YANGON UNIVERSITY OF ECONOMICS
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A STUDY ON
FOOD SECURITY SITUATION OF MAGWAY REGION
(A CASE STUDY OF CHAUK TOWNSHIP)

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EMPA - 1 (15th Batch)

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FOOD SECURITY SITUATION OF MAGWAY REGION
(A CASE STUDY OF CHAUK TOWNSHIP)

A thesis submitted as partial fulfillment towards the requirement for the degree of Master of Public Administration (MPA)

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ABSTRACT

Food security has become the most challenge for national and global governance due to population growth, economic instability and climate change. This thesis focuses on understanding of food security situation of the households in Chauk township. The descriptive method with quantitative and qualitative approaches were used. The primary data was collected using semi structured questionnaires. It is analyzed the three dimensions of food security (Availability, Accessibility and Utilization) that are very important for the households at any point and it is also highlighted the important of food security conditions are needed to be continuously met (Stability). It is observed that 56.4% of households didn't have access to agricultural land and the households encountered long period of lean season from February to June every year that is leading them to lack of job opportunity and 86.8% of households are having financing food with debts. The households' food consumption pattern and the way they adopted different strategies to cope with the food insecurity situations have also been learnt. Moreover, suggestions are made how to increase resilience of household's agricultural livelihoods, food systems and nutrition that will address the availability of food in the community and the whole system is stable.

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LIST OF ABBREVIATIONS

BC	British Columbia
CARE	Cooperative for Assistance and Relief Everywhere
CSI	Coping Strategy Index
EASAC	European Academies' Science Advisory Council
EFSA	Emergency Food Security Assessment
EU	European Union
FAO	Food and Agriculture Organization
FCGs	Food Consumption Groups
FCS	Food Consumption Score
GAD	General Administration Department
GDP	Gross Domestic Product
GOM	Government of the Republic of the Union of Myanmar
HFI	Household Food Insecurity
HH	Household
HHH	Household Head
IAP	Inter Academy Partnership
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IHLCA	Integrated Household Living Condition Assessment
LIFT	Livelihoods and Food Security Fund
MDGs	Millennium Development Goals
MOAI	Ministry of Agriculture and Irrigation
MOALI	Ministry of Agriculture Livestock and Irrigation
SDGs	Sustainable Development Goals
SIAP	Statistical Institute for Asia and the Pacific
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNICEF	United Nations International Children's Emergency Fund
WASH	Water Sanitation and Hygiene
WFP	World Food Programme
WFS	World Food Summit
WHO	World Health Organization
WVI	World Vision International

CHAPTER I
INTRODUCTION

1.1 Rationale of the study

Food is the basic needs for all mankind in all over the world for survival. So ensuring food security is an important issue for all countries. In many countries, food insecurity is growing and the number of undernourished people has increased. The increased levels of needs and complexity of current food insecurity situations requires humanitarian interventions to reach to food security. Food and nutrition security has emerged as a primary development goal at the top of the global agenda. Therefore, the year 2015 marks the end of the monitoring period for the Millennium Development Goal (MDG) targets. For the developing regions as a whole, the share of undernourished people in the total population has decreased from 23.3 percent in 1990–92 to 12.9 per cent. Some regions, such as Latin America, the east and southeastern regions of Asia, the Caucasus and Central Asia, and the northern and western regions of Africa have made fast progress. Progress was also recorded in southern Asia, Oceania, the Caribbean and southern and eastern Africa, but at too slow a pace to reach the MDG 1c target of halving the proportion of the chronically undernourished.

Accordingly, the United Nations and its member states have set out the Millennium Development Goal (MDG) NO.1 as “to eradicate extreme poverty and hunger” and it's Target 2 as “to halve, between 1990 and 2015, the proportion of people who suffer from hunger”. Following the MDGs, the international community adopted a new global development framework from 2016 to 2030 which has also been taken into account the importance of food security in second number goal as “End hunger, achieve food security and improved nutrition, and promote sustainable agriculture”.

Currently, the world is faced with an unprecedented call for action at a moment in which four countries have been identified as at risk of famine, and demand

for humanitarian and resilience assistance is escalating. Against this background, informing the global and national food security community on the risk of food crises and on the severity of such crises is of fundamental importance. In recent years, stakeholders have made major investments to improve food security analysis and related early warning systems in order to prevent and tackle food crises more efficiently. Although significant improvements have been made over time in the methods and technologies used to improve the quality and timeliness of food security assessments and monitoring systems, a comprehensive global picture of food crises are still often missing. Partial geographical coverage and a lack of comparable data within a standardized system make it difficult to get a full global picture of food crises at any given time.

The world produces enough food to feed everyone. For the world as a whole, per capita caloric availability and food diversity (the variety of food groups in a diet) have increased between the 1960s and 2011 (FAO, 2017). This growth in food availability, along with improved access to food, helped reduce the percentage of chronically undernourished people in lower-middle-income countries from about 30 percent in the 1990-92 to about 13 percent two decades later (FAO, 2017). A principal problem is that many people in the world still do not have sufficient income to purchase (or land to grow) enough food or access nutritious food.

Drought and conflict are the main factors that have exacerbated the problem of food production, distribution and access. High rates of population growth and poverty have also played a part, within an already difficult environment of fragile ecosystems. The fact that almost 80 percent of the population of the countries of the region is rural, and depends almost exclusively on agriculture for its consumption and needs, means that measures to address the problems of poverty and food insecurity must mainly be found within the agricultural sector. The connection between poverty and food insecurity is important. Food production is significant because, for the majority of the poor, agriculture is the main source of livelihood and some 76 percent of the population is classed as agricultural. However, it is only when poverty can be alleviated or diminished that the level of food insecurity is reduced. Consequently, the long-term solution to food insecurity lies beyond the production of additional food and includes the need to address rural livelihoods in general. Social safety nets of various sorts are also part of the solution to absolute poverty and food insecurity, not

only in exceptional circumstances such as drought, but also over the long periods required to arrive at socially inclusive sustainable solutions.

Myanmar was top rice-exporter reaching to three million tons during pre-war period, particularly from 1921 to 1941. It was known as the food sufficient nation and given name as the food bowl of Asia in early 1950s exporting about two million tons per annum more than one million during mid – 1960s, the country is now able to export only 300 to 600 thousand tons of rice after meeting domestic consumption in recent years. However, there are regional disparities so that some areas remain insufficient, particularly deficit in hilly region and central dry zone. Although goods can move freely between regions where there are food stock shortages but it is not occurred in those deficit areas. Central Dry Zone, scarcity of water hampers people with low agricultural production, low income and poor nutrition uptake. The most common causes of food insecurity are;1) Drought and other extreme weather events, 2) Pests, livestock diseases, 3) Agricultural problems, 4) Climate change and 5) Rapid population growth.

The dry Zone in the center of Myanmar is chronically receiving less rainfall compared to other parts of Myanmar. Myanmar has a diverse and favorable range of agro-ecological zones with varying climatic conditions, land quality and suitability for agricultural activities. Food production in Myanmar is sufficient to feed the nation with surplus production of rice, pulses and fish in most years. Myanmar is generally food secure at the national level, with a potentially important role to play in regional food security. But, there are also food deficit areas due to geographical differences, especially in some parts of central dry zone and hilly regions. Five million people in Myanmar are suffering food insecurity. Women and children are more likely to experience food insecurity including small scale farmers who produce 80% of Myanmar food consumption. This study will focus on the current food security situation at household levels and to understand food insecurity and vulnerability with regards to availability, access and utilization of rural household in selected areas of Chauk Township, Magway Region.

1.2 Objectives of the study

The main objectives of the study are:

(1) To assess the food security situation of Chauk Township

(2) To identify underlying causes of food insecurity in Chauk Township

1.3 Method of Study

The study has used descriptive method based on both primary and secondary data. The primary data had been collected from household's level from the targeted villages in Chauk Township. The second data is collected from relevant government departments, academic publication and other official websites. Respondents are selected by Simple Random Sampling method. The survey is done by structured questionnaires and Focus Group Discussion.

1.4 Scope and Limitation of the Study

The case study is conducted at the household level in selected 10 villages in Chauk Township from 18 to 24 December 2018. The secondary data is used in this study for understanding of food availability at national level and covered the period from 1995 to 2014. The most vulnerable villages are only targeted in the study. During the study, most of the households could not memorize their income and expenditure.

1.5 Organization of the Study

This study is constructed with five chapters. Chapter (1) includes the rationale of the study, objectives of the study, method of study, scope and limitation of the study and organization of the study. Chapter (2) indicates the concept of food security, the food and nutrition security framework, food security and its determinants factors, food security related issues in the world, measuring of food security and review on previous studies. Chapter (3) provides the general food security situation in Myanmar. Chapter (4) describes the analysis of food security situation at household level in selected 10 villages in Chauk Township and underlying causes of food insecurity and Chapter (5) consists of findings and recommendations on the study.

CHAPTER II
LITERATURE REVIEW

2.1 Concept of Food Security

The term “food security” is widely used in publications, articles, statements, the media, etc. Yet, the meaning one gives to it varies considerably: for many, the concepts surrounding hunger, famine and food security are blurred and these words are often used interchangeably.

2.1.1 The Evolution of Food Security Concerns

Concerns about food security can be traced back to the Hot Springs Conference of Food and Agriculture in 1943, since which time the issue has undergone several redefinitions. Back in the 1970s the whole problem of food security was basically seen as one of supply, stemming from a series of food crises and major outbreaks of famine that the hoped for promises of the Green revolution had done little to avert. The main focus was on guaranteeing the availability of food as well as attempting to ensure price stability both nationally and internationally through increased food production and the use of food surpluses. This approach led to the 1974 definition of food security: “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (United Nations, 1975)

The Green revolution of the 1980s began to deliver some of its promise and levels of food production did in fact increase; however, the problem of famine did not go away and it was at this point that it was realized that the underlying cause was not so much food supply as the purchasing power of specific social groups. The definition of food security now took in the economic as well as the physical aspects of food availability and attention was drawn to ways to alleviate poverty and enhance the role of women in the development process.

The definition was further widened when Amartya Sen’s book “Poverty and Famines” came out in 1981. The book made the point that the starving is often denied

access to food rather than suffering because food is unavailable and in so doing introduced the idea of entitlement to food: “Starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there being not enough food to eat.” (Sen, 1981)

The effect was to move the whole issue of food security out of the realm of the essentially agricultural and place it in a broader context of poverty and lack of development. This resulted in the FAO in 1983 adding the factor of access to those of production and price stability: “the ultimate objective of world food security should be to ensure that all people at all times have both physical and economic access to the basic food they need. Food security should have three specific aims, namely ensuring production of adequate food supplies; maximizing stability in the flow of supplies; and securing access to available supplies on the part of those who need them.” (FAO, 1983)

Although access is an important factor in food security it can only prevent hunger if accompanied by stability. By 1986 and the publication of the World Bank’s report “Poverty and Hunger” another component in the food security picture was making an appearance, namely the time element. Food insecurity could be categorized as either chronic or transitory with the former representing a situation where the lack of food is a permanent feature and the latter describing a temporary shortage. Chronic food insecurity basically means that that the risk of famine is high and that to guarantee food security that risk must be tackled and eliminated, giving rise to the idea of: “Access of all people at all times to enough food for an active, healthy life”.

A further component in the definition of food security concerned the actual quality and type of food supplied and a requirement that it should not merely satisfy protein energy needs but provide the nutritional balance necessary for a healthy and active life; in addition to this was the recognition of preferences, traditional habits and socially acceptable food types when considering the definition of food security. The World Food Summit’s 1996 definition includes these aspects when it mentions: **“**access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.” (Napoli, 2010/2011)

The issue of food security really came to the fore in the 1970s and at the 1974 World Food Conference in Rome the first explicit acknowledgement was made that this issue concerned the whole of mankind. Since the 1974 Rome conference the whole concept has “evolved, developed, multiplied and diversified” (Maxwell, 1996).

There are now thought to be almost two hundred definitions of food security (Smith et al., 1993) which is a clear indication of differing views and approaches to the problem; however, the definition that has acquired the broadest acceptance is that of the World Food Summit (WFS) in November 1996: Food security exists "when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy life".

To be food secure, households must be able to produce or procure adequate amounts of food in a sustainable manner and then use the food properly. The transformational vision of the 2030 Agenda for Sustainable Development calls on all countries and stakeholders to work together to end hunger and prevent all forms of malnutrition by 2030. This ambition can only be fulfilled if agriculture and food systems become sustainable, so that food supplies are stable and all people have access to adequate nutrition and health.

2.1.2 The Importance of Food Security

There are fourteen reasons regarding with the importance of food security as per following.

1. Everybody has to eat.

The obvious should not go without saying. Dependency on food is so central that do not consider it or who is benefitting and who is paying.

