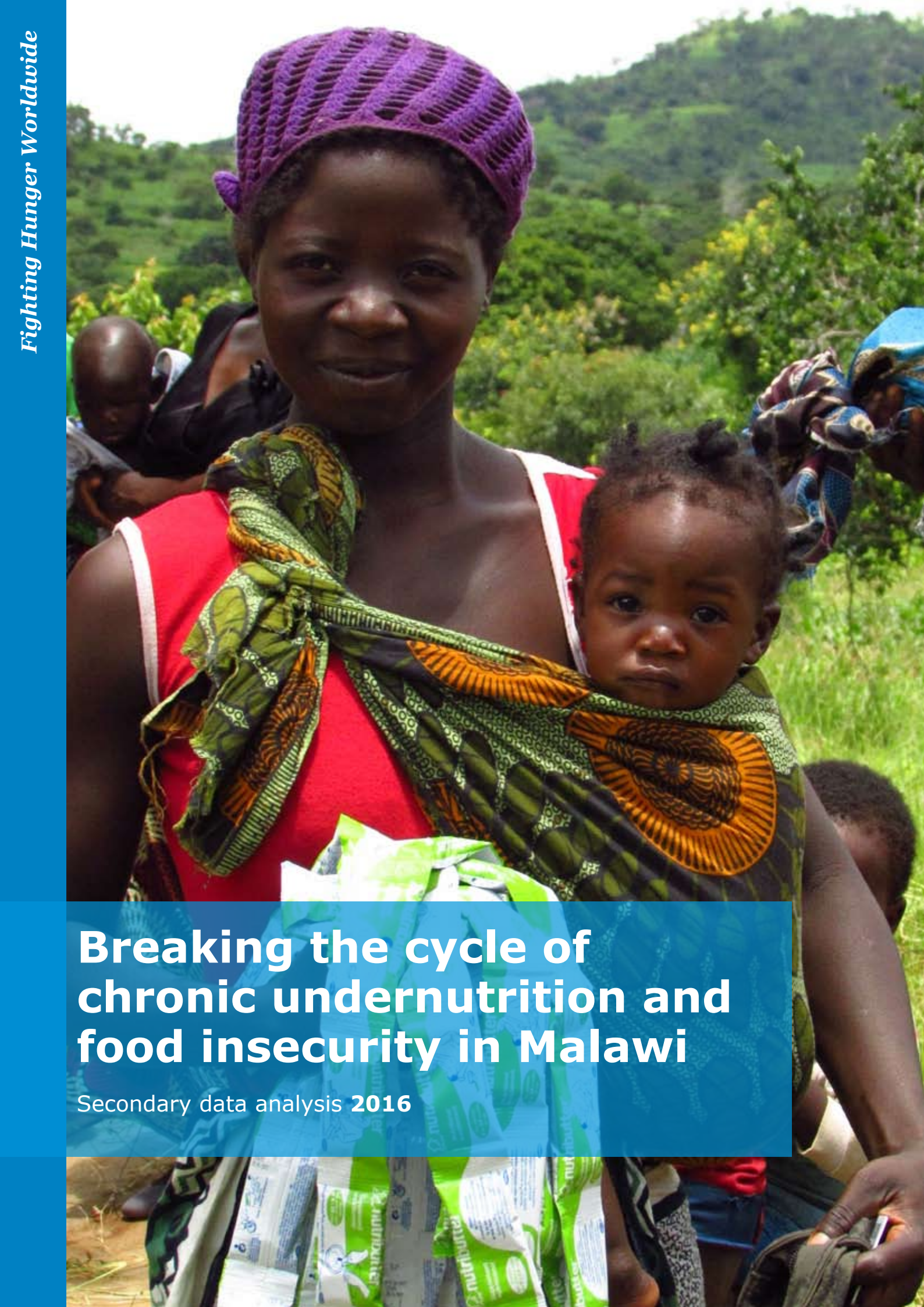




Breaking the cycle of chronic undernutrition and food insecurity in Malawi

Secondary data analysis **2016**

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A joint production of:



Background

Malawi is a low income country with a GDP of \$5.44 billion (2016) and ranked 170 out of 189 countries on the Human Development Index¹ (HDI) and 30 out of 118 developing countries on the 2015 Global Hunger Index². More than half of its population (57%) is classified as poor³. Rural families headed by women tend to be the poorest⁴.

Over 80 percent of Malawi's 17.2 million people⁵ are smallholder farmers relying on small parcels of densely cultivated, chiefly rain-fed land for their livelihoods and are highly vulnerable to the effects of natural disasters such as floods and droughts.⁶ Drought and severe flooding are increasing in frequency, intensity and unpredictability in Malawi, giving the most vulnerable households inadequate time to recover. Twenty-five percent of the country has experienced drought more than seven times in the last decade⁷.

Smallholder farmers have borne the effects of a prolonged El Niño-induced drought in 2016/17. Flooding in southern districts, followed by countrywide drought conditions and other factors, greatly reduced the national harvest leading to the second consecutive year of deficit production of maize, the key crop for household food security.

Chronic undernutrition⁸ (measured by stunting or low height for age) continues to be

¹ http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf

² <http://ghi.ifpri.org/>

³ Integrated Household Survey 3 2012

⁴ Three in 10 households are headed by women (DHS 2015/16)

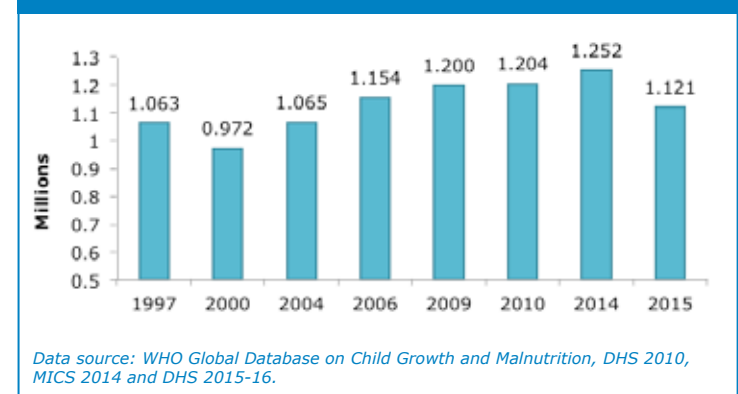
⁵ World Bank 2015

⁶ <http://www1.wfp.org/countries/malawi>

⁷ <http://www1.wfp.org/countries/malawi>

⁸ This report uses the term undernutrition, defined as the outcome of insufficient food intake (hunger) and repeated infectious diseases. Undernutrition includes being underweight for one's age, too short for one's age (stunted), dangerously thin (wasted), and deficient in vitamins and minerals (micronutrient undernutrition). The term malnutrition refers to both undernutrition and overnutrition. https://www.unicef.org/progressforchildren/2006n4/index_undernutrition.html

Figure 1 Absolute number of stunted children between 1997 and 2015



one of the main developmental challenges for Malawi. Although the stunting⁹ rate has declined steadily since 1997, the findings of the last DHS survey (2015-16) showed that chronic undernutrition still affected 37 percent of children under five years. While stunting prevalence has fallen over the last two decades, the absolute number of children with chronic undernutrition increased from 1,062,650 in 1997 to 1,121,346 in 2015 (Figure 1).

In 2016 some 39 percent of all Malawians were food insecure – rising to 45 percent of rural people (MVAC 2016), marking a further deterioration from the 2015 situation (17%) and the worst food security situation since 2005. In absolute numbers: 6.5 million people in 2016 were food insecure versus 4.9 million in 2005.

Households' ability to prepare for difficult times by saving or investing are constrained by high inflation, high food prices and limited opportunities for income-earning work.

⁹ Stunting (low height for age) is a measurement of chronic undernutrition characterized by a slowing in the growth of a foetus or child and resulting in a failure to achieve expected length in comparison to a healthy, well-nourished child of the same age. It is an indicator of past growth failure and is associated with a number of long-term factors, including chronically inadequate levels of protein and energy intake, micronutrient deficiencies, frequent infection, inappropriate feeding practices over a sustained period, and household poverty. It is not an accurate measurement of short-term changes in nutritional status.

Report rationale and objectives

The overall objective of this report is to carry out a systematic and unified analysis of the nutrition and food security situation in Malawi to feed into national planning processes.

A critical review of the linkages between food security and chronic undernutrition within the wider context is crucial to improve the effectiveness of short, medium and long term programmes and policies that aim to build people's resilience¹⁰, stabilise food security and reduce chronic undernutrition to acceptable levels. This analysis provides an opportunity to better understand the pathways to chronic undernutrition and food insecurity and identify key investment areas for resilience-building.

¹⁰ The international development community has numerous definitions and understandings of the term 'resilience'. They generally refer to the ability of communities, households and individuals to manage risk from sudden shocks and long-term stresses and to respond positively to change without compromising their long-term potential.

The extension of the current Malawi Growth Development Strategy (MDGS) II until June 2017, provided an opportunity to undertake this analysis and expand the evidence base to inform the next major national planning processes, including the MGDS III, the Common Country Analysis¹¹ (CCA) for the United Nations Development Assistance Framework (UNDAF) and agency-specific strategies.

Overview of chronic undernutrition

There are multiple and interlinked underlying causes of chronic undernutrition. These include a chronic lack of nutrients during a child's first 1,000 days, from conception to their second birthday, although stunting can start before birth if the mother is herself

¹¹ The CCA is an objective, impartial assessment (a description of what is happening) and an analysis (a description of why it is happening) of the country situation. It strategically positions the UN system in the country and serves primarily as a programming tool.

