Republic of Namibia

Namibia Strategic Review of Food and Nutrition Security

DRAFT REPORT

National Planning Commission

Office of the Prime Minister

Ministry of Poverty Eradication and Social Welfare

WFP
wfp.org
World Food Programme

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FOREWORD *(To be drafted)*

ABBREVIATIONS & ACRONYMS

AMTA	Agro-Marketing Trade Agency
CAADP	Comprehensive Agriculture Development Programme
CSA	Climate Smart Agriculture
DDRM	Directorate: Disaster Risk Management
DRM	Disaster Risk Management
EFSA	Emergency Food Security Assessment
EU	European Union
FAO	Food and Agricultural Organisation
FNSM	Food and Nutrition Security Monitoring
FNSMP	Food and Nutrition Security Monitoring Plan
FNSMS	Food and Nutrition Security Monitoring System
GRN	Government of the Republic of Namibia
HEWS	Health Extension Workers
HIV	Human Immunodeficiency Virus
IYCF	Infant and Young Child Feeding
MAWF	Ministry of Agriculture, Water and Forestry
MeatCo	Meat Corporation of Namibia
MTC	Mobile Tele-Communication
MET	Ministry of Environment and Tourism
MoHSS	Ministry of Health and Social Services
MoU	Memorandum of Understanding
NACS	Namibia Assessment Counselling and Support
NAFIN	Namibia Alliance for Improve Nutrition
NamVAC	Namibian Vulnerability Assessment Committee
NCA	Northern Communal Areas
NCCSAP	National Climate Change Strategy and Action Plan
NDC	Namibia Development Corporation
NDHS	Namibia Demographic Health Survey
NDP4	Namibia Development Plan 4
NGOs	Non-Governmental Organizations
NHIES	Namibia Household Income & Economy Survey
NPC	National Planning Commission
NSA	Namibia Statistics Agency
NSFP	Namibia School Feeding Programme
NTF	Namibia Trade Forum
OFDA	Office of U.S. Foreign Disaster Assistance
OPM	Office of the Prime Minister
PDL	Poverty Datum Line
RCs	Regional Councils
SADC	Southern
SDG	Sustainable Development Goals
SME	Small and Medium-sized Enterprises Bank
SSMS	Small Stock Marketing Scheme
UN	United Nations
USAID	United States Agency for International Development
VAC	Vulnerability Assessment Committee
VAM	Vulnerability Analysis and Mapping

EXECUTIVE SUMMARY

Introduction

The Zero Hunger Challenge is an international multi-level and multi-sectoral call for action made by the United Nations Secretary-General in 2012 towards a vision of a world without hunger. It brings together different stakeholders at country level to contribute to eliminating food and nutrition insecurity. Achieving Zero Hunger is a priority of the government of Namibia and, as a result, considerable resources are being devoted towards its attainment. It lies at the heart of the Food and Nutrition Strategic Review, which seeks to identify opportunities to strengthen current and future programmes and strategies.

The specific objectives of the Food and Nutrition Strategic Review are:

1. To establish a comprehensive analysis of the food security and nutrition within the pillars of the Zero Hunger Challenge and targets of the Sustainable Development Goal Two (SDG2);
2. To determine the progress that policies and programmes aimed at improving food security and nutrition have made, and identify gaps in the response; and
3. To discuss and prioritise actions that will be required to fill response gaps and accelerate progress toward zero hunger, and how these actions may be implemented.

The Hunger Challenge in Namibia

Food and nutrition security is elusive for the majority of the rural population and a significant proportion of those living in urban areas. In 2013, the Emergency Food Security Assessment found 16% of the population to be severely food insecure while 22% of the population were moderately food insecure; the 2014 Global Hunger Index, ranks Namibia 51st out of 120 countries assessed, with an index score of 18.4, indicating a 'serious food problem'.

Extreme variability in levels of food production is significant. Namibia's climate and largely semi-arid and arid condition is expected to worsen the variability and intensify the impacts on the economy and general livelihoods. The commercial and communal production systems are under increased threat from climate change although the smallholder and subsistence-farming sub-sector, located particularly in the northern regions, are far more vulnerable. Climate change provides a particular threat in reducing the amount and reliability of rainfall and the increase in evaporation due to rises in temperature. This will decrease the availability of already scarce water resources.

Smallholder and subsistence farmers, largely in the northern communal areas, struggle with access to inputs including water and low producer prices. Low levels of production are due to the limits of the total land area (34%) in Namibia that is able to support economic crop and livestock production. Low levels of productivity are partly due to Namibian smallholder farmers not experiencing sustained technological progress. Opportunities exist with new technologies, particularly those that focus on drought resistance, and expansion of areas under irrigation. The productivity of the livestock sector is constrained by high frequency of droughts, as well as exclusion from the lucrative markets due to prevalence of foot and mouth disease. Poor grazing is a major concern in the northern regions.

Namibia's heavy reliance on food imports also makes it susceptible to high food prices, which increases pressure on vulnerable households' food security. Low-income earners struggle to meet

their minimum daily requirements for food intake accessing poor quality foods with low micronutrient quality. This implies that poverty is a major factor limiting access to food. The poor are primarily women, subsistence and smallholder farmers, pensioners located largely in rural areas and people living in urban informal areas. Although Namibia does not produce enough food for its own consumption needs, it is estimated that about 24% of all food calories grown per year are lost or wasted from the farm. The issue of food loss and food waste across the vale chain, from producer to consumer, provides an immense opportunity to reduce some of the food needs in the country.

The high child stunting rates of 24% is an indication of inadequate nutrition over long periods of time exacerbated by poor access to health and care. Regions with the highest stunting rates generally tend to have poor socio-economic conditions. The prevalence of diarrhoea, HIV and TB undermine the immune system. 46% of the population do not have access to improved sanitation and practice open defecation, factors which strongly impact nutrition status. Gender issues are clearly of critical importance for addressing stunting with insufficient care and support for mothers and adolescents (10-19 years) needing to be acknowledged as a distinct category instead of being subsumed within broader maternal programmes.

Addressing these factors requires different stakeholders to work together to deliver on a common vision. This vision is captured under the Zero Hunger Challenge: zero stunted children less than two years of age; 100% access to adequate food exists all year round; all food systems are sustainable; 100% increase in smallholder productivity and income; and zero loss or waste of food. Having a vision underpinning a sustainable food system implies smarter approaches, policies and investments. This encompasses the environment, people, institutions and processes by which agricultural products are produced, processed and brought to consumers in a sustainable manner. Different actors and sectors need to act in a joined-up manner, each one dealing with different aspects of the problem, but collectively acting in a coherent manner.

Building a Strong Coordination Mechanism

A genuine, coordinated attempt to align policy to effectively address food and nutrition security demands deliberate and methodical action across different domains of policy. Such action would involve systematically addressing the immediate and underlying determinants of food and nutrition security, the health environment, care practices, diet, and health status.

The success of a national strategy relates directly to a suite of adequate and clear policies and related programmes that are effectively aligned. This implies that the public sector, which is comprised of a mix of institutions with varying structures, mandates, and accountabilities, has to agree and target a number of interventions that collectively will address the issue.

This will depend on clear relationships based upon a growing recognition of the importance of food and nutrition for people's development, which in turn will bolster the political commitment required to address the issues. An inclusive coordination mechanism supported by a strong legislative framework would, in turn, underpin the institutional arrangements required to ensure that the goals are taken on board by various sectors to ensure that implementation occurs.

It is imperative that an inclusive coordination mechanism consisting of a wide range of sectors and stakeholders, inside and outside of the state, is established. This should be empowered to both insure that the programmes of individual departments align with the strategic intent outlined in this strategy and to improve the levels of coordination and collaboration between departments within the province and with the other spheres of government.

Such a structure may fall within the Office of the Prime Minister based on its over-arching and convening position. Such a position would confer greater power to enable it convene a multi-stakeholder platform, ensure adequate coordination to address food and nutrition insecurity across different scales, and mobilise resources from different sectors. Once the coordinating structure is established, other sectors will have to be drawn in to develop a broad strategy that encompasses different strategic options that can be implemented at regional level.

All this requires enhanced institutional capacity that can contribute to realising higher degrees of coherence and coordination. Building capacity both within the coordinating mechanism and within other sectors will become a priority. The facilitation of multi-sectoral action requires strengthening not only of technical but also strategic and management capacities, bolstering individual and institutional capacity to broker agreements, resolve conflicts, build relationships, respond to recurring challenges, and undertake strategic communications within and across sectors.

Finally, the establishment of an effective food and nutrition security governance system requires a systematic approach to the collection and assessment of data to understand the way in which the food system is changing and affecting the lives of the residents of Namibia, particularly the poor. The country needs to build strategic partnerships with key stakeholders to ensure that the data that is already being collected is readily accessible to policy and decision-makers and, where gaps exist, identify them and possible partners that have a mutual interest in addressing them. This would essentially build on the establishment of the Namibia Food and Nutrition Security Monitoring System that is forging a harmonised system for holistic monitoring and evaluation.

Roadmap Ahead

Addressing food and nutrition insecurity hunger in Namibia by 2030 is attainable if sufficient resources are allocated and appropriate policies and investments are pursued. Key to this is establishing and building the appropriate institutional arrangements that will enable the effective governance of the food system and the efficient allocation of resources across sectors.

Convening a multi-sectoral and multi-stakeholder forum to establish a coordinating mechanism and to agree on the strategic options for Zero Hunger is the first step.

Looking beyond the establishment of such an entity, appropriate strategies and policies will need to refocus on Namibia's food and nutrition challenges identified in this Strategic Review. To achieve this, a high-level process to review key sectoral programmes and to ensure their focus on a shared vision should be convened by the Office of the Prime Minister in conjunction with the Coordinating Mechanism.

This process should identify and design alternative policy options (or policy packages) to address sector-specific or economy-wide issues and consider whether appropriate institutional arrangements for policy implementation are in place. This process should highlight opportunities for mainstreaming food and nutrition security.

A related activity is to assess the capacities required (individual, organisational and systemic) and finance available to adopt and support different policy options. This could be supported through applying a food and nutrition security lens to capacity with regard to individuals (analytical tools, skills), organisations (staff, infrastructure), and wider systems (including cross-sectoral mechanisms and platforms for engagement).

Decision makers, on the basis of this information will choose the policy package, which “optimise” the net expected impacts of a given sector/domain.

A number of specific sector recommendations have been identified in the review process although it is recognised that an established coordinating structure will likely convene a process to develop a full Zero Hunger Strategy and thereby select priority interventions.

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CHAPTER 1: INTRODUCTION

1. Background

Achieving Zero Hunger is a priority for the government of Namibia. As a result considerable resources and efforts are being devoted towards its attainment. It lies at the heart of the Food and Nutrition Strategic Review, which seeks to identify opportunities to strengthen current and future programmes and strategies towards a common goal of eliminating hunger and malnutrition.

The Zero Hunger Challenge is an international multi-level and multi-sectoral call for action made by the Secretary-General of the United Nations towards a vision of a world without hunger. It brings together different stakeholders at country level to contribute to eliminating food and nutrition insecurity. The Zero Hunger Challenge[1] is structured upon the following five pillars:

- **Pillar I** 100% equitable access to adequate food all-year round
- **Pillar II** Zero stunted children less than two years old
- **Pillar III** All food systems are sustainable
- **Pillar IV** 100% increase in smallholder productivity and incomes
- **Pillar V** Zero loss or waste of food

Taken together, these five elements will end hunger, eliminate the worst forms of malnutrition and build inclusive and sustainable food systems. Zero Hunger lies at the heart of the 2030 sustainable development agenda, which the Namibian government has readily embraced. Sustainable Development Goal 2 (SDG2) calls on Member States to "End hunger, achieve food security and improve nutrition and promote sustainable agriculture"[2]. Four of the five targets under SDG2 are directly derived from the Zero Hunger Challenge including access to food, malnutrition, agricultural productivity and resilient food systems. The fifth is folded into its sub objectives. By implication SDG2 has incorporated the challenges of ensuring more equitable development and environmental sustainability, especially the key goal of curbing the dangers of human-induced climate change. Together with target 2.5 on biodiversity, target 12.3 on food loss and waste, and the outcome of the Addis Conference on Financing for Development[3], these targets represent the vision and blueprint for achieving zero hunger at the global level.

2. The Strategic Review

The Strategic Review is explicitly intended to provide direction to the achievement of Zero Hunger and thereby SDG2 in Namibia. It is informed by key national policy and strategic frameworks including the Food Security and Nutrition Policy and an Action Plan developed in 1995, which is currently being updated. These seek to increase food and nutrition status by improving the quantity and quality of food and ensuring adequate diets; empowering households to use their resources to improve their well-being; and ensuring adequate levels of social and supporting services.

[1] UN Zero Hunger Challenge. http://www.un.org/en/zerohunger/#&panel1-1 Retrieved on 12 January 2016
[2] http://www.un.org/sustainabledevelopment/sustainable-development-goals Visited 12 January 2016
[3] http://www.un.org/esa/ffd/ffd3 Visited 12 January 2016

The food security situation in Namibia is characterised by extreme variability in levels of food production. Namibia's climate and largely semi-arid and arid condition is expected to worsen the variability and intensify the impacts on the economy and general livelihoods. Namibia's heavy reliance on food imports also makes it susceptible to high food prices, which increases pressure on vulnerable households' food security. Socio-economic factors including population growth, poor access to sanitation, high prevalence of HIV, and gender inequalities exacerbate Namibia's vulnerability to food insecurity.

As a result of these and other issues identified in the strategy, food and nutrition security is elusive for the majority of the rural population and a significant proportion of those living in urban areas. In 2013, the Emergency Food Security Assessment found 47.5% of the rural population to be at risk of food insecurity[4]; the 2014 Global Hunger Index, ranks Namibia 51st out of 120 countries assessed, with an index score of 18.4, indicating a 'serious food problem'[5]. The latest data used to compile this index shows that in Namibia the proportion of undernourished in the population is 29.3% up from 25.2% in 2006, the prevalence of underweight in children under five years is 17.5%, and that the under-five mortality rate is 3.9% down from 6.7% in 2005. Low-income earners struggling to meet their minimum daily requirements for food intake underpin these important figures. The high child stunting rates of 24% is an indication of inadequate nutrition over long periods of time.