2. Food is a basic human right.

Canada is a signatory to the United Nations Universal Declaration of Human Rights. Article 25 includes the "right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care "Human rights leaders around the world are concerned about actions of global institutions like the World Trade Organization that violate these and other human rights.

3. Food is the basis of a community's economy.

Food is the basic element of community self-reliance. It provides jobs, enhances culture, enables community and supports public health. Because of its essential nature, agriculture and food keeps going when other industries fail. For every farmer there are many related jobs in processing, distribution, sales, and food preparation.

4. Food system is unduly dependent on distant suppliers.

Most of us rely on a system that rarely has more than 3-4 days' fresh food stockpiled locally food that travels hundreds or thousands of miles. Excessive transportation (such as milk trucked out of province for processing and back again for sale) is dictated by economies of scale that do not account for environmental costs or loss of product freshness. This practice is vulnerable to interruptions of various kinds and is poor risk management.

5. What people see in the grocery store is a vulnerable perfection.

The bounty on the grocery store shelves gives the impression that our food systems are in fine shape. The perfection—in looks and variety comes with a price, but all the risks and most of the long-term environmental and social costs are hidden. For instance, you can buy fruits and vegetables all year round which have to be imported outside our growing season these products are grown far away, under rules over which we have no control, by people who may be forfeiting their own food security to grow cash crops for our markets.

6. People can only control what is close to home.

The way food products are grown/raised, prepared, processed and packaged can only be effectively monitored in our own jurisdiction where people have some say about the rules.

7. The jurisdiction that cannot feed its people is at the mercy of whoever can.

Ultimately a community, province or nation is beholden to its food suppliers. The use of food as a weapon is becoming more common around the world. It is folly to let go our capability of feeding ourselves.

8. It is vital to preserve the blueprint (capacity, skills and tools to feed ourselves).

In less than a century we have gone from societies where almost everyone was on the land to societies in North America where fewer than 2% presently are. In North America hardly anybody is left to train new growers in regenerative farming techniques. We are losing the people who could teach us the arts of growing, harvesting, preserving and cooking our own food, and many of us are losing the skills.

9. People are rightly concerned about food-health connections.

Consumers are growing increasingly concerned about the safety of their food. This relates to manufactured food products and questions about additives, pesticide residues, hormones, or genetically modified organisms; and to links between diet and disease (such as cancer or Mad Cow Disease).

10. Good food is the basis of health.

Nutrition is tied to health. The major causes of death and disability in the society (cardiovascular disease, diabetes, cancer) can all be significantly affected by healthy eating choices and lifestyles.

11. People in the community are hungry and/or undernourished.

According to Food Banks Canada Hunger Count 2013, 833,000 Canadians used food banks each month and one third were children. This rate is 23% higher than it was in 2008. Today there are about 700 food banks across the country, as well as more than 2,000 agencies operating emergency food programs.

12. Inability to pay should not mean hunger.

A single person on welfare receives $663.37 a month. The average rent for a bachelor suite in Victoria, BC is $695 and there is a short supply of subsidized housing. The Ministry of Health publishes monthly information on a basic "nutritious food basket" and a "thrifty food basket." The prices of the items in the basket are updated each month. Today in many BC cities and towns families on welfare cannot afford even the thrifty basket.

13. What people eat should not exploit those who produced it.

In a global food system dedicated to free trade that encourages exports, the trend is to grow monoculture crops on a large scale for distant markets. All countries end up doing this at the expense of the land, the water, their farmers and their workers, families and communities.

14. Cheap food is too good to be true.

Canadians only spend 11-12 per cent of our disposable income on food, the lowest percentage in the world. They reluctance to spend more, coupled with international trade pressures and corporate concentration, make it difficult for our farmers to stay in business. If the environmental and social costs were taken into account (fuels for transportation, loss of species diversity, loss of jobs, loss of community) the equation would be far different and cheap would be exposed as not cheap at all.

There is also an issue about food value. It is normally taken to mean cost. It is needed to define what values are the most want in food and what trade-offs are willing to make. Value added, for instance, could mean fresher or more flavorful rather than further processed.

2.2 The Food and Nutrition Security Framework

The Emergency Food Security Assessment (EFSA) analysis is based on an understanding of food security and vulnerability. The Food and Nutrition Security Conceptual Framework informs not only the selection of indicators for analysis and use in geographical targeting, but also the design of field assessment instruments and the organization of standardized reporting formats. The household food security conceptual framework adopted by EFSAs considers food availability, food access and food utilization as core determinants of food security, and links these to households' asset endowments, livelihood strategies, and political, social, institutional and economic environment.

Figure 2.1 The Food and Nutrition Security Conceptual Framework

Source: WFP (2009)

Vulnerability is a forward-looking concept for assessing community and household exposure and sensitivity to future shocks. Ultimately, the vulnerability of a household or community depends on its ability to cope with exposure to the risks

associated with shocks such as drought, flood, crop blight or infestation, economic fluctuation and conflict. The ability to manage these risks is determined largely by the characteristics of a household or community, particularly its asset base and the livelihood and food security strategies it pursues.

The framework shows that exposure to risk is determined by the frequency and severity of natural and human-induced hazards, and by their socio-economic and geographical scope. The determinants of coping capacity include the levels of a household's natural, physical, economic, human, social and political assets, the levels of its production, income and consumption, and its ability to diversify its income sources and consumption to mitigate the effects of the risks it may face at any moment.

Food security analysis is a static view of food access and household constraints to food access, from either a short- or a long-term perspective. In contrast, vulnerability analysis views food access from a more dynamic, forward-looking perspective, because it includes the element of risk that households face in their day-to-day decision-making, and their capacity to respond effectively over time. (WFP, 2009)

2.3 Food Security and Its Determinant Factors

The food security status of any household or individual is typically determined by the interaction of a broad range of agro-environmental, socio-economic and biological factors. As with the concepts of health or social welfare, there is no single direct measure of food security. However, the complexity of the food security problem can be simplified by focusing three distinct but interrelated dimensions. The three dimension of food security (Availability, Accessibility and Utilization) are very important for everyone at any point but it is still important to ensure that food security conditions are continuously met. Therefore, the fourth and final dimension of food security is thereby stability. To be food secure, a population, household, or individual must have access to adequate food at all times, and should not risk losing access to food as a consequence of sudden economic, climatic, or political shocks. The stability dimension also aims to monitor the robustness of the food security situation to cyclical, predictable variations connected with annual weather patterns. (WFP, 2009)

An integral part of the multi-dimensional nature of food security is the nutritional dimension; in addition, as the 1996 World Food Summit declared and

subsequently reconfirmed in 2002, food security consists of four essential parts: 1) food availability, 2) food access, 3) food utilization, 4) food stability: (Simo, 2012)

(a) Food Availability

Food availability is the physical presence of food in the area of concern through all forms of domestic production, commercial imports and food aid. Food availability might be aggregated at the regional, national, district or community level. In an Emergency Food Security Assessment, food availability is usually analyzed at the district and community levels; national and regional food availability may be considered when developing future scenarios and discussing response options. Food availability is determined by:

- production: food produced in the area;
- trade: food brought into the area through market mechanisms;
- stocks: food held by traders and in government reserves;
- transfers: food supplied by the government and/or aid agencies.

(b) Food Accessibility

Food access concerns a household's ability to acquire adequate amounts of food, through one or a combination of own home production and stocks, purchases, barter, gifts, borrowing and food aid. The following are some examples:

- own production – crops, livestock, etc.;
- hunting, fishing and gathering of wild foods;
- purchase at markets, shops, etc.;
- barter – exchange of items for food;
- gifts from friends/relatives, community, government, aid agencies, etc.

Food may be available but not accessible to certain households if they cannot acquire a sufficient quantity or diversity of food through these mechanisms.

(c) Food Utilization

Food utilization refers to households' use of the food to which they have access, and individuals' ability to absorb and metabolize the nutrients – the conversion efficiency of the body. Food utilization includes:

- the ways in which food is stored, processed and prepared, including the water and cooking fuel used, and hygiene conditions;
- feeding practices, particularly for individuals with special nutrition needs, such as babies, young children, the elderly, sick people, and pregnant or lactating women;
- the sharing of food within the household, and the extent to which this corresponds to individuals' nutrition needs - growth, pregnancy, lactation, etc.;
- the health status of each member of the household.

Food may be available and accessible but certain household members may not benefitfullyiftheydonotreceiveanadequateshareofthefoodintermsofquantity and diversity, or if their bodies are unable to absorb food because of poor food preparation or sickness.(WFP, 2009)

(d) Food Stability

If the dimensions of availability, access and utilization are sufficiently met, stability is the condition in which the whole system is stable, thus ensuring that households are food secure at all times. Stability issues can refer to short-term instability (which can lead to acute food insecurity) or medium- to long-term instability (which can lead to chronic food insecurity). Climatic, economic, social and political factors can all be a source of instability. (FAO, IFAD, UNICEF, WFP & WHO, 2018)

Food stability can be determined that a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability therefore refers to the availability, access and utilization dimensions of food security.(FAO, 2016)

2.4 Food Security Related Issues in the World

2.4.1 Causes and Consequences of Food Insecurity

Causes of food insecurity include unstable social and political environments that preclude sustainable economic growth, war and civil strife, macroeconomic imbalances in trade, natural resource constraints, poor human resource base, gender inequality, inadequate education, poor health, natural disasters, such as floods and

locust infestation and the absence of good governance. All these factors contribute to either insufficient national food availability or insufficient access to food by households and individuals. (Ilaboya, 2012)

(a) Causes of Food Insecurity

Household food insecurity (HFI) is the result of poverty, poor health of the household member or members, and suboptimal livelihood and household management strategies. Food security is closely related to, but not synonymous with, nutrition security and health. Nutrition security is attained by individuals when the body tissues are exposed to optimal amounts of nutrients and other essential substances. Nutrition security results from the combination of household food security, health care access security, and access to other basic human needs including adequate sanitation. Food security and the other determinants of nutrition security are linked with each other. For example, a household with limited economic access to food may decide to not seek medical care for a child or to not purchase prescribed medications. For food security to be a reality, households need to have unrestricted access to a healthy and nutritious diet. Access to healthy diets, in turn, depends on having adequate economic resources and for foods to be readily available in the country, region, and communities in which the households are located. National food availability is a function of the balance between foods grown in the country plus foods imported minus foods exported, spoiled, or fed to animals. Therefore, the maintenance of an affordable and sustainable healthy food supply at the global level is paramount for achieving household food security and nutrition security worldwide. For this reason, it is crucial to understand and address climate change, agricultural commodity price policies, armed conflicts, and ultimately, the health of our planet from a household food security perspective in the context of the UN Sustainable Development Goals (SDGs), which specifically call for ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture globally.

(b) Consequences of Food Insecurity

HFI represents a strong biological and psychosocial stressor that may increase the risk of poor mental, social, and psycho-emotional development of individuals across the life course through different pathways. A biological pathway involves the potential links between HFI, poorer dietary intakes, nutritional status, and overall

well-being. A case in point is a current study from the United States that documents the very poor dietary quality of low-income individuals at risk of food insecurity. Their diets were characterized by exceedingly low intakes of whole grains, fruit, vegetables, and fish. This indeed is a dietary pattern that has been strongly linked to an increased risk of obesity, metabolic syndrome, chronic diseases such as diabetes, and premature death. A psycho-emotional pathway involves the worry and anxiety; feeling of exclusion, deprivation, and alienation; distress; and adverse family and social interactions among individuals experiencing food insecurity. (Escamilla, 2017)

2.4.2 Global Food Loss and Food Waste

The world produces enough food for everyone to live a healthy, productive life. There is now 17 percent more food available per person than there was 30 years ago. And if the entire world's food were evenly distributed, there would be enough for everyone to get 2,700 calories per day—even more than the minimum 2,100 requirements for proper health. One third of the food produced worldwide is lost or wasted.

Globally, around one-third of all food produced is lost or wasted along the food chain, from production to consumption. In a world where hundreds of millions of people go hungry, that is a stark indication of the inefficiency of current food systems. Food losses and waste often translate into economic losses for farmers and others stakeholders within the food value chain, and higher prices for consumers, both of which affect food insecurity by making food less accessible for vulnerable groups. Reducing food losses and waste would increase the supply of available food and strengthen global food security. (Escamilla, 2017)

In developed countries, most food waste happens as a result of food left unconsumed at home, in restaurants, or in supermarkets. This means that in high-income nations, consumers have the power to reduce food waste by modifying their own eating behaviors and through their collective power to demand supermarkets and eating venues to disclose and take measures to reduce food losses. In contrast, in low-income countries, most food losses occur between the farm and the markets as a result of poor agricultural practices, as well as poor food storage and food distribution systems, including transportation.