Objectives

- 1 Identify drivers of food insecurity and chronic undernutrition in Malawi.
- 2 Explore the depth of the relationship between food insecurity and chronic undernutrition in Malawi.
- 3 Map the opportunities and priorities for long-term programming for government authorities, development partners and civil society bodies at national and district level.
- 4 Identify key investment areas to build people's resilience to shocks and stresses.
- 5 Identify gaps in existing information and evidence.
- 6 Recommend a set of indicators for food and nutrition security monitoring to strengthen existing monitoring.

malnourished and/or ill and cannot pass on enough nutrients to her unborn child. Poor feeding practices, poor food quality, and frequent infections are other causes. Stunting is also associated with low birth weight, child anaemia, lack of parental education, lack of healthcare, and poor household sanitation.

Whatever the cause, the damage caused by stunting is irreversible. It significantly increases the risk of childhood death: for instance, a stunted child is five times more likely to die from diarrhoea. Those children who survive are at much greater risk of illness and disease.

Stunting also causes major long-term damage to brain and nerve development and function. These include reduced mental skills and activity, and impaired physical movement and coordination. This damage may result in lower IQ and poorer performance in school in childhood and adolescence¹².

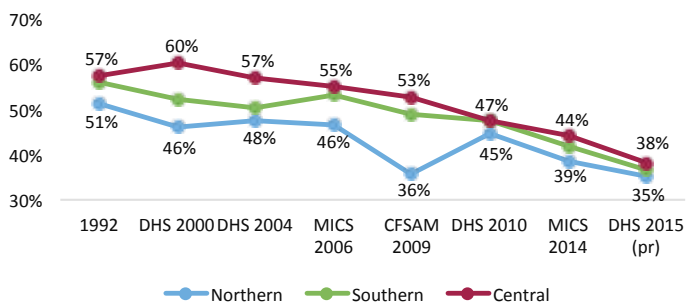
So stunting can have significant educational and economic consequences at individual, household and community level¹³. When a child is undernourished, the negative consequences follow that child for his/her entire life and have grave effects on the economies where s/he lives, learns and works. Children who performed poorly in school because of nutritional deprivation are less productive as adults and earn less than their healthy peers. The cycle of undernutrition and poverty thereby repeats itself, generation after generation.

The Cost of Hunger in Malawi report of 2015, which was commissioned by the African Union (AU) and supported by the United Nations Economic Commission for Africa (UNECA) and the United Nations World Food Programme, confirmed the magnitude of the consequences of child undernutrition on health, education and the national economy. It estimated the annual loss in potential productivity incurred by undernutrition to be the equivalent of 10.3 percent of Malawi's yearly Gross Domestic Product (GDP).

¹² The right ingredients: the need to invest in child nutrition. UNICEF UK 2013 https://downloads.unicef.org.uk/wp-content/uploads/2013/03/UNICEFUK_ChildNutritionReport2013w.pdf

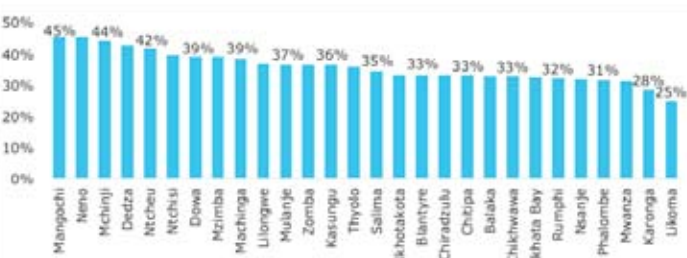
¹³ Walter et al. 2007, Black et al. 2013, WHO 2014

Figure 2 Stunting rates by region between 1992 and 2015



Data source: WHO 2012, DHS 2000, 2004, 2010 and preliminary results of 2015, MICS 2006 and 2014.

Figure 3 Prevalence of stunted under-fives by district



Data source: DHS 2015-16.

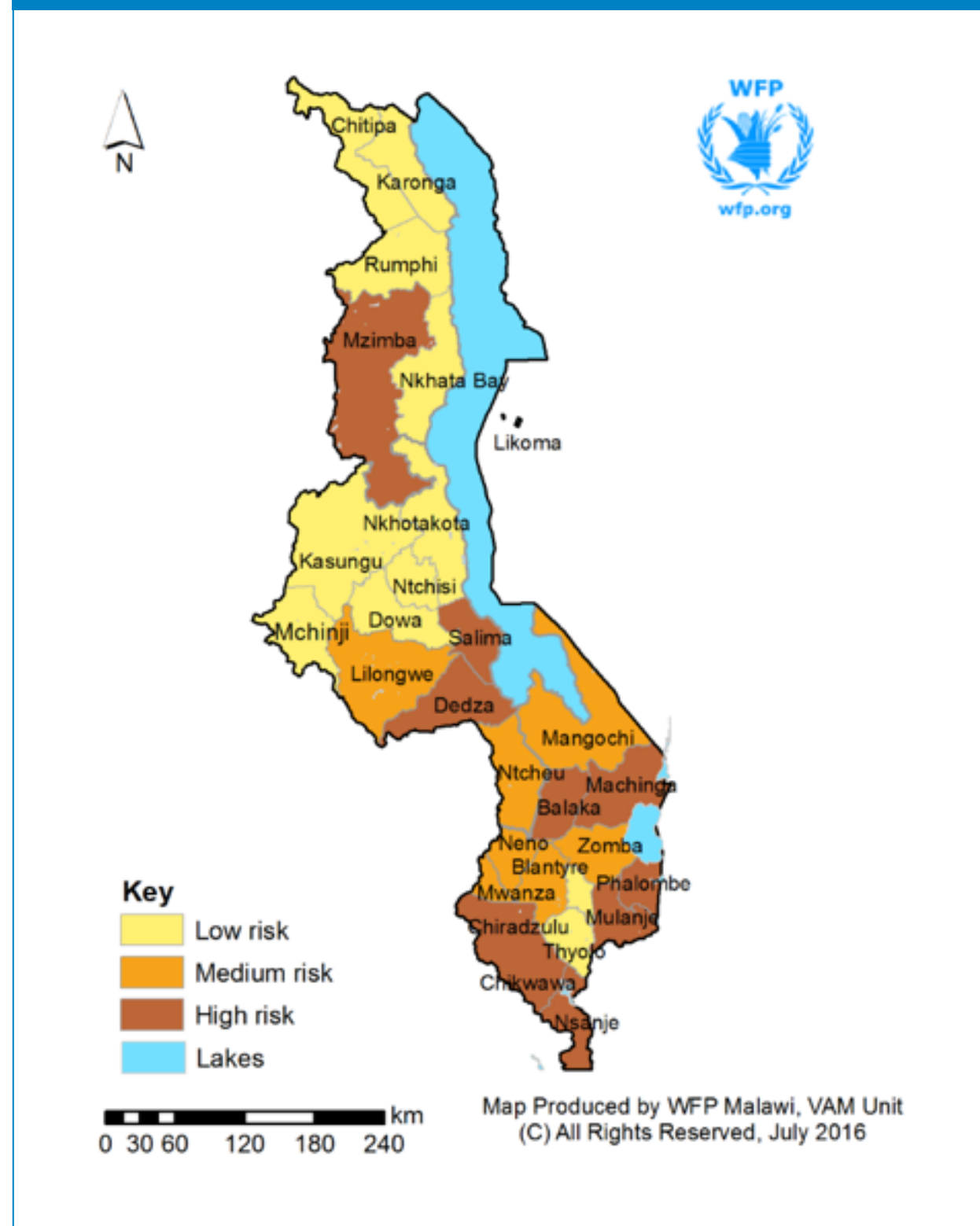
Reducing chronic undernutrition in Malawi is both a national objective and is in line with one of the global nutrition targets for 2025 endorsed by the World Health Assembly in 2012 (WHO 2013).

As already noted, despite the progressive decrease in stunting prevalence since 1997, very high numbers of children were chronically malnourished in 2015/16 and the overall prevalence still stood at 37 percent, considered 'serious' by WHO parameters.

There was little regional variation in the DHS 2015-16 report with 38 percent of children under five years stunted in the Central region, 37 percent in the Southern and 35 percent in Northern (Figure 2). In five out of the 28 districts (Mangochi, Neno, Mchinji, Dedza, Ntcheu) the prevalence was 40 percent or higher, considered 'critical' according to WHO cut-off points¹⁴. All other districts apart from Karonga and Likoma had serious rates (>30%) (Figure 3).

¹⁴ The WHO classification of severity of chronic undernutrition (height for age) in a community for children under five years of age is <20%: acceptable; 20-29%: poor; 30-39%: serious and ≥40%: critical

Map 1 Chronic food insecurity by district based on MVAC estimates between 2005 and 2016 and household food security estimates



Children in rural areas were more likely to be stunted than those in urban and the rate was slightly higher among boys than girls (Figure 4). The stunting rate increased from 21 percent in children under six months to 53 percent among those between two and three years old according to 2014 MICS (Figure 5).

Overview of food insecurity situation

Food security refers to a state in which all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences

for an active and healthy life (World Food Summit, 1996).

Despite the humanitarian and developmental efforts and resources invested in improving production and food security in the country, over the last two years the El Niño effect has resulted in an unprecedented increase in food insecurity. On 12 April 2016, the President of Malawi declared a State of National Disaster following the second round of decreased crop estimates caused by the prolonged dry spells during the 2015/16 season. Some 39 percent of the country's total population was food insecure – rising to 45 percent of the country's rural population (MVAC 2016), marking a further deterioration from the 2015 situation (17%) and the worst food security situation since 2005. In absolute numbers: 6.5 million people in 2016 were food insecure versus 4.9 million in 2005 (Figure 6).