In response to this situation, the Food and Nutrition Strategic Review was established to achieve a number of objectives:

- To establish a comprehensive analysis of the food security and nutrition within the pillars of the Zero Hunger Challenge and targets of the Sustainable Development Goal Two (SDG2);
- To determine the progress that policies and programmes aimed at improving food security and nutrition have made, and identify gaps in the response; and
- To discuss and prioritise actions that will be required to fill response gaps and accelerate progress toward zero hunger, and how these actions may be implemented.

As stated, the findings and the recommendations of the Strategic Review are intended to inform Namibia's food security strategy and will contribute to national development planning, and the formulation and implementation of development partners' strategic plans in Namibia.

3. Conceptual framework of Food and Nutrition Security

The elimination of hunger and undernutrition globally by 2025 is a formidable but realistic goal given the successes of developing countries such as Brazil, China, and Thailand in reducing hunger. This vision guided the development of the Zero Hunger Challenge, which prioritises empowering women, family farming, and the sustainability and resilience of food systems. Put succinctly, the Zero Hunger Challenge means that there are zero stunted children less than two years old; 100% access to

[4] Namibian Vulnerability assessment Committee, Namibia Emergency Food Security Assessment 2013, https://www.humanitarianresponse.info/system/files/documents/files/RVAC-NAMIBIA-2013.pdf

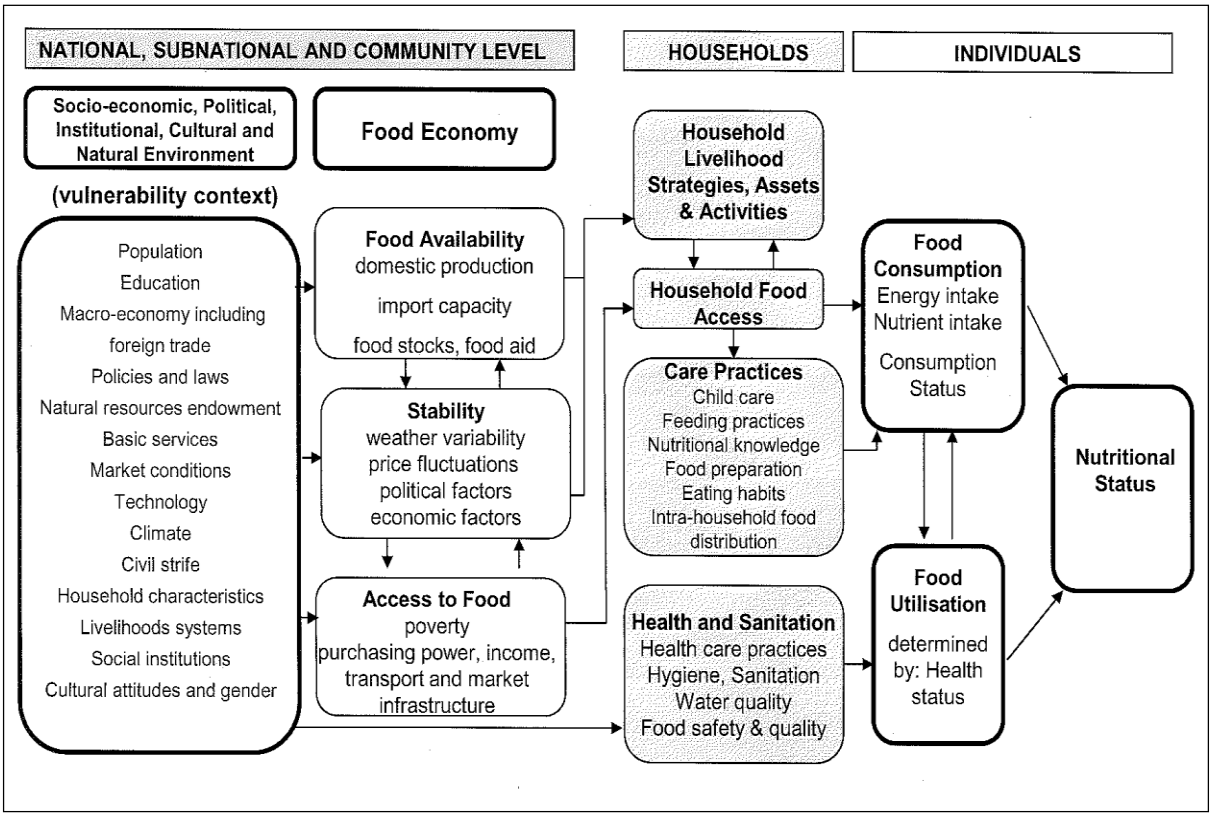
[5] K. von Grebmer, A. Saltzman, E. Birol, D. Wiesmann, N. Prasai, S. Yin, Y. Yohannes, P. Menon, J. Thompson, A. Sonntag. 2014. 2014 Global Hunger Index: The Challenge of Hidden Hunger. Bonn, Washington, D.C., and Dublin: Welthungerhilfe, International Food Policy Research Institute, and Concern Worldwide. http://dx.doi.org/10.2499/9780896299580

adequate food exists all year round; all food systems are sustainable; 100% increase in smallholder productivity and income; and zero loss or waste of food.

The guiding principles behind the development of a vision for Namibia's food and nutrition security strategy stem from the prevailing 1996 World Food Summit definition of food security: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". The strength of this definition is found in its four core pillars: food availability, food access, food use, and the stability of these conditions.

These complex dimensions require an approach to food and nutrition security that not only crosses sectors, economies and institutions, but also spans from individual and household to regional and global levels. This is directly aligned with the Zero Hunger Challenge and SDG2. Hunger, food insecurity and malnutrition are complex problems, which cannot be resolved by a single actor or sector. A variety of actions are required to deal with the immediate, underlying and structural causes of these problems. Different actors and sectors need to act in a joined-up manner, each one dealing with different aspects of the problem, but collectively acting in a coherent manner.

Figure 1.1: Food and Nutrition Security Conceptual Framework



Source: FAO, 2004

The framework presented in Figure 1.1, reading left to right, shows the linkages between the overall development context, the food economy, household-level strategies, assets and activities and individual measures of nutritional well-being.

Looking within the food economy, the availability of food relates to the physical presence of food. To achieve food security it is necessary that food is physically available in an area. Along with availability, it is necessary that food is accessible for all population groups, which depends on the household's ability to acquire food through various means, including own production, labour, transfers, or through the market (Sen 1982[6]). If food is physically available and accessible, how households and individuals utilise this food becomes key for food security. The way people utilise foods depends on factors such as economic status, cultural preferences, health status, water availability, environmental conditions, food processing and preservation, technology, maternal practices and food safety. Finally, the food security situation needs to be stable over time – even if food is available, accessible and appropriately utilised, conditions need to be consistent.

The term 'food security and nutrition' is now commonly used as a way to combine food security and nutrition security. In this strategic review, food and nutrition security is defined as the state "when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life" (CFS, 2012[7]). This definition best reflects the conceptual linkages between food security and nutrition security while also expressing a single integrated development goal that helps guide policy and programmes.

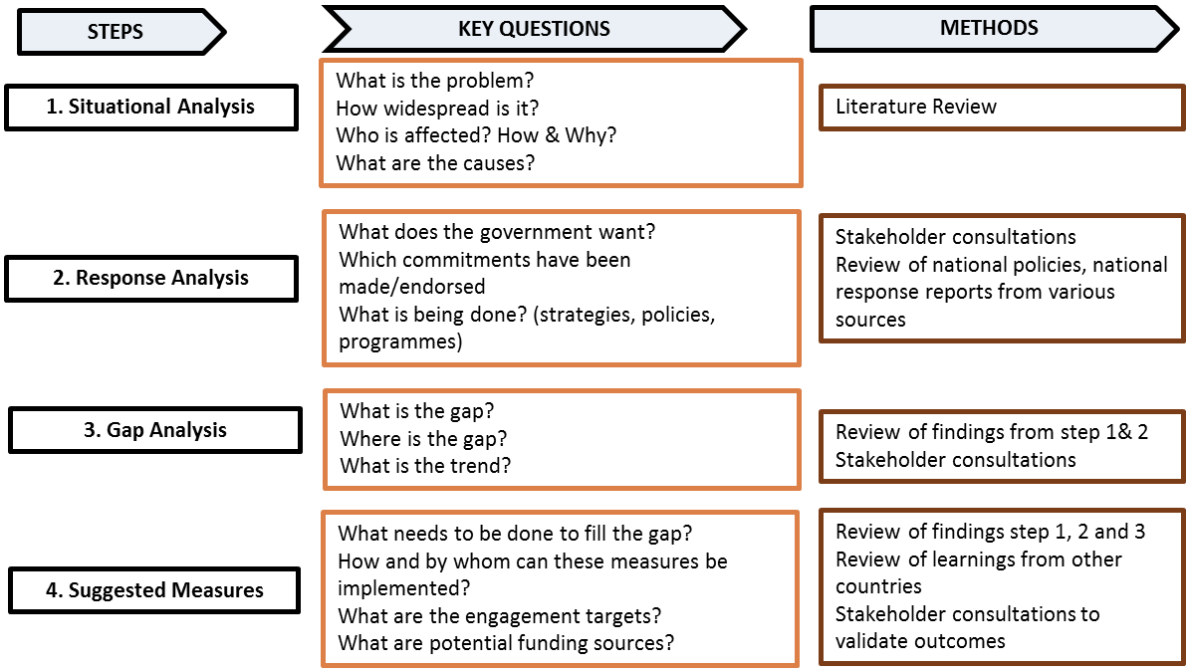
4. Strategic Review Process, Methodology and Structure

The National Planning Commission (NPC) of Namibia coordinated the review process in collaboration with the Office of the Prime Minister (OPM) and the World Food Programme (WFP), which provided financial support and technical assistance. The review process followed four consecutive and interrelated steps reflected in Figure 1.2. These included a detailed situational analysis conducted by consultants who explored the five dimensions of the Zero Hunger Challenge. This included an analysis of responses to this underlying situation, an identification of gaps and the suggestion of recommendations.

A mixed methods approach was adopted to ensure that a comprehensive review of literature was undertaken and complemented by wide-ranging consultation with stakeholders across the Namibian food system. A synthesis workshop was conducted with key stakeholders to validate the findings with a particular emphasis on the recommendations. These various components were drawn together into a synthesis document, which was distilled through various editions into the strategic review. As such the review is based on detailed and validated information processed to identify key strategic options.

[6] Sen, Amartya (1982). *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford New York: Clarendon Press Oxford University Press. ISBN 9780198284635.
[7] http://www.fao.org/docrep/meeting/026/MD776E.pdf Retrieved 12 January 2016

Figure 1.2: Strategic Review Process and Methodology



The Strategic Review consists of the following chapters:

Chapter 1 introduces the Zero Hunger Challenge and provides a background to the Review, states the objectives, outlines a conceptual framework, and delineates the process and methodology.

Chapter 2 presents the country context and situational analysis of food and nutrition security, relating it to the five pillars of the Zero Hunger Challenge in Namibia. This section provides a baseline for the uptake of the Zero Hunger Challenge by the country.

Chapter 3 provides an analysis of the national responses to food and nutrition security.

Chapter 4 identifies the strategic gaps in the country responses, suggests recommendations and indicates necessary institutional arrangements to co-design a road map for the way forward.

CHAPTER 2: THE ZERO HUNGER CHALLENGE IN NAMIBIA

This chapter presents a situational analysis of food and nutrition security in Namibia, as it relates to the context of the five pillars of the Zero Hunger Challenge. This provides a general baseline for the uptake of the Zero Hunger Challenge.

2.1 SITUATIONAL ANALYSIS

2.1.1 Introduction

Namibia is an upper-middle-income country with perennial food deficits, recurring droughts and floods and high rates of chronic malnutrition. Food insecurity is mainly linked to structural poverty compounded by recurrent natural disasters where cyclical drought and floods severely affect people's livelihoods. Namibia is one of the countries in the southern African region to have been hit hard by the "triple threat" of HIV, tuberculosis and malnutrition. The HIV prevalence rate of 13.3% is the sixth highest in the world.

Since gaining independence in 1990, Namibia has enjoyed relative stability with the economy growing at an average rate of 4.71% between 2000 and 2015. From 1990 to 2013 the economy grew from N$8.3 billion to N$126.6 billion. GDP growth is estimated at 6.2% in 2014, up from 5.1% in 2013. Agriculture remains central to people's livelihoods, accounting for 5.6% of the GDP and supporting 70% of the country's population. This growth, however, has not translated into reduced poverty rates. In 2015, the proportion of poor individuals stood at 26.9%.

Poverty is more widespread in rural areas than urban (27% and 10% respectively)[8]. The poor are primarily women, subsistence farmers and pensioners located largely in rural areas. Unemployment has remained high at 29.9% of the total labour force and tends to be concentrated among the youth (15-34 years), and women in particular[9]. The middle-income status and the steady economic growth have thus masked extreme poverty; with a Gini coefficient[10] of 0.594, Namibia is regarded as one of the countries with the most unequal income distribution in the world.

These important factors underpin the food security situation in Namibia, which is characterised by extreme variability in levels of food production, dependency on large volumes of food imports, disparity in household income levels, high levels of child undernutrition and climate variability. These align to the five pillars of the Zero Hunger Challenge.

2.1.2 Pillar One: 100% Access to Adequate Food All Year Round

Rural households are largely producer-consumers, meaning they can access food directly from their own farms. With the rural population constituting about 58% of the total population, the majority of the rural dwellers depend on access to land as a paramount factor in determining food production and subsequent access to food. In addition, they require that weather patterns and soil quality sustain their crops. This population participate in the food value chain at different levels. They can process agricultural products to access refined foods such as grains, meat, or oils, or source them from

[8] NSA 2012b: 156
[9] NSA 2015
[10] NHIES, 2009/2010

processors. Alternatively, households can buy food from distributors such as independent grocery shops and large supermarkets. The financial resources required for accessing the market are multi-factorial and consist of income from various sources, savings, and asset holdings.