Food losses refer to the decrease in edible food mass throughout the part of the supply chain that specifically leads to edible food for human consumption. Food

losses take place at production, postharvest and processing stages in the food supply chain. Food losses occurring at the end of the food chain (retail and final consumption) are rather called “food waste”, which relates to retailers’ and consumers’ behavior. “Food” waste or loss is measured only for products that are directed to human consumption, excluding feed and parts of products which are not edible. Per definition, food losses or waste are the masses of food lost or wasted in the part of food chains leading to “edible products going to human consumption”. Therefore, food that was originally meant to human consumption but which fortuity gets out the human food chain is considered as food loss or waste even if it is then directed to a non-food use (feed, bio energy…). This approach distinguishes “planned” non-food uses to “unplanned” non-food uses, which are hereby accounted under losses. (FAO, 2011)

2.4.3 Global Challenges on Food Security

Global and national food systems present increasing challenges for science communities in tackling issues for health, nutrition, agriculture, ecology and human behavior, and for encompassing public and private sector research. The Sustainable Development Goals (SDGs) adopted by the United Nations (UN) in 2015 represent a critically important framework for tackling challenges. However, progressing the SDGs requires fresh engagement by science, including the economic and social sciences, to address the complexities of evidence-based policies and programmes.

Academies of science worldwide are committed to engage widely to strengthen the evidence base for enhanced food and nutrition security at global, regional and national levels. In this European Academies’ Science Advisory Council (EASAC) report, part of a worldwide Inter Academy Partnership (IAP) project, we discuss critical issues for Europe within the context of this global project; our messages on how science can help to resolve them are aimed at European Union (EU) and national policymakers, the wider science community and other stakeholders. We emphasize that the desired outcome for food and nutrition security is access for all to a healthy and affordable diet that is environmentally sustainable. With our report, we also aim to contribute to the broader IAP project objective of facilitating learning between regions and to show how academies can contribute to sharing and implementing good practice on these vitally important topics.

There are three sets of nutrition issues that exist in parallel and are partly connected: hunger and under nutrition, micronutrient deficiencies, and over nutrition with obesity. This represents a triple burden to public health and highlights the importance of nutrition security as well as food security (Horton and Lo, 2013). Increasing numbers of people are overweight or obese and many consume calorie-dense but nutrient-poor diets. At the same time, according to the latest UN Food and Agriculture Organization (FAO) assessment (FAO, 2017), worldwide 815 million people in 2016 were chronically undernourished in terms of calorie deficit to meet energy needs to lead a healthy and active life, which is 38 million more people than the previous year (FAO, 2015). The number affected by caloric deficiency has decreased by about 20% in the past decade but an additional approximately two billion people suffer from under nutrition from micronutrient deficits. Data from the Global Hunger Index (International Food Policy Research Institute (IFPRI) et al., 2016) indicate significant progress in many countries in reducing calorie deficiency but less progress on child stunting and micronutrient deficiencies.

The major global challenges for delivering food and nutrition security are compounded by the pressures of the growing population (projected to reach over 9 billion by 2050 with 70% of the population in urban areas compared with 50% today), climate change, other global environmental changes, and economic inequity and instability (Pretty et al., 2010; UNESCO, 2010; GOS, 2011). In addition, lack of quality and safety of diets, risk-prone food distribution systems and adverse nutrition behavior and lifestyles, resulting in obesity, are of increasing concern, including in the EU. It is vitally important to develop food systems that are nutrition-sensitive.

Historically, global production of staple foods has increased faster than consumption, leading to reduction in prices. However, this greater supply is now slowing because of production constraints together with further increase in demand because of the population growth, exacerbated by changing dietary patterns (in particular global meat consumption). A healthy diet has become more expensive, although the assessment of relative costs can be complex, as discussed subsequently. Setting priorities for increasing agricultural production must take account of pressures on other critical resources, particularly water, soil and energy, and the continuing imperative to avoid climate change and further loss in ecosystems services and biodiversity. Agriculture currently accounts for 40% of the Earth’s land surface and 70% of the world’s use of fresh water; the UN predicts that irrigation demands will

increase by up to 100% by 2025. About 2% of calories and 15% of protein of human food is obtained from products from the sea.

Agriculture and the food system also currently account for about 30% of energy consumption and just under one-third of greenhouse gases originate from agriculture and food. Moreover, up to one-third of the world's food production is lost or wasted according to some estimates, it being calculated that the food wasted by the EU and North America is equivalent to the total food production of sub-Saharan Africa.

Consideration of food and nutrition security must encompass both supply-side and demand-side issues. Reducing waste will reduce pressure on land and other natural resources. Therefore, achieving food and nutrition security raises important issues for resource efficiency, environmental sustainability, resilience and the public health agenda. There is urgent need for adopting an integrative food systems approach (GOS, 2011; Steering Committee of the EU scientific programme for Expo 2015), to cover the interrelated issues for resource efficiency, environmental sustainability, resilience and the public health agenda, within the context of the local–global connectedness of systems. (EASAC, 2016)

2.5 Measuring of Food Security

(a) Food Consumption Score

Food security is a difficult concept to measure since it deals in very broad terms with the production, distribution and consumption of food. There is no single way to measure food security, the concept itself being rather elusive. Analysis of food security by WFP generally uses food consumption as the entry point. Food consumption measured in kilocalories is the gold standard for measuring consumption, and often considered to be one of the gold standards for food security-but the collection of detailed food intake data is difficult and time consuming. A score calculated using the frequency of consumption of different food groups consumed by a household during the 7 days before the survey. There are standard weights for each of the food groups that comprise the food consumption score. Based on the standard thresholds within a country context, households are classified into three Food Consumption Groups (FCGs): poor, borderline or acceptable. The following table 2.1 shows the weight of each food groups and the typical threshold of the household's food consumption. (WFP, 2006)

Table 2.1 Food Groups and its Weight

Sr. No	Food Items	Food Groups	Weight
1	Maize , maize porridge, rice, sorghum, millet pasta, bread and other cereals	Main Staples	2
2	Cassava, potatoes and sweet potatoes, other tubers, plantains		
3	Beans. Peas, groundnuts and cashew nuts	Pulse	3
4	Vegetables, leaves	Vegetables	1
5	Beef, goat, poultry, pork, eggs and fish	Meat and Fish	4
6	Milk yogurt and other diary	Milk	4
7	Sugar and sugar products, honey	Sugar	0.5
8	Oils, fats and butter	Oil	0.5

Source: WFP (2006)

Table 2.2 FCS – The Typical Thresholds

Threshold	Profiles	Thresholds with oil and sugar eaten on a daily basis (~7 days per week)
0-21	Poor	0-28
21.5-35	Borderline	28.5-42
>35	Acceptable	>42

Source: WFP (2006)

(b) Coping Strategy Index (CSI)

Coping Strategies Index is a method developed by Maxwell in 2008 to track changes in household behaviors and indicate degrees of food insecurity when compared over time or to a baseline. With reference to consumption coping strategies, it is an indicator of household food security. A series of questions about how households manage to cope with a shortfall in food for consumption results in a simple numeric score. This index results in a score that reflects current and perceived future food security status. Changes in the index provide a rapid indication of whether food security is getting worse or the situation is improving – a higher score indicates a greater level of coping, and hence increased food insecurity. (CARE & WFP, 2003)

There are 12 strategies to assess how frequently the households use them when they experience either perceived or actual shocks they are faced with a number of available options for dealing with the stress. With the understanding that not all

coping mechanisms imply the same severity, the CSI uses the range of household level coping behavior to derive a proxy indicator of relative household food insecurity. The index is used to "score" coping behavior implying that the more severe the coping strategies used by a household and the more frequently they employ coping strategies, the greater their food insecurity. The following table 2.3 shows the number of coping days and its weight used by World Vision International (WVI) as a standardized weight in globally. The coping strategy questions are attached in appendix B.

Table 2.3 Coping Strategies' Weight

Weight Table for Coping Strategy Questions												
	Q-1	**Q-2**	**Q-3**	**Q-4**	**Q-5**	**Q-6**	**Q-7**	**Q-8**	**Q-9**	**Q-10**	**Q-11**	**Q-12**
1. Never	2.3	2.9	3.7	2.3	3	2.3	3.1	3.1	3	3.5	3.1	2.3
2. Seldom	5.6	5.8	7.5	5.6	6	5.6	6.2	6.2	6	7	6.2	5.6
3. Once in a while	6.9	8.7	11.1	6.9	9	6.9	9.3	9.3	9	10.5	9.3	6.9
4. Pretty Often	9.2	11.6	15.6	9.2	12	9.2	12.5	12.5	12	15	12.5	9.2
5. Almost Everyday	11.5	15.5	18.5	11.5	15	11.5	15.5	15.5	15	17.5	15.5	11.5

Source: WVI (2015)

2.6 Review on Previous Studies

The United Nations Food and Agriculture Organization estimates that about 795 million people of the 7.3 billion people in the world, or one in nine, were suffering from chronic undernourishment in 2014-2016.Almost all the hungry people, 780 million, live in developing countries, representing 12.9 percent, or one in eight, of the population of developing counties. (FAO, IFAD & WFP, 2015)

In 2016, the number of undernourished people in the world increased to an estimated 815 million, up from 777 million in 2015 but still down from about 900 million in the year 2000. Similarly, while the prevalence of under nourishment is projected to have increased to an estimated 11 percent in 2016, this is still well below the level of a decade ago. Nonetheless, the recent increase is cause for great concern and poses a significant challenge for international commitments to end hunger by 2030. Globally, the prevalence of stunting fell from 29.5 percent to 22.9 percent between 2005 and 2016, although 155 million children under five years of age across the world still suffer from stunted growth. Wasting affected one in twelve (52 million) of all children under five years of age in 2016, more than half of whom (27.6 million) live in Southern Asia. In 2016, 41 million children under five years of age were overweight. (FAO, IFAD, UNICEF, WFP & WHO, 2017)

It is necessary to do more to understand what makes a healthy and sustainable diet and how it may be produced and accessed. The magnitude of the challenge for the global and EU food systems is such that action is needed throughout the system: moderating demand, reducing waste, improving governance, as well as producing more food (Dogliotti et al., 2014). Every country is co-dependent to a greater or lesser degree on local production and global trade. In addition to production and trade flows, knowledge and science information flows are of growing importance.

As part of the wider considerations for local–global inter connectedness in food systems, the effects on food production must be achieved with less impact on the environment (German et al., 2016): sustainable intensification to enhance the efficiency of inputs and land use. Which mechanisms are chosen for delivering sustainable intensification has numerous implications: for example, for biodiversity and ecosystem services, relationship to nutritional quality and animal welfare (Godfray & Garnett, 2014). Throughout the present report, environmental issues will be discussed in relation to agriculture, with regard to climate change, use of water and energy, soil health, opportunities for reducing waste and for introducing precision

agriculture. It is vitally important to take this integrated view to tackle cross-cutting issues and identify opportunities for cross disciplinarily without losing the essential science focus. (EASAC, 2016)

The study on the food security status of the IDPs affected from armed conflict in Waingmaw Township, Kachin State stated that they have no job opportunity and most of the households try to make money by working as casual labors. The IDPs usually get cash assistance from supporting organization to buy food monthly. 99.3% of households got regular cash assistance for acquiring food items and o.4% of households did not get. Depending on receiving amount of cash assistant, 97.5% of households mostly buy food and 2.5% of households do not buy food but they used it for health. Among the IDPs, 91.1% of households were easily accessible to buy food as the market is near and 8.9% of households were not. In terms of households' food consumption pattern, the normal practice of Kachin people takes 3 meals per day. Among the IDPs, 65% of households take meal 3 times per day and 35% of households just take meal 2 times per day. The study pointed out that 77.5% of household members in the camp received sufficient and clean water and the main source of water supply for domestic use is hand dug well answered by 79.6%. The family in the camp wants to return original places but the basic needs of shelter, household utensil and food gaps were major constraints to survive at their original villages. (Thant Zin Soe, 2016)

The study on the food security situation of Loikaw township, Kayah State revealed that 72% of household's access to agricultural land. The average acres of the households are 3.8 acres. Rice and maize were the major crops the households cultivated and followed by maize and pigeon pea. There are agricultural constraints to farming households and they loss of crops due to pests and diseases. In terms of food consumption pattern, 43% of households are under acceptable food consumption while 46% of households are under borderline of food consumption and followed by 11% of households are under poor consumption. During the time of survey, 65% of households reported that they are being in debt with the main reason of purchasing food. The study also pointed out that 56% of household's access water from tube well while 31% of households' access from river. About 91% of households reported that they treated drinking water by boiling. The study suggested that food availability can be obtained through agricultural extension programme and food accessible can be

achieved through the development of micro – finance institutions with low interests. (Aye Myat Thu, 2015)