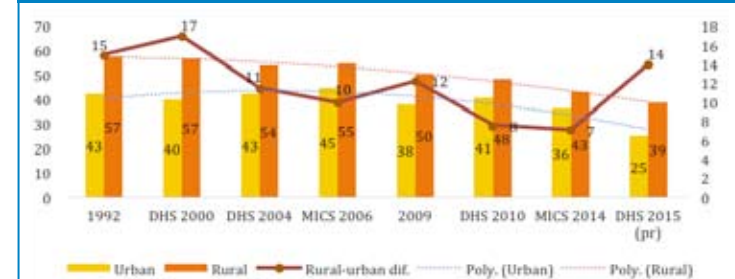
The nine months from July 2016 – March 2017 marked WFP Malawi's largest and longest humanitarian response in recent history, working with partners to provide over 6.7 million people in 24 out of the 28 districts with urgent food or cash support to tide them over to the harvest in March 2017. UNICEF supported the nutrition emergency response in all drought-affected districts by identifying and treating children under five years with severe acute malnutrition, immunizing children aged 6 to 59 months against measles, and providing lifesaving commodities to all 707 community management of acute malnutrition (CMAM) sites¹⁵.

Different methodologies may be followed to estimate the level of food security. This report uses the Consolidated Approach to Report Indicators of Food Security (CARI) and the Food Consumption Score (FCS) to estimate food insecurity at household level, and the Household Economy Approach (HEA) to determine food insecurity at regional level, as it is the methodology followed by the Government of Malawi for decision-making.

Malawi's food security situation is historically unstable. According to the Malawi

¹⁵ https://www.unicef.org/about/annualreport/files/Malawi_2016_COAR.pdf

Figure 4 Chronic malnutrition in rural and urban areas since 1992 to 2015



Data source: WHO 2012, DHS 2000, 2004, 2010 and preliminary results of 2015, MICS 2006 and 2014.

Figure 5 Stunting rates by age group

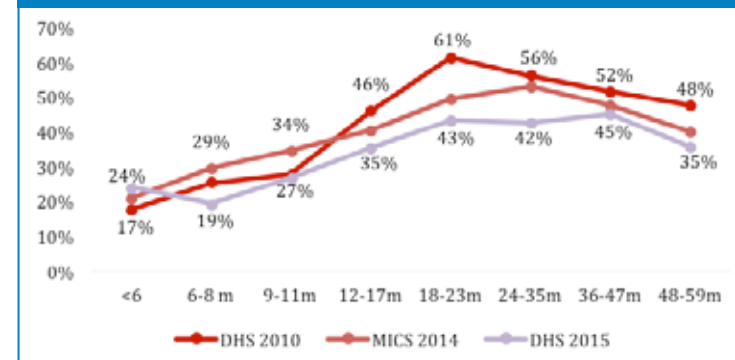


Figure 6 Percentage and absolute number of food insecure people between 2005 and 2016 according to MVAC



Vulnerability Assessment Committee (MVAC), for the last 12 years between just one percent and 46 percent of the population has been food insecure, reflecting both households' low resilience to shocks and the potential to reduce food insecurity. Despite the efforts and resources invested, the number of food insecure people in 2016 reached the highest number for 12 years and 1.5 million more than in 2005, when the percentage of food insecure households was similar (see Figure 6).

Since 2005, 20 districts have been targeted for six or more years out of 12, according to

MVAC methodology. Among them, Balaka, Chikhwawa and Nsanje were targeted every year, Blantyre and Phalombe for 10 years, and Machinga, Mwanza and Zomba for nine years.

To determine chronic household-level food insecurity, MVAC results and household food security estimations based on FCS at

household level and the CARI approach applied to IHS3 were cross tabulated. From this classification, districts with the highest levels of chronic household-level food insecurity were Balaka, Chikhwawa, Dedza, Machinga, Mzimba, Mulanje, Nsanje, Phalombe and Salima with an average of 79 percent (*Map 1*).

Methodology

The information contained in the report derives from desk reviews and secondary analysis of assessments previously conducted. No primary data collection has been undertaken.

Data sources include: Demographic Health Surveys (DHS) since 2000, Multiple Indicator Cluster Survey 2014 (MICS), the Integrated Household Survey 3 (IHS3), the WFP Comprehensive Food Security and Vulnerability Analysis 2009 (CFSVA), Emergency Food Security Assessments (EFSA) 2013 and 2014, the annual Malawi Vulnerability Assessment Committees (MVAC) assessments, the Malawi nutrition SMART survey 2016, Agriculture Production Estimates Survey (APES), the Agriculture Market Information System (AMIS), and rainfall data.

Following a literature review of food and nutrition security and bilateral meetings with government representatives, UN agencies and NGOs, potential key factors linked with food insecurity and undernutrition were identified. After the presentation of the study at the MVAC training sessions, more discussions took place and inputs noted. Bilateral meetings were held with the Malawi Vulnerability Assessment Committee (Ministry of Finance, Economic Planning and Development), Food Security and Statistics Units of the Ministry of Agriculture and Food Security, Department of Nutrition HIV and Aids (Ministry of Health), FAO, UNICEF, IFPRI, Food For Peace, Action Against Hunger Malawi (ACF), Concern Worldwide and Concern Universal.

Two levels of analysis were conducted: exploratory and confirmatory analysis.

Exploratory analysis¹⁶ A high level analysis of indicators (on agriculture, poverty, nutrition, health, WASH, demographics and food security) at the district level that helped focus the in-depth analysis.

Confirmatory analysis¹⁷ Multi-variate analysis to map the causal pathways of food and nutrition security indicators using household data. Logistic binary regression analysis was applied to the MICS 2014 dataset to identify immediate and underlying causes of chronic undernutrition and to the IHS3 dataset to determine the main factors associated with food insecurity. Statistical analysis included bivariate means and frequency tests, logistic analysis and principal component analysis.

The methodology and main results were discussed with a technical task team consisting of WFP, FAO, UNICEF and government representatives of the Ministry of Agriculture, Ministry of Health, Ministry of Economic Planning and Development, Department of Nutrition and National Statistical Office (NSO).

¹⁶ Exploratory analysis is a statistical method used to understand the underlying structure and relationships of a relatively large set of variables.

¹⁷ Confirmatory analysis is used to test whether the data fit a hypothesis, theory or previous analytic research.

Results were presented in a workshop with the participation of government representatives, UN agencies, INGOs and civil society. A summary of the main results was also presented during the food security cluster meeting.

Limitations

As this report consists of secondary data analysis, results and conclusions are limited to the information available in country at the time of analysis. Depending on the indicator analysed, information might be out of date, following a different methodology, different timing and frequency of data collection or geographical region or scale considered. The most complete national surveys with food security or nutrition indicators were the preliminary results of DHS 2015-16 and MICS 2014. It is highly recommended that the forthcoming IHS4 report be consulted to update and confirm the current results.

Analysis is based on cross-sectional and observational surveys and hence causality cannot be guaranteed. Results identify factors strongly associated, directly or indirectly, with stunting or food insecurity.

Child and/or mother food consumption are key indicators for understanding the linkages and causal pathways between food security and nutrition. But in Malawi no nationally representative survey contains information on household food security and individual food consumption that would allow the required analysis on food security and nutrition links.

Representative data on household food security is limited to the Integrated Household Survey conducted once every 5-6 years. This frequency of data collection reduces the possibilities of analysis about effects of seasonality and year to year shocks on household food security and limits forming a deeper understanding of household coping capacities.

Factors underlying chronic malnutrition

As highlighted above, although progress has been made in terms of addressing chronic malnutrition in Malawi over the last two decades, there is still much work to do. The following are the factors that the logistic binary regression analysis showed to be associated with stunting in Malawi.

Low birth weight

Birth weight is an important indicator when assessing a child's health. Children who weigh less than 2.5 kg at birth are reported to be very small or smaller than average, and are considered to have a higher-than-average risk of early childhood death. In the DHS 2015-16, birth weight was recorded from either a written record or the mother's report, which were available for 84 percent of live births

in the five years before the survey. Twelve percent of these infants had a low birth weight.

The highest percentages of low birth weight were found in Chitipa, Dedza, Machinga, Mangochi, Nsanje and Ntcheu (DHS 2015-16). Indeed three of these districts (Dedza, Ntcheu and Mangochi) had critical levels of stunting.

Babies being born to teenage girls could explain the relatively high percentage of small babies. Some 29 percent of 15-19 year olds had begun childbearing reaching 35 percent or more in Ntcheu, Machinga, Mangochi, Mulanje, Nsanje and Zomba. Almost three in four women did not discuss family planning issues with field workers or at health facilities in the last year, peaking at 84 percent in Mangochi (where stunting levels were the highest in the country).

Child anaemia

According to the DHS 2015-16, 63 percent of children between 6 and 59 months of age in Malawi had some form of anaemia (<11g/dl) (*Figure 7*). In Nkhata Bay, Salima, Nkhatakota, Chikhwawa, Neno, Nsanje and Machinga the prevalence was over 70 percent. Moderate or severe anaemia (<10g/dl) affected 36 percent of children and exceeded 40 percent in nine districts.

Consequences of anaemia in children include impairment of cognitive development, stunted growth and increased morbidity from infectious diseases (DHS 2015-16). Iron deficiency is estimated to be responsible for half of all anaemia globally. Just two in five children ate iron-rich foods the day before the survey, while 12 percent received an iron supplement in the week before the survey (DHS 2015-16).

