lands Commission Ghana Water Company
Lack of market access	1) Establish linkages with small holder farmers and both small and large scale industries 2)Ensure open market access to all including small holder farmers 3)Train the farmers to add value to their products to help reduce post-harvest losses especially when industry is not ready to take it 4)Develop solar driers to process vegetable and other perishable produce for further marketing	2017-2030	All units under Ministry of Food and Agriculture (MoFA) Research Universities and other institutions Development Partners (WFP, USAID, UNICEF) NDPC Ministry of Trade and Industry Ministry of Tourism

Target 4: Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality by 2030.

Gaps	Priority action	Time frame	Key Partners
Value chains of non-wood forest products (semi-wild fruits such as Shea nuts, baobab and tamarind as well as snails, crabs etc.)	1) Identify actors along the value chains in areas with comparative advantage. 2) Promote Public-Private Partnerships (PPPs) in the value chains	2018-2021: Active establishment of value chain PPPs. 2021-2025: Production increases by 25%. 2025-2030: Increase by 25%.	Ministry of Food and Agriculture (MoFA) / Crop division Research Universities and other institutions Development Partners (USAID, UNICEF) Forestry Commission NDPC Lands Commission
There are no interventions that will ensure sustainable food systems that produce nutrient-rich foods for home consumption and sale.	1) Identify five communities interested in piloting agricultural clusters 2) Train cluster members on the concept, its advantages and disadvantages 3) Establish the clusters as pilots	2017 Five communities chosen 2017 Clusters trained 2018-2030 Clusters established	Ministry of Food and Agriculture (MoFA) / Crop division Research Universities and other institutions Development Partners DAs Farmers
Processes towards achieving food sovereignty	1) Identify resilient indigenous food systems (agro-biodiversity systems). 2) Promote seed security and agro-biodiversity 3) Facilitate legislation against GMOs and any action that will erode seed security and agro-biodiversity	2018-2021: Action research on resilient food systems and legislation against GMOs. 2021-2030: Implementation of food sovereignty processes.	Ministry of Food and Agriculture (MoFA) / Crop division Research Universities and other institutions Development Partners (USAID, UNICEF) Forestry Commission NDPC Lands Commission

Post-harvest losses	1) Promote the establishment of post-harvest handling facilities 2) Promote low cost technologies on food processing, handling, preservation and storage 3) Encourage agro-processing and value addition wherever possible. 4) Processing, packaging and value addition to food products 5) storage quality assurance through regulation (cold chain for fresh fish and meat) 6) safety checks by public health and consumer associations (civil society) 7) Construct and maintain roads to facilitate easy transport of farm produce	2018-2021: These have been on the drawing board for too long. Immediate action is required.	MoFA Ghana Roads and Highways Private sector Research Universities and other institutions Development Partners (USAID, UNICEF) FDA GSA Civil Society
Lack of proper drying and storage resulting in high levels of afflatoxins	Promote and ensure timely harvesting of crops Employ appropriate drying techniques Promote temperature-controlled storage (humidity, temperature) Promote and secure machinery for the electronic sorting of grains (Legumes and Cereals	2017-2030	Ministry of Food and Agriculture (MoFA) /Crop Division Research Universities and other institutions CSIR FDA/ GSA Development Partners (USAID, UNICEF) NDPC Private Sector NGOs Media Ministry of Education
Dietary diversification	1) Promote the consumption of high-quality foods from all the food groups 2) Promote consumption of bio-fortified foods (yellow maize and cassava, orange-flesh sweet potato). 3) Promote consumption of green leafy vegetables and other coloured fruits.	2018-2025: Country wide	MoFA/Crop Division Research Universities and other institutions Development Partners (WFP, USAID, UNICEF) Private Sector NGOs Media Ministry of Education

Food wastes through reform of culture	1) Use behaviour change communication techniques to advocate for reduction in food wastes during festivals, funerals and on farms (farm waste).	2018-2021: Country-wide sensitization on consequences of food wastes	Media Ministry of Education Research Universities and other institutions Development Partners (USAID, UNICEF)

Target 5: Maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge as internationally agreed by 2020

Gaps	Priority action	Time frame	Key Partners
National Gene Banks of cultivated plants and related wild species are incomplete	Establish an office to coordinate genetic diversity of seeds Inventory of drought and pest resistant seed bank Timely distribution of seeds to farmers Promote commercial seed producers	2017-2020	MoFA/ Crop Division National Agricultural Research Institute Research Universities and other institutions Development Partners (FAO, USAID, UNICEF)
Seed management remains limited	Catalogue seed needs at all levels (regional to sub-districts)	2017-2020	MoFA/ Crop Division National Agricultural Research Institute Research Universities and other institutions Development Partners (FAO, USAID, UNICEF) Private sector
Importation of many vegetable seeds particularly hybrids persist	1) Identify vegetable crop varieties (indigenous and exotic) and test them in-situ 2) Identify semi-wild nutritious vegetables for domestication 3) Identify vegetable crops for genetic improvement (e.g. okro, pepper, garden eggs, tomatoes etc.). 3) Improved seeds developed and licensed to seed companies	2017-2020	MoFA National Agricultural Research Institute Research Universities and other institutions Development Partners (FAO, USAID, UNICEF) Organized private sector NGOs CSIR/FRI Private sector

5.3 GUIDELINES FOR MONITORING AND EVALUATION

Food and nutrition security programming and interventions as discussed above involve integrated multidisciplinary and multi-sectoral processes, thus tracking results (M&E) can be a very complex undertaking. It requires a well-developed M&E plan or system with indicators and clear indication of who should collect what information, where and how. The M&E system will monitor (and evaluate) inputs, processes, outputs, outcomes and impacts. All these will be required in disaggregated forms in terms of gender, age groups, geographical location and other forms considered appropriate in particular situations. For example, anaemia status information will be required for pregnant women and women of reproductive age but may not be required for other categories of persons.