CHAPTER III
OVERVIEW ON FOOD SECURITY SITUATION IN MYANMAR

3.1 Food Security Situation of Myanmar

Myanmar has long been considered a “food surplus country” at the national level, in large part due to its self-sufficiency in rice. Yet, this has not translated into food security for all in a country that is has skewed distribution of assets and high rates of poverty, as per the most recent Integrated Household Living Condition Assessment (IHLCA) surveys. The same assessment indicated that around one quarter of the national populations, and 29% of rural households, fall below the national poverty line, and household expenditure on food remains high, at over 70% of the population. A baseline assessment by LIFT observed that up to half of the country’s rural households report going two months per year without adequate food supplies. In Myanmar, food surplus is by no means an assurance of food security for the rural poor. This situation is exacerbated by huge variance in the socio-economic, climatic, geographic and political conditions across the country’s regions. (FSWG, 2015)

Myanmar is richly endowed with land and water resources and favorable climates for agricultural production. The Agriculture sector, comprising Agriculture, Livestock, Fisheries and, Forestry, is the largest contributor to Gross Domestic Product (GDP), accounting for more than 29.8% (2014-15) of GDP. About 70 percent of the population resides in rural areas. The Agriculture sector, including the livestock and fisheries subsectors, employs 61.2% of the total labor force and earns 20% of total exports. Out of Myanmar’s total geographical area of 67.66 million hectares, about 17.24 million hectares (excluding forests) (25.50%) remain suitable for cultivation. However, current crop land totals only 11.97 million hectares. The majority of agricultural land is used for the production of basic grains for internal consumption and livestock feed. The country has been taking steps to gradually bring fallow and cultivable wasteland under cultivation. (Yar Zar Myo Thant & Htay Htay Win, 2016)

Myanmar is a resource rich country, with sufficient food availability at the national level, but a very uneven distribution of resources, lack of investment in key sectors (including water, sanitation and hygiene (WASH), health, education, and agricultural research and extension), and government policies that frustrate efforts to ensure household food security. Official statistics suggest that one quarter of Myanmar's households live below the national poverty line, and that one in ten households lives below the official food poverty line. Most poverty and food poverty is concentrated in rural areas, where nearly 3/4 of the population lives, in geographic areas dominated by ethnic minorities, and among landless and functionally landless households.

Access to land is a major constraint in Myanmar and average landholding size is 6.22 acres. Nearly 50 percent of rural households are landless. There is some evidence that the rate of landlessness is increasing. There are four pathways to landlessness: population growth, indebtedness, confiscation, and continued or renewed conflict in some areas. There is widespread and deep indebtedness of Myanmar's landless and smallholder farmers. Lack of access to credit at sustainable interest rates places many smallholder farmers at high risk of becoming landless. Even with collateral, interest rates of 5-10 percent per month are common; without collateral, interest rates are often 10-15 percent per month or higher. Farmers with small landholdings are less able to cope with poor harvests or other shocks to income, and appear especially likely to take on debt which they are unable to repay. (Wilson, S., & Naw Eh Mwee Aye Wai, 2013)

Rice is the country's main crop and staple food. Other major crops include maize, pulses, oilseeds, sugarcane, rubber, tea and timber. Over the past six decades, and up to as recently as two years ago, the Government measures have sought to make rice, considered being a strategic crop, available at affordable prices. To pursue this policy, rice exports were controlled through the issuance of export licenses, and farmers were required to sell their rice at low prices to the domestic milling industry. The low prices benefited consumers, but penalized farmers. To ensure that the lower incentives did not adversely affect rice production, farmers were allocated production quotas and benefitted from lower land taxes compared with those who grew other crops, such as pulses or beans. This led to an increase in the area planted with rice and a consequent increase in production. (FAO & WFP, 2016)

Table 3.1 Paddy production (1998 – 2014)

Year	Sown Area (mil ha)	Yield (mt/ha)	Production (Mil/MT)
1998-1999	5.76	3.13	17.08
2001-2002	6.45	3.42	21.92
2002-2003	6.49	3.42	21.81
2003-2004	6.54	3.54	23.14
2004-2005	6.86	3.64	24.75
2005-2006	7.39	3.75	27.68
2006-2007	8.12	3.83	30.92
2007-2008	8.09	3.93	31.45
2008-2009	8.09	4.03	32.57
2009-2010	8.07	4.06	32.68
2010-2011	8.05	4.07	32.58
2011-2012	7.59	3.83	29.01
2012-2013	7.24	3.84	27.70
2013-2014	7.28	3.90	28.32

Source: Myanmar Agriculture in Brief (2014)

According to the national planning targets, the total areas of paddy was 7.31 million hectares, comprising 6.2 million hectares under monsoon paddy and 1.1 million hectares under summer paddy and average yield 3.97 MT/Ha in 2013-2014. Actual paddy sown areas in the year was increased by more than 20 percent between 1994 and 2014 (from 5.9 million hectares to 7.28 million hectares), and production increased by 37 percent, reaching 28.32 million tons in 2014. Improved extension services, and an increase in the use of high-yielding varieties and fertilizers, also supported rice production growth.(MOALI, 2014)

3.1.1 Food Availability in Myanmar

At the national level food is widely available in Myanmar. With a large agricultural workforce and ample agricultural lands, Myanmar is self-sufficient in food production and also exports substantial quantities of food abroad, particularly pulses (peas and beans) and fish and shrimp products. However, the agricultural system is both the answer to and cause of Myanmar's food security woes. While the agricultural system is able to produce more than enough food to feed the population, it does not provide adequate farm-based incomes to ensure access to food for the

smallholder farmers and landless laborers who constitute the majority of the rural population. Relatedly, the skewed nature of agricultural production leads to cyclical under-employment for the agricultural workforce and highly volatile prices for staple foods like rice. Food price fluctuations cyclically undercut food access for both the rural and urban poor alike. Simply put, there are periods in the year where they do not earn enough money to purchase food. Financing food purchases with debt is a commonly used coping mechanism. While this forestalls immediate hunger, it inhibits asset accumulation and locks many people into a cycle of debt and tenuous food security.

3.1.2 Food Accessibility in Myanmar

In order to improve food access amongst the rural population and achieve SDG 2.2, agricultural incomes and farm productivity for small scale farmers and agricultural laborers must increase. While this review has identified numerous factors affecting agricultural incomes, the biggest gains can be made by ensuring that smallholder farmers and landless agricultural laborers have secure ownership or usage rights to land and access to agricultural inputs including quality seed, agrochemicals and agricultural finance. The rural road network also needs to be extended and upgraded so that farmers have access to markets where they can obtain agricultural inputs and sell their products. This will serve to incentivize more intensive agricultural investments and the production of cash crops. Farmers also require knowledge of new agricultural techniques and technologies that not only increase yields and diversify agricultural production but also improve resiliency to climatic shocks, maintain ecosystems and ultimately ensure the sustainability of food production systems, in line with SDG 2.3.

3.1.3 Food Utilization in Myanmar

Even if food is both available and accessible, there is no guarantee that it will be utilized effectively. Available data indicate that much of the poor population do not consume enough protein rich foods like fish or meat. Anecdotal evidence as well as a high prevalence of micronutrient deficiencies also indicates that they do not consume enough fruits and vegetables that are rich in vitamins and minerals. Rather, diets consist heavily of rice for the simple fact that it is relatively inexpensive. This enables much of the population to ‘fill their stomachs’. They do not feel hungry, but without a

balanced diet their bodies are not receiving the necessary nutrients to reach their full biological potential for physical and cognitive development. While a nutritious diet need not be expensive, nutritional knowledge is poor amongst most of the population. They have limited knowledge on how to prepare well-balanced, healthy meals with a diverse range of locally produced nutritious and cheap ingredients. Common practices for food preparation, such as overcooking vegetables, also reduce the nutritional value of the food they consume. (Robertson, 2018)

3.2 Key Shocks that Lead to Food Insecurity in Myanmar

The key shocks that appear to most affect vulnerability to food security in Myanmar are: price volatility, natural disaster, climate change, disease, conflict, and sudden loss of access to land.

Price volatility: Myanmar agricultural markets experience a large degree of price volatility because of GOM policies, global events, and occasional large-scale natural disasters. Unusually high price spikes have negatively impacted food security. For example, in August 2007, the GOM eliminated fuel subsidies which caused an overnight spike in prices (at an estimated 100-500 percent increase) and an inflation rate of 35 percent. Food and other commodity prices suddenly increased. Landless and functionally landless households, who rely on casual labor for the majority of their income, are most vulnerable to wage and price shocks since they must depend entirely on market purchases. These increases had a strong negative impact on the population welfare.

Natural disasters and climate change: One UN agency reports that an estimated "84 percent of natural disasters are climate-related, and Asia is the global ground zero for natural catastrophes." When we looked back Myanmar in the last four-five years knows well, the country is prone to cyclones, earthquakes, landslides, and generalized effects of climate change. When Cyclone Nargis struck Ayeyarwady and Yangon regions, an estimated 140,000 people were killed and 2.4 million people were severely affected. The total amount of damage and losses in affected areas was estimated at US$4.06 billion.159 Nargis directly and negatively affected rice production since more than 65 percent of the country's main rice production zone is located in the area directly hit.160 In October 2010, cyclone Giri struck Rakhine

State. WFP and other partners estimated that more than 200,000 people were directly affected. Though relatively rare, several parts of the country face risk of earthquakes. Shan State experienced a 6.9 magnitude earthquake in March 2011. A 6.8 magnitude earthquake struck Shwebo in November 2012. Therefore, natural disasters are another important cause of volatility in agricultural production and prices.

Conflict and displacement: In the border states of Kachin and Rakhine, there is ongoing conflict. In the ethnic states of Chin, Kayin, Kayah, and Tananthiryi, past conflict has left many communities in isolation. Conflict and displacement often leads to a sudden loss of access to land, but also results in many other negative outcomes. Populations in conflict or post-conflict situations are often faced with physical isolation from markets, and humanitarian organizations who might otherwise respond to acute food insecurity are often unable to gain physical access to affected communities.

Sudden loss of access to land: Loss of access to land, through indebtedness, confiscation, or conflict represents an important key shock for large numbers of people across the country, though the majorities experiencing this type of shock are in hilly regions. (Wilson, S., & Naw Eh Mwee Aye Wai, 2013)

3.3 Food Security Related Policies and Plans in Myanmar

As a part of the 1988 reform program, the Government of Myanmar recognized food security as a key element of its agricultural policy. Objectives developed for the agricultural sector focused on two main areas: (1) commercialization of agriculture, and (2) maintaining food security. Other significant reform measures that supported food security include rice trade liberalization, the allocation of waste and fallow land to private investors for agriculture purposes, the exemption of import tax on agricultural inputs, and other adjustment measures supporting the market economy. (Nyunt Nyunt Win, 2013)

Food security is cited as a priority in national development planning, and closely aligned with agriculture. To date, it is notable that there has been no national level policy framework or law that specifically addresses food security for Myanmar. However, the food security and its core issues are increasingly addressed in policy and law across a range of sectors beyond its traditional focal point of the Ministry of

Agriculture and Irrigation (MOAI) and its traditional focus on crop production, land consolidation and mechanization. This is reflected both in heightened policy formulation on related issues across other sectors, and in the way in which government institutions are restructuring. (FSWG, 2015)

Table 3.2 Overview of policy activity and key sectors related to food security

Sector	Existing/Pending Policy Plans?	Existing Laws and Regulations?
Agriculture: Production and Inputs	Seed policy (Pending)	Yes, many
Agriculture: Rural development and credit	Rural Development Framework (Pending)	Yes, several
Agriculture: Lands use rights	No	Yes, several
Livestock and Fishery	No, not at national level	Yes, several at both national and sub-national level
Health (Nutrition)	National plan for food and nutrition	No
Social Welfare: Social Protection	No	No
Social Welfare: Disaster assistance	Myanmar action plan for disaster risk reeducation	Disaster Management Law (2013)

Source: Food security related policy analysis Myanmar (2015)

Myanmar's economic development strategy gives high priority to the agriculture sector. Agriculture sector development has been considered as one of the major driving forces for enhancing the wellbeing of the people. As part of its current agricultural policy, Ministry of Agriculture, Livestock and Irrigation (MOALI) have also identified 'accuracy of agriculture statistics' as a target in itself in recognition of their importance for planning and policy making and for measuring the progress of agriculture sector credibly, timely and adequately. (Yar Zar Myo Thant & Htay Htay Win, 2016)

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

Chauk Township is situated in Myanmar's Dry Zone in central Magway Region. It is ranked amongst the six poorest townships in the Region (there are 25 townships in Magway in total). The area covers 991.5 square kilometers with a population of 212,733 people distributed in 44,278 households, split amongst 230 rural villages and 51 village tracts. The population density of Chauk Township is 186.8 persons per square kilometer. It lays between north latitude 20 and 20 25˚, east longitude 94 and 94 50˚. 98.97 percent of the population living in Chauk township are primarily Burma and the rest minority groups are Kachin, Kayah, Kayin, Chin, Mon, Burma, Rakhine, Shan and Inn Tar, etc. Most of the populations believe in Buddhist and the others believe in Christian, Hindu and Muslim. The urban area is notably better off than the rural area, stemming from the historical involvement in the oil industry in the town.