Other causes of anaemia include hookworm and other helminths, other nutritional deficiencies, chronic infections and genetic conditions (DHS 2015-16). Less than half (45%) of under fives had been de-wormed in the six months before the DHS dropping to less than 30 percent in Karonga, Rumphi and Mwanza.

A positive reduction in child anaemia of 11 percent was observed between DHS 2004 and DHS 2010, but this trend has not continued with child anaemia remaining static since 2010.

Poor maternal nutrition and health

A child's health is inextricably linked to the health of his or her mother. Women who were stunted as girls, whose nutritional status was poor when they conceived or who didn't gain enough weight during pregnancy may deliver babies with low birthweight. These infants in turn may never recoup from their early disadvantage. Like other undernourished children, they may be susceptible to infectious disease and death, and as adults they may face a higher risk of chronic illness such as heart disease and diabetes.

According to the DHS 2015-16, 7.2 percent of non-pregnant women between 15 and 49 years old were classified as thin ($BMI \leq 18 \text{ kg/m}^2$); percentages were higher than 10 percent in Phalombe and Mangochi.

During adolescence, girls' risk of anaemia and iron deficiency increases due to quick growth and menstruation, often further enhanced by malaria and parasitic infections. Iron deficiency and anaemia slow growth and increase fatigue, leading to lower performance in school.

Anaemia also increases the risk of haemorrhage and bacterial infection during childbirth and is implicated in maternal deaths. In turn, babies may be born prematurely and suffer from infections, undernutrition, learning disabilities, and delayed development.

According to the DHS 2015-16, nearly one third of 15-49 year old Malawian women had anaemia (*Figure 7*). While the prevalence had fallen by 11 percent between DHS 2004 and 2010, the latest DHS showed no improvement. Geographically, the prevalence was lowest in the northern region and highest in the south; in Mangochi and Nsanje more than 40 percent of women had anaemia. Women in rural areas, with low educational levels and in lower wealth quintiles were more likely to be anaemic.

Pregnant women should take iron tablets for at least 90 days during pregnancy to prevent anaemia and other complications. According to the DHS 2015-16 just one third of women took iron tablets for at least 90 days during their last pregnancy.

Acute undernutrition of 6-23 month olds

Acutely malnourished children between six and 23 months of age were more likely to be stunted. These results point out the possibility of understanding stunting partly as a response to cyclical energy shortages. However further explorations of the association between wasting and stunting in other datasets from Malawi (e.g. DHS) are recommended. Relationships between stunting and wasting are not consistently found in analysis using cross-sectional data, likely because wasting

is a short-term and potentially seasonal phenomenon, whereas stunting results from a longer term multifactorial process of undernutrition (Richard et al. 2012).

Child illness (diarrhoea and fever)

Among immediate causes, **child sickness**, especially **diarrhoea** and **fever**, were identified by the bivariate and logistic analysis as key drivers of chronic undernutrition.

An undernourished child is more likely to become ill and illness aggravates undernutrition. When a child suffers from diarrhoea – due to a lack of clean water or inadequate sanitation, or because of poor hygiene practices – nutrients drain from his or her body. The cycle becomes ever more vicious: children weakened by nutritional deficiencies cannot stave off illness for long, and, experiencing more frequent and more severe bouts of illness makes them even weaker.

Between the 2004 and 2014 MICS, no net improvements were observed in the percentage of under fives with fever or diarrhoea.

Twenty-two percent of children under age five had diarrhoea in the two weeks before the DHS 2015-16 survey (*Map 2*), and advice or treatment was sought for 66 percent of them. The prevalence of diarrhoea increased sharply from six months, reaching 41 percent in children aged 6-11 months, when complementary foods and other liquids are introduced. Prevalence remained high (37%) at age 12-23 months, which is the time when children begin to walk and are at increased risk of contamination from the environment.

A similar trend was observed for incidence of fever – 29 percent of children under age five had a fever in the two weeks before the survey (*Figure 8*), and 67 percent of these children were taken for advice or treatment. It also peaked (41%) in 9-11 month old children before gradually declining.

The regression showed a link between lack of sanitation and undernutrition. About half of

Fig. 7 Trends in anaemia among children and women (percentage of children aged 6-59 months and women aged 15-49 years with anaemia)

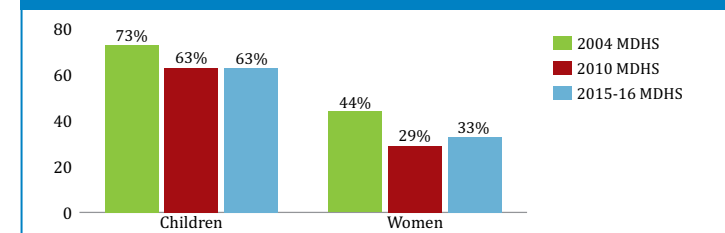
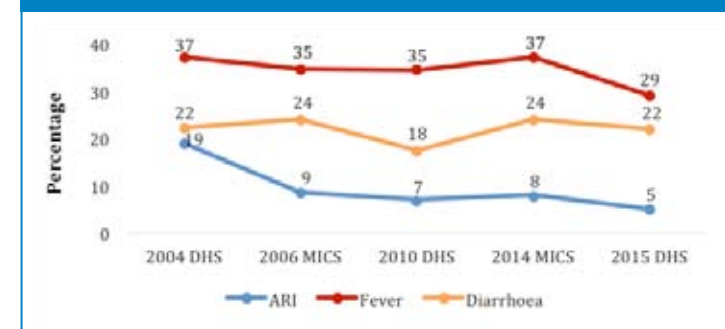


Fig. 8 Trend analysis of acute respiratory infection (ARI), diarrhoea and fever national prevalence in children aged under five from 2004 to 2015



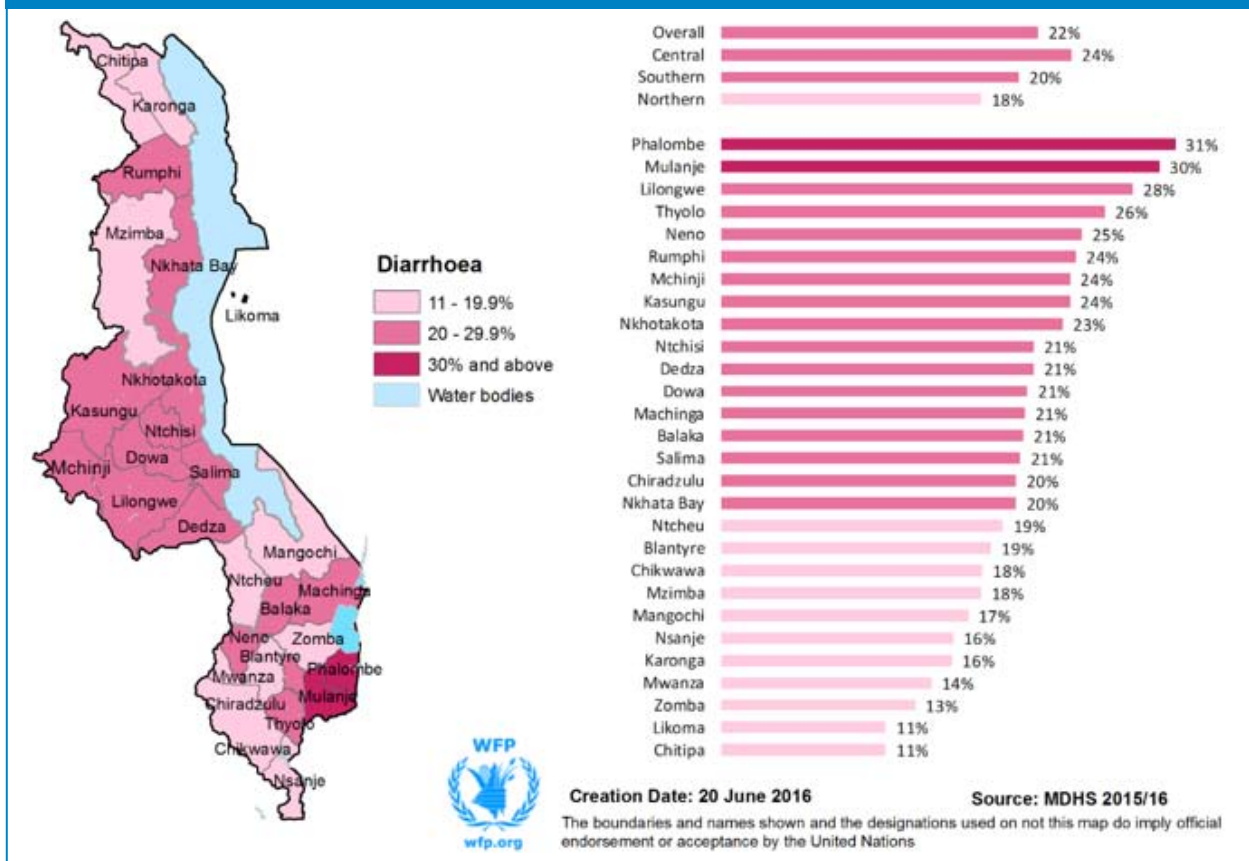
Malawian households (52%) used improved toilet facilities, which are non-shared facilities that prevent people from coming into contact with human waste and can reduce the transmission of cholera, typhoid, and other diseases. Shared toilet facilities of an otherwise acceptable type were also common, especially in urban areas; 51 percent of urban households use shared facilities compared with 28 percent of rural households.

However, almost one in five rural households in Malawi used unimproved toilet facilities. Of these seven percent of households had no facilities at all.