A participatory results-based M&E system has to be designed. Stakeholders in food and nutrition security at all levels (from national to community levels) should as much as possible be part of the M&E process and the system should be able to provide clear evidence. It is the best way correct and reliable M&E information can be obtained. It is also the best way to obtain reliable feedback. The M&E system should also align with the NDPC Result-Based M&E System.

Monitoring and some evaluation are meant to support programme implementation and management decision-making; thus data analysis, reporting and information sharing must be part of the M&E system. Since the suggested institutional framework has its apex controlling body at the Presidency, it means M&E information will constantly reach the Presidency as well as lower level decision-making committees and bodies.

The food and nutrition security M&E system has to be comprehensively designed immediately following the completion of the Zero Hunger Strategic Review. It will involve harmonizing sector M&E implementation strategies; identifying the critical M&E indicators at output, process, outcome and impact levels; determining information-gathering modalities and timelines; producing data collection and reporting formats; and identifying capacity-building needs at all levels.

CHAPTER 6: KEY MESSAGES FROM STAKE-HOLDER AND COMMUNITY ENGAGEMENTS

6.1 SUMMARY

This section summarizes the key messages from stakeholder and community engagements on the road map to alleviating hunger and malnutrition. These are views of the people that government and its development partners need to seriously take into consideration to help in designing policy guidelines.

1. Alleviating hunger and malnutrition requires collaborative effort across sectors

a. There should be good collaboration among the Ministry of Health/Ghana Health Sectors, the Ministry of Food and Agriculture and the Food and Drugs Authority. This inter-ministerial collaboration is important since most of their roles overlap.

b. Folk perceptions about agriculture and farming should be reconsidered. Many people think that, farming is not lucrative and is actually for "school drop outs". There should therefore be sensitization and educational programs right from the junior high school to change the thinking of people and encourage more to go into agriculture. The practice of asking students to work on farms as punishment affects their perception of agriculture as an altogether punitive vocation.

c. Agriculture should be seen as a business: Market-led approaches should be emphasized including the setting up of enterprises and provision of inputs and (including equipment) for food production. The entire value chain should be considered for improvement.

d. Statistical services should be generating data at regional and district levels and government organizations should be encouraged to work closely with the Ghana Statistical Service. The Ghana Statistical Service (GSS) has been trying to undertake an agricultural census but has not been able to secure enough resources. If basic input-output information could be collected on routine bases at the district level by GSS that can help in the estimation of areas cultivated to different crops, outputs and yields. Other important data include food consumption from consumption surveys and anthropometric information to determine nutrition status.

2. The agriculture system in Ghana

a. There should be cross-sectional or cross-ministerial collaboration to formulate and implement policies and programmes. For instance, the Ministry of Food and Agriculture (MoFA) is not primarily responsible for carrying out research and therefore must include research institutions (such as MESTI, CSIR etc.) in seed production researches. This implies that, there should be consultations with research organizations and institutions who are already in the system and are on the ground. For instance, there is the risk of army worm infesting maize and cocoa and therefore the potential threats of outbreaks. One farmer almost committed suicide because army worms destroyed his entire maize farm in Afigya-Sekyere in the Ashanti region during the 2015 farming season.

b. There is a need for agricultural research to impact food production. Researchers should develop a compendium of critical agricultural problems in Ghana that requires research, advocate and push for a policy on priority agricultural research areas so that government and donors can be guided accordingly.

c. Reliance on donor funding for research is too risky, does not address the critical issues because all donors have their own pet interests and agendas, and is not sustainable.

d. Access to agricultural equipment such as tractor services is generally limited and this is even more so for women farmers. Some women reported they have devised some strategies where they ask the tractor operators to plough for them on credit so they can make payments after harvest. However, this becomes psychologically challenging when there is a poor harvest.

e. Agricultural extension should be supported; there should be funding for dissemination of agricultural findings. This is because the lack of extension services is now a great challenge in the country.

f. There should be enforcement of the seed laws in the country to help enhance the seed system. To ensure effective development of our food systems the country must aim at seed security. We must depend on our own research institutions and MoFA to produce the needed seeds.

g. Farming should also be made attractive to the youth through the availability of seeds for planting, mechanization and irrigation to support production.

h. Government should ensure that farmers, processors, pickers etc. obtain remunerative prices for their produce.