Table 4.1 Households and Population of Chauk Township

Sr. No	Description	Households	Ward	Village Tract	Village	Population		
						Male	Female	Total
1	Urban	9,248	15	-	-	21,637	24,861	46,498
2	Rural	35,030	-	51	230	78,065	88,170	166,235
Total		**44,278**	**15**	**51**	**230**	**99,702**	**113,031**	**212,733**

Source: GAD (2017)

The majority of the people in Chauk township live in rural areas with only (24.3%) living in urban areas. Rural areas in particular are under developed in all sectors. There is poor transportation and communication, widespread illiteracy, lack of health facilities, and high unemployment and migration rates due to lack of job opportunities, especially in the months of February, March, April, May and June (dry

season), when many male family members seek better employment opportunities elsewhere.

4.2 Survey Design

The survey questionnaire in this study is used both quantitative and qualitative tools to collect data information to know food security situation and underlying causes of food insecurity in the area. To measure the effectiveness of the situation, data was collected at household level through specific questions. 10 data collectors were trained one day on 17th December 2018.

This study was carried out for 250 households in 10 villages in Chauk Township. The villages were selected by using vulnerable mapping while simple random sampling was used for the household's survey. The survey was conducted from 18th December to 24th December 2018. The survey was done through face to face interview with the person who knows about the households and managing all things in the house. Data collection was carried out by structured household questionnaire and focus group discussion has also been used to get overall understanding of current situation of the areas and to verify the specific answers of the individual questionnaire. The questionnaire contains semi structured questions, which are a closed-ended and multiple answer type's questionnaire design that allows respondents to make objective answers. There are nine headings used to categorize questions in the study as follow:

1. Sample identification
2. Household characteristics
3. Household vulnerability and welfare
4. Household food availability
5. Household food accessibility and utilization
6. Lean periods and difficulties that household encountered
7. Household coping strategies
8. Food safety of the household
9. Utilization of water and personal hygiene

The survey field work was started taking consent to the households and they answered in a private place to prevent the interference from others.

Table 4.2 Surveyed Villages

Sr. No	Village Name	No of Household	No of Sample	Percentage
1	Htauk Shay Kan	127	25	20%
2	Kadaing (South)	92	25	27%
3	Kway Pin Gyi	217	25	12%
4	Magyi Kone	175	25	14%
5	Magyi Sout	157	25	16%
6	San Su Ywar Ma	189	25	13%
7	Tar Yar Kone	127	25	20%
8	Taung Tar (North)	175	25	14%
9	Taung Tar (South)	300	25	8%
10	Taung Te' Gyi	215	25	12%
Total		**1,774**	**250**	**14%**

Source: Survey Data (2018)

4.3 Survey Analysis

4.3.1 Household Characteristics

The distribution of a population by age and sex is among the most basic types of information needed for the planning. The household characteristics provide the information about the gender and age of the respondent, respondent relationship to household heads, members of the household and average household size.

Table 4.3 Households Characteristics

Description	Characteristics	Respondents	Percent (%)
Respondents Gender	Male	67	27%
	Female	183	73%
Total		**250**	**100%**
Respondents Age	<20	0	0%
	21-40	108	43.2%
	41-60	115	46%
	>60	27	10.8%
Total		**250**	**100%**
Is the respondents HHH	No	144	58%
	Yes	106	42%
Total		**250**	**100%**

Respondents related to HHH	Spouse	113	78.5%
	Child	23	16%
	Parents	0	0%
	Sibling	4	2.8%
	Relatives	0	0%
	Others	4	2.8%
Total		**144**	**100%**
Households size	Up to 5 HH member	155	62%
	6 to 10 HH member	92	37%
	Over 10 HH member	3	1%
Total		**250**	**100%**
Resident in the village	Permanent	248	99%
	Temporary	2	1%
	Migrate	0	0%
Total		**250**	**100%**

Source: Survey Data (2018)

Based on the survey result, household information is as shown in Table 4.3. Among 250 household interviewed, mostly of the respondents are female at 73% while very low percent of respondents were male at 27%. Across the sample, size of family up to five is 62% while 37% are between and 10 members followed by 1% are over 10 members. The average household size is approximately 6.

4.3.2 Household Vulnerability and Welfare

(i) Number of Income Earners in the Household

Household income is a measure of the combined incomes of all members shared for a particular household or place of residence. It includes every forms of income coming from salaries, daily wages, selling of crops and vegetables from the land, working outside of the village, doing own business, receiving assistance from donors or relatives, etc. The following table 4.4 shows the number of income earners in the household contributed from different income sources.

Table 4.4 Number of Income Earners in the Household

Sr. No	No of Income Earners	Number of Households	Percent
1	1 Person	96	38.4%
2	2 Persons	115	46.0%
3	3 Persons	35	14.0%
4	4 Persons	3	1.2%
5	5 Persons	1	0.4%
Total		**250**	**100**

Source: Survey Data (2018)

The finding pointed out that the number of household income earners varies among the surveyed households. The highest income earners with two persons in the household are 46% while income earners with one person is 38% and followed by 14% of households have 3 persons of income earners.

(ii) Monthly Household's Income

Myanmar is classified as lower-middle-income country, with a GDP per capita of USD 1,270 at purchasing-power parity, one of the lowest in the region. However, rates of poverty remain high, with an estimated 37.5% of the population living below the poverty line. Most of the poor live in rural areas.

Table: 4.5 Monthly Households' Income

Sr. No	Monthly Income	Number of Households	Percent
1	10000-100000	118.0	47.2%
2	100001-200000	88.0	35.2%
3	200001-300000	27.0	10.8%
4	300001-400000	11.0	4.4%
5	Above 400000	6.0	2.4%
Total		**250**	**100%**

Source: Survey Data (2018)

In terms of monthly household's income based on the surveyed result, the household having income between 10,000 kyats and 100,000 kyats is 47.2% which is very low income for the average household size at 6 while the household with the highest income above 400,000 kyats is 2%.

(iii) Households' Income Sources

Income is important for the household to buy basic needs. It is measured all the combination of income earners in the household and includes all forms of income such as employment, having own business, selling of crops or livestock, working as casual labor and having income from local and abroad.

Table 4.6 Sources of Income

Sr. No	Main Income Sources	Number of Responses	Percentage of Responses
1	No Income	2	0.8%
2	Crop sales	68	27.2%
3	Casual labor – Agriculture	24	9.6%
4	Casual labor - Non-Agriculture	176	70.4%
5	Livestock sales	17	6.8%
6	Own Business	14	5.6%
7	Selling of different things	20	8.0%
8	Government staff/ Retired	3	1.2%
9	Assistance by relatives	5	2.0%
10	Brokerage	3	1.2%
11	Income sent from abroad and local	53	21.2%
12	Others	8	3.2%

Source: Survey data (2018)

Data on sources of income were collected to better understand the income level of the households in the last 30 days. According to the households surveyed, casual labor with non-agriculture was mentioned as the main income source which is at 70.4% while 27.2% of the household's income comes from crop sales and followed by 21.2% of household's income come from working in abroad and in within local, Myanmar.

(iv) Monthly Household's Expenditure

Table 4.7 Monthly Household's Expenditure

Sr. No	Monthly Expenses	Number of Households	Percent
1	10000-100000	94.0	37.6%
2	100001-200000	115.0	46.0%
3	200001-300000	26.0	10.4%
4	300001-400000	6.0	2.4%
5	Above 400000	9.0	3.6%
Total		**250.0**	**100%**

Source: Survey Data (2018)

The surveyed result pointed out that monthly household's expenditure has between 100,001 kyats and 200,000 kyats is 46%, followed by 37.6% of household's monthly expenses has between 10,000 kyats to 100,000 kyats. In compare to the household income and expenditure, the survey findings showed that there is

imbalance of income and expenditure among the households which indicated that household expenditure is higher than household income.

(v) Household's Main Expenses

Table 4.8 Household's Main Expenses

Sr. No	Main Expenses	Number of Responses	Percentage of Responses
1	Staple foods	239	95.6%
2	Non-staple foods	38	15.2%
3	Household goods	19	7.6%
4	Education	125	50.0%
5	Health	139	55.6%
6	Social activities	141	56.4%
7	Travel	10	4.0%
8	Agriculture inputs	6	2.4%

Source: Survey data (2018)

The households were asked for their main expenditure to understand how they allocate their income. Among 250 households interviewed, most of the households by 95.6% reported that their main expenses fall on staple foods. 56.4% of households spent on social activities, 55.6% of households spent on health and 50% of households spent on education while 15.2% of households spent on non-staple foods, 7.6% for household goods, 4% for travel and 2.4% for using on agriculture inputs respectively.

(vi) Ownership of Productive and Household Assets

The variation in asset ownership reflects economic conditions of the households. Asset ownership of the households is strongly correlated with households' income. Some assets have a greater inherent value than others as they facilitate economic productivity (e.g. land, livestock, tools) whereas others can be considered as nonproductive or basic assets as they relate more to living standards (e.g. television, motor cycle, solar). The assets in this study included both productive and household assets.

Table 4.9 Situation of Productive and Household Assets

Sr. No	Type of Assets	Number of Responses	Percentage of Responses
1	Farming machineries	73	29.2%
2	Tractors	7	2.8%
3	Agricultural tools	203	81.2%
4	Generator	5	2%
5	Radio	65	26%
6	Television	29	11.6%
7	Car	4	1.6%
8	Motor Cycle	126	50.4%
9	Bicycle	27	10.8%
10	Telephone	186	74.4%
11	Sewing machine	14	5.6%
12	Solar with battery	146	58.4%
13	Electricity	11	4.4%
14	TV player	14	5.6%

Source: Survey Data (2018)

Table 4.10 Ownership of Assets by Households

Sr. No	Ownership of Assets	Number of HHs	Percent
1	HH with no asset	12	4.8%
2	HH with one asset	16	6.4%
3	HH with two assets	26	10.4%
4	HH with three assets	57	22.8%
5	HH with four assets	64	25.6%
6	HH with five assets	44	17.6%
7	HH with six assets	24	9.6%
8	HH with seven assets	7	2.8%
Total		**250**	**100%**

Source: Survey Data (2018)

The survey result revealed that 81.2% of the households owned agriculture tools which are important for the households using in their lands in cultivation times while 74.4% of households owned telephone which is used for the communication purposes while 74.4% of households owned telephone followed by 58.4% of households owned solar with battery and 50.4% of households owned motor cycle which is used for the transportation. In addition to this, it was also observed that 4.8% of the households did not own any assets while 2.8% of households owned seven

types of assets which is the highest assets owned among the surveyed households. The highest percentage at 25.6% of surveyed households owned four assets.

4.3.3 Food Availability

This dimension addresses whether or not food is actually or potentially physically present in a country or area through all forms of domestic production, wild foods, food reserves, markets and transportation.

(i) Access to Agricultural Land

Agriculture is an important factor contribution to improve food security of the households. Based on the survey result, it is observed that 56.4% of households didn't have access to agricultural land while 43.6% of households had access to agricultural land with mainly low land ('Ya" Cultivation).

The survey result showed the land distribution of the surveyed households are different from the least 1 acres to the highest 13 acres. Among the households who access to agricultural lands, 81% of the households' access from one to five acres while 18% of the households' access from 5.5 to 10 acres followed by only 1% access over 10 acres.

(ii) Cropping Pattern

Since Chauk Township is located in central dry zone of Myanmar, climate is an important factor that influences on the cropping pattern of the study area. "Ya" cultivation is the most important in agriculture in that area. The agricultural activities and cultivation of crop are carried out by traditional method only. The major crops cultivated in Chauk Township are sesame and groundnut and other crops grown are rice, millet, maize, sunflower, beans, pulses, tobacco, toddy, chili, onions, garlics and potatoes.