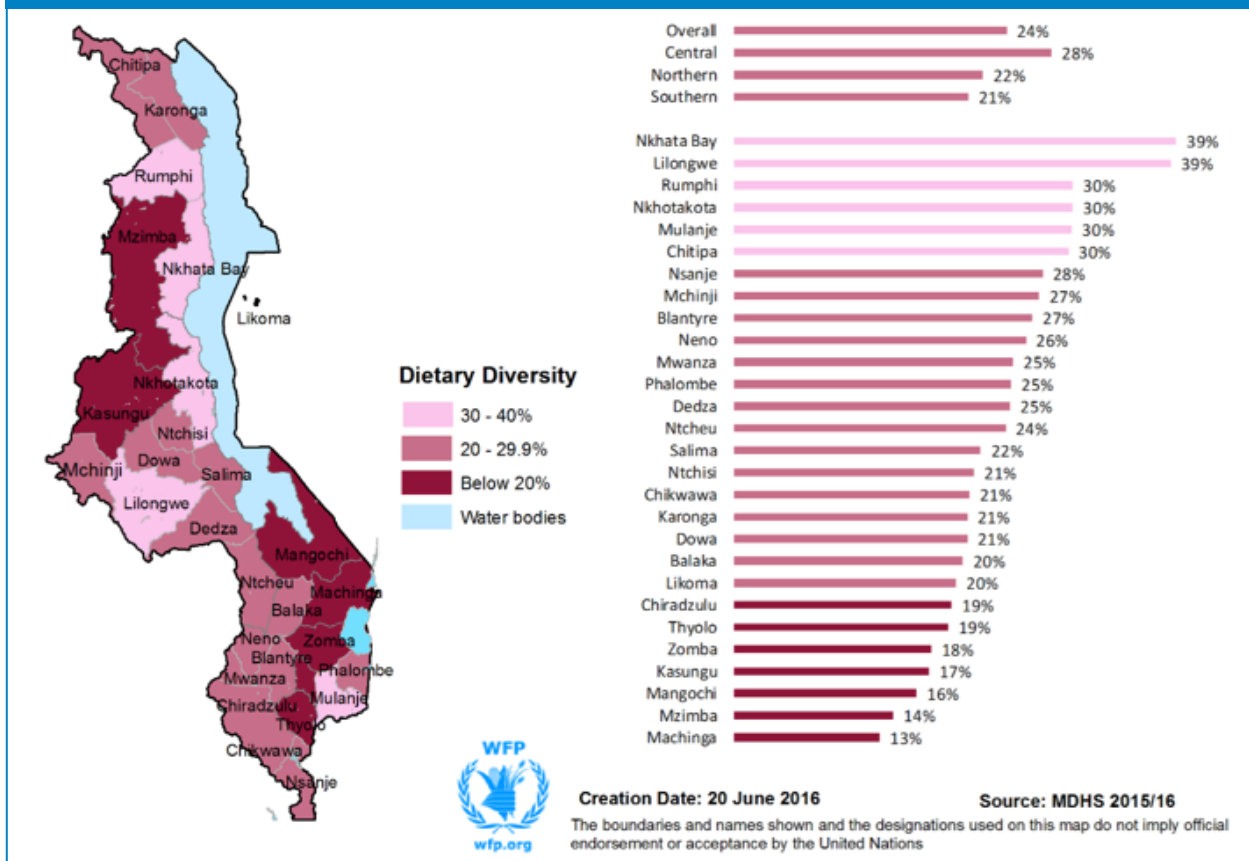
Lack of diet diversity in under fives

Unless the diet is balanced with proteins and vitamin-rich fruit and vegetables, a heavy reliance on maize is a recipe for undernutrition, especially among young children. According to bivariate analysis by age groups, feeding toddlers aged 12-17 months with food other than staples and vegetable relish, such as meat and fish, dairy, eggs and fruits significantly reduced their risk of chronic undernutrition.

Map 2 Percentage of children age 0-59 months with an episode of diarrhea in the last two weeks by district



Map 3 Percentage of children aged 6-23 months who received minimum dietary diversity during the previous day by district



A major concern is that only eight percent of children aged 6-23 months received the minimum acceptable diet set out in the 2008 WHO recommendations (DHS 2015-16) (Figure 9).

Dietary diversity is the main limiting factor in this. From six months of age, breast milk or other forms of milk used for replacement feeding alone are not enough to meet the child's energy and nutrient requirements due to rapid growth and development. During this time, the child experiences rapid physical and motor development, becomes more active and is prone to various infections that increase nutritional needs. UNICEF's nutrition guidelines for Malawi state that children should be given other energy and nutrient-rich foods and fluids in addition to breast milk from six months old¹⁸.

Only 24 percent of 6-23 month old children had an adequately diverse diet and had been given foods from the appropriate number of food groups (DHS 2015-16) (Map 3).

Food safety in the preparation of meals must also be considered, including water quality and hygiene practices during cooking and eating processes, as introducing complementary foods may constitute a source of infection and parasites that did not exist when the child was exclusively breastfed. As mentioned above fewer than half of children aged 6-59 months had been de-wormed, according to the DHS 2015-16.

Lack of parental education

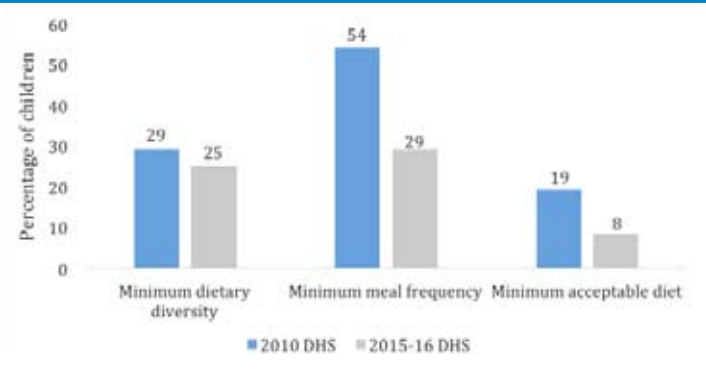
That children born to less-educated mothers are more likely to be undernourished has been well-documented in nutrition analyses since Caldwell's analysis in 1979¹⁹. The results of a 2013 study in Malawi, Tanzania and Zimbabwe showed that all three measures of child nutritional status (stunting, wasting and underweight) significantly decreased with increased levels of mother's education²⁰.

¹⁸ https://www.unicef.org/malawi/MLW_resources_nutritionguidelines.pdf

¹⁹ Caldwell, JC. Education as a factor in mortality decline: an examination of Nigerian data. Pop Stud 1979 <https://www.popline.org/node/443273>

²⁰ The impact of maternal education on child nutrition: evidence from Malawi, Tanzania and Zimbabwe, Makoka, D. February 2013

Figure 9 Percentage of under-fives that met minimum IYCF standards in 2010 and 2014



The threshold level of maternal education above which nutrition indicators significantly improved was nine years of schooling in Malawi. A recent study in low and middle income countries found that paternal education is similarly important for reducing childhood undernutrition²¹.

According to the DHS 2015-16, 12 percent of women and five percent of men had no education. Around half (50% of men and 54% of women) had not completed primary. About one in four (26%) women and one in three men (36%) age 15-49 had at least some secondary education. Since 1992, the median number of years of schooling completed by women and men age 15-49 has increased substantially, and the gap between them has narrowed – but it still only stood at 5.6 years for women and 6.6 years for men in 2015-16.

Urban women were more educated than their rural counterparts and more likely to be literate. Fourteen percent of rural women had never attended school compared with three percent of urban women and 68 percent of rural women were literate versus 90 percent of urban. The Northern region had the lowest percentage of adults with no education.

The percentage of those who had completed secondary school or higher increased by wealth quintile; less than one percent of women in the lowest wealth quintile had completed secondary school or higher compared with 31 percent in the highest wealth quintile.

²¹ The association of parental education with childhood undernutrition in low- and middle-income countries: comparing the role of paternal and maternal education, Vollmer, S. et al February 2017

Poor access to healthcare facilities

Where there is little public health provision for vulnerable families, undernutrition may go unchecked. Without a good quality public health system and caring practices, families may lack the services and information they need for care throughout pregnancy, at birth and during the first two years of a child's life.

The DHS 2015-16 found that seven in 10 women in Malawi reported at least one problem accessing health care for themselves. Women in rural areas were more likely to

report at least one problem accessing health care than women in urban areas (76% and 56%, respectively). The most commonly reported problems were distance to the health facility (56% peaking at 73.5% in Machinga) and obtaining money to pay for treatment (53% reaching 71% in Machinga and 72% in Phalombe). A sizeable percentage of women reported not wanting to go alone (30%) or needing to obtain permission to go for treatment (16%). For one in four women or more in Dedza, Nkhotoakota, Ntchisi, Machinga and Phalombe getting permission to go for treatment was a problem (DHS 2015-16).

Factors associated with household food insecurity

The following are the factors that the logistic binary regression analysis showed to be associated with food insecurity in Malawi:

Low diet diversity

An average Malawian household will not consider a meal a meal if it does not contain the staple maize meal (nsima) and relish, which usually consists of green vegetables, most commonly okra, pumpkin leaves and brassicas such as rape, mustard greens or cabbage with tomatoes and onions added if available. The relish is cooked in oil when the household can afford it and may also include protein foods such as pigeon peas, cowpeas, soya beans, groundnuts, small dried fish (matemba or bonya), chicken, eggs and more rarely red meat (typically goat or occasionally beef). Cassava, bread and rice are alternative starches usually considered as secondary after nsima. (IFPRI²² 2015).