i. There should be a ready market for the various food crops in the country. For example, the Ghana Cocoa Board is the sole buyer from cocoa farmers. Such ready markets should also be organized for other crops. A farmers' market (a set day they all sell their produce) should be encouraged as this can help regulate the price of farm produce.

j. Attention should be given to addressing post-harvest losses and storage since most crops do not have a long shelf life resulting in spoilage/wastage. For example, there should be "grain banks" where farm produce should be stored.

k. The livestock and fingerlings industries and associated logistics should be enhanced

e.g. with feed and proper transportation.

l. Land policy is either weak or nonexistent; zoning of fertile lands for farming in each district should be done. This will prevent farmlands from being used for housing and other infrastructure.

m. The current trend where most good agricultural lands are being sold to estate developers must be stopped even if it means Government buying those lands and leasing them to farmers for farming purposes.

n. Expensive labour: Finding money to hire labour is challenging to most farmers and this forces some of them to rely on chemical spraying as a short cut with its attendant problems.

o. Financial institutions themselves are not willing to support farmers with credits or loans due to the potential risks involved in farming. Farmers informed us that, the original mandate of the Agricultural Development Bank (ADB) was to support farmers, which was initially fulfilled. However, currently, the Agricultural Development Bank operates just like the other financial institutions.

p. The market system in Ghana calls for standardization of market prices for farm produce. Prices of farm produce should not be solely determined by market women. Farmers are forced to sell to market women sometimes at low prices due to the fact that failure to do so will result in their farm produce rotting.

q. Standard measures and grading of produce should be pursued to ensure farmers get value for their produce.

3. The image of agriculture in Ghana

a. "Farming is somehow seen as a punishment" so most people would rather work as artisans and in offices than in farming. It is basically a disincentive to young men and women to go into farming.

b. Integrate agriculture into mainstream education from basic through secondary as a core subject.

c. Using farm work as punishment in schools should be discouraged.

d. There should be strengthening of research, extension and farmer linkages and all the other actors along the value chain because there seems to be poor collaboration between the different actors and the different agricultural intervention projects/programs. Also, government's invention programmes should have a specific plan.

e. E-extension should be encouraged in the country but must also take into consideration the fact that a majority of the farmers cannot read.

f. Volunteer extension agents should be incentivized since there is a limited number of extension officers currently.

g. Small scale irrigation, already practised by small farmers, should be improved upon and irrigators supported to increase production.

4. Nutrition and Health

a. Nutrition is a fundamental human right for every person.

b. Homestead gardens should be promoted.

c. Need for a nutrition calendar for all regions at the district level to aid in planning against food shortages and to respond to actions from crop failures

d. Malnutrition leads to poverty and vice versa.

e. Lack of knowledge on food groups and nutrient profile

f. Globalization of market systems leading to influx of processed foods and beverages that is not nutritionally good

g. No regulation on advertisement so junk foods and alcoholic beverages are promoted and this has serious implications on overweight/obesity, hidden hunger and general health of the people

h. Food safety is a major challenge with respect to use of pesticides, insecticides and preservatives. Tighter laws and regulations along the food path and value addition chain should be promulgated.

i. There is a need for sensitization on the dangers of the increasing "chemicalization" of food.

j. Water for household chores and drinking is not easily available and sometimes the quality is compromised by human activities such as illegal gold mining and pollution of water bodies.

k. Health-worker attitude towards patients is varied but some challenges arise when they are overwhelmed with increased work load.

l. The need to adopt an enterprise approach to the food and nutrition security situation even at the micro level

m. Organic farming should be encouraged to help with the issue of the abuse of chemicals.

n. Regulatory bodies should be equipped with enough logistics to ensure compliance and to monitor food safety even at the micro level.

o. Stability in farming methods to prevent foods from going 'extinct'

p. There should be proper segmentation of the population to determine what the particular challenges in each area are and properly address them.

q. Government to give incentives to industries which are interested in food fortification

r. Sensitization on good eating habits as a preventive measure

s. Educating people to exercise and be more physically active is necessary

t. At the school level Physical Education should be encouraged and intensified.

5. Nutrition Education (NE) nationwide for all to promote better nutrition and health

a. The need to craft a standardized communication strategy that is manned by technical people and experts in the field of nutrition

b. Sensitization on all the dimensions of food and nutrition security such as food safety, dietary quality and quantity and avoidance of the tendency to focus on food production and availability

c. NE should make clear and address what food really is and the dimensions of hunger.

d. Attitudinal/cultural dimensions to post-harvest losses with regards to food wastage and taboos

e. The need to boost sensitization through media and use of innovative technology

f. Have radio and TV shows with phone-in sessions and incorporate listeners' contributions

g. NE should be gender-balanced; for instance, though the vulnerable group is important, men should not be side lined.

h. The Human Resource bit for conveying NE is low and should be addressed.

i. An approach is making logistics available to the few HR bases to carry out their duties

j. There is a need to come out with simple communication strategies and messages/processes at the grass-roots level to educate people on nutrition and quality food preparation rather than to promote the sale of baby foods.

k. A social mobilization approach should be used to disseminate information on nutrition and food consumption.

l. Media campaigns, home visits, and cooking demonstrations should be encouraged and/or strengthened.

m. Promotion of micronutrient-rich foods from plant and animal sources should be encouraged.