In contrast in urban areas, there is very little own production[11], and some food insecure urban households rely on food transfers or remittances from the rural sector. The urban dwellers also remit money to their rural households, which are, among other uses, used to purchase food[12]. In other instances, households and individuals share and/or borrow from their neighbours, implying that social networks play a crucial role in access to food.

About 83% of the population rely on market purchases for food, and the food mainly comes from South Africa[13], which exposes local consumption to international price movements. In Windhoek, 66% of the households source some of their food from the informal markets[14], including from farmers' trading points. Pendleton et al., (2012) observed that there is stratification by type of housing units (informal and formal), economic activity, ethnic background, and gender, all of which have different impacts on households' ability to access food. In addition, it was observed that that the poorest households spend 57% of their annual income on food, while the richest households spend only 13.2%[15]. These figures indicate that poverty and income inequalities are key determinants of access to food.

There is greater food insecurity in the informal settlements around the country than in formal settlements and the situation is worse in urban areas. The high level of poverty among informal settlement households has resulted in over 70% of them being food insecure. This phenomenon is usually not discussed, and not much is known about its character and dynamics. For this reason, Pendleton et al., (2012) calls urban poverty the 'invisible crisis'.

The different ways of accessing food are dynamic throughout the year, which means the levels of food security and vulnerability change over time. For smallholder farmers, the lean period is usually a few months before harvesting. During this period, food prices in the local markets rise. After harvesting, households are usually more food secure although the quality of food remains a challenge. Another challenge is that those with surplus food who may want to sell in order to buy other food types (to improve their nutritional status) may be faced with low market prices because of over-supply.

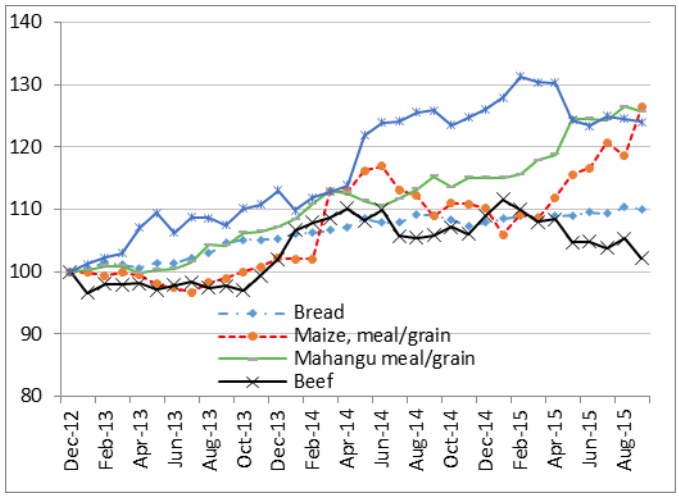
Central to the households' access to food is the availability of the food and the households' income, and therefore purchasing power. The main sources of income include: salaries and wages (51.6%); crop and animal subsistence farming (15.8%); old age pension (11.7%) and cash remittances (10.4%). Many households have multiple sources of income, and this increases their budgetary allocation to expenditures, including expenditure on food. The 2014 labour force survey put the level of unemployment at 28.1%. The unemployment rate varies across regions and between rural areas (30.2%) and urban areas (26.2%). Unemployment in the country is structural and is of a long-term

[11] (Pendleton et al., 2012)
[12] (Ashton et al., 2009)
[13] Emongor, 2008
[14] Pendleton et al, 2012
[15] NPC, 2008

nature. Of the people who are unemployed, 61.5% of them have been unemployed for a period longer than two years and more women than men experience long-term unemployment. Importantly the poverty datum line (PDL) has been increasing in line with the general price level in the economy while household earnings have not. From 2012 and 2014, a significant segment of the population faced reduced access to food because of incomes that fell below the PDL.

Figure 2.1 shows the upward trend in food prices illustrated by the prices of staple foods maize meal, *mahangu* (millet) and beef, together with bread and milk.

Figure 2.1: Price variations: five key food products, 2012 - 2015



Source: Produced using price data from the Namibia Statistics Agency

The graph shows that for four products, prices have been increasing over time. The overall effects of these price dynamics are reduced household purchasing power and reduced access to food.

It is also important to recognise that producer prices have an impact on access to food, as earned income is used to buy food products not produced. Lower producer prices have serious effects on such households' access to food. These variations can occur from livestock prices changing or maize price changing, or both. In the northern communal areas, falling livestock prices cause farmers to hold onto their animals. In other instances, the Meat Corporation of Namibia (MeatCo) imposes a quarantine period for cattle, which may lead to animals losing weight during that period. Prices may also be too low when they are released as a result of the conditions for delivery that reduce the value of the cattle[16]. Emongor (2008) argues that the stringent food quality and safety standards are a major constraint on small-scale beef producers and many households miss out on the benefits of the global supply chain that offers higher prices. The impact on household incomes eventually impact consumption patterns. As the dominant player in the market is MeatCo, many farmers argued for more competition in the market.

High levels of poverty are usually associated with high inequality, as resources get concentrated in the hands a few people. Income inequality in Namibia has been declining, but still remains high. As shown

[16] Schade et al., 2000

in table 2.1, households in richer quintiles have higher income and have greater access to food compared to those in lower quintiles.

Table 2.1: Inter-quintile percentage income differences

	1993/94	2003/04	2009/10
Poorest 20% - second poorest 20%	1.6	2.4	2.7
Second poorest 20% - middle 20%	2.4	3.0	2.8
Middle 20% - second richest 20%	6.1	7.0	7.1
Second richest 20% - richest 20%	67.2	53.6	39.2

Source: Author's calculations from the Fourth National Development Plan.

There is also growing inequality between adjacent quintile groups. The situation is worse between the bottom quintiles. At the top of the income distribution, the inequality between the richest and second richest quintiles has been decreasing over time.

NHIES 2009/10 data shows that the levels of poverty and inequality differ between male and female-headed households. There is greater inequality in male-headed households (61.9%) than in female-headed households (51%). On the other hand, headcount poverty is higher among female-headed households. Poverty is also higher among bigger households, especially those with children younger than six years. More than 49% of households with three or more children under six years fall below the poverty line. Extreme poverty was pegged at 15.8% in 2009/10, and it was highest among households whose heads were aged sixty years and above (23%). The combination of poverty and inequality results in a large part of the population not being able to access adequate amounts of food as required.

Equitable food access is dependent on the nature and structure of intra-household decision-making, as dictated by social and cultural norms. It is most likely that the head of household makes decisions, which household members abide by. In Namibia, 41% heads of household are women[17]. Female-headed households face significant challenges in both production and access to food, as they command only 29% of total income[18]. They tend to face challenges in accessing land, inputs and labour, and women as mothers and carers lose time in the labour market and end up with less income than men.

2.1.3 Pillar Two: Zero Stunted Children Less Than Two Years

Namibia is impacted by the double burden of undernutrition and overweight or obesity with the consequences transmitted across generations via maternal-child linkages. The nutritional status of children under five has improved over the last six years. The proportion of children, who are stunted,

[17] UNICEF, 2015
[18] NSA, 2010

wasted, and underweight decreased from 29% to 24%, 8 % to 6% and 17% to 13% respectively between the 2006-07 NDHS and 2013 NDHS surveys[19]. While such progress is commendable, the levels of stunting remain unacceptable. Stunting (height-for-age) is a reflection of chronic malnutrition as a result of failure to receive adequate nutrition over a relatively long period, both in terms of macronutrients and micronutrients, and recurrent or chronic illness. The percentage of children who are stunted initially increases with age, from 1% among children aged 6-8 months to 35% among those aged 24-35 months, before declining steadily to reach 21% among children aged 48-59 months[20].

There are significant variances when stunting is compared against geographical location; poverty and household wealth; the mother's birth interval, body mass index (BMI) and level of education. Children in rural areas are more likely than those in urban areas to be stunted (28% and 17%, respectively). Geographically, five regions have the highest proportion of stunted children (with rates above the national average of 24%): Ohangwena (37 %), Hardap (29%), Karas and Omaheke (27% each) and Oshikoto (26%). These regions generally tend to have poor socio-economic conditions characterised by high poverty levels and high unemployment rates. Evidence generally shows that children living in households in the poorest wealth quintile have the highest prevalence of stunting (31%)[21].

The mother's BMI has an inverse relationship with stunting levels. NDHS (2013) found that 28% of children of mothers who have a BMI less than 18.5 are stunted, as compared with 15% of children whose mothers are overweight or obese with a BMI of 25 or above. Another important factor is the mother's level of education. Children whose mothers have more than a secondary education are least likely to be stunted (9%), whereas children whose mothers have no education are most likely to be stunted (34%). The spacing of children's births also influences stunting. If a pregnancy occurs too soon after the previous birth, the mother may have insufficient time to recover her nutritional status or it may mean premature weaning of breastfeeding and inadequate alternative feeding practices of the sibling. As such, children whose size at birth was reported as very small by their mothers are most likely to be stunted (40%).

In terms of wasting, children age 9-11 months (19%), male children (9%), those with a preceding birth interval of less than 24 months (11%), those with a very small size at birth (17%), and those living in Omaheke (10%) have the highest levels of wasting. Similarly, the prevalence of wasting decreases with increasing mother's education and the data further show that children living in the poorest households have the highest prevalence of wasting (9%).

Gender issues are clearly of critical importance for food and nutrition security and in particular for addressing stunting in Namibia. With 19% of women age 15-19 having begun childbearing (14% have had a live birth, and 5% are currently pregnant)[22], it means adolescents (10-19 years) should be acknowledged as a distinct category instead of being subsumed within broader maternal programmes. Teenage pregnancies have been increasing in Namibia, with a 4% increase recorded since the 2006-07 NDHS. Teenage pregnancy is more than three times higher among young women in the lowest

[19] Namibia Demographic Health Survey, 2013
[20] ibid
[21] Ibid
[22] Namibia Demographic Health Survey, 2013

wealth quintile than among those in the highest wealth quintile. There are various risks associated with teenage pregnancies. For example, adolescent girls who give birth each year are more likely to die during childbirth than older women. Similarly, their babies are likely to die or be born with nutritional deficiencies.

A range of immediate, underlying, and basic determinants and their interactions causes stunted growth in Namibia. Among the immediate causes are poor quality foods including poor micronutrient quality and prevalence of diseases. An analysis of the consumption patterns in six regions based on the food and nutrition security monitoring indicate poor dietary diversity in these areas over the three periods[23]. This is increasing level of poor consumption often leads to malnutrition. Micronutrient deficiency is partly reflected in the prevalence of anaemia among children age 6 - 59 months and among women 15-49 years. Overall, 48% of children ages 6-59 months are anaemic[24]. Although micronutrient deficiency data (iodine, vitamin A and iron) is over two decades old[25], previous studies identified goitre as a public health concern due to high prevalence of iodine deficiency[26].

In terms of diseases, the prevalence of diarrhoea, HIV and TB undermine the immune system and contribute to malnutrition and stunting in Namibia. Diarrhoea is often more prevalent among children (6-35 months) in households without an improved source of drinking water, and without an improved toilet facility. Although, overall HIV prevalence in Namibia has declined to 16.9% in 2014 from 18.2% in 2012[27], it is still high and a factor impacting stunting. This is because undernutrition and poor growth are common manifestations of HIV infection[28]. Hence, a child's HIV status is a significant predictor of malnutrition among infants born to women living with HIV.

Another disease that exacerbates malnutrition is TB because it weakens the immune system. Many patients with active TB experience severe weight loss and show signs of vitamin and mineral deficiencies. Namibia has one of the highest infection rates of TB in the world, the highest caseload being attributed mainly to co-infection with HIV[29].

Insufficient care and support for mothers are critical underlying causes for stunting in Namibia. In general, the level of breastfeeding is common in Namibia. In 2013, 95.7% children had been breastfed as reflected in table 2.2. However, the average duration of breastfeeding has been decreasing from 2006-2013 (from 16.8 months to 14.8 months). Sub-optimal care practices, for example responsive feeding, early initiation of solid and semi-solid foods are due to time constraints available for the mother to take care of children. Another hindrance for exclusive breastfeeding is the promotion of breast milk substitutes.

Table 2.2: Overview of Breastfeeding in Namibia

	1992	**2000**	**2006**	**2013**

[23] Omaheke, Zambezi, Karas, Kunene, Omusati and Ohangwena regions – assessments are undertaken by the Directorate of Disaster Risk Management (DDRM) with technical assistance from WFP
[24] Namibia Demographic Health Survey, 2013
[25] NAFIN, 2012
[26] ibid
[27] Ministry of Health and Social Services, 2014
[28] Arpadi, 2000
[29] Kahler B, 2015

Median duration of breastfeeding	17.3 months	18.6 months	16.8 months	14.8 months
% EBF from birth to 6 months	3%	4.1%	23.9%	48.5%
% started BF within 1 hour of birth	52.3%	80.9%	71.3%	71.2%
Children ever breastfed	94.9%	95.1%	94%	95.7%
Children breastfed at 1 year	73%	75.2%	69%	64%
Children breastfed at 2 years	13.4%	22.3%	28%	21%

Source: MoHSS, 2015; NDHS, 2013.

Namibia has made significant progress in improving access to water, but there is a lack of progress on sanitation, also an underlying cause for stunting. Nationally, only 34% of households in Namibia have access to improved sanitation and the situation is worse in rural areas (17% compared to 49% in urban areas). The NDHS conducted in 2013 shows that 46% of the population do not have access to improved sanitation and practice open defecation (some estimates put the figure at more than half of the population). Sanitation in schools is equally poor. One in five schools in Namibia do not have toilets and 93% of the schools without toilets are concentrated in the five flood prone northern regions.

The lack of progress in sanitation has been attributed to several factors: poor coordination in the sector; lack of accountability; spreading efforts and resources thinly; lack of knowledge and understanding of the impact of sanitation on public health; and economic development[30]. Such challenges are also compounded by the relative or total absence of a formalised process for implementation, monitoring and evaluation of plans.

Namibia's malnutrition challenges and in particular stunting are deeply rooted in a number of socio-economic and environmental factors. The majority of the population and in particular women and children is affected by high poverty levels, unemployment rate and suffer from the impacts of droughts and floods. Of major concern is also the institutional fragmentation and coordination challenge thereby reducing the impact of programmes and policies aimed at addressing food and nutrition insecurity.