While cereals, vegetables and condiments are eaten daily by most households, food high in protein i.e. meat, fish, eggs and pulses are

generally consumed weekly, and only by a small minority (around 10%) on a daily basis. Malawian households' low consumption of dairy products is notable: 80 percent of households do not consume dairy (Figure 10).

Having a diversified diet is associated with a number of improved outcomes in areas such as birth weight, child's anthropometric status and improved haemoglobin concentrations. It is highly correlated with such factors as caloric, micronutrient and protein adequacy. Micronutrients, such as Iodine, Iron, Vitamin A and Zinc are essential vitamins and minerals needed by humans to lead a healthy, active and productive life.

Dietary diversity can be captured by simply measuring the number of food groups (out of seven) that a household consumes over a reference period of seven days. Households consuming fewer than four food groups are considered to have low diversity. The seven food groups are: cereals, tubers and root crops; pulses; vegetables; fruit; meat and fish; milk; oil²³.

²² IFPRI. 2015. Chapter 4. Understanding the pathways to improved diets from the production of nutritious food and marketable commodities. Aberman NL & Roopnaraine T. Mapping the linkages between agriculture, food security & nutrition.

²³ <http://www.ifpri.org/sites/default/files/pubs/pubs/fspractice/sp3/sp3.pdf>

According to the IHS3, around 33 percent of rural households had low dietary diversity in the week leading up to the survey. In rural Malawi more than half of households (58%) derived a very high share of their energy (i.e., more than 75%) from cereals and grains alone, with protein essentially absent from their diet.

Rural poverty

Time and again WFP food security analyses point out that poverty - which itself may be an outcome of low education and skill levels as well as lack of work opportunities - is a chief cause of food insecurity because poor households lack the resources required to buy or grow enough nutritious food to live a healthy active life.

They are unable to invest in the inputs required to boost their own yields or in disaster preparedness that may protect their crops and homes from flooding, for instance. Poor farmers have to sell any surplus soon after harvest to earn income and repay debts, so they cannot benefit from selling their produce when prices rise and become market-dependent when prices are highest. It is always the poorest who suffer the most when food prices rise - not only is their ability to purchase food curtailed, but so is their capacity to buy other goods and services that are essential for their health and welfare.

The extreme poor have no financial buffer to protect them from recurrent shocks. In times of such stress households often resort to corrosive coping mechanisms that may involve reducing food intake and removing children from school. Such strategies often perpetuate a cycle of poverty and further undermine their already fragile food security status.

According to the IHS3 around half of the Malawian population was poor (50.7%). While the poverty rate fell in urban Malawi from 25 percent in IHS2 to 17 percent in IHS3, it rose slightly in rural areas to 56 percent. Overall the proportion of ultra poor rose from 22 percent in IHS2 to 25 percent in IHS3, meaning that about one in every four people were living in such dire poverty that they could not even afford to meet the minimum standard

Figure 10 Food consumption pattern at national level



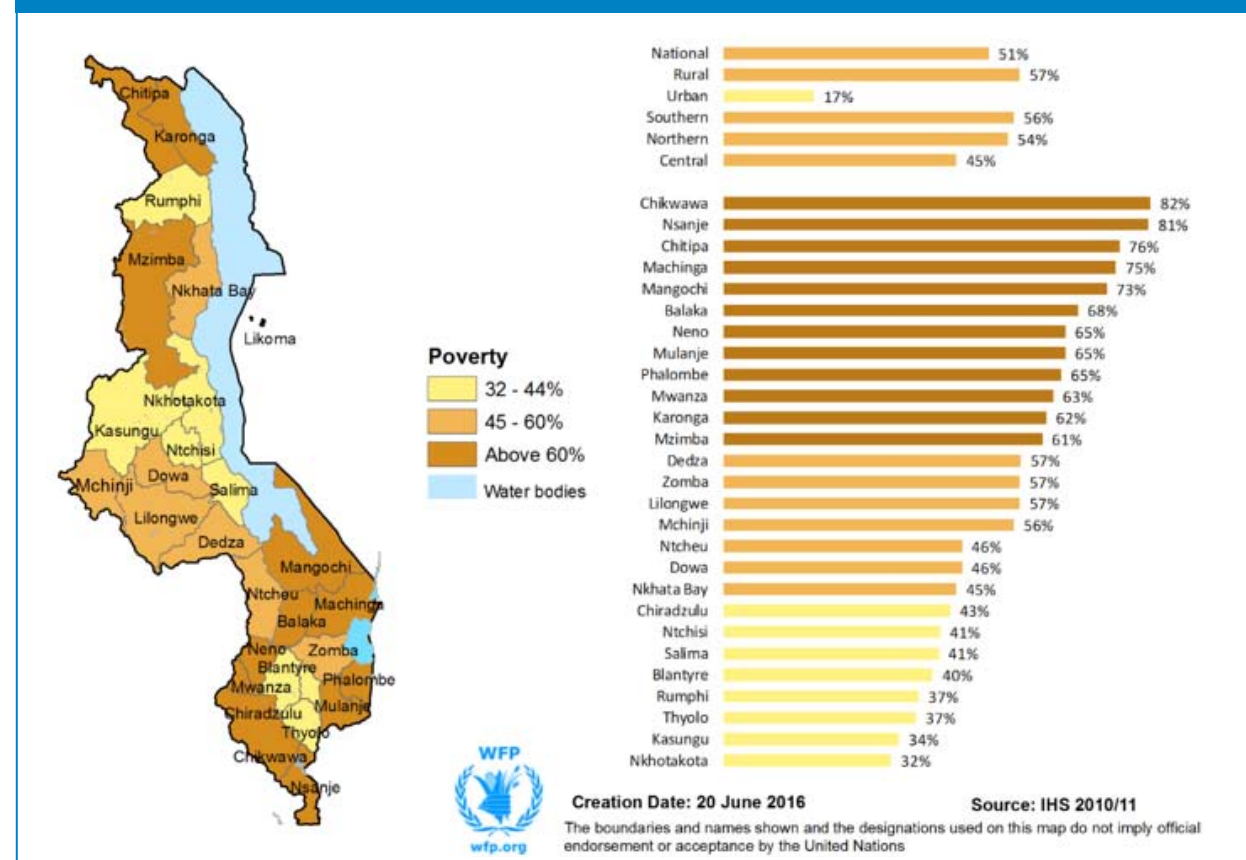
for daily-recommended food requirements. Poverty was highest in Chikhwawa, Nsanje and Chitipa with more than 70 percent of households classified as poor, followed by Machinga and Mangochi with more than 60 percent in the same situation. Ultra-poverty reached more than 45 percent in Chikhwawa and Nsanje and more than 30 percent in Chitipa, Mangochi, Phalombe and Machinga (Map 4).

The CARI food security console points to household purchasing power as the key limiting factor of food security. Households that normally spend a high (>65%) or very high (>75%) proportion of their total expenditures on food have no lee-way when food prices rise or if they have to meet an unexpected household expense or don't manage to find work²⁴. In such cases they have no choice but to employ coping strategies that negatively impact their food security, such as foregoing meals, eating smaller portions or less preferred food.

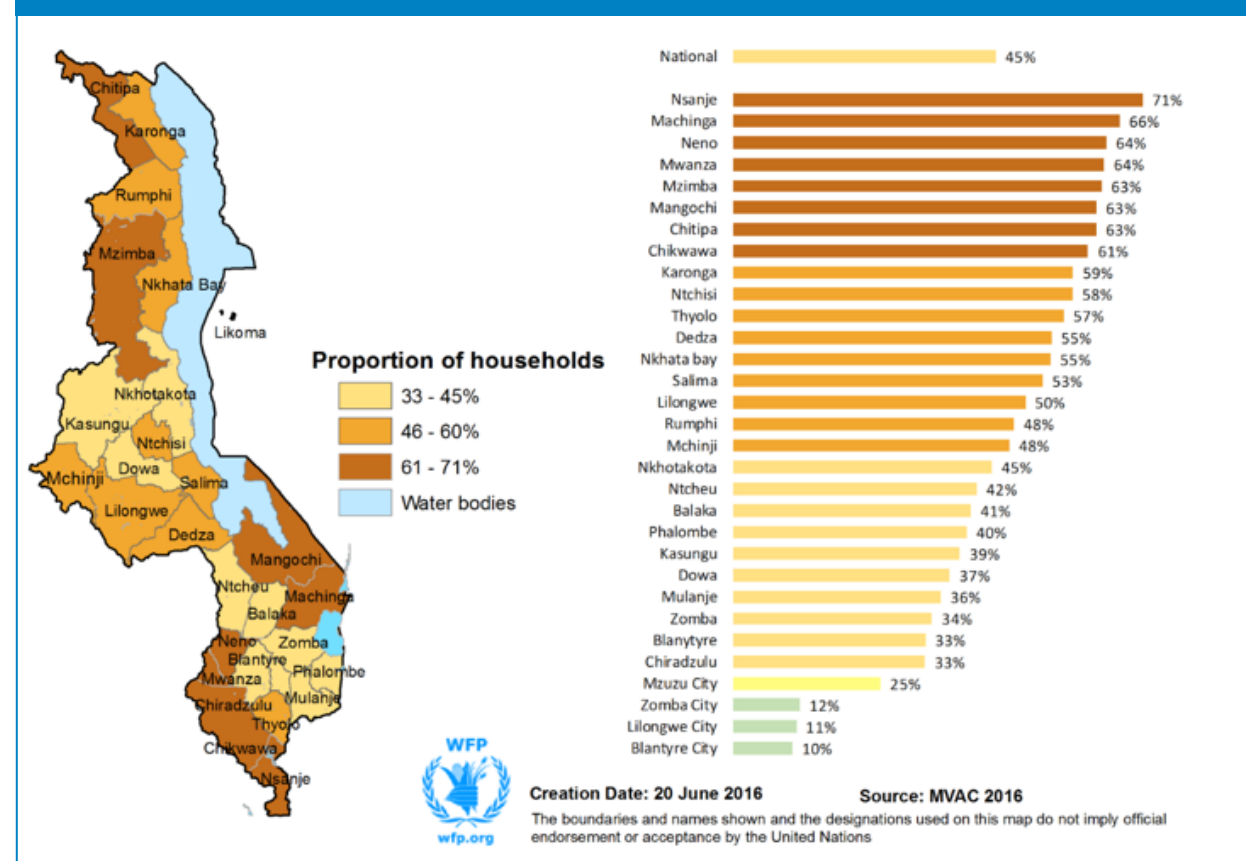
On average, more than half of total household expenditure was spent on food (56%), according to IHS3 data, followed by housing and utilities (16%) and transport (6%). Expenditure on education and health represented two percent and one percent, respectively.