6. Understanding of Hunger

a. Poverty results in hunger; "there is no rich person who is hungry". Farmers sell all their produce at lower prices and remain hungry the rest of the year. Farmers should be informed that about 80 percent of their farm produce is sold and about 20 percent (usually the wasted ones) is left for household consumption. Food stored for household consumption usually lasts from September to February but hunger periods last from March to August.

b. In the northern regions, usually, the head of the household (the man) provides cereals after harvest to his wife and it falls on the woman to get proteins and other nutrients to add to it to ensure the family is fed. When the women do not have money to provide the protein, the whole family suffers which means that there will be hidden hunger and nutrient insecurity in the family. In spite of all these, programmes on nutrition and care do not necessarily include men. Mostly, it is women who are targeted and sensitized.

c. Laziness can also result in hunger. For example, for various reasons, including laziness, the youth refuse to farm.

d. There is a need to distinguish between apprenticeship and child labour else children will grow up without having any knowledge of farming.

e. Social vices such as those that result in teenage pregnancies and uncared-for children result in hunger among children.

f. Households cope during hunger periods by avoiding afternoon meals; they either consume less or substitute some foods for others.

g. The quantity of food does not decrease for children during hunger periods but the quality of food may not be secured, and this affects working hours.

h. Usually, meals for pregnant women are not affected during hunger periods. Pregnant women partake in household meals; they eat more of leafy vegetables.

i. The quantity and quality of food decreases but not for pregnant women and children.

j. Livestock production is an alternate source of livelihood during hunger periods. However, this is mostly practised by men.

k. Hidden hunger is not recognized; eating just the carbohydrate portion of foods to fill the stomach is considered enough for all.

7. Gender, social mobilization and care

a. Gender differences exist regarding livestock production as a majority of women rear animals for home consumption rather than as an alternative source of livelihood, compared to men.

b. Though the Ghana School Feeding Programme started very well, it is now being poorly managed. The quality of food provided is very poor and thus some of the children refuse it. The selection of the schools to feed in some districts is also still a challenge. Coupled with this is the lack of nutrition and food safety knowledge by caterers.

c. Nutritionists should be attached to all schools to advise on meal planning/ preparation of quality foods.

d. There is a need to intensify education, awareness and sensitization programmes, for example, by employing nutrition officers (just as we have agricultural extension officers) to educate on the content of meals, etc. (home and school)

e. Male involvement in the sensitization of child care. As part of the solution, it was recommended that men should be encouraged to attend ANC/CWC with their wives and also to be part of the sensitization of child-care. The education should not only target women and their children but also men.

f. Cooking and housekeeping should be taught to both the male and girl child so that when the males grow up they can also cook and take care of the home when the women are sick.

g. There is a disconnect in the implementation of some of the policies and programmes. For example, there is a policy on exclusive breastfeeding and yet working women have only three months' maternity leave. This negatively influences the success of the programme and detracts from its effectiveness. There is a need to increase the number of months of maternity leave for working women.

8. Climate change

a. Causes of climate change include nature and human activities such as cutting down trees and wood charring.

b. Reinforcement of sustainable, ecological and environmentally sound agricultural practices and technologies for overall livelihood improvement of the people

c. Excessive use of agro-chemicals and bush burning is causing crops like cocoyam and taro as well as snails and mushrooms to become extinct.

d. Every household should be tasked to plant at least a tree to help offset climate change and boost agriculture.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The Ghana Zero Hunger Strategic Review set out to identify the causes of hunger, food insecurity and malnutrition in Ghana, as well as the measures taken so far to address the problems, the gaps that exist and what government and its development partners can do to ensure zero hunger by 2030. The process was very participatory, involving all levels of stakeholders from the national to the community level.

Ghana has done relatively well with respect to reducing both food insecurity and malnutrition compared to other countries on the continent but it is still confronted with the triple burden of malnutrition (i.e. Protein Energy Malnutrition , Macronutrient Malnutrition and Overweight & Obesity). Protein Energy Malnutrition and Macronutrient Malnutrition are still prevalent in rural areas, especially in the Northern, Upper East and Upper West regions.

The causes of hunger and malnutrition in Ghana are basically poverty due mainly to the inability of farmers to obtain secure markets for their produce and low prices, lack of education/knowledge, the promotion of unsustainable farming systems, post-harvest losses, socio-cultural factors, and climate change, which reflects in irregular rainfall and droughts. The Government and its development partners have formulated policies and instituted strategies, programmes and projects over several decades and even though there have been some successes, about 1.2 million Ghanaians still constitute the hungry. Others may also be hungry without knowing it since there is relatively high ignorance about "hidden hunger" or micronutrient malnutrition.

Ghana could have done better if it had taken a number of measures and actions. They include the following:

1. Adequate funding of food and nutrition security interventions instead of depending almost wholly on donor support.
2. Effective and adequate inter-sectoral and inter-ministerial collaboration
3. Effective monitoring and evaluation of food and nutrition security programmes to help improve programme deliverables. Effective M & E would have also prevented unnecessary duplication of efforts by development partners and NGOs.