Table 4.11 Type of Crops

Sr. No	Type of Crops	Number of Responses	Percentage of Responses
1	Maize	16	14.7%
2	Millet	7	6.4%
3	Sesame	54	49.5%
4	Potato	4	3.7%
5	Different type of Beans	106	97.2%
6	Tomato	5	4.6%
7	Eggplant	1	0.9%
8	Chili	2	1.8%

Source: Survey Data (2018)

Among the households who access to agricultural land, the result showed that 97.2% of households cultivated different type of beans as a major crop including ground nut, pigeon pea, green beans, etc. and followed by 49.5% of households cultivated sesame as second major crop. In terms of multi cropping, it is observed that 40.4% of households cultivated only one crop, while 2 crops at 35.8%, 3 crops at 20.2% and 4 crops at 3.7% respectively.

(iii) Agricultural Constraints

In order to use the full agricultural potential, it is important to understand some of the limiting factors hampering the expansion of agricultural land or agricultural productivity. Therefore, households were also asked to mention the major constraints or obstacle to farming.

Table 4.12 Agricultural Constraints to Farming Households

Sr. No	Agricultural Constraints	Number of Responses	Percentage of Responses
1	Unable to borrow land	3	3%
2	High cost of labors	49	49%
3	Dry spells/Drought	65	64%
4	Inability to afford agricultural inputs	52	51%
5	Plant diseases	77	76%
6	Climate Change	44	44%
7	Declining agricultural production	1	1%

Source: Survey Data (2018)

According to the survey result, it is observed that 7% out of access to agricultural land didn’t have any agricultural constraints while 93% had. Among of

them, the main agriculture constraints for farming households are as followed respectively.

1. Plant diseases (76%)
2. Dry spells/Drought (64%)
3. Inability to afford agricultural inputs (51%)
4. High cost of labors (49%)
5. Climate change (44%)
6. Unable to borrow land (3%)
7. Declining agricultural production (1%)

(iv) Ownership of livestock

Acute food insecurity occurs as a result of a shock such as flood, storm, drought, a sudden surge in food prices, conflict or other events that create instability and disrupt the normal livelihood of affected households. Livestock are a central component of the farming systems where cattle (Mainly oxen for draught power), goats and sheep are the predominant species, with also some pigs and chickens. The main income generating animals are small ruminants followed by pigs and where chickens are mainly used for household consumption. Livestock particularly the cattle are heavily reliant on crop residues from the pulses and cereal crop in mainly. Stall feeding is common again for the cattle, and also the goats and sheep, but in general most of fodder comes from the rain fed lands. Large portion of the population in dry zone is dependent on subsistence farming and small-scale livestock rearing. Among of 250 household interviewed, 76.8% of households owned livestock while 23.2% of households didn't own.

Table 4.13 Situation of Household's Livestock

Sr. No	Type of livestock	Number of Responses	Percentage of Responses
1	Cattle	136	54.4%
2	Goat	13	5.2%
3	Chicken	121	48.4%
4	Pig	25	10.0%
5	Duck	4	1.6%

Source: Survey Data (2018)

Table 4.14 Ownership of Livestock

Sr. No	Ownership of Livestock	Number of HHs	Percent
1	HH with no livestock	58	23.2%
2	HH with one livestock	100	40.0%
3	HH with two livestock	79	31.6%
4	HH with three livestock	12	4.8%
5	HH with four livestock	1	0.4%
Total		**250**	**100%**

Source: Survey Data (2018)

According to the table 4.14 the most common livestock owned by 54.4% of the households are cattle which are important for the households using for farming while 48.4% of households owned chicken which is used for the households' consumption and selling. The other livestock are less owned by the households which are 10% of pigs, 5.2% of goats and 1.6% of duck. Among who owned livestock, the highest percentage at 40% of households owned only one asset while 31.6% of households owned two livestock followed by 4.8% of households owned three livestock and o.4% owned four livestock.

(v) Food Stored at the Households

In terms of knowing food secured at the household level at the time of interview, they were asked how many months they still have in stocks for the different kinds of food. The food included in this study is the households planted in their land and daily utilization food.

Table 4.15 Food Stored at the Households

Months	Rice	Pulse	Potato	Oil	Chili	Garlic	Onion
0	52	175	227	103	107	112	106
	20.8%	70%	90.8%	41.2%	42.8%	44.8%	42.4%
1	186	71	22	141	140	134	139
	74.4%	28.4%	8.8%	56.4%	56%	53.6%	55.6%
2	11	1	1	4	2	4	4
	4.4%	0.4%	0.4%	1.6%	0.8%	1.6%	1.6%
3	1	3	0	2	1	0	1
	0.4%	1.2%	0%	0.8%	0.4%	0%	0.4%

Source: Survey Data (2018)

According to the survey, the finding pointed out that 13.2% of the households didn't last any food stored. The survey result also revealed that the main food of the households is mostly rice at 74.4% and it is last for one month and the households less stored are pulse at 28.4% and potato at 8.8%. Oil, Chili, garlic and onion are also stored one month by more than 50% of the households.

4.3.4 Food Accessibility and Consumption Pattern

In terms of study food accessible and food utilization, food consumption score is used to reveal the consumption patterns of a given population. The Food Consumption Score (FCS) is commonly used in World Food Programme food security surveys and monitoring systems. The FCS is a composite score based on dietary diversity, food frequency (number of days during the past seven days) and the relative nutritional importance of different food groups.

During survey, the households were asked to state which food items they had consumed over the last 7 days. The findings revealed that 74% of households were found with acceptable consumption, followed by 24% of households had borderline consumption while 2% of households had poor consumption. It is also observed that rice, vegetable and oil are the most items consumed by the households regularly. The households with acceptable consumption had a very significant difference in their dietary diversity with a regular consumption of pulses as well as, meat, poultry and fish. In terms of the main source of food in the last 7 days, majority of households purchased staple foods (Rice, Potato, and Oil) from the market while 17% of households received Pulses from their own production.

4.3.5 Shocks and Difficulties

Natural disaster and climate shocks are also common in Myanmar and can result in acute, localized food shortages and jeopardize incomes and food access for affected households. As a coping mechanism, financing food purchases with debt has become a common practice. The survey result stated that 76% of households had 5 months (February to June) of lean season throughout the year which is long period for the household to cope with food shortage and financial difficulties. The lean season may vary from one household to another since individual household has different livelihood activities.

Table 4.16 Lean Seasons

Sr. No	Months	Number of Households	Percent
1	Jan - May	2	1%
2	Jan - Jun	9	4%
3	Jan - Jul	10	4%
4	Feb - Jun	191	76%
5	Feb - Jul	36	14%
6	Mar - Jun	2	1%
Total		**250**	**100**

Source: Survey Data (2018)

(i) Indebtedness

In terms of indebtedness, the survey finding showed that 86.8% of households were in debt in time of lack of job opportunity and having food shortages while 13.2% of households didn't have any debt to pay back. Household with high debts are amongst the most food insecure groups in the villages.

Table 4.17 Use of Debt

Sr. No	Use of Debt	Number of Responses	Percentage of Responses
1	Used on food	203	93.5%
2	Used on Health	142	65.4%
3	Used on Education	108	49.8%
4	Used on Agri Inputs	35	16.1%
5	Used on livestock	7	3.2%
6	Used on social affair	44	20.3%

Source: Survey Data (2018)

Based on the survey interviewed, the result showed that households with debts, and particularly those with debts on food, are more likely to be food insecure than those who are without debt. During the lean seasons and lack of job opportunity when the households are being in debt which period is mostly reported from February to June, it is observed that 93.5% of the households used mostly for food while 65.4% of households used for health followed by 49.8% of households used for education. According to the survey, the households mainly used for their basic needs while they used very less for other purposes such as agricultural inputs at 16.1%, livestock at 3.2% and social affair at 20.3% respectively.

(ii) Household's Difficulties in the last 3 Months

The households were asked whether they had difficulties within household in the last three months. The survey result pointed that 78% of households faced difficulties in the last three months while 22% of households didn't face any difficulties.

Table 4.18 Household's Difficulties

Sr. No	Difficulties	Number of Responses	Percentage of Responses
1	Lack of job opportunity	93	47.7%
2	Sickness	107	54.9%
3	Need money for education	80	41.0%
4	Unable to pay debt back	74	37.9%
5	Low productivity	54	27.7%
6	Natural disaster	1	0.5%
7	Lack of labor	1	0.5%

Source: Survey data (2018)

The households are asked to respond multiple answers on the difficulties that they experienced. According to the table 4.18, number one constraints that the households reported was sickness at 54.9% while 47.7% of household faced with the lack of job opportunity followed by 41% of households had financial problem for education, 37.9% of households encountered with low productivity which is the most common obstacle to food insecurity and having the burden of recurring from health and education problem.

4.3.6 Coping Strategies

Coping Strategy Index (CSI) is often used as a proxy indicator of household food insecurity. Households were asked about how often they used a set of twelve short-term food based coping strategies in situations in which they did not have enough food, or money to buy food, during the one-week period prior to interview. The information is combined into the CSI which is a score assigned to a household that represents the frequency and severity of coping strategies employed. Household CSI scores are then determined by multiplying the number of days in the past week (1-5) each strategy was employed by its corresponding severity weight (table 2.3), and then summing together the totals.

Table 4.19 Household's Coping Strategies Index Score

Sr. No	Scores (Relative Frequency * Weight)	No of Households	Percent
1	0-40	75	30.0%
2	41-50	122	48.8%
3	51-60	41	16.4%
4	61-70	9	3.6%
5	>70	3	1.2%
Total		**250**	**100%**

Source: Survey data (2018)

The CSI score means that the higher the score, the greater the level of household food insecurity. The survey pointed out that 48.8% of households have CSI score from 41 to 50. Across the sample, 1.2% of households have CSI scores above 70 which mean that they are the highest level of food insecurity among the surveyed households.

The analysis can also be done which strategies are the most employed by the households. It is calculated based on the average score of all households. The series of questions below represents the kind of strategies used by households to cope with food insecurity crisis and average score.

Table: 4.20 Average CSI Score

Sr. No	Coping Strategies	Average CSI Score
1	Limiting portion sizes at meal time	2.38
2	Reduce the number of meals per day	2.97
3	Skip entire days without eating	3.73
4	Borrow food or rely on help from friends or relative	3.60
5	Rely on less expensive or less preferred food	5.86
6	Purchase food on credit/take a loan to buy food	5.45
7	Gather unusual type/amount of wild food or hunt	3.75
8	Harvest immature crops	3.10
9	Send household members elsewhere	3.12
10	Send household members to beg	3.71
11	Restrict adult food consumption so that the children can eat more	2.40
12	Rely on casual labor for food	3.30
13	Average Coping Strategies Score	3.61

Source: Survey data (2018)

Table 4.20 presents the findings on the average CSI score for households for the month of December, 2018. As at the time of the survey, the average aggregated CSI score for the households were 3.61. From the scores, we can conclude that majority of households have adopted different coping strategies to cope up with the food insecurity situations with the most frequent which was relying on less expensive or preferred goods at an average CSI score of 5.86 while the least frequent was limiting portion size of meal per day at an average CSI score of 2.28.

4.3.7 Food Safety and Food Utilization

Food and nutrition security requires that nutritionally diverse food is not only available and accessible but also utilize of the food effectively in terms of food storage, food preparation, food cooking style and intra-household distribution of food. Food utilization in Myanmar is further hampered by a poor health environment and inadequate care practices related to hygiene and sanitation. Among the 250 households interviewed, the survey result showed that most of the households at 98.8% stored food safely in generally while very few of households at 1.2% didn't store food safely. In terms of cleansing the food, 100% of households made sure of they used to clean the food when cooking.

Households were also asked whether they used to eat instant food and food that is made by chemical and dye. According to the survey result, the findings stated that 21.6% of households used to eat instant food while 78.4% of households not. The instant food that the households used to eat are mostly reported on instant noddle, salad noddle and fish cans. It is also observed that 25.2% of households used to eat food that is made by chemical and dye while 74.8% of households not. The chemical and dye food that the households mostly used to consume are juice made with dye, ice lolly and (A Chin Paung).

4.3.8 Water, Sanitation and Hygiene

(i) Access to Water

One critical factor for a healthy environment and food utilization is access to safe drinking water and sanitation. Appropriate water treatment is also an important health consideration, which impacts nutritional outcomes. Access to food, care practices and a health environment are the underlying factors for determining the

nutrition situation. One critical factor for a healthy environment and food utilization is access to safe drinking water and sanitation.

Table 4.21 Access to Water Sources

Sr. No	Water Sources	Number of Responses	Percentage of Responses
1	Hang dug well	25	10.0%
2	Rain	2	0.8%
3	River/Spring	8	3.2%
4	Pond	130	52.0%
5	Tube well	203	81.2%

Source: Survey Data (2018)

In terms of access to water sources, the survey result pointed out that 81.2% of households' access water from tube well, while 52% of households' access water from pond followed by 10% of households' access from dug well and very few of water sources also stated which are from river and spring at 3.2% and rain water at 0.8% respectively. Across the sample, it is positively reported that most households treat their drinking water by using a filter at 98.4% while 0.8% of households are boiling their water before consumption. Very few of households at 0.8% do nothing with their water before consumption.