²⁴ Smith, L. and Subandoro, A. 2007: "Measuring Food Security. Using Household Expenditure Surveys" Food Security in Practice technical guide series. Washington, D.C.:IFPRI. See page 82: The poorest households in the world spend more than 75 percent of their income on food. Households in the richest countries, such as the United States and Canada, spend less than 15 percent of their expenditures on food (COCA 2006; U.S. Department of Labor 2006). ... the guideline is 75+: very high (very vulnerable to food insecurity), 65-75: high; 50-65: medium, <50: low

Map 4 Percentage of poor households by district



Map 5 Proportion of households with high food expenditure share ($\geq 65\%$) by district



High food expenditure share

Districts with the highest food expenditure share were Nsanje, Chitipa, Chikhwawa, Mwanza, Machinga, Neno, Mangochi and Mzimba, where more than 60 percent of households had a high food spend ($> 65\%$ of total expenditure on food) and more than 30 percent of households had very high expenditure on food ($\geq 75\%$). Urban households spent a lower share of their total expenditure on food than rural households. (Figure 11 and Map 5)

Low levels of education

Malawian children are often forced to drop out of school because of lack of money and because they are needed to work. As adults the illiterate and uneducated are less likely to command well paid jobs, locking them into a cycle of poverty and food insecurity. They are also less knowledgeable about feeding practices and the importance of nutrition.

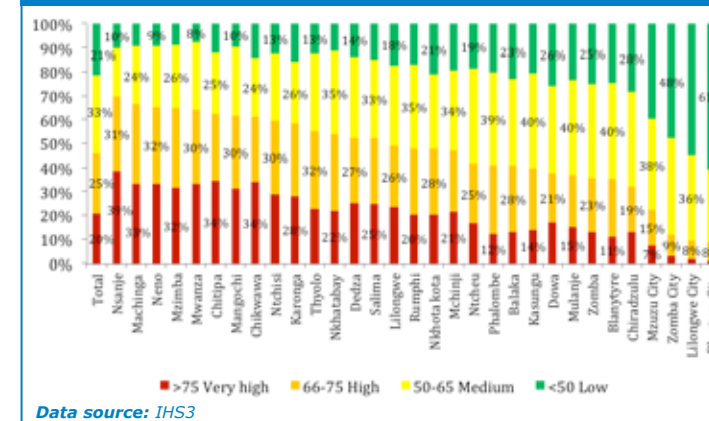
Some 17 percent of men cannot read at all reaching more than 20 percent in Dedza, Dowa, Kasungu, Ntchisi, Salima, Chikhwawa, Machinga, Mangochi, Nsanje and Phalombe. Illiteracy is far higher among women – overall 28 percent, but the prevalence is more than 40 percent in Salima, Chikhwawa, Machinga, Mangochi and Nsanje (DHS 2015/16).

High exposure to climatic shocks (drought)

Between 2004 and 2013, the 28 districts of Malawi experienced drought or dry spells during critical periods for maize production during at least three years out of the 10 considered, and 19 districts suffered dry spells for six or seven years²⁵.

The Integrated Context Analysis (ICA) 2014 classified districts into three groups according to a combined risk score for floods and dry spells, based on data between 2000 and 2013. Nine districts were among those with high risk for floods and dry spells: Balaka, Blantyre, Chikhwawa, Karonga, Machinga, Mangochi, Nsanje, Phalombe and Zomba.

Figure 11 Food expenditure share categories by district



Poor market access

For many Malawian households the trek to a market is extremely long, and transport costs high. In Nsanje it takes on average seven hours to reach a market and in Chitipa, Rumphi and Nkhata Bay six hours.

Smallholder farmers who depend on intermediaries to sell their produce struggle to pay the high cost of reaching a market. In Malawi, domestic transport costs, are much higher than in neighbouring countries. These high transport costs are passed on to the cost of inputs and food, further compromising food access for the large numbers who have limited purchasing power²⁶. Road density per capita in Malawi is the lowest in southern Africa and poor transport infrastructure accounts for up to 55 percent of marketing costs²⁷.

Facing limited access to markets households become more dependent on their own production – which reduces their chances of enriching their diet diversity. It also means farmers visit markets less frequently and miss out on the opportunity to obtain information that could be key for decision-making about when to sell their produce or buy inputs: ill-informed decisions regarding this can have consequences for their food security status as they may not buy and sell at the most opportune moments²⁸.

²⁶ African Development Bank/ Organization for Economic Co-operation and Development [AfDB/OECD], 2006

²⁷ Makombe et al. 2010

²⁸ Staal et al. 2002; Feleke et al. 2004

Although the impact of market proximity on household food security varies according to the levels of food security, according to a 2012 study²⁹ a one percent increase in distance from the household to market is associated with a 0.4 percent reduction in household food security. Other studies have found significant association between distance to markets and consumption of calories per capita per day³⁰.

Lewin and Fisher's (2013) analysis indicated that food insecurity increased with increasing distance to a weekly market among households in northern Malawi, and with increasing distance to an Agricultural Development Marketing Corporation (ADMARC) depot in the central region. Their results showed that asphaltting the main community road surfaces would reduce food insecurity by 18 percent in the central region and 19 percent in the southern region³¹.

High number of dependants/ under fives

While households with many working age members are more likely to be able to make ends meet, dependents (children, the elderly, sick, disabled) represent a drain on tight resources. Malawi has a rapidly expanding population. According to the DHS 2015-16 the total fertility rate (TFR) was 4.4 (versus wanted rate of 3.4) peaking at 6.6 in Machinga. It was above five in Mchinji, Nkhonkhotakota, Ntchisi, Salima, Chikhwawa, Mangochi, Neno, Nsanje and Phalombe. One in three households had foster and/or orphaned children.

The main determinants of the growth rate are a high fertility rate due to low use of family planning. This is largely due to gender-related traditional and cultural practices, values and norms that make it difficult for women, and couples, to use family planning, exacerbated by the fact that adolescents have very limited access to quality family planning services,

²⁹ Matchaya, G. and Chilonda, P. (2012) Estimating effects of constraints on food security in Malawi: policy lessons from regressions quantiles. Available from: http://econpapers.repec.org/article/eaadeinde/v_3a12_3ay_3a2012_3ai_3a2_5f12.htm [Accessed: June 2nd 2017]

³⁰ Tembo and Simtowe 2009

³¹ Household, Community, and Policy Determinants of Food Insecurity in Rural Malawi. Lewin and Fisher, 2013

and that illiteracy levels are high, especially among women. According to the DHS 2015-16 73 percent of women did not discuss family planning issues with field workers or at health facilities in the last year peaking at 84 percent in Mangochi. More than one in 10 women said they had unmet needs for family planning for spacing between births, reaching 23 percent in Mangochi.

Households headed by women

The main reason why households headed by women are more food insecure than those headed by men is that they are likely to be poorer. There are many reasons for this: they are less likely to have a job (63% versus 82% of men) and more dependent on more insecure, low paid livelihoods such as ganyu and subsistence farming and much less on wage labour by comparison with men – in fact around three in four women working in agriculture are not paid at all (DHS 2015-16). They are more likely to be widowed and less able to work; they are more likely to be caring for a sick member and for dependants including orphaned children, making them less available to carry out paid work. Many are dispossessed of their property following the death of their husband. In addition 14 percent of women had never attended school compared with eight percent of men (DHS 2015-16). Lack of education locks people into a cycle of poorly paid work and perpetuates poverty, food insecurity and undernutrition.

According to the DHS 2015-16 32 percent of rural households were headed by women – and 86 percent of rural women had little or no education.

Lean season food price spikes

The food consumption profile of rural Malawian households presents a marked seasonality, with poorer food consumption levels at the end of the lean season, around February-March. This is also the time when dependency on markets is highest and when maize prices tend to reach their pre-harvest peak. Seasonal price changes are highly influenced by maize production.

The poor maize production of 2015 led to a significant increase in prices: maize prices at the end of the lean season, in February and March 2016, were 117 percent and 109 percent above the three year average (2013-2015)³². The even poorer harvest of 2016 was again reflected in prices, which by May 2016 were 90 percent above the three-year average. Projections for the 2017 lean season were for prices to be 172-194 percent above the 2013-2015 average, and 44-54 percent above the 2014-2016 average. These price rises have a shock impact on household purchasing power – especially for the poorest households, who are already spending a high percentage share of total expenditure on food.

Households with poor food consumption are even more likely to have depleted their maize stocks and be market-reliant during the lean season (just 15% of poor food consumption households depend on own production versus 37% of households with borderline and acceptable FCS during this time).