It was found that gender inequality impacts negatively on food and nutrition security in several ways. Specific gender-related issues include difficulties in accessing productive resources such as land, labour, credit, and mechanization services. Work overload as well as the perception that females are not farmers even though they do a lot of farm work, are other gender-based problems facing rural women. On the positive side women as home keepers determine to a large degree the nutritional content of the food eaten by farm families and thus their empowerment necessarily implies better access to nutritious food by the whole family.

Food-based approaches (including food systems involving livestock and poultry) are the most sustainable ways for food and nutrition security; thus nutrition-sensitive agriculture is key in eliminating hunger. It is being argued that small farmer production of mixed cropping and mixed farming and the ecosystem-friendly practices employed in production ensures holistic production of nutritious food for the family and for sale. However the small farmer has to be supported to produce more efficiently and to gradually increase his acreage over time. Profitable agricultural production can be achieved by small farmers if they understand the principle of Sustainable Agricultural Intensification (SAI). The youth can be attracted to agriculture under SAI and the development of irrigated agriculture. Some aspects of the "planting for food and jobs" such as home vegetable gardens are aimed at food and nutrition security and should be encouraged. Another area that needs priority attention is the institution of grades and standards for various commodities to promote effective marketing.

Private sector involvement is important if the Zero Hunger target is to be achieved. Farmers are part of the private sector but other agribusiness concerns such input dealers, aggregators, processors, marketers, financiers and others are critical in ensuring the proper functioning of commodity value chains. It is also necessary to foster private-public partnerships across all levels. Government needs to engage the private sector with the aim reducing tariffs, import cost concessions,

targeted subsidies to providers of storage equipment and tools. The private sector and other organizations, for example, should help fund social intervention programmes. Internally Generated Funds (IGFs) can supplement what the government receives from donor agencies and should be considered in addition to the budgetary allocations from government. At the local level, Zero Hunger will require mobilization of grass-roots organizations, NGOs, and community groups. At the grassroots, the people should be made to own programmes for sustainability sake, and actively participate in policy-making, as well as monitoring the implementation of guidelines and programmes at all levels.

The food systems model being proposed to be piloted at chosen food-insecure locations is a variant of the agricultural clusters model. It is a model that relies on the cooperation and collaboration of all value chain actors within a particular farmers' location. The model does not distort the holistic food system of the small farmers but also incorporates the value chain concept to ensure value addition of the produce and remunerative returns to the farmer. The model is based on adequate financial input by the credit system. It is hoped the Bank of Ghana proposal for agricultural financing will see the light of day to support the clusters.

7.2 RECOMMENDATIONS

To implement the strategies as outlined in the document the following recommendations are suggested.

- A multi-sectoral and multi-level approach for maximum impact is required in order to eradicate hunger in Ghana. The SDG2 targets must be mainstreamed in all sectors and at all levels from national to local level. All stakeholders should be welcomed on board as per the framework (Figure 1). Health, gender and social protection, agriculture, environment and sanitation, soil and water, climate change, civil society, finance and others, are all relevant factors in addressing Zero Hunger. Coordination is key and the success of the Zero Hunger Initiative depends on a strong, powerful and vibrant coordinating institution.
- Effective implementation begins with commitment at the highest level. Tackling hunger and malnutrition must be a priority for the Government of Ghana. The Government needs to ceaselessly take all measures within its means to ensure that its people are protected against food insecurity throughout the country. This high-level commitment will ensure that concerted efforts are directed towards the Zero Hunger Challenge campaign to end hunger through a 'whole-of-government' approach.
- At the top of the hierarchy should be an Advisory Board in the Office of the President and at Cabinet level, which should include representatives from other development partners (WFP, UNICEF, USAID etc.) and Research Universities and other Institutions. This would facilitate integration at the highest level. Currently, some of these development partners are doing their best to help but efforts are fragmented and often duplicated.
- There is a need to create a Food and Nutrition Security Inter-ministerial Board responsible for the drafting and implementation of the food and nutrition security plan. The Board would be responsible for close coordination of government agencies at national, regional, district and local levels to ensure they work together. It would work closely with Cross-Sectoral Planning Groups (created under the SUN movement agenda) at regional, district, and community levels. The Food and Nutrition Technical committee (FNTC) will continue to play its leadership role, but needs to be enhanced and strengthened through financial and technical support to enable it to fully play its coordination role more effectively. All these platforms need to be adequately resourced to coordinate planning, monitoring and evaluation of food and nutrition security interventions.
- There is a need to intensify education, awareness and sensitization programmes on attitudes and behaviour change particularly in relation to cultural beliefs and practices towards food and nutrition issues.
- It is important to encourage effective coordination, monitoring and supervision at all levels of policy formulation and implementation.
- Programme design should be informed by gender and location-disaggregated assessment plus monitoring and reporting.
- Programmes that target females in agriculture should be strengthened. Women should be empowered for example, to rear animals as an alternate means of livelihood to supplement their income and also to feed their families.