(ii) Household's Hygiene Status

The prevalence of diarrhea and other diseases is often the result of hygiene practices as well as the sanitation of the surrounding environment. Disease can inhibit the body's ability to absorb nutrients. This is largely a factor of the of health environment, care practices related to hygiene, and access to healthcare. Households were asked about the practices of washing hands before and after meal, after using the latrine, after handling rubbishes, animals and after working.

Table 4.22 Household's Hygiene Status

Sr. No	Description	Always	Sometimes	Never	Total
1	Before meal	100%	-	-	100%
2	After meal	99.6%	0.4%	-	100%
3	After using latrine	90.8%	8.8%	0.4%	100%
4	After handling rubbishes	90%	8.8%	1.2%	100%
5	After handling animals	88.8%	8.8%	2.4%	100%
6	After working	91.6%	7.2%	1.2%	100%

Source: Survey Data (2018)

According to the surveyed result, it is observed that 100% of households reported that they always washed their hands before having meal. It can be concluded that most of the households always used to wash their hands after they do something. There are few households with who never washed their hand after using latrine (0.4%), handling rubbishes (1.2%), and handling animals (2.4%) and after working (1.2%). The surveyed result also pointed out that 98.4% of households used soap when washing their hand while very few of households at 1.6% did not use soap as a material contributed to personal hygiene.

(iii) Awareness on 4 Cleans

Four clean methods are very essential when considering food security that are food clean, water clean, hands clean and latrine clean. Across the sample, the findings showed that 79.6% of households had awareness on 4 clean while 20.4% of households didn't aware of it. Based on the survey result, among who had an awareness of 4 cleans, over 90% of households reported that they know all type of 4 cleans while very less percentage of households just know some of them.

(iv) Utilization of latrine

The links between sanitation, water supply, and health are directly affected by hygiene behavior. Improved sanitation facility has four broad criteria; 1) using improved types of toilets, 2) exclusively used by one household, 3) having hand washing facility, and 4) faucal waste system which is safely disposed in situ or treated off-site. Improved of using appropriate toilets is also important for the households in terms of protection from diseases and promote household personal hygiene.

Table 4.23 Type of Latrines used by Households

Sr. No	Type of Latrines	No of Household	Percent
1	Fly proof latrine	1	0.4%
2	Water-Closet	178	71.2%
3	Simple pit latrine	9	3.6%
4	No latrine	62	24.8%
Total		**250**	**100%**

Source: Survey Data (2018)

Based on the survey result, it is found out that 71.2% of households are using types of water-closet b while 24.8% of households didn't have latrine and they just go

in the forest. The other few households are using simple pit latrine at 3.6% and only one household is using fly proof latrine.

CHAPTER V
CONSLUSION

5.1 Findings

Food should be considered in terms of the variety needed to support the dietary and nutritional needs of people. Ensuring food security is a high priority for the nation and amongst the most important issues addressed in the national development plan. The food security status of any household or individual is typically determined by the interaction of a broad range of agro-environmental, socio-economic and biological factors. Food security is often further compromised by the poor utilization of food due to a lack of clean water, sanitation or health care, or unstable access to adequate food at all times due to sudden shocks such as economic, climatic or political crisis, or cyclical events such as seasonal food insecurity. Therefore, it is very important for all to have adequate access to and utilization of food that is safe, adequate and well-balanced on a long term basic in order to enhance the physical and mental development.

The study has assessed the food security situation of Chauk Township based on the different aspects of issue.

(1) Household Vulnerability and Welfare

Most of the households have two persons of income earners and most of their monthly income having between 10,000 kyats and 100,000 kyats which is very low income for the average household size with 6 family members. The households' income mainly come from casual labor with non-agricultural at 44.8% while 17.3% of the household's income comes from crop sales and followed by 13.5% of household's income come from working in abroad and in within local, Myanmar. But, their monthly expenditure has between 100,001 kyats and 200,000 kyats which is indicated that household expenditure is higher than household income when compare to the household focus their expenses on mainly food security which is basis need for

survival. In terms of ownership of productive and household assets which reflects economic conditions of the households, 81.2% of the households owned agriculture tools which are important for the households using in their lands in cultivation times which is their main sources of income and most of the households owned at least four assets.

(2) Food Availability, Accessibility and Utilization

(a) Food Availability

Although agriculture is an important factor contribution to improve food security of the households, 56.4% of households didn't have access to agricultural land. Among the households who access to agricultural lands, 81% of the household's access land from one to five acres and the types of land they belong to is "Ya" cultivation. The major crops that the households cultivated are different kind of beans including ground nut, pigeon pea, green beans and most of the households cultivated only one crop in generally. 93% households suffered from agricultural constraints and limitation factors that hampering the productivity. Among them, the most typical constraint was loss of crops due to plant diseases at 74%. And 76.8% of households owned at least one kind of livestock. Among them, the most common livestock owned by 54.4% of the households are cattle which are important for the households using for farming activities while 48.4% of households owned chicken which is used for the household's consumption and selling. During the time of survey, 13.2% of the households didn't last any food stored. Among the households who last for food, rice is the main at 74.4% and most of the households last for one month. In looking at the food availability at community level, domestic production is important but over half of the surveyed households do not access to agricultural land and even those who access to land still suffered from agricultural constraints resulted low productivity due to plant diseases.

(b) Food Accessibility

Household's food consumption is directly related to the food availability and accessible which ensured the households' nutrient intake. The findings obviously stated that rice, vegetable and oil are the most items consumed by the households regularly. It is also revealed that 74% of households were found with acceptable consumption and also pointed out that the food sources are come from the market

while very few of household's access from their own production. The finding can be concluded that the food security situation of the sampled households is high because the study was conducted during the cultivation season that the households can have job opportunity and having more income so this can be assumed that they can access food either from their domestic production or afford to buy food from the market during that time.

(c) Food Utilization

In consideration of utilize of food effectively, food safety is also important. The surveyed result showed most of the households at 98.8% stored food safely in generally and 100% of households made sure of they used to clean the food when cooking which is good for the households that food is prepared in sanitary fashion and ensure protection from parasitic infections and food borne illness. In terms of eating instant food and food that is made by chemical and dye, about one third of households used to eat instant food (21.6%) and chemical and dye food (25.2%) which are mostly reported on instant noddle, salad noddle and fish cans, juice made with dye, ice lolly and A Chin Paung.

(d) Food Stability

The dimension of "stability" is crosscutting and taking into consideration throughout the other three dimensions. When assessing across the three dimensions based on the household surveyed results, the households had difficulties on food availability due to over half of them have no access to land and household's monthly income is very low and less of purchasing power. On the other hand, the households mostly accessed food from the market for consumption which is also need to consider of complement of market demand and price fluctuation. Therefore, it is still not ensured that the households are food secure all the time since stability is the condition in which the whole system is stable.

(3) Shocks and Difficulties

The most common obstacle to food security in the survey villages is chronically receiving less rainfall compare to others parts of Myanmar resulting the areas are drought and suffering from long periods of lean season. The survey result stated that 76% of households had 5 months (February to June) of lean season

throughout the year which is long period for the household to cope with food shortage and finance difficulties. In time of lack of job opportunity and having food shortage problem, 86.8% of the households are being in debt with high interests and they spent it mostly on food at 93.5%.

(4) Water, Sanitation and Hygiene

In order to promote effective food utilization and a sanitary living environment, appropriate water treatment is important. In terms of access to water sources by the surveyed households, 100% of the households' access water from different sources such as tube well (81.2%), pond (52%), river and spring (3.2%) and rain water (0.8%) which also means a household may be able to access more than water source. it is positively reported that most households treat their drinking water by using a filter at 98.4% while 0.8% of households are boiling their water before consumption. 100% of households have practice of washing hand before having meal and 98.4% of households used soap when washing their hand. The households survey stated that 79.6% of households had an awareness on 4 cleans and 90% out of them reported that they know all type 4 cleans. The surveyed findings revealed that 24.8% of households do not use proper latrine and they just go in the forest.

(5) Underlying Causes of Food Insecurity

All the following main underlying factors contributed to either insufficient the household's food availability or insufficient access to food by households and individuals.

1. The key shocks that most affect households to food security are climate change, plant diseases, and loss of access to land. Such variability and extremes are negatively affecting agricultural productivity of the households.
2. Highly indebted households will have difficulties for leaving from the debt-cycle; farming households may face difficulties accessing the required agricultural inputs hindering their ability to make full use of their agricultural potential.
3. Food availability can vary significantly from village to village and across seasons and food accessibility which is a function of purchasing power is a major contributory factor to food insecurity. The seasonality of agricultural employment limits annual household income, and appears to derive consumer

indebtedness to buy food. The strong seasonality of agricultural employment, very low wage rates for that agricultural employment, and seasonal underemployment severely limits monthly incomes of landless households and encountered seasonal food shortage. According to the survey result, the finding pointed out that debt-financing of food purchases is more common during the lean season since most of the households had experiences of long periods lean season starting from February and May every year leading them to lack of job opportunity and food shortage.

4. Over half of the surveyed households are landless and they are the most vulnerable to wage and price shocks since they depend primarily on farm labor as their primary source of income and they have to depend entirely on casual labor to earn the income necessary to access food from market purchases.
5. Food poverty is the point at which all household income is spent on food to meet minimum caloric intake requirements. The surveyed result showed that nearly 50% of the households' income is very low and they are particularly food insecure because any increase in expenditure will negatively impact their access to food. Furthermore, they cannot save any money to invest in productive and household assets to improve their situation.

5.2 Recommendations

1. The government, development partners and humanitarian actors should work closely together to ensure that agricultural and nutrition interventions are designed to provide the farmers on agricultural techniques and crop choice which will maximize both yields and profits in such areas of suffering dry spells and drought.
2. There is need to increase resilience of household's agricultural livelihoods, food systems and nutrition through climate resilience strategies, programmes and investments that address the availability of food in the community and the whole system is stable. This will also address not only the direct impacts but also the underlying vulnerabilities, which in most cases are aggravated by the changing nature of climate variability and extremes.
3. Food access can be attained by providing and expanding livelihood opportunities and increasing incomes of vulnerable households through development of micro finance institutions with low interests to reduce the households from indebtedness and being in debt cycle and sustainable income generation activities. In times of lack of job opportunity, conditional cash transfer activities should be carried out to create job opportunity and reduce unemployment of the households.
4. Food utilization in Myanmar is further hampered by a poor health environment and inadequate care practices related to hygiene and sanitation. In order to promote effective food utilization and a sanitary living environment, municipal governments should find practical solutions to provide sufficient public infrastructure, particularly for water provision and waste management. Then, programs that take a holistic view of food systems and food utilization should be promoted. For example, jointly running nutrition sensitive farmer field schools and a maternal and child health package of trainings should be generated positive synergies and address food and nutrition security across the whole food system.
5. Food security and nutrition objectives have to be mainstreamed in national development policies and plans which consequently resulted in limited investments made for nutrition and related actions and having framework or law that specifically addresses food security for Myanmar and focusing on strengthening of local food production systems.

6. Moreover, policies that encourage a more even distribution of resources, and strategic government and donor investment in physical, financial, and especially human capital, hold promise to improve food security not only for the households in Chauk Township but also for millions of Myanmar's most vulnerable households. Without these investments, it will hard to meet its Sustainable Development Goals and the majority of its population – the poor who live and work in rural areas– will continue to face wide spread food insecurity.