2.1.4 Pillar Three: All Food Systems Are Sustainable

The High Level Panel of Experts on food security and nutrition (HLPE) define a sustainable food system as "a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised" (2014[31]). Efficient, well-managed and sustainable food systems are essential to end hunger and malnutrition as well as to protect the environment and its long-term food production capacity. This implies smarter approaches, policies and investments encompassing "the environment,

[30] Ministry of Agriculture Water and Forestry, 2015

[31] HLPE, 2014. Food losses and waste in the context of sustainable food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2014.

people, institutions and processes by which agricultural products are produced, processed and brought to consumers in a sustainable manner" (UN, 2013[32]).

A sustainable food system in Namibia should explicitly recognize that drought and high climatic variability are endemic and that climate change will have an important impact in the future. The country has recorded several drought episodes and flood hazards between 1999 and 2015. The number of people affected by drought has steadily increased from 25,000 in 1998 to more than 700,000 in 2013[33]. Indeed, the drought of 2012/13 resulted in a state of emergency, with over 780,000 people in the country declared as food insecure, over 330,000 people requiring urgent support[34], and over 4,000 animals dying. In the 2014/15 seasons lower than normal rains and prolonged dry spells resulted in poor harvests. Food insecurity was compounded by resultant increased food price and restricted access to food[35].

Similarly people affected by floods increased from 2,000 in 2000 to 350,000 in 2009. Floods are common in northern regions of the country and impacts significantly on crops and livestock. In 2013, many households were displaced with their houses and crops destroyed by floods in the Zambezi region[36]. Apart from damaging houses, crops and killing livestock, floods destroy infrastructure, with particularly severe impact on vulnerable groups that are unable to recover[37]. Furthermore, the outbreaks of pests and diseases, and late and erratic rainfalls make agricultural production risky as some households lose their livestock and planted crops.

Natural hazards in Namibia though not qualified as disasters, often result in population displacement economic disruptions to transport, livestock, crops and other physical and environmental assets. In addition, vulnerability resulting from these hazards has been growing putting more people in difficult conditions. Indications are that the country will continue to be highly susceptible to increased flooding, both in terms of extent and frequency, and increased moisture stress during dry periods leading to increased drought both in terms of intensity and frequency (MET, 2011[38]). Apart from these hazards, Namibia also experiences frequent veld and forest fires that destroy pasture for livestock and forests. Veld and forest fires are also linked to unfolding climate change, contributing to environmental degradation, ecosystem stress, and watershed instability and biodiversity loss. Namibia is also prone to earthquakes, with the largest recorded in history in July 2009, although these have not yet caused any major destruction but they have a potential to create tsunamis.

Reliable crop production under rain-fed conditions is only possible in areas receiving an average of over 400mm rainfall annually. This occurs in two of the four agro-ecological regions, which represent 34% of Namibia and determine the main agricultural production systems. Namibia agriculture's production is practiced within commercial and communal sub-systems. The communal areas directly

[32] UN. 2013. Secretary-General's message on World Food Day. New York, 16 October 2013, http://www.un.org/sg/statements/index.asp?nid=7206
[33] Ministry of Environment and Tourism, 2011, National Policy on Climate Change for Namibia, http://www.met.gov.na/AAP/Downloads/National%20Policy%20on%20Climate%20Change%20for%20Namibia%202011_compressed.pdf
[34] UN-OCHA, 2013
[35] FNSM, 2015
[36] IFRC, 2013
[37] Anthonj, et al., 2015
[38] Ministry of Environment and Tourism, 2011, Namibia National Climate Change Programme, Windhoek, Namibia

support 95% of the nation's farming population, occupying 48% of the total agricultural land (33.5 million hectares). This is clearly predicated upon smallholder and subsistence production. The commercial farming sub-sector is underpinned by 4,200 large-scale farmers and occupies 52% of agricultural land (36.2 million hectares). Both sub-systems are under increased threat from climate change although the communal sub-sector, located particularly in the northern regions, is far more vulnerable as it is associated with deep poverty, as shown in Figures 2.2a and 2.2b.

Figure 2.2a: The main farming systems in Namibia

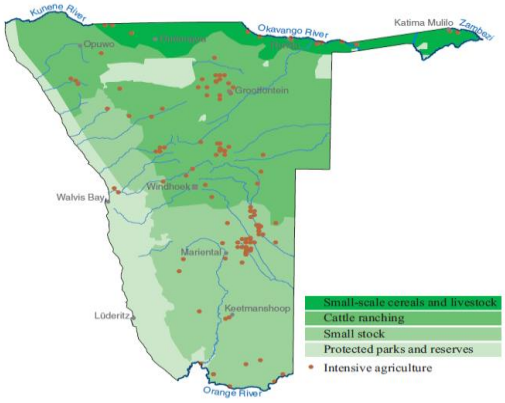
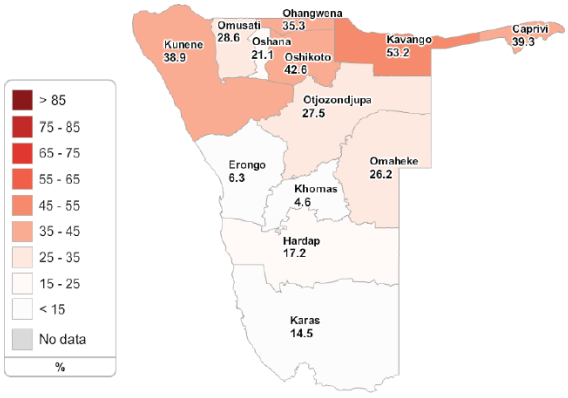


Figure 2.2b: Headcount Poverty rate, 2011, by region



Source: Adopted from Mendelsohn 2006

Since the level of output depends on productivity and other factors, households' food security is not uniform. A study on the duration of food stocks in six regions during the period November 2014 to March 2015 conducted by the Namibia Food and Nutrition Security Monitoring System (NFNSMS) (2015) showed that five regions had stocks lasting less than one month. In addition to rearing animals, some communal households produce grains for own consumption and for the market. As the bulk of communal crop production is rain-fed, it is subject to the vagaries of the weather patterns. These findings indicate significant vulnerability faced by rural households, especially during drought periods. Livestock farmers are also adversely affected by drought, which causes a decline in the value of animals. Poor rains over the past three years have resulted in significant deterioration of the communal sector livestock population, thus reducing the market value of the animals.

Namibia is recognized as one of the countries most vulnerable to the impacts of climate change globally through predicted increases in temperature and evaporation as well as increased variability of rainfall. Climate change impacts are expected to affect water availability in particular through increased variability of rainfall, temperature increases, prolonged and more severe droughts, declining soil moisture and increased evapo-transpiration. With respect to water resources, even in the absence of significant climate change, Namibia is predicted to suffer complete water scarcity by 2020 (INC, 2002[39]). With less than 5% of Namibia considered as dry sub-humid, the vast majority of the country is arid to semi-arid. Bulk water supply is provided through a network of storage dams and from the perennial rivers situated along the northern and southern borders. Thus a reduction in the amount and reliability of rainfall and the increase in evaporation due to rises in temperature will decrease the availability of already scarce water resources.

[39] Republic of Namibia (2002). Namibia Initial Communication to the United Nations Framework Convention on Climate Change

Namibia's marine fisheries, which rely on the nutrient-rich upwelling of the Benguela Current system, are threatened by changes brought by climate change. When upwelling is suppressed by northerly or easterly winds, oxygen-poor water can accumulate near the seabed and suffocate marine life[40]. It is also possible that observed reductions in pilchard stocks since 1993 could be partially explained by warmer seas. Climate change impacts will thus affect fish catches, which contribute 6% to GDP, and decreases in production are likely to range from 30% to 50% (MET, 2011).

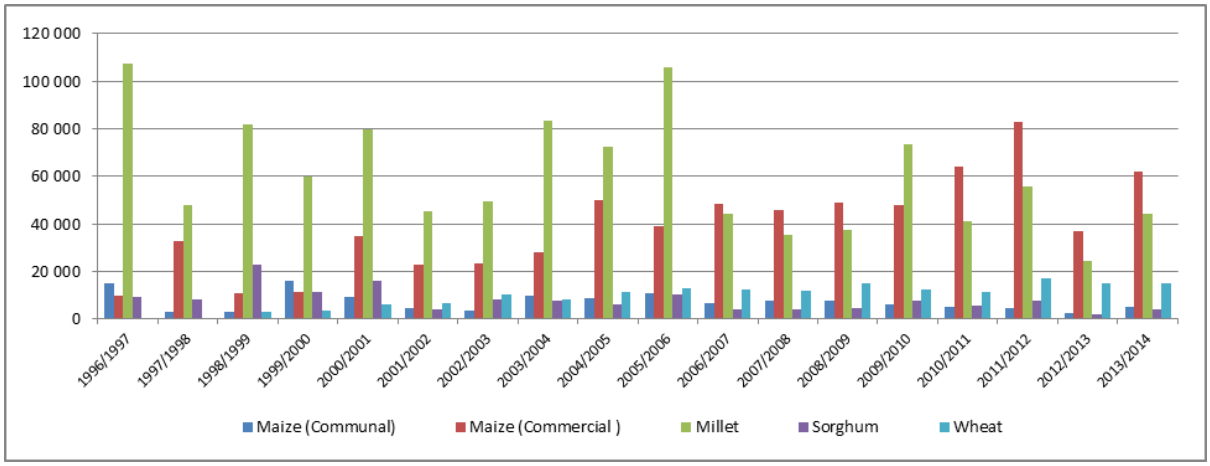
In sum, climate change will exacerbate the existing challenges that Namibia is facing as the driest country south of the Sahara, compounding the stress on climate-sensitive sectors such as agriculture, livestock management and fishing. Indeed, the high dependence on these climate sensitive natural resource-based sectors is revealed through their accounting for 24% of the total Gross Domestic Product in 2008[41].

2.1.5 Pillar Four: 100% Increase in Smallholder Productivity and Income

Namibia remains a structurally food deficit country[42] with low levels of production among Namibia's smallholder farmers. This is partly due to the limits of total land area (34%) able to support economic crop and livestock production, along with of low levels of productivity. Namibian smallholder farmers have not experienced sustained technological progress and increased productivity compared to other neighbouring countries such as in Zambia[43]. Another constraint has been the low agriculture wages in this sector. While 29.5% of the national employees are within the agriculture sector, their average monthly wage of $2265 for female workers and $2076 for male workers is below the subsistence needs of an average family of 5 members[44].

Figure 2.2 demonstrates that there has only been an increase in commercially produced maize between 196 and 2014, with communal production remaining significantly lower over that period. The remaining crops have experienced a decline.

Figure 2.2: Maize, millet, sorghum and wheat production 1996/97 and 2013/14 seasons



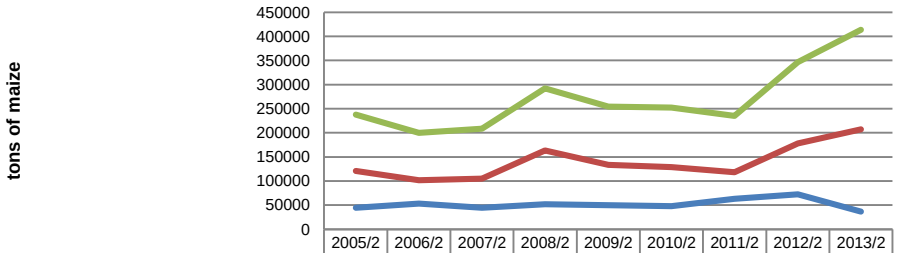
[40] Republic of Namibia (2002). Namibia Initial Communication to the United Nations Framework Convention on Climate Change
[41] Central Bureau of Statistic, National Planning Commission, 2009
[42] Namibia Agronomic Board, 2014 and EFSA (2013)
[43] International Food and Agricultural Development (2011)
[44] NHIES, 2009/10.

Crop production in Namibia is practiced under both rain-fed and irrigation. Communal farmers in the northern regions mainly practice rain-fed production. There are a number of commercial irrigation schemes operating under the Green Scheme Policy as well as some private funded irrigation schemes. It is estimated that about 6,500 hectares are currently being used for commercial irrigated crop production[45] with the country having a potential of 27,000 hectares under irrigation[46]. The fact that only a quarter of all potential irrigable land is used is a key opportunity for smallholder farmer development.

The Green Scheme projects produce half of the local maize produced in the country. For smallholder production the irrigation system yield ranges between 7.1 tonnes in drought years to 10.6 tonnes in good rainfall years[47]. The comparison with dry land farming is stark: yields vary between 0.17 tons per hectare in drought years, to 3.2 tonnes in good rainfall years. This is an important point that is linked to the fact that 50% of maize production comes from rain-fed sources, which demonstrates the structural issues of food security.

Its vital to recognise that the rain fed system has not witnessed significant increases in area between the 2005/06 and 2013/14 farming seasons (NAB, 2014). A key underlying issue is that rain-fed agriculture is highly susceptible to drought. Figure 2.9 shows trends in maize production, imports and consumption in Namibia. In most of the years, the country has experienced a deficit in maize requirements and, on average, imports +-55% of maize each year. Figure 2.3 shows that consumption is increasing, along with the imported quantities, while local production is declining.

Figure 2.3: Local production, imports and total consumption of maize



	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
Net domestic consumption (tons)	116899	98543	103934	128825	120928	123393	116488	168168	206622
Grain imports (tons)	76 534	48 247	60 141	111 714	83 903	81 111	55 305	105 742	170 234
Local production (tons)	44365	53296	44642	51832	49566	47961	63228	72438	36694

Source: Namibia Agronomic Board (2014)

It is instructive to look at other crops under irrigation. Wheat is a major food source for the majority of the population yet only produces around 13% of the national wheat requirements, importing the

[45] AgriBusDev 2014
[46] AgriBank, 2014
[47] Namibia Agronomic Board, 2014

remainder. There was no expansion in irrigated wheat: in the 2013/2014 season, 2,198 hectares were used for wheat production to produce a total production of 11,312 tons[48]. Similarly Namibia produces a small quantity of its horticultural requirements and imports around 60% of these including potato, onion and other vegetables[49]. The Agronomic Board of Namibia (2014) argues that there is an enormous potential for local horticulture production and that local marketing infrastructure and marketing strategies are hampering the performance of the local production.