- To sustain programmes and to prevent them from collapse, there should be partnership with the private sector and also a consideration of how to internally generate funds (IGFs).
- There is a need for proper monitoring and setting up of a reporting system on health, social protection and gender issues in order to track improvements in nutrition, health and social intervention programmes such as LEAP and GSFP. Monitoring through the involvement of research institutions and CSOs is key in ensuring that the social intervention programmes are working at all levels and that they are tailored to be culture-specific. The use of ICT would be useful in monitoring and tracking the LEAP to ensure its effectiveness.
- There is a need for setting up a realistic transfer value for social intervention programmes to enable adequate provision for the needs of its beneficiaries. Provision for social programmes such as the school feeding programme which currently stands as 80 pesewas per day is simply unrealistic to provide for the nutrition needs of school children.
- Social intervention programmes should be reviewed to identify those which must be made more nutrition-sensitive. For example, there is a need to ensure that the LEAP1000 programme is conditional on attendance of antenatal care (ANC) services and Child Welfare Clinics (CWC).
- There is a need for collection of good and relevant data at the district level on social intervention programmes to help track progress. The districts therefore need to be well-equipped and resourced to enable them keep accurate data on the progress made by social protection programmes.
- Finalise the legislation for social protection and GSFP to ensure adequate allocation of resources in the national budget.

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APPENDIX I
Timeliness and Milestones

Date	Action	Responsibility	Remarks
27 Sept,2016	Pre-Contract Meeting with Lead Convener	HQ,RB & WFP Ghana	Completed
06 Oct,2016	Hiring of Lead Convener	HQ,RB & WFP Ghana	Completed
13 Oct,2016	Hiring of Research Institution		
Finalize TOR	Lead Convener & WFP Ghana	Completed	
20 Oct,2016	All contracts ready and signed	WFP Ghana	Completed
02 Nov, 2016	Inception meeting	Lead Convener, Research Institution & WFP	Completed
Tue. 6th Dec. 2016	Send letters to focal point and Advisory Board in Ministries	Lead convener and WFP Ghana	Letter drafted and sent on schedule
Tue. 6th Dec. 2016	Send letters to Technical team – send invitation and follow up	Lead convener	Letter drafted and sent on schedule
Mon. 9th Dec. 2016	Finalize TOR and share with WFP	Lead Convener, Research Institution	TOR Finalized and shared
Mon. 19th Dec. 2016	Sign Contract with Research Institution and meeting on way forward	Lead Convener	Completed
Tue. 3rdJan. 2017	Send out Invitations to Stakeholders meeting (Ministry Focal points, Advisory Board and Technical Team)	Lead Convener	Completed
Friday 6th January 2017	Receive inception report with Methodology from research institution	Research Institution	Received
Fri, 24th January 2017			
Starts at 10am	1st Stakeholders meeting, Advisory Board and Technical Team (Ministry Focal points)	Lead Convener, Research Institution & WFP	Completed
Fri. 7thApril 2017	Receive Draft Inception and send to WFP	Lead Convener, Research Institution & WFP	
Tue. 11th April 2017	Receive Comments from WFP	WFP	
Wed. 12th April 2017	Send draft to Technical Committee	Lead Convener	
Tue. 18th April 2017	Receive comments from Technical Committee	Lead Convener	
Thur. 20th April 2017	Send collated comments to Research team	Lead Convener	
Mon. 24th April 2017	Receive final inception report	Lead Convener	
Mon. 1st May 2017	Travel to Cape Coast	Lead Convener, Research team	
Tues. 2nd May 2017	Community group discussions	Lead Convener, Research team	
Wed. 3rd May 2017	Cape Coast Workshop	Lead Convener, Research team	

Thur. 4th May 2017	Travel to Koforidua	Lead Convener, Research team	
Fri. 5th May 2017	Koforidua Workshop	Lead Convener, Research team	
Sat. 6th May 2017	Community group discussions	Lead Convener, Research team	
Wed. 10th May 2017	Travel to Tamale	Lead Convener, Research team	
Thur. 11th May 2017	Tamale Workshop	Lead Convener, Research team	
Fri. 12th May 2017	Community group discussions	Lead Convener, Research team	
Sat. 13th May 2017	Travel to Accra	Lead Convener, Research team	
Thur. 25th May 2017			
	Completion of Data Collection and Analysis	Research Institution	
31st May 2017			
	Submission of first draft	Research Institution	
Wed. 7th June 2017			
	Presentation of draft report to Technical Team	Lead Convener, Research Institution & WFP	
Wed. 14th June 2017	Presentation to Advisory Board	Lead Convener, Advisory Board Members & WFP	
Wed. 28th June 2017	Receive Final comments from stakeholders (email)	Stakeholders	
Fri. 30th June 2017	Submission of SR Final Report	Research Institution	
Tue 18th July 2017	Strategic Review Report - Official Launch	Lead Convener, Research Institution, Advisory Board Members, Ministry Focal Points & WFP	

APPENDIX II: Overview of Nutrition Policies, Strategies, and Major Programmes in Ghana