Generally the inflation for the country has been decreasing since 2013 (*Figure 12*). Rural inflation (food and non-food) has historically been below that of urban – until early 2015 when it overtook urban and continued to increase until November. This highlights the vulnerability of rural households who depend on food purchases.

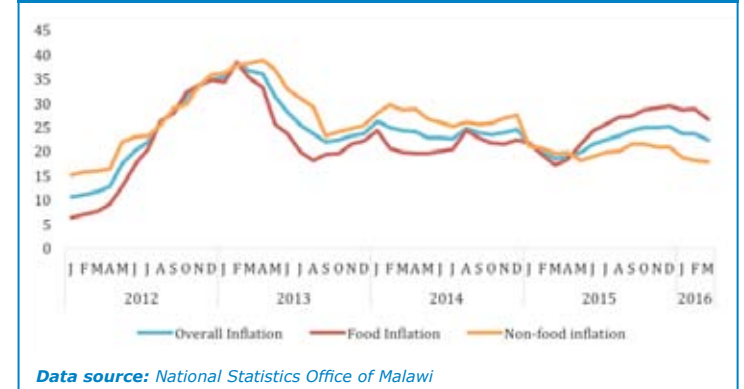
Depleted maize production

Malawi's agricultural production is dominated by two main crops – cassava and maize – which represent 85 percent of the total production in country³³. As already discussed Malawians feel they have not eaten anything unless their meal consists of *nsima*. But the country often fails to produce enough maize to meet the calorific requirements (1533 kcals/day) of its people.

³² 5 years average has not been considered in the analysis due to the impact on prices of the 2012 devaluation and modification of the exchange rate regime from fix to floating

³³ Average annual production from 2010-2015 (APES). Crops considered are: cassava, maize, pulses, nuts, beans, rice, sorghum, millet, tobacco and cotton.

Figure 12 Overall, food and non-food inflation from 2012 to 2016



Country-wide net maize production covered Malawi's energy³⁴, seed, feed and industrial requirements for six years out of the nine considered. On average for the last five years, Malawi's net maize production was able to cover 73 percent of its people's calorific needs³⁵.

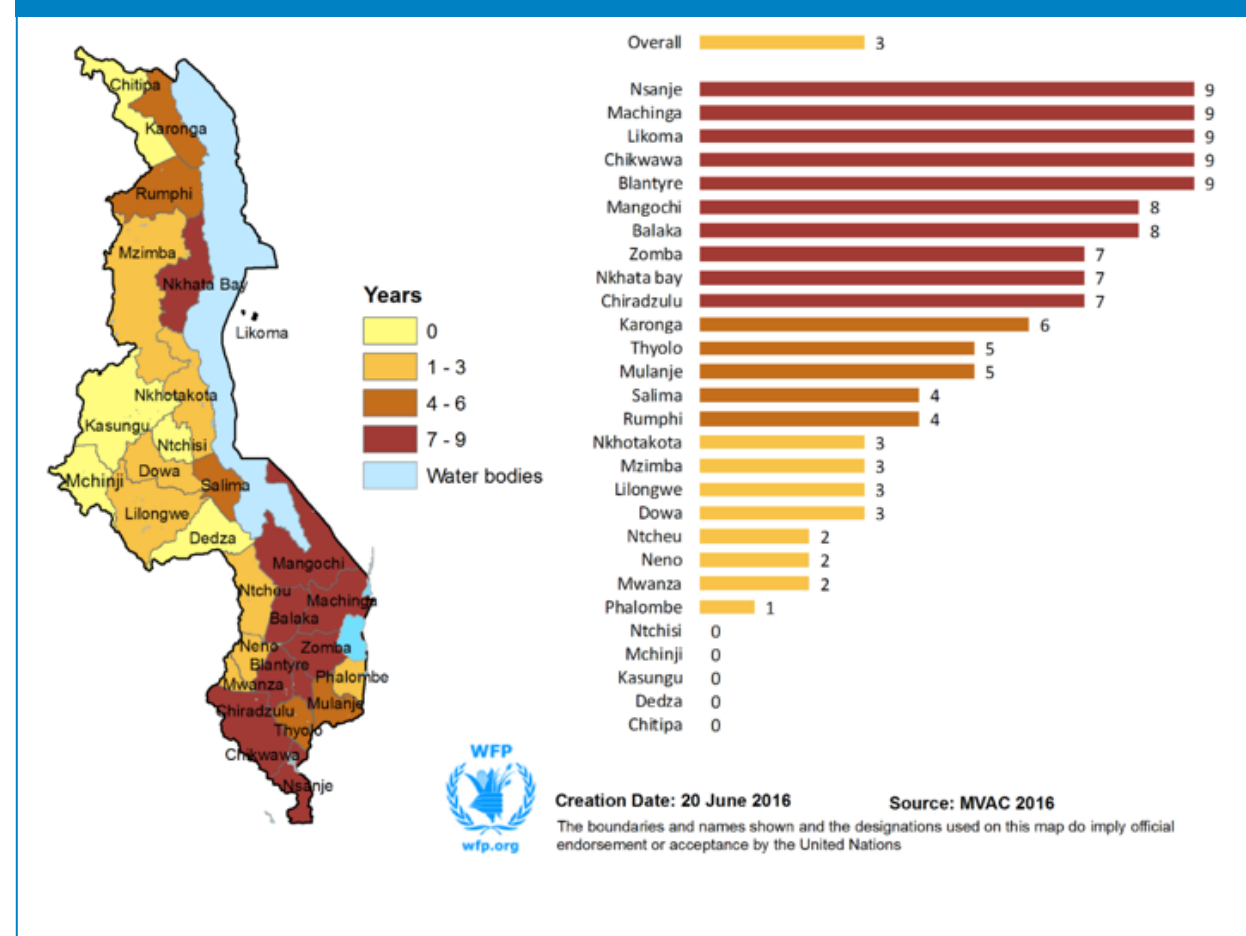
Ten districts have a chronic maize production deficit, i.e., for seven or more years out of nine they did not manage to meet 73 percent of the daily calorie requirements of their populations (*Map 6*). In Likoma, Blantyre, Machinga, Chikhwawa and Nsanje maize production did not cover people's calorie requirements for any of the nine years considered – though it must be noted that in Chikhwawa and Nsanje households are reliant on sorghum and millet as their staples.

In the 2016 second round, maize yields were lowest in Mangochi, Zomba, Balaka and Machinga. There are many reasons for Malawi's low maize yields. Among them planting continual rounds of maize without rotation or leaving land fallow strips the soil of nutrients. Neither is maize a drought-tolerant crop. Others include smallholders farming very small parcels of land which prevents them from diversifying crops; lack of money to

³⁴ It is considered able to cover energy/calories needs when it is enough to provide 1533 Kcal/person/day, which represent 73 percent of total calorie requirements.

³⁵ The percentage of calories provided by district annual maize net production once quantities required for seeds, feed and industrial uses are removed was calculated making the following assumptions: post-harvest losses: 12.9% (FBS 13-14 and 15-16); total quantity of seed requirement: 67,000 tonnes (based on FBS 13-14 and 15-16); total feed and industrial uses requirement: 300,000 tonnes (based on FBS 13-14). Requirements by district have been calculated proportionally to the percentage of area cultivated in the district out of the total area cultivated in country in 2015-16.

Map 6 Number of years net maize production was below 1533 kcals/person/day between 2008 and 2016 by district



invest in inputs, techniques and seed varieties; and land degradation.

One of the main causes of low agricultural productivity (and by extension rural poverty and food insecurity) is smallholders' dependency on rain fed cultivation. According to the IHS3 just 0.5 percent of land was irrigated.

Although irrigated winter production of maize doubled between 2007-08 and 2008-09, to 504,000 tonnes and experienced a steady increase between 2010 and 2014, to 587,000 tonnes, irrigated maize only represents around 15 percent of the total annual maize production. By 2014-15 irrigated production had fallen to 435,000 tonnes and rain-fed production was also low (Figure 13).

By district, irrigated production is lowest in Balaka, Kasungu, Chiradzulu, Mangochi, Chitipa, Salima, Machinga, Zomba and Mzimba.

Unreliable low-paid livelihoods

According to the 2015-16 DHS women and men were most commonly employed in agriculture (59% and 44%, respectively), followed by unskilled manual labour known as ganyu (20% and 25%, respectively). People engaged in these types of less reliable work are more likely to have inadequate food consumption and be deficient in energy.

Some 68 percent of rural women and more than half of rural men (52%) worked in agriculture (Figures 14 and 15). Most 15-49 year old men were currently employed (81%) and just 14 percent hadn't been employed at all in the last year – though this reached 44 percent in Mwanza, 32 percent in Blantyre and 28 percent in Nsanje.

High HIV prevalence

HIV and AIDS in Malawi is among the most intense in the world with a prevalence of 8.8

percent rising to almost 20 percent among 45-49 year old men and 40-44 year old women.

Prevalence is higher in the southern region reaching 26 percent and 21 percent for women in Mulanje and Blantyre followed by Phalombe, Mangochi and Zomba. HIV prevalence among men also peaks in these districts reaching 21 percent in Mulanje and 18 percent in Blantyre. The percentage of men who had 'ever paid for sex' was highest in the southern region (24% vs 18% national average) peaking at some 56 percent in Zomba followed by Mangochi. Comprehensive knowledge about HIV was lowest in Chitipia, Blantyre and Mangochi. (DHS 2015-16)

The links between chronic undernutrition and food insecurity

Results show that all but two districts have serious or critical levels of chronic undernutrition but not all are chronically food insecure. Of the 13 most chronically food insecure districts eight have critical levels of stunting and the