Namibia is known as a livestock producing country as livestock forms an important asset for most households. It is a store of wealth as well as food in terms of meat and milk and can be sold or bartered in times of hunger. There is a general decline in terms of cattle numbers in the northern regions. On average, 40% of the households own cattle. For all the cattle marketed through formal channels, only 11.40% and 7.3 % came from the Northern Communal Areas (NCA) in 2013 and 2014 respectively[50]. This is despite the fact that 44% of the national herd is found in the NCA[51]. Looking at the price trends, 2014 prices were better compared to 2013 but when one factors in the inflation level and the consistent increases in the food prices farmers who sold cattle to buy food were worse off than in previous years. This may explain why there is little participation in the livestock markets. The productivity of the livestock sector in the NCA is constrained by high frequency of droughts, as well as exclusion from the lucrative markets such as the European Union due to prevalence of foot and mouth disease. The poor grazing is a major concern in all the northern regions. Some farmers in the NCA take pride in having a large herd of cattle rather than selling even in the face of drought.

In the southern regions most smallholder farmers are farming predominantly with small stock. Most smallholder farmers in the southern communal areas market their livestock through local abattoirs and export the live animals to South Africa. The producer prices have seen a significant growth between 2013 and 2014 marketing seasons. Sheep producer price is performing better than cattle producer prices. It has been established that small stock farmers in the southern regions earn on average N$5 000 per month, which is close to the national average per capita income of US$5 693.13[52].

The Namibian coast has an important opportunity for marine aquaculture development that can significantly contribute to economic growth and food and nutritional security. The main objective of the sector is to manage and govern utilisation of the country's fishery resources on a sustainable manner and facilitates development of responsible industries that ensure lasting contribution to the country's socio economic development (Marine Resources Policy, 2004). It is estimated that inland aquaculture is producing between 50 and 100 tons of fresh water fish annually[53].

[48] Namibia Agronomic Board, 2014
[49] NAB, 2014
[50] MAWF, Directorate of Veterinary Services, 2015
[51] NNFU, 2006 and Sherbourne, 2010
[52] Ngavetene,2015
[53] ibid

2.1.6 Pillar Five: Zero Loss or Waste of Food

Reducing food waste and increasing resource use efficiency in the food chain has received growing attention at the international, regional and national levels. Globally, food lost after harvest and food wasted along the distribution and consumption chain, or food wastage, has a twofold negative environmental impact: unnecessary pressure on natural resources and ecosystem services; and pollution through food rejects.

Although Namibia does not produce enough food for its own consumption needs, it is estimated that about 24% of all food calories grown per year are lost or wasted from the farm[54]. Although there is evident of food losses and waste in Namibia, currently there are no comprehensive records about food losses and waste for Namibia. The information in this section is undocumented evidence of Namibia and this information was collected informally from various stakeholders.

In the production of vegetables or plant-based products, including watermelons, cabbages and pumpkins, the losses are estimated at 14% for commercial smallholder farmers while for communal farmers the losses are more than 40% for perishable products. In maize, sorghum and wheat, the losses are estimated at 20% per production season. These could be mitigated but producers in rural areas are not educated concerning food loss and waste, especially during harvesting and storing.

Rural farmers report that food losses occur at various stages of agricultural production including:

- Grains being eaten by birds or destroyed by animals while they are still in the field.
- Grains lost during winnowing as grains are being mixed with soil.
- Transporting the grains with unsuitable equipment, which leads to grain losses.
- Some foods are left in the field not harvested due to lack of labour and the use of machinery.
- Some foods are harvested while they are not yet ready.
- More and more animals are lost due to drought and issue of overgrazing every year.

Commercial producers experience food losses during harvesting of vegetables although efforts have been made to donate unmarketable crops in the effort of minimising food loss and waste.

In supermarkets, food losses occur when supply exceeds demand. Sometimes due to shortage of customers, food may remain on the shelves, resulting in a loss of quality and sometimes have to be disposed. In 2015, losses and waste from three main supermarkets in the country was estimated to be over N$90 million annually[55]. Inappropriate ordering and incorrect projections of demand for food products also result in quantities of merchandise not being sold before the expiration date or experiencing natural deterioration. Estimating demand for food products is very complex and is influenced by multiple factors such as climate, season, specific marketing campaigns, new product launches, promotions, and holidays.

Food needs to be transported from warehouses to distribution points or to retailers, and food losses occur during transit. Accidents may occur during transportation of food products and monitoring of cooling systems during transportation is often an unattainable task since it is inconvenient for the

[54] Oskar Elago, 2015, Input paper into Food and Nutrition Security Strategy: Food Loss and Food Waste.
[55] Namibia Trade Forum, stakeholder consultation

driver to keep stopping in order to monitor the temperature. Uneven roads might also damage food products and communal farms are often not fully accessible due to poor roads conditions.

Unsuitable storage facilities may cause foods to deteriorate in quality. Moreover, temperature fluctuation may occur in storage due to improper management and inconsistent inspection, this can lead to shrinking and swelling of the food product. Additionally, power failures, especially at night, affect the cooling systems, which may result in an increase in temperature and therefore food may get spoiled. Inadequate implementation of good practices results in maize meal being stored and forgotten, food being damaged by heavy rain, and food rotting due to mismanagement.

The presence of unhygienic personnel and conditions during processing harbour an increase in food contamination and food spoilage. Food loss can also occur if the food was not prepared in the right way (such as overcooking), resulting in food no longer being sold to consumers. Fish heads and livers that are also edible are thrown away at sea during processing. Meat and meat products are lost every day as a result of poor handling during processing.

Food losses and waste can also occur as a result of customer preference as not all food prepared may be sold, and will spoil. In Namibia, food waste at the final stage of the supply chain is more contained. There are two principal causes of avoidable household waste such as too much food is cooked, or ruined during cooking, along with food not being consumed in time. Food is also used as a symbol of riches, and therefore a larger tendency to waste. An example of this is hotels and restaurants, which offer a fixed price buffet ("eat as much as you can"), supersized portions and refills of soft drinks, which promote waste.

Other causes of food losses and waste identified through stakeholder consultations include limits of the technology used to conserve products, particularly fresh products (cold chain); damage to the product and food packaging during transportation and storage; inadequate professional training of sales staff, who do not perform proper stock rotation procedures; recalls of products that do not meet qualitative and safety standards; and marketing strategies, such as 'buy one, get one free', which are intended to promote the sale of products close to their expiration date and solve overstock problems, but which result in transfer of the risk of waste from distribution to final consumption.

In terms of smallholder producers, challenges associated with food losses and waste relate largely to the structural dimensions that limit productivity. For example poor road infrastructure, particularly in rural areas, inadequate transport services meaning that transport is not always available, and the high transportation costs often exclude communal farmers from markets. This means that produce may be waster post-harvest particularly if there is a long distance to markets. Exacerbating this is a lack of proper packaging materials in which to transport products.

2.1.6 The Over-Arching Challenge

Food and nutrition security is elusive for the majority of the rural population and a significant proportion of those living in urban areas. Indeed, the 2014 Global Hunger Index defines Namibia as having a 'serious food problem'. According to the preceding analysis, this situation is characterised by a number of factors.

Extreme variability in levels of food production is significant. Namibia's climate and largely semi-arid and arid condition is expected to worsen the variability and intensify the impacts on the economy and general livelihoods. The commercial and communal production systems are under increased threat from climate change although the smallholder and subsistence-farming sub-sector, located particularly in the northern regions, are far more vulnerable. Climate change provides a particular threat in reducing the amount and reliability of rainfall and the increase in evaporation due to rises in temperature. This will decrease the availability of already scarce water resources.

Smallholder and subsistence farmers, largely in the northern communal areas, struggle with access to inputs including water and low producer prices. Low levels of production are due to the limits of the total land area (34%) in Namibia that is able to support economic crop and livestock production. Low levels of productivity are partly due to Namibian smallholder farmers not experiencing sustained technological progress. Opportunities exist with new technologies, particularly those that focus on drought resistance, and expansion of areas under irrigation. The productivity of the livestock sector is constrained by high frequency of droughts, as well as exclusion from the lucrative markets due to prevalence of foot and mouth disease. Poor grazing is a major concern in the northern regions.

Namibia's heavy reliance on food imports also makes it susceptible to high food prices, which increases pressure on vulnerable households' food security. Low-income earners struggle to meet their minimum daily requirements for food intake accessing poor quality foods with low micronutrient quality. This implies that poverty is a major factor limiting access to food. The poor are primarily women, subsistence and smallholder farmers, pensioners located largely in rural areas and people living in urban informal areas. Although Namibia does not produce enough food for its own consumption needs, it is estimated that about 24% of all food calories grown per year are lost or wasted from the farm. The issue of food loss and food waste across the vale chain, from producer to consumer, provides an immense opportunity to reduce some of the food needs in the country.

The high child stunting rates of 24% is an indication of inadequate nutrition over long periods of time exacerbated by poor access to health and care. Regions with the highest stunting rates generally tend to have poor socio-economic conditions. The prevalence of diarrhoea, HIV and TB undermine the immune system. 46% of the population do not have access to improved sanitation and practice open defecation, factors which strongly impact nutrition status. Gender issues are clearly of critical importance for addressing stunting with insufficient care and support for mothers and adolescents (10-19 years) needing to be acknowledged as a distinct category instead of being subsumed within broader maternal programmes.

Addressing these factors requires different stakeholders to work together to deliver on a common vision. This vision is captured under the Zero Hunger Challenge: zero stunted children less than two years of age; 100% access to adequate food exists all year round; all food systems are sustainable; 100% increase in smallholder productivity and income; and zero loss or waste of food. Having a vision underpinning a sustainable food system implies smarter approaches, policies and investments. This encompasses the environment, people, institutions and processes by which agricultural products are produced, processed and brought to consumers in a sustainable manner. Different actors and sectors need to act in a joined-up manner, each one dealing with different aspects of the problem, but collectively acting in a coherent manner.

CHAPTER 3: RESPONSE ANALYSIS

3.1 INTRODUCTION

Namibia has a wide range of policies and strategies addressing different aspects of food and nutrition insecurity. A detailed analysis of each of the Zero Hunger Pillars has been provided in the source documents that underpin the synthesis document for this strategic review. The implications of these have been drawn out to provide direction and opportunities for a strategic response. These are presented below in conjunction with the key challenges identified in the situational analysis.

3.2 POLICY AND INSTITUTIONAL ENVIRONMENT

Looking more specifically at the key dimensions of the situational analysis, a detailed analysis of the policy and institutional environment can be made.

Sustainable food systems

According to the situational analysis some key issues relating to sustainable food systems include:
Namibia's climate and largely semi-arid and arid condition is expected to worsen the variability and intensify the impacts on the economy and general livelihoods. The commercial and communal production systems are under increased threat from climate change although the smallholder and subsistence-farming sub-sector, located particularly in the northern regions, are far more vulnerable. Climate change provides a particular threat in reducing the amount and reliability of rainfall and the increase in evaporation due to rises in temperature. This will decrease the availability of already scarce water resources.

To build resilience of drought-affected communities, the Ministry of Agriculture, Water and Fisheries (MAWF) has embarked on a number of initiatives, which range from breeding of drought resistances crop and livestock varieties and the establishment of two Fresh Produce Business Hubs to serve as cold storage facilities for fresh produce, to the introduction of irrigated green schemes in some regions. The construction of the Neckartal Dam near Keetmashoop facilitates the irrigation of increased stretches of arable land by harnessing seasonal floodwaters. The availability of water has also impelled other socio-economic development in line of Vision 2030. Mutation breeding techniques have developed better yielding and resilient crop varieties against drought and insect pests. Community-Based Rangeland and Livestock Management has been promoted as a way of ensuring sustainable wealth creation in the NCA for livestock farmers.

In line with the Climate Change policy, climate adaptation information tool kits have been developed and through MET, a regional scale up initiated. In addition, the government has introduced a Climate-Smart Agriculture (CSA) programme to address challenges associated with climate change. Both these initiatives represent inter-sectoral collaboration and alignment with the African Union Comprehensive Agriculture Development Programme (CAADP), Namibia Vision 2030, National Development Plan (NDP4), Agricultural Sector Plan and the National Climate Change Strategy and Action Plan (NCCSAP). The Country CSA programme aims to build resilience of agricultural farming systems for enhanced food and nutrition security in Namibia through a comprehensive set of programmes.

The government has entered a 25-year partnership with the Food and Agricultural Organisation (FAO) to improve the resilience of flood-affected farmers in the Zambezi River Basin. The Post Disaster Needs Assessment of 2011 indicated that an estimated 33% of households in the region were food insecure following the floods. According to experts, climate change will affect the Zambezi River Basin more severely than any other river system in the world. The partnership focuses on training in good agricultural practices, conservation agriculture, business and marketing skills, and postharvest storage and processing. The inputs provided by the project enabled farmers to diversify production, increase land under production, replenish seed stocks and improve yields. By diversifying crop production, the project helped mitigate the risk of losing an entire harvest to flooding or drought.

In addition to distributing food relief, the government has intensified its efforts to provide water for both human and animal consumption to mitigate the adverse impacts of drought. This is part of a broader process of developing various policy and strategic frameworks to assist the transition from disaster response to disaster risk reduction. These include the 1997 national drought policy and the 2009 National Disaster Risk Management Policy. The establishment of the Disaster Risk Management (DRM) office within the Office of the Prime Minister provides a national disaster preparedness and response unit to coordinate preparedness and relief operations in the country. The major weaknesses of the structure is that there is no legal instrument that specifies the chain of command to facilitate the disaster risk management authority (DDRM) to mobilise the regional authorities and stakeholders during disaster and significant events. Most importantly, Namibia has not included DRR in the NDP4. There is also insufficient skilled human resource capacity for coordination and operations regarding disaster risk management. As a result, preparedness, response and recovery measures against future disasters are often lacking in quality and effectiveness.