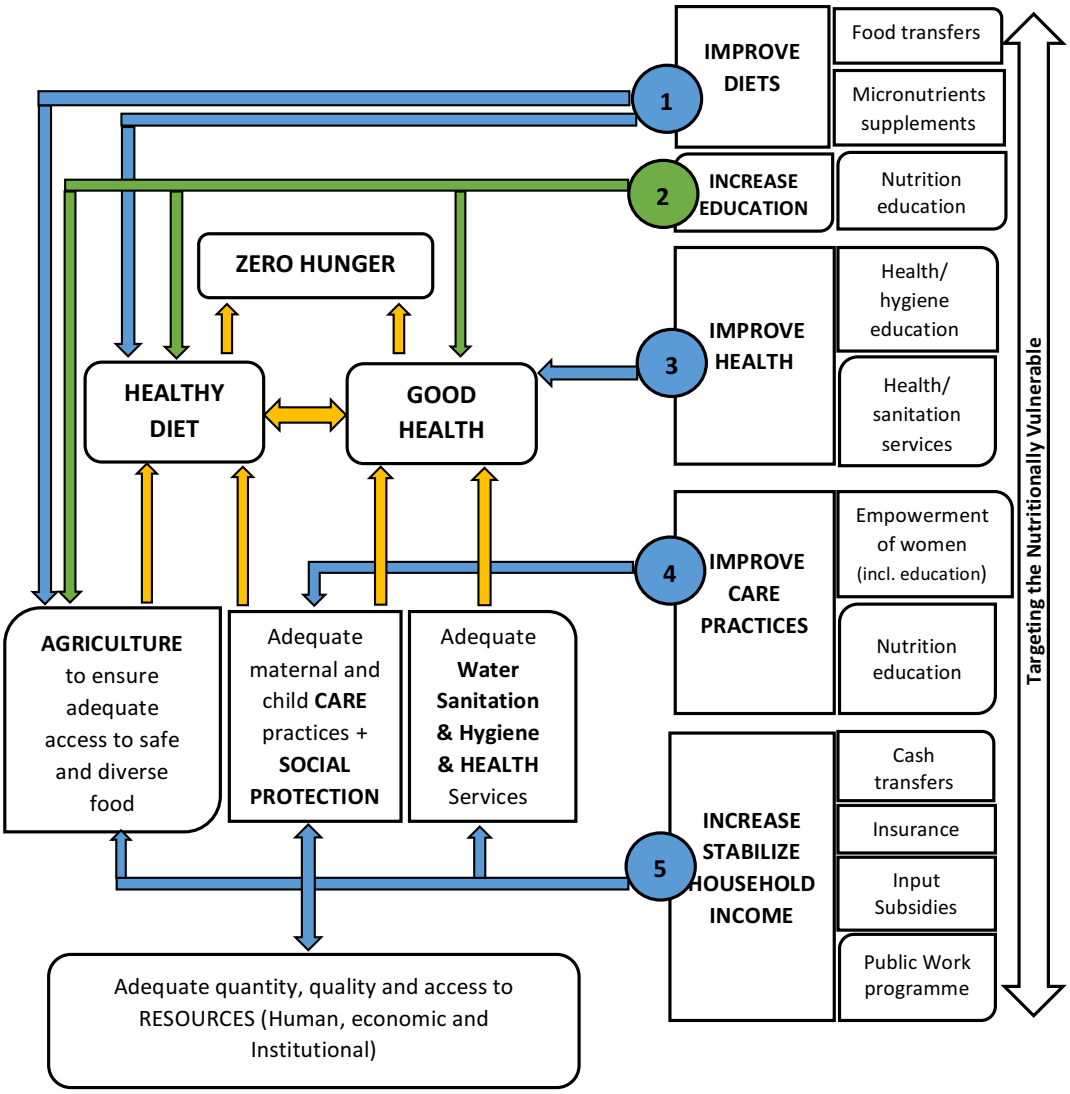
Nutrition thematic areas addressed						
Policies, strategies, and programmes in Ghana	**Under-nutrition**	**Overweight**	**Micronutrients**	**Young Child Feeding**	**Food Security**	**Health**
National Policies						
Ghana Poverty Reduction Strategy (GPRS 11 2006-2009) National Development Planning Commission (NDPC 2005)	• Underweight • Stunting • Maternal		• Micronutrients in general	• Early initiation • Complementary food • Responsive feeding	• School feeding cash transfer	• Mean Corpuscular Hemoglobin (MCH) • Vaccination • Deworming • Bednet
Ghana Shared Growth and Development Agenda (GSGDA I and II)						
Ministry of Health						
National Health Policy: Creating health through wealth (Ministry of Health [MOH])	• Underweight					
Breastfeeding promotion Regulation (L.1667)				• Exclusive breast-feeding • Complementary food		
Food and Drug Law (Public Health Act 2012, Act 851)			• Iron • Iodine • Micronutrient supplement	• Early initiation		
Food and Drug Law and Amendments: Universal Salt Iodisation Policy (MOH 1955)			• Iodine • Fortification • Micronutrient supplement		• Production	
Integration of nutrition actions into HIV, IMCI, maternal health, HRD policies and protocols	• Underweight • Stunting • Wasting • Maternal • Low Birth Weight		• Vitamin A • Iron • Iodine • Micronutrient supplement	• Early initiation • Exclusive breast-feeding • Complementary food • Responsive feeding		• Mean Corpuscular Hemoglobin (MCH) • Vaccination • Deworming • Bednet • Water and sanitation