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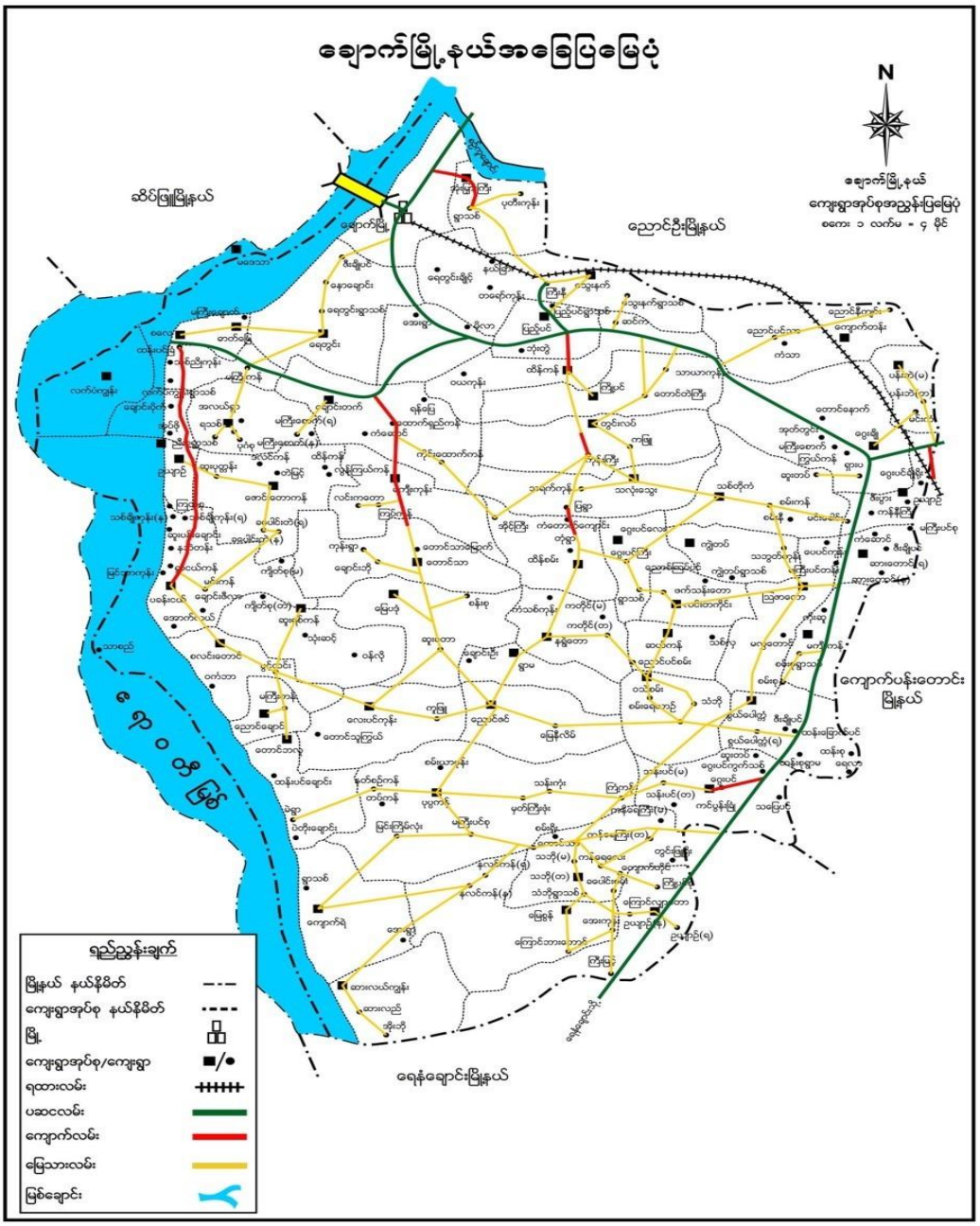
APPENDIX – A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ကျောက်ပန်းတောင်း
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ရည်ညွှန်းချက်
မြို့နယ် နယ်နိမိတ်
ကျေးရွာအုပ်စု နယ်နိမိတ်
မြို့
ကျေးရွာအုပ်စု/ကျေးရွာ
ရထားလမ်း
ပဆင်လမ်း
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မြေသားလမ်း
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APPENDIX – B

Household Food Security Assessment Survey

Good Morning/Good Afternoon.

- My Name is _____. I would like to kindly invite your household to participate in the survey that is looking at food security situation of households in the village.
- The purpose of this survey is to learn the household's food security situation and to do a Master Thesis Paper based on the collected information.
- The information you give will be confidential – and will only be used to prepare a report of general findings – but will not include any specific names.
- Could you please spare some time (around (45) minutes) for the interview?

1. Sample Identification

This section must be completed for each household/respondent visited**.**

101	Date of Interview	
102	Village Name	
		Name
103	Interviewer	
104	Interviewee	

ID

Rule: Fill 99 for unrelated or Inapplicable Questions.

2. Household Characteristics

201	Gender of respondent	1) Male 2) Female						
202	Age of the respondent							
203	Is the respondent household head?	0) No 1) Yes						
204	Respondent relationship to head of household?	1) Household Head 2) Spouse 3) Child 4) Father/Mother 5) Bother/Sister 6) Relative 77)Others_____						
205	Family members in the household?	0-14 years		15-63 years		>64 years		Total
		M	F	M	F	M	F	
206	Is the household permanent resident in this village?	1) Permanent 2) Temporary 3) Migrate 77)Others_____						

3. Household's Vulnerability and Welfare

301	How many income earners do you have in the household?		
302	How much of average monthly income of the household?		
303	During the past month, what was your household's primary source of income? ***(Choose all which is applicable)***	1) No income 2) Crop sales 3) Casual labor – Agri labor 4) Casual labor – Non - agri labor 5)Livestock sales 6) Own business 7) Selling different things 8) Formal salary/Pension 9) Vegetable sales 10) Assistance from relatives 11) Brokerage 12) Income from local/international 77) Other_____	1) ___ 2) ___ 3) ___
304	How much of average monthly expenses of the household?		
305	During the past month, what was your household's main expense? ***(Choose all which is applicable)***	1) Staple food 2) Non staple food 3) Household goods 4) Education 5) Health 6) Social affairs 7) Travel 8) Agricultural inputs 77) Other_____	1) __ 2) __ 3) __
306	How many productive and household assets does your household own? **Answer all!**	0) Nothing 1) Farming machines 2) Tractors 3) Agricultural tools 4) Generator 5) Radio 6) TV 7) Car 8) Motor Cycle 9) Bicycle 10) Telephone 11) Sewing machine 12) Solar with battery 13) Electricity 14) TV Player 77) Others_____	0) ---- 1) ---- 2) ---- 3) ---- 4) ---- 5) ---- 6) ---- 7) ---- 8) ---- 9) ---- 10) -- 11) -- 12) -- 13) -- 14) -- 77) --

4. Household's Food Availability

401	Do you have own land or have access to land for farming?	0) No 1) Yes	
402	Types of land do your household belong to?	1) "Leh" Land 2) "Ya" Land 3) Orchard 77) _____	
403	How many acres of land do your household have?		

404	What kind of crops planted at your land? ***(Choose all which is applicable)***	1) Cotton 6) Onion 2) Maize 7) Garlic 3) Millet 8) Tomato 4)Sesame 9) Egg plant 5) Potato 10) Chili 6) Beans 11) Roselle 77) Others_____	1) ___ 2) ___ 3) ___
405	Is there any agricultural related constraints?	0) No 1) Yes	
406	What kind of agricultural constraints do you face? ***(Choose all which is applicable)***	1) Unable to borrow land 2) High cost of labors 3) Dry spells and Drought 4) Inability to afford agri inputs 5) Plant diseases 6) Climate change 77) Others _____	1) ___ 2) ___ 3) ___
407	Is there livestock in your household?	0) No 1) Yes	

408	How many livestock does your household own? ***(Answer all)***	Cattle	Goat	Sheep	Total	
		Chicken	Pig	Duck		

407	How much commodities do you have in your house right now? 0) Nothing 2) 2 months 1) 1 month 3) ≥ 3 months	Rice	Pulse	Potato	Oil	Chili	Garlic	Onion

5. Food utilization and Accessibility

501-503 Food Consumption Score			
Food Items		Over the last 7 days, how many days did you consume the following foods? (enter 0-7)	What was the main source of the food in the past 7 days? (Use key below)
501	Maize , maize porridge, rice, sorghum, millet pasta, bread and other cereals		
502	Cassava, potatoes and sweet potatoes, other tubers, plantains		
503	Beans. Peas, groundnuts and cashew nuts		
504	Vegetables, leaves		

505	Beef, goat, poultry, pork, eggs and fish		
506	Milk yogurt and other diary		
507	Sugar and sugar products, honey		
508	Oils, fats and butter		
KEY: Main Source of Food		1) Own production 2) Work for food 3) Gifts from relatives 4) Market/shop purchase 5) Borrowing/debts	6) Aid program 7) Hunting 8) Fishing 9) Exchange items for food 10) Others ----------

6. Shocks and Difficulties

601	In which months do the household face lack of job opportunity and have difficulties? (To mention in month. E.g. from February to June)		
602	Did your household borrow money from others in time of lack of job opportunity and food shortage?	0) No 1) Yes	
603	If Yes, what was the main utilization of the money borrowed?	1) Food 4) Agricultural inputs 2) Health 5) Livestock 3) Education 6) Social Affairs 77) Others _____	1) ___ 2) ___ 3) ___
604	Is there any difficulties did your household faced in the last three months?	0) No 1) Yes	
605	If Yes, what are they? ***(Choose all which is applicable)***	1) Lack of job opportunity and food shortage 2) Sickness 3) Need money for Education 4) Unable to pay for debt 5) Low productivity 6) Natural Disaster 77) Others _____	1) ___ 2) ___ 3) ___

7. Copying Strategies

During the past 30 days, how frequently did your household use the following strategies in order to access food?

Food Items		Never	Seldom (1 day a week)	Once in a while (1-2 days a week)	Pretty Often (3-6 days a week)	Almost Everyday	Put the number (1-5)
701	Limit portion sizes at meal times?	1	2	3	4	5	
702	Reduce the number of meals per day	1	2	3	4	5	
703	Skip entire days without eating?	1	2	3	4	5	

704	Borrow food or rely on help from a friend or relative?	1	2	3	4	5	
705	Rely on less expensive or less preferred food?	1	2	3	4	5	
706	Purchase food on credit/ take a loan to buy food?	1	2	3	4	5	
707	Gather usual types/ amounts of wild food or hunt?	1	2	3	4	5	
708	Harvest immature crops?	1	2	3	4	5	
709	Send household members elsewhere?	1	2	3	4	5	
710	Send household members to beg?	1	2	3	4	5	
711	Restrict consumption by adults so children can eat more?	1	2	3	4	5	
712	Rely on casual labor for food?	1	2	3	4	5	

8. Food safety and Utilization

801	Do your household store food safely?	0) No 1) Yes	
802	Do your household clean the food before cooking?	0) No 1) Yes	
803	Do your household used to eat instant food?	0) No 1) Yes	
804	If Yes, what are the food the household eat? **To answer all kind of food**		
805	Do your household used to eat food that is made by chemical and dye?	1) No 1) Yes	
806	If Yes, what are the food the household eat? **To answer all kind of food**		

9.Water, Sanitation and Hygiene

901	From where the water sources are available? ***(Choose all which is applicable)***	1) Dug well 2) Rain Water 3) River and Spring 4) Pond 5) Tube well 77) Others_____	1) ____ 2) ____ 3) ____
902	How does the household treat to have clean water?	1) Do nothing 2) Boil 3) Add chlorine 4) Filter 5) Make it settle 77) Others _____	

903	Please describe of hand washing behavior? 1) Before meal 2) After meal 3) After using latrine 4) After handling rubbishes 5) After handling animals 6) After working	 1) Always 2) Sometimes 3) Never	 1) ____ 2) ____ 3) ____ 4) ____ 5) ____ 6) ____
904	Do you use soap whenever washing your hand?	0) No 1) Yes	
905	Have you heard about 4 cleans before?	0) No 1) Yes	
906	If Yes, what are the 4 cleans? ***(Choose all which is applicable)***	1) Food clean 2) Water clean 3) Hand clean 4) Toilet clean	1) ____ 2) ____ 3) ____ 4) ____
907	What kind of latrine do your household uses?	1) Fly proof latrine 2) Water - closet 3) Simple pit latrine 4) No latrine 77) Others _____	

Thank you!

APPENDIX - C

FOCUS GROUP DISCUSSION

Village Name :

Village Tract :

Date :

Attendance : Male ( ), Female ( ), Total ( )

Household :

Population : Male ( ), Female ( ), Total ( )

Household Vulnerable Mapping - Level 1 ( ) HHs

- Level 2 ( ) HHs
- Level 3 ( ) HHs
- Level 4 ( ) HHs

1) I would like to know livelihood activities of the households in the village.

2) What are the status of food security situation in the area, improving, worsening and why?

3) Please describe the difficulties and obstacles of the households encountered and how do households cope to overcome it?

4) Please describe the situation of the markets functioning in the village and grocery shops that can accessible by the households.

5) Please describe the situation of food availability and accessibility in the village and can the market supply the demand of the households.

6) Is there school in the village and how many grade do you have. If no, where the children have to go and how long do they have to get to school.

7) Is there rural clinic in the village? If not, how the households access the health service and how long do they have to get there?

8) Do the village used to organize the session of promoting nutrition education and personal hygiene.

9) Did the village accessed the assistance of Non-Government Organization? If yes, what kinds of assistance do you receive and how it was impacted to the village?

10) If the village has food needs, in what ways you will overcome of it. how do you think?

11) What kind of activities will be needed for the development of the village? Please describe the village plan on moving forward to achieve it?

12) Any suggestion is welcome.