Several early warnings systems have been established to provide frequent early warning information; however these were not fully effective on the ground. For instance although the national flood forecasting system is well established and functional, mechanisms for the transformation of the flood forecasting into early warning information are still inadequate. It is critical that Namibia creates a harmonized disaster risk management information database and operations room able to inform policy makers and the public on a real-time basis.

During the 2012-13 drought, the government coordinated a multi-sectoral Emergency Food Security Assessment, and this identified over 330,000 people, nationwide, who were food insecure. An integrated and comprehensive drought response covering food and nutrition security, agriculture and water sanitation was established. A number of interventions followed, including food assistance and borehole drilling. Farmers were encouraged to reduce their livestock in order to preserve grazing land. The Namibia Red Cross Society and the Council of Churches in Namibia complemented government efforts through direct assistance to affected communities.

Sustainable production of smallholder agriculture

According to the situational analysis some key issues pertaining to smallholder production include:
Smallholder and subsistence farmers, largely in the northern communal areas, struggle with access to inputs including water and low producer prices. Low levels of production are due to the limits of the total land area that is able to support economic crop and livestock production. Low levels of productivity are partly due to Namibian smallholder farmers not experiencing sustained technological

progress. Opportunities exist with new technologies, particularly those that focus on drought resistance, and expansion of areas under irrigation. The productivity of the livestock sector is constrained by high frequency of droughts, as well as exclusion from the lucrative markets due to prevalence of foot and mouth disease. Poor grazing is a major concern in the northern regions.

Clearly some of these issues have been touched upon by the MAWF policies and programmes mentioned above, including the CSA programme. However, Namibia has room to increase smallholder farmers' productivity through increased adoption of new technologies, mechanisation and a more supportive government policy environment. This will allow smallholder farmers to benefit from economies of scale and enable them to utilise previously marginal lands. There is much, however, to build upon.

Besides producing maize, communal farmers in the north produce *mahangu* (millet), which is drought resistant and forms an important part of the national diet. The impacts of climate and erratic weather patterns, the widespread use of traditional farming practices, limited farm sizes, and *quelea* birds, are contributing to low levels of production[56]. To combat this, the country's research stations have produced two new drought resistant varieties. Another strategy is the Strategic Food Reserve programme whereby a number of grain silos are constructed in various regions in order to reduce losses due to poor storage of *mahangu* and other grains. They aim to stimulate production through availing a ready market, as the government buys the grain at the farm gate. The Dryland Crop Producers Programme involves providing support in the form of fertiliser, seeds, tillage upkeep, loans, draught power support and subsidies for harvesting the crop. The government also has a programme to provide appropriate tillage technology in the form of walking tractors that can be used by smallholder farmers. These are all important complementary activities to the CSA programme and with careful coordination at production level can have a sustained impact on smallholder productivity. The message is that other opportunities must be found under the CSA programme to offset climate risks particularly as more than 70% of the country is arid and semi-arid.

In terms of comprehensive smallholder support, the Green Scheme policy is another important initiative to improve grain production. AgriBusDev, the state owned enterprise running the initiative projects that at current production levels of 10 tons of maize per hectare, the country will achieve more than 100% maize production for own consumption needs as well as wheat and rice production when the projected 27 000 hectares come under irrigation. This is an immensely promising initiative that should be prioritised. In terms of improving horticulture, an example is the Market Share Promotion initiative seeks to increase market share of local horticultural produce to 60%. The challenge is that there is limited participation by smallholder farmers, as they cannot afford the irrigation technology needed to produce the crops.

Half of the cattle in Namibia are found in the northern communal areas[57] yet participation by NCA in livestock markets is minimal[58]. Foot and mouth disease is the main challenge for NCA farmers, as their beef cannot be taken to lucrative EU markets. To enhance productivity of this beef sector, the

[56] FAO, 2009
[57] Directorate of Veterinary Services (DVS) (2010)
[58] Mendelsohn (2006)

government has invested in abattoirs in the northern regions as well as in Kaprivi and Zambezi. To improve the quality of the livestock the government-funded livestock research stations are undertaking research on breeding to produce more adaptive livestock. The government has also initiated a search for an alternative market for beef from the northern regions and there was an agreement between Zimbabwe and Namibia to export beef from the NCA to Zimbabwe in 2014.

The government also provides support to construct abattoirs where value addition to small stock is done. The government initiated the Small Stock Marketing Scheme (SSMS) in 2004 to impose quantitative export restrictions on exports of live sheep from Namibia to South Africa by forcing exporters to slaughter lambs in Namibia and then export carcasses, in order to benefit the Namibia livestock industry[59]. However, there has not been a significant improvement in the local abattoirs with respect to processing of small stock with a perception that the Namibian SSMS has led to unnecessary interference in the market. The scheme has led to a few abattoirs benefitting at the expense of the farmers, which resulted in a number of workers having to be laid off by the farmers[60].

At independence, government initiated land reform to bring about fair distribution of agricultural land, to promote economic growth, lower income inequalities and reduce poverty[61]. Despite investments, there has been limited production from emerging farmers as very few are participating in agricultural markets[62]. The processes of building up livestock herds by individuals resettled on commercial farms is progressing slowly: 40% of beneficiaries resettled for more than eight years have not yet reached stocking levels sufficient to generate a sustainable livelihood[63]. Land reform by nature is highly complex and requires application of social, agricultural, and environmental principles by different institutions as well as planning and coordination. There seems to be lack of coordination, as well as monitoring and evaluation, to track the performance and impact of the programme. It is imperative that the country draws lessons from countries like Brazil whose resettlement has led to improved productivity and market integration.

In 2003, the government established AgriBank mandated to advance money to persons or financial intermediaries to promote agriculture. The bank's products included short-term production loans, medium term loans for infrastructure and farm improvements, long-term loans for purchasing and consolidating farmland, specialised loans for special agriculture projects and special schemes loans. This includes post settlement support. In the 2012/13 financial year, the bank supported 970 clients country wide, creating 2 910 jobs. At regional level, there is a perception that most smallholder farmers are unaware of these loans as very few are benefiting from the products (AgriBank, 2014). There is clearly an opportunity to scale up impact through connection with other institutions.

Sustaining access to affordable, quality food

According to the situational analysis some key issues pertaining to accessing food include:

Namibia's heavy reliance on food imports makes it susceptible to high food prices, which increases pressure on vulnerable households' food security. Low-income earners struggle to meet their minimum

[59] Taljaard, Zerihun, Jooste and Jordaan 2009
[60] Ibid
[61] (RoN, 1991:2; Werner & Odendaal, 2010:5)
[62] (PIA, 2010:21)
[63] (PIA, 2010:39)

daily requirements for food intake accessing poor quality foods with low micronutrient quality. This implies that poverty is a major factor limiting access to food. The poor are primarily women, subsistence and smallholder farmers, pensioners located largely in rural areas and people living in urban informal areas. Although Namibia does not produce enough food for its own consumption needs, it is estimated that about 24% of all food calories grown per year are lost or wasted from the farm. The issue of food loss and food waste across the vale chain, from producer to consumer, provides an immense opportunity to reduce some of the food needs in the country.

Stimulating the broader economy to create employment is a clearly articulated objective of the government. A wide range of policies and programmes emphasise this so stress is placed on policies targeting the most vulnerable to hunger. These programmes cover both safety nets for the most vulnerable and enterprise development to underpin broader economic activity.

An important challenge in Namibia is that the majority of working people have a median wage close to the poverty datum line. With low incomes, households have limited options to address food and nutrition security. In order to ensure that food is affordable, the government monitors prices in the market. It recognises that the market structures in some sectors of the economy have the potential for market abuse. The Namibia Trade Forum (NTF) collects and monitors prices in industry on behalf of the Ministry of Industrialisation, Trade and SME Development. The forum is working on the formulation of a Retail Charter, which would include legislation that protects consumers. The charter seeks to facilitate 'growth at home', thus ensuring that local producers are protected against unfair competition from imported products. Through this programme, the country is closed to grain imports during certain periods of the year to allow local production to be consumed on the market.

MAWF has invested in the Agro-Marketing and Trade Agency Company (AMTA) to support the National Strategic Food Reserves, which have a capacity of more than 15,000 metric tonnes. The silos store produce from Green Schemes and local farmers through marketing channels. AMTA is providing transport services between small-scale fresh produce farmers in the rural areas and the market in order to prevent some food losses associated with lack of access to storage facilities. These food reserves can be deployed as a necessary safety net when required, as part of a broader social protection approach.

Social protection is a blanket term describing a system of interventions aimed at assisting households to build routes out of poverty. Broadly, social protection consists of labour market interventions (e.g. labour skills training and active labour market policies), social insurance (e.g. social health insurance), and social safety nets or social assistance programmes. The most prominent social assistance programme is the social pension or basic social grant. This is a universal and unconditional cash transfer to pensioners aged 60 years and above in order to improve and maintain their purchasing power. According to the NHIES, the coverage was 95% in 2009 with the transfer being the main source of income for 10.2% of surveyed households. A wide range of other grants exists to provide income to households and individuals with certain social and economic conditions. One challenge affecting the accessibility of social and child grants is the lack of documentation among potential beneficiaries. Sometimes, lack of access is caused by illiteracy, and the complex procedures in place at government offices. In some cases, grandparents looking after grandchildren fail to register the children for the appropriate maintenance grants because the eligibility conditions require the biological parents.

Another important intervention that facilitates access to food is the school-feeding programme. This safety net provides learners with a standardised mid-morning meal with fortified inputs to improve the nutritional value of the meal. The programme supports over 200,000 learners[64], and it provides 30% of the daily nutritional requirement (the other 70% is supposed to be met through household consumption). The feeding programme is the main meal for some learners[65], since their households are not able to fully complement the feeding programme. Of the total enrolment, 52.8% were orphans and vulnerable children[66]. Further, MoHSS initiated the National Policy for School Health in 2008 to support a comprehensive school health programme that offers food and manages the nutritional needs of learners[67].

The government has put in place a number of social protection measures to promote productive activities to build and maintain livelihoods, and to limit the possibility of distress sales of productive assets. The government offers tillage units, subsidised seeds and fertilisers to communal farmers. In some areas, MAWF is engaged in distributing small stock as a way of building household assets. It is involved in setting up community gardens to ensure the local availability of fresh vegetables. The ministry is also encouraging the establishment of backyard gardens so as to reduce reliance on the formal market. However, the lack of coordination between some of the ministry's department results in the projects failing to become sustainable.

The government provides support for employment creation to the informal sector and small and medium enterprises through the Namibia Development Corporation (NDC). The NDC is mandated to provide credit and business training to small enterprises[68]. To complement the initiative, and offset a perceived urban-bias, non-governmental organisations assist rural households by providing small loans to start small businesses. The venture-capital nature of the NDC operations precludes poor, vulnerable and unskilled people from effectively participating. Subbarao (1998) found that the default rate was between 30 - 40%, and this compromised the sustainability of the initiative. The Ministry of Gender Equality and Child Welfare also has an initiative to promote entrepreneurship and employment creation whereby financing is offered to individuals to engage in viable income generating activities. The granted funds should be used to purchase equipment and materials for the start-up of small businesses.

There are times when the government has increased expenditures to enhance job creation and infrastructure development. Through the tendering process, small and medium enterprises are given preference. The government, in collaboration with donors, funds the construction and maintenance of infrastructure like schools and roads with the private sector as the implementing agency. Although the employment created is generally short-term in nature, the programme has a skills development

[64] FNSM, 2013
[65] WFP, 2012
[66] FNSM, 2013
[67] WFP, 2012
[68] Seiche, 1995

component aimed at improving the long-term employability of the participants. Despite its intentions, weaknesses in inter and intra-sectoral linkages undermine employment creation.

Apart from formal social assistance programmes, Namibia has a number of informal social safety nets. These consist of help from the extended family, taking care of orphaned children of relatives[69], sharing food, draught power and other productive assets with neighbours, gifts and contributions to social functions like marriage ceremonies, weddings and funerals, and soft loans to neighbours and relatives. Food deficit households may borrow and beg for food, or obtain food from neighbours or the community. However, such *ad hoc* interventions only bridge the gap and are not sustainable.

Sustaining Good Nutrition

According to the situational analysis some key issues pertaining to nutrition include:
The high child stunting rates of 24% is an indication of inadequate nutrition over long periods of time exacerbated by poor access to health and care. The prevalence of diarrhoea, HIV and TB undermine the immune system. 46% of the population do not have access to improved sanitation and practice open defecation, factors which strongly impact nutrition status. Gender issues are clearly of critical importance for addressing stunting with insufficient care and support for mothers and adolescents (10-19 years) needing to be acknowledged as a distinct category instead of being subsumed within broader maternal programmes.

To address malnutrition, Namibia joined the Scaling Up of Nutrition movement in 2011 following the formation of the Namibia Alliance for Improved Nutrition (NAFIN). This entity is a multi-stakeholder platform to develop and coordinate a multi-sectoral national nutrition strategy[70]. Although a common results framework is in place to track progress toward the goal of ending malnutrition, NAFIN has faced a range of challenges. These include weak coordination and integration between sectors at both national and regional levels. NAFIN has the challenge of convening high-level decision makers, which has hindered progress. In addition, while the SUN implementation plan has set targets, comprehensive monitoring through NAFIN has not taken place except for the regular reporting from the health and education sectors. Without high-level political commitment to addressing malnutrition and a realisation that a multi-sectoral and multi-stakeholder process is required, NAFIN will continue to face challenges in meetings it key role in the broader food and nutrition security strategy. Global evidence shows that reductions in stunting and other forms of malnutrition can be achieved through proven nutrition specific and nutrition sensitive interventions within the context of an enabling environment. These interventions draw on complementary sectors and address crucial underlying determinants of nutrition such as poverty, governance, income and equity.