Policies, strategies, and programmes in Ghana	Under-nutrition	Overweight	Micronutrients	Young Child Feeding	Food Security	Health
National Plan of Action for promotion of Breastfeeding, Ghana (MOH 10995c)	• Maternal		• Micronutrient supplement	• Early initiation • Exclusive breastfeeding Complementary food		• Mean Corpuscular Hemoglobin (MCH)
Reproductive Health Strategic Plan 2007-2011 (GHS 2007)	• Low Birth Weight		• Vitamin A • Iron • Micronutrient supplement	• Early initiation • Exclusive breastfeeding		• Mean Corpuscular Hemoglobin (MCH) • Vaccination • Bednet
Regenerative Health Policy Paper (MOH 2007c)		• Preventive				
National Breastfeeding Policy (MOH 1995)				• Early initiation • Exclusive breastfeeding • Complementary food		
Imagine Ghana Free of Malnutrition (GHS 2005)	• Underweight • Stunting • Wasting • Maternal • Low Birth Weight		• Vitamin A • Iron • Iodine • Fortification • Micronutrient supplement	• Early initiation • Exclusive breastfeeding • Complementary food • Responsive feeding	• Production • School feeding cash transfer	• Deworming • Badnet
Anaemia Strategy (GHS 2003)			• Iron Fortification Micronutrient supplement			Mean Corpuscular Hemoglobin (MCH) • Deworming • Bednet • Water and Sanitation

Child Health Policy (Final Draft, GHS/MOH 2008)	• Underweight • Stunting • Wasting • Maternal • Low Birth Weight		• Vitamin A • Iron • Iodine • Fortification • Micronutrient supplement	• Early initiation • Exclusive breast-feeding • Complementary food • Responsive feeding		• Mean Corpuscular Hemoglobin (MCH) • Vaccination • Deworming • Badnet • Water and Sanitation
Policies, strategies, and programmes in Ghana	**Under-nutrition**	**Overweight**	**Micronutrients**	**Young Child Feeding**	**Food Security**	**Health**
Infant and Young Child Feeding Strategy for Ghana (GHS 2007)	• Underweight • Stunting • Wasting • Maternal • Low Birth Weight		Vitamin A Iron Iodine Micronutrient supplement	Early initiation Exclusive breast-feeding Complementary food Responsive feeding	Production	Mean Corpuscular Hemoglobin (MCH) Vaccination Deworming Badnet Water and Sanitation
National Reproductive Health Service Policy And Standards (GHS 2003)	• Maternal • Low Birth Weight		• Vitamin A • Micronutrient supplement	• Exclusive breast-feeding		Mean Corpuscular Hemoglobin (MCH)
Essential Nutrition Actions programme	• Underweight • Stunting • Wasting • Maternal • Low Birth Weight		• Vitamin A • Iron • Iodine • Micronutrient supplement	Early initiation Exclusive breast-feeding Complementary food Responsive feeding		• Mean Corpuscular Hemoglobin (MCH) • Vaccination • Deworming • Badnet • Water and Sanitation
Universal Salt Iodisation Strategy						
Community-based milling/ fortification and salt rebagging programme				• Vitamin A • Iron • Iodine • Fortification		
Promotion of Breastfeeding, Ghana (MOH 1995c)						

Interim National Guidelines for Community –Based Management of Severe Acute Malnutrition in Ghana, 2010	·Wasting ·Therapeutic feeding		· Vitamin A · Iron			
Nutrition facts for Ghanaian families (2nd Edition),2009	·Underweight · Stunting · Wasting ·Maternal		· Early initiation ·Exclusive breastfeeding			·Complementary food ·Responsive feeding · Production
Policies, strategies, and programmes in Ghana	**Under-nutrition**	**Overweight**	**Micronutrients**	**Young Child Feeding**	**Food Security**	**Health**
Nutrition Assessment, Counseling, and Support (NACS) for people living with HIV/AIDS and/or TB, 2010	· Underweight · Wasting · Therapeutic feeding		· Micronutrient supplement		· Production · supplementation	·Water and Sanitation
Food Safety Policy						
Community-Based Growth promotion programme	· Underweight · Stunting · Wasting ·Maternal		·Vitamin A · Iron · Iodine · Micronutrient supplement	·Early initiation ·Exclusive breastfeeding · Complementary Food ·Responsive feeding		·Mean Corpuscular Hemoglobin (MCH) ·Vaccination ·Badnet ·Water nd Sanitation
Ministry of Food and Agriculture						
Food and Agriculture Sector Development Policy (FASDEPC II) (MOFA 2007)	·Underweight ·Stunting · Wasting				·Production	
High-Impact Rapid Development Approach	·Underweight ·Stunting ·Wasting ·Therapeutic feeding · Maternal		·Vitamin A ·Iron ·Iodine ·Micronutrient supplement	·Earlyinitiation ·Exclusive breastfeeding ·Complementary food ·Responsive feeding		·Mean Corpuscular Hemoglobin (MCH) ·Vaccination ·Deworming ·Badnet ·Waterand Sanitation

APPENDIX III: Nutrition-Social Protection / Education linkages (Possible Entry points for social protection programmes)



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