Nutrition specific interventions cover mainly multiple micronutrient supplementation and Infant and Young Child Feeding (IYCF) initiatives. With assistance from the FAO, the government will develop a new Nutrition Policy and Implementation Plan that will consolidate a nutrition-specific strategy including making it mandatory to fortify foods. As part of the food fortification initiatives, the Food Fortification Working Group commissioned studies on the potential of fortifying *mahangu* and sugar

[69] Pendleton et al., 2012

with both studies highlighting the need for fortification legislation that will provide guidance. In addition there is a countrywide programme on vitamin A supplementation targeting children 6-59 months of age and women *postpartum*. As a result, the proportion of children who received micronutrient supplements has increased since the 2006-07 NDHS from 52% to 84% in 2015. In terms of addressing iodine deficiency, the government launched an iodine supplementation campaign and passed legislation on mandatory iodisation of household salt. Iron supplementation for 90 or more days during pregnancy is still promoted and has high adherence rates. However, Zinc deficiency is a public health problem, given that maize and millet are the common staple foods eaten by most Namibians.

Due to mixed messages around HIV and infant feeding, the Ministry of Health and Social Services (MoHSS) developed the National Policy on Infant and Young Child Feeding[71] in 2003 focusing on the benefits of exclusive breastfeeding, management of breast problems, introduction of complementary foods and young child nutrition needs[72]. These programmes have resulted in marked progress in exclusive breastfeeding. Nevertheless, there is still insufficient guidance on complementary feeding. Similarly, the Code of Marketing of Breast-Milk Substitutes has been drafted and included in 2015 Public and Environment Health Bill. Training and advocacy campaigns have been on going but more needs to be done in improving maternity leave conditions, awareness and education.

The main health sector interventions include Nutrition Assessment Counselling and Support (NACS) for PLHIV, immunization of children 0-2 years and the introduction of Health Extension Workers (HEWs). This is proving to be a good community-based approach to accessing health services. The objective of the programme is to provide promotive, educative, basic curative and rehabilitative services at community level especially to those living in remote rural areas. The HEWs provide important basic health care information, and can alert health facility and district staff on health related events in the community. The programme also faces some challenges as the health extension workers travel long distances. Lack of transport and the semi-nomadic nature of communities also hinder follow-ups and referrals from reaching health facilities.

Since 2008, Ministry of Health and Social Services has been working to integrate nutrition assessment, counselling, and support (NACS) into health care services in every region of the country and to improve the quality of NACS service delivery[73]. In terms of progress, the NACS have been key in preventing and managing malnutrition; improving adherence and efficacy of ART and TB treatment; improving birth outcomes for women and promoting HIV-free infant and child survival. However, a major gaps remains the need for greater involvement of all relevant line ministries especially decision makers.

In 2013 the immunization coverage showed some improvement from previous years, with 89% of infants receiving the recommended three doses of Pentavalent vaccine which protects against five diseases (diphtheria, whooping cough, tetanus, hepatitis and haemophilus influenza); and 83% vaccinated against measles[74]. Although immunization has a better coverage, not all children are

[71] MoHSS, 2003
[72] MoHSS, 2011
[73] http://www.fantaproject.org/countries/namibia
[74] http://www.who.int/immunization/monitoring_surveillance/data/nam.pdf - July 2015

immunized. The level is dropping particularly in urban areas. In 2013 69.5% of children had a vaccination card.

Nutrition sensitive interventions cover the agriculture, health, social protection, and water and sanitation sectors. MAWF is involved in a number of initiatives that can improve accessibility to nutritious and diverse diets through several pathways. Initiatives around crop improvement, crop diversification and horticulture production are, however, currently being implemented without deliberate nutrition goals and targets. The role of agriculture in improving nutrition needs to be clearly defined and understood at all levels. Similarly the "Integrated Initiative in Support of Urban and Peri-Urban Horticulture Development" has no specific nutrition objective.

Under social protection initiatives, the Namibian School Feeding Programme (NSFP) plays a major role in improving nutrition outcomes. The NSFP provides a standardized mid-morning meal to learners at participating schools. The meal consists of a maize blend, which is fortified[75]. A current gap is in the lack of a school feeding policy in Namibia but stakeholder engagement is underway. Another apparent gap is a lack of an impact evaluation of the programme that includes an understanding of the nutritional outcomes.

In the water and sanitation sectors, MAWF has a coordination role in implementation of sanitation strategy and community led sanitation in the regions. A communication strategy on open defecation was produced which will provide guidance and improve behavioural change and knowledge amongst the population. Clear gaps still exist in that there is no clear link to nutrition, weak coordination in implementation as the mandate falls across various ministries, key ministries do not attend meetings, the demand for sanitation is low, and there is community fatigue.

Institutional arrangements for effective food system governance

According to the situational analysis, several institutional challenges emerge:

Addressing these factors requires different stakeholders to work together to deliver on a common vision. This vision is captured under the Zero Hunger Challenge. Having a vision underpinning a sustainable food system implies smarter approaches, policies and investments. This encompasses the environment, people, institutions and processes by food is produced, processed and brought to consumers in a sustainable manner. Different actors and sectors need to act in a joined-up manner, each one dealing with different aspects of the problem, but collectively acting in a coherent manner.

Policy coherence

Considering the preceding situational analysis relating to food and nutrition security, captured succinctly by the 2014 Global Hunger Index, which defines Namibia as having a 'serious food problem', there are clear limits to the effectiveness of existing policies, or at least their implementation, in converging to impact on food and nutrition security. The success of national efforts to achieve food and nutrition security depends on various factors, amongst which the institutional landscape and financial resources to implement strategies and programmes are crucial.

[75] ibid

A major issue emerging from the review and stakeholder consultations is the lack of policy coherence between different sectors developed by different government agencies. In some instances, policies have well-structured implementation frameworks, such as the National Employment Policy, but different government departments do not effectively implement their parts. This situation has been exacerbated by a lack of measures to periodically evaluate the performances of the policies in attaining set targets and objectives.

Decentralisation challenges

Another key issue to emerge was the lack of decentralised decision-making, which hindered the ability for locally based officials to respond quickly to situations, as approvals need to be sanctioned from head offices, which takes time. While this current approach ensures accountability, it is bureaucratic and prevents timeous interventions. This is exacerbated by a lack of community interest, attitudes towards development in terms of expecting quick-wins coupled with a marked dependency culture. This is complicating the delivery of many programmes. In some regions, there were calls for expedited decentralisation of government services and more power and resources for local government, along with increased coordination across ministries in the different regions.

Coordination challenges

There are also challenges experienced in coordination mechanisms. Such a mechanisms exists under NAFIN but has proven to be ineffective at both national and regional levels. There is also weak coordination within and between ministries and UN agencies as well as with the private sector. The communication and coordination between sectors currently happening is not formalised or institutionalised. There have been no deliberate efforts towards reinforcing these linkages.

Weak monitoring and evaluation

The menu of policies, strategies and plans meant to address food and nutrition insecurity is not matched by deliberate attempts to assess progress through documentation, regular monitoring and impact evaluations. There is often no clear link between policy and activities on the ground. The major reason given for this gap is the lack of capacity in terms of limited human resources and high staff-turn-over.

There are, however, several institutions in Namibia that collect information on different dimensions of food and nutrition security. The National Early Warning Unit in MAWF conducts Agricultural Inputs and Household Food Security Assessment Missions to assess the availability of inputs, farmers' preparedness for the season, changes in household food security and to collect information on prices. Timely bi-annual crop assessments are also carried out to collect data on area planted, production and yield estimates. MoHSS have three information systems namely Health Information System, Demographic Health Survey (DHS), and Sentinel Surveillance Systems. These collect routine data at district, regional and national level on growth monitoring and assess nutritional status, treatment, breastfeeding and diseases. Price data at different zones in urban areas is collected by the National Statistics Agency, which is essential for determining people's access to food. Data collected through the Namibia Vulnerability Assessment Committee (NAMVAC) provides information on livelihood vulnerability and food nutrition security through an annual, widely accepted exercise.

Although a wealth of information is generated by various Government information systems, several gaps and limitations exist. These include inadequate regular monitoring at household level in all regions, limited coordination of food and nutrition security monitoring and insufficient capacity. Most strategic and guiding documents are generally developed using out-dated data. For example the DHS is the main source of nutrition, gender and health data but this is collected every five years, leaving the country with limited data to guide programming on a continuous basis. There are also delays in the release of data due to bureaucracy associated with report approval and dissemination. Efforts have been made to address the gaps through the establishment of the Namibia Food and Nutrition Security Monitoring System (NFNSMS). This has been piloted in six regions to incorporate individual units into a harmonised system and synthesis the information in a holistic manner.

Capacity constraints

There are capacity constraints are in terms of competence and skills as well as poor management of programmes and processes. For example there is limited capacity among nurses and community health workers who are primarily responsible for delivering nutrition programmes. Poor management is reflected in the form of accountability, weak oversight and abilities to manage programmes. This situation has been attributed to time constraints; too much work assigned to the workforce, high turnover rates as well as high attrition rates. The latter is due to high mobility especially in the health sector where at a hospital level staff is rotated on a regular basis.

Drawing out the key challenge: coordination and coherence

A genuine, coordinated attempt to align policy to effectively address food and nutrition security demands deliberate and methodical action across different domains of policy. Such action would involve systematically addressing the immediate and underlying determinants of food and nutrition security, the health environment, care practices, diet, and health status. These factors face important challenges as overall there is a difficult environment for improving food and nutrition security with so many key areas that need to be addressed simultaneously by coherent and joined-up policy and programming.

CHAPTER 4: RECOMMENDATIONS

Chapter 4 suggests recommendations and indicates a road map for the way forward.

4.1 ADDRESSING THE KEY CHALLENGE: COORDINATION AND COHERENCE

The success of a national strategy to address food and nutrition security relates directly to a suite of adequate and clear policies and related programmes that are effectively aligned. This implies that the public sector, which is comprised of a mix of institutions with varying structures, mandates, and accountabilities, has to agree and target a number of interventions that collectively will address the issue. This will depend on clear relationships based upon a growing recognition of the importance of food and nutrition for people's development, which in turn will bolster the political commitment required to address the issues. An inclusive coordination mechanism supported by a strong legislative framework would, in turn, underpin the institutional arrangements required to ensure that the goals are taken on board by various sectors to ensure that implementation occurs.

All this requires enhanced institutional capacity that can contribute to realising higher degrees of coherence and coordination. A central argument is that addressing the complex drivers of food and nutrition insecurity requires policies and programmes that mutually reinforce one another, thereby contributing to shared goals and outcomes. Essentially the best outcomes, in terms of effective implementation, will be seen when policy is well aligned with political motivations on the part of government and non government actors, and that multiple stakeholders need to be coordinated around what is a complex and multidimensional policy and implementation challenge.

4.2 ESTABLISHING A COORDINATION MECHANISM: GOVERNING ZERO HUNGER

The complexity of the Namibian food system means that there are a wide range of the influential stakeholders in determining every aspect of access, availability, utilisation and stability of supply of food in the country. This strategy seeks to balance the direct interventions required of the state to ensure that all the residents of the Namibia have access to food and more indirect interventions that seek to influence the food system to ensure that it is more inclusive.

It is, however, important to acknowledge that the state, and particularly provinces, has a limited set of levers to influence these dynamics. Improving the food security, therefore, can only be successfully pursued through the building of robust partnerships between the different spheres of the state, the private sector and civil society including communities. Relevant policy and programmes that seek to address complex problems should involve a wide range of stakeholders working together. This approach aligns well with the national policy framework and international trends towards the formation of food governance structures, to coordinate the different aspects of a response to food insecurity. Such a multi-stakeholder approach will become ever more necessary as the effects of climate change begin to transform aspects of the food system.

It is imperative that an effective coordination mechanism consisting of a wide range of sectors and stakeholders, inside and outside of the state, is established. This should be empowered to both insure that the programmes of individual departments align with the strategic intent outlined in this strategy and to improve the levels of coordination and collaboration between departments within the province and with the other spheres of government. The identification of collaborative opportunities and

formation of partnerships also requires a systematic space to bring together the private sector and civil society.

Such a structure may fall within the Office of the Prime Minister based on its over-arching and convening position. Such a position would confer greater power to the structure to enable it convene a multi-stakeholder platform, ensure adequate coordination to address food and nutrition insecurity across different scales, and mobilise resources from different sectors. Without a strong political champion driving Zero Hunger to create the space in which to work, little will be achieved. Thus the institutional positioning of the coordinating structure requires a clear definition of the level of autonomy and authority in relation to other sectors.

Once the coordinating structure is established, other sectors will have to be drawn in to develop a broad strategy that encompasses different strategic options that can be implemented at regional level. A key question, therefore, is what are the incentives that can be used to coordinate a multi-sectoral response to addressing Zero Hunger? A number of factors that lubricate the mechanisms of coordination can be identified from experiences elsewhere, including:

- A shared understanding of the problem at hand;
- Genuine participation and ownership among participants and stakeholders in the agreed response;
- Clear roles and responsibility of all participants and stakeholders;
- Effective accountability mechanisms; and
- Flexibility to create appropriate responses and partnership types at different scales.

Building capacity both within the coordinating structure and within other sectors will become a priority. The facilitation of multi-sectoral action requires strengthening not only of technical but also strategic and management capacities, bolstering individual and institutional capacity to broker agreements, resolve conflicts, build relationships, respond to recurring challenges and opportunities, and undertake strategic communications within and across sectors. Key actions include:

- Assessing the human and institutional capacity: The local research institutes should be used to undertake needs assessments and disseminate information. In addition, there is need for designing a tertiary academic programme in food security and nutrition to create a pool of expertise/experts in these fields.
- Build awareness among decision makers: Another essential area of capacity building should include creation of awareness of food and nutrition security issues at the highest level.
- Build capacity for multi-sectoral programming to effectively address the causes of food and nutrition insecurity: This may mean development of tools and methodologies to create a shared understanding and establish a mass of technical expertise across a number of sectors who can effectively integrate nutrition on the ground.

Finally, the establishment of an effective food and nutrition security governance system requires a systematic approach to the collection and assessment of data to understand the way in which the food system is changing and affecting the lives of the residents of Namibia, particularly the poor. The country needs to build strategic partnerships with key stakeholders to ensure that the data that is already being collected is readily accessible to policy and decision-makers and, where gaps exist, identify them and possible partners that have a mutual interest in addressing them. This would

essentially build on the establishment of the Namibia Food and Nutrition Security Monitoring System that is forging a harmonised system for holistic monitoring and evaluation.

4.3 SPECIFIC SECTOR RECOMMENDATIONS

To achieve the goals of the Zero Hunger Challenge requires more than single interventions in agriculture, health, or any other sector. Instead, the approach has to be multi-sectoral to leverage linkages across sectors. For example, investments in rural infrastructure to improve access to clean water, provide adequate sanitation, promote proper hygiene, and increase health clinics will be vital to promote food security, nutrition, and health. In these and other ways, technologies, policies, and institutions can help eliminate hunger and malnutrition. In other words specific, sector specific interventions should be brought to the table and through a process of review and reflection, be adapted to become truly effective in aligning with other sectors and building on the strengths of "joined-up" government.

A number of specific sector recommendations have been identified in the review process although it is recommended that the Office of the Prime Minister and an established coordinating structure should convene a process to develop a full Zero Hunger Strategy and thereby select priority interventions through the process (roadmap) outlined below. These broad recommendations are presented under annexure 1.

4.4 ROADMAP AHEAD

Addressing food and nutrition insecurity hunger in Namibia by 2030 is attainable if sufficient resources are allocated and appropriate policies and investments are pursued. Key to this is establishing and building appropriate institutional arrangements that will enable the effective governance of the food system and the efficient allocation of resources across sectors.

Convening a multi-sectoral and multi-stakeholder forum to establish a coordinating mechanism and to agree on the strategic options for Zero Hunger is the first step.

Looking beyond the establishment of such an entity, appropriate strategies and policies will need to refocus on Namibia's food and nutrition challenges identified in this Strategic Review. To achieve this this the OPM, WFP and the Coordinating Mechanism should convene a high-level process to review key sectoral programmes and to ensure their focus on a shared vision.

This process should identify and design alternative policy options (or policy packages) to address sector-specific or economy-wide issues and consider whether appropriate institutional arrangements for policy implementation are in place. This process should highlight opportunities for mainstreaming food and nutrition security.

A related activity is to assess the capacities required (individual, organisational and systemic) and finance available to adopt and support different policy options. This could be supported through applying a food and nutrition security lens to capacity with regard to individuals (analytical tools,

skills), organisations (staff, infrastructure), and wider systems (including cross-sectoral mechanisms and platforms for engagement).

Decision makers, on the basis of this information will choose the policy package, which “optimise” the net expected impacts of a given sector/domain.

Effectively tackling the breadth of food and nutrition security challenges that exist at local and national levels requires that Namibia adopt whole food value chain approach to food security. Such an approach, from “seed to fork”, includes sustainable production in the fields, linking smallholders with markets and retail centres, consumption and building the overall resilience of the food system – with emphasis on improving inclusiveness, efficiency, sustainability, nutrition, and food safety.

Annexure 1: Sector Specific Recommendations

Specific sector recommendations have been identified in the review process although it is recognised that the Office of the Prime Minister and an established coordinating structure will likely convene a process to develop a full Zero Hunger Strategy and thereby select priority interventions.

Food Availability (focusing on smallholder agriculture):

Nutrition-sensitivity through the food value chain:
An overriding objective is to better integrate nutrition into the whole food production value chain. The starting points for this include the provision of incentives to farmers through new policies and increased investment in research and development to produce more nutritious crops.

Focus on women:
One of the important ingredients that have not received adequate attention is improvements in the role of women in agriculture, which can lead to higher agricultural productivity, reduced hunger and malnutrition, and better rural livelihoods. Strengthening land rights, improving access to inputs and financial services, and providing training and information could achieve women's empowerment in agriculture.

Grain production:
To improve grain production is crucial for Namibia and the Green Scheme to invest more in the expansion of the area under irrigation. This should include investing in new technologies such as rainwater harvesting by smallholder farmers as well as exploring ways of harnessing Namibia's underground water reserves for irrigation.

More research to produce drought resistant varieties of crops should also be a priority, particularly for smallholder farmers. The idea is for farmers to harness technology so as to improve their technical efficiency and ultimately increase yield.

Livestock production:
Improving performance of smallholder livestock sector in the NCA requires a programme focused on adoption of technology and improvement of economies of scale in production. One component of the programme will focus on research to improve livestock quality, emphasising breeding and grazing improvement. The grazing can be improved through community-based rangeland management to allow communities to come together and benefit from economies of scale.

The other component will address marketing issues, by searching for alternative markets for livestock products from the NCA. Concerted efforts should be made to educate the farmers on the importance of participation in the livestock markets that can include linking them to banking systems to provide credit and savings facilities.

Horticulture production:
To improve local horticulture products' market share, a programme that will intensify local production is needed. While AMTA can continue to stimulate the marketing side, more research should be

conducted to develop new production systems that use less water and space just like the hydroponic technology and the greenhouse production technology.

Land access:
With respect to land reform, there is need for critical review of progress. The "right people" should be matched to the "right land options". This should be linked to the funding model, which rewards those performing and supports those who are not.

There should be an institution to supervise coordination of service provision for the resettled farmers. Before land is bought and people are settled, there should be research on land use and the carrying capacity. Robust monitoring and evaluation systems should be invested in so as to ensure optimum land use by the beneficiaries.

Fisheries development:
For the fishing sector there is need for further research on inland aquaculture production systems. The programme should integrate fish production and nutrition with more awareness-raising initiatives.

More investment is needed for infrastructure development as well as exploration of alternatives, particularly for the fresh water fish in the region.

Food Accessibility

In terms of strengthening accessibility of food:

Broad Social Protection Interventions:
Social protection for the urban and rural poor is key for food security and nutrition in Namibia. Productive, cross-sector social safety nets can help small farmers cope with livelihood shocks and provide them with long-term profitability-enhancing opportunities. Similarly social grants and safety nets can support vulnerable people to access good quality food.

- Undertake a national identification and registration programme for pensioners and orphan and other vulnerable children, especially in marginalised and isolated communities.
- Increase cash transfer payment points, and possible introduction of alternative payment methods.
- Develop a national database that records all beneficiaries of social protection, and the database have to be shared by all government departments.
- Apply a national data management system accessible to all ministries with annual updates to reduce errors.
- Apply food and cash for work programmes so that communities remain engaged with the labour market.

Broad Infrastructure Interventions (Resilience Building):

- Upgrade relevant infrastructure so that it is more robust to floods and flooding.
- Construct and maintain evacuation centres with adequate facilities in flood-prone areas e.g. schools.
- Implementation of the proposed FoodBanks to help the poorest have access to food.

- Maintain adequate strategic grain reserves to stabilise supply during drought periods. Expand storage facilities.

Broad Production Interventions:

- Expand quarantine facilities in areas affected by food and mouth disease.
- Organise national vaccination programmes and awareness campaigns to fight the foot and mouth disease.
- Open new markets for beef and other meat products from north of the cordon fence e.g. into neighbouring countries.
- Put in place a price stability mechanism to reduce livestock price volatility.
- Assist farmers with training and infrastructure development to reduce post-harvest losses.
- Promote non-farm income generating activities in the drought-prone areas e.g. community tourism projects.
- Expand irrigation schemes especially in areas occupied by smallholder farmers.
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- Expand irrigation schemes especially in areas occupied by smallholder farmers;
- Educating farmers about treating farming as a business, and that they can destock during drought and restock when conditions improve.
- Expand the import market beyond South Africa, which will reduce prices on the domestic market.
- Reduce post-harvest losses when storing grains, and when distributing it e.g. cases of spoilage of school feeding programme food.

Broad Education Interventions:

- Enhancing educational outcomes through skills training in line with the economy's requirements
- Shift from a supply-drive to a demand-driven education and training system
- Enforcement of equality laws, punishing gender-based discrimination.

Food Utilisation (Nutrition) Interventions

In terms of strengthening nutrition programmes:

Improve Infant and Young Child Feeding:

Improving infant and young child feeding, particularly during the first two years of life, is crucial for preventing and reducing chronic undernutrition and micronutrient deficiencies. The following interventions are currently progressing well, but need to be increased in scale:

- Exclusive breastfeeding, up to 6 months of age and this should be encouraged through promoting and implementing the International Code of Marketing of Breast-milk Substitutes.
- Facilitating breastfeeding through flexible work environment and maternity leave policies, ensuring the full 10 steps of breastfeeding are implemented.
- Continued breastfeeding, together with appropriate and nutritious complementary food up to 2 years of age and beyond, should be encouraged.
- Direct provision of extra nutrients such as vitamin A supplementation and to link this with immunisation days.

Improve the quality of diets of all Namibians:
The promotion of quality foods should be emphasised and integrated with traditional food production and consumption methods, especially for pregnant and lactating mothers, adolescents and infants. It has been shown that the most effective educational interventions use a carefully selected small number of specific key messages about practices that can feasibly be adopted by the target population, rather than general advice on child feeding. Successful interventions should also be culturally sensitive, accessible and integrated with local resources, as well as affordable and convenient for local families.

It is essential that guidelines on micronutrients be developed to help reduce malnutrition, particularly stunting. Training, awareness raising and dissemination with monitoring and evaluation should follow this.

On-going efforts on food fortification should be strengthened, including the development of food fortification legislation and addressing the concerns of infrastructure and financial resources, as identified in the two studies commissioned by the Food Fortification Working Groups.

Strengthening community and backyard garden interventions in-order for increasing dietary diversity, particularly in areas with restricted market access to nutritious foods, and is also important for coping with food price fluctuations. Most of the current gardens are not performing well and the reasons provided are varied. It is therefore important that all these efforts (agriculture, regional councils, traditional leaders, NGOs and other) are consolidated, integrated and coordinated under the same planning, implementation and monitoring frameworks. Of critical importance is the integration with nutrition through nutrition education.

Strengthen support for bio-fortification:
Bio-fortification should be prioritised through the development of nationally appropriate bio-fortified crop varieties and a scale up their adoption and consumption. In bio-fortification, conventional crop breeding techniques are used to identify varieties with particularly high concentration of desired nutrients such as zinc, iron or vitamin A, for example, in addition to other productivity traits desired by farmers. The bio-fortified seeds or cuttings can then be distributed through extension programmes. Another area of support should be directed in the development bio-fortification legislation.

Strengthen the school-feeding programme:
While progress has been made in school feeding, much work now lies on developing the concept, accelerating progress towards linking school feeding to family farming as well as development of the school feeding policy. In Brazil, under the Bolsa Familia Programme, this has led not only to better nutrition among school children but also effective integration of food and nutritional education and greater community involvement and significant improvements in income and the welfare of family farmers.

This will require better planning, and coordination between sectors, particularly education, agriculture, health, water and sanitation.

In addition, there is need for diversifying the school feeding meals with protein rich commodities to provide a balanced diet. Introducing fish, milk, high energy biscuits, legumes and vegetables would contribute to the nutritional needs while at the same time helping children to attain their educational objectives.

Other important related interventions would be that of accelerating/scaling up the establishment of early childhood development centres (ECDs) where mothers including adolescents/teenagers can leave their children when they go to engage in economic activities that diversify their incomes.

Accelerate access to sanitation:
In recognition of the poor sanitation coverage, the government has developed a good policy framework and strategy for improving the situation. Building on this initiative, more effort needs to go on strengthening the political commitment in terms of improving coordination, commitment and implementation of various stakeholders.

Food Stability Through a Sustainable Food System

In terms of strengthening a sustainable food system:

National Disaster Risk Management Policy:
The establishment of the Disaster Risk Management (DRM) office within the Office of the Prime Minister provides a national disaster preparedness and response unit to coordinate preparedness and relief operations in the country. The major weaknesses of the structure is that there is no legal instrument that specifies the chain of command to facilitate the disaster risk management authority (DDRM) to mobilise the regional authorities and stakeholders during disaster and significant events.

Focus on bringing in skilled human resource capacity for coordination and operations regarding disaster risk management. As a result, preparedness, response and recovery measures against future disasters are often lacking in quality and effectiveness.

Drought Policy:
Implement the Drought Policy of 2010, which seeks to improve management of the effects of drought to help farmers take proactive responsibility.

Conservation agriculture:
A key intervention to build sustainable food production systems is the Comprehensive Conservation Agriculture Programme for Namibia to counter land degradation and to increase adaption to climate change for sustainable crop and production and improve rangeland management.

Conservation agriculture will also contribute to mitigating the impacts of climate and erratic weather patterns, the widespread use of traditional farming practices, limited farm sizes, and the quelea birds, which destroy *mahangu* crops, all of which contribute to low levels of production.

Food Loss and Food Waste

Build better information:
Measures to avoid food losses have to be taken at all stages of the food value chain. The implementation of measures requires all actors to be involved, including the government. There is need for in depth research to quantify the scale of food loss in Namibia.

Utilise Information Communication Technology:
Since Mobile Tele-Communication (MTC) has put up network towers to enable connections, this can be used to communicate information concerning food. This could be used to enable compliance with food safety and traceability standards. This system encourage producers and retailers to produce and market good and quality food as the produce can be easily be traced and the price of the price degraded if it does not comply with the standard.

Increase Awareness:
Namibia should implement consumer awareness campaigns, which reveal how much food people waste and provide simple solutions for cutting down on that waste.

Build Political Commitment:
The issue of food losses and waste is silent on the political agenda of Namibia. Food waste is likely to constitute a growing problem given the changes that food systems are undergoing because of rapid urbanisation, expansion of supermarket chains, and changes in diets and lifestyles.

Government needs to introduce a Save Food Initiative that should give priority to interventions that prevent food loss and waste from occurring in the first place, followed by interventions that can lead to reduced loss and waste.

Strengthen Collaboration and Coordination:
Collaboration and coordination of national initiatives on food loss and waste reduction need to be established in partnership with public and private sector organisations and companies that are active in the fight against food loss and waste.

Strengthen Proper Storage Facilities:
The key intervention all along the food chains is to improve storage conditions. There are a number of post-harvest technologies developed to protect stored grains from pests, for instance, insecticide protection is recommended to protect stored grains, but is often unavailable or too expensive for smallholder farmers.

There is a need for intensive efforts by researchers, donor agencies, government, non-governmental organisations and other development partners to scale up affordable and adaptable storage technologies and solutions for Namibia.

Refrigeration:
In case of preservation of quality of harvested perishable foods, the most important issue is temperature control. There is a need for alternative, low-cost, electricity-independent options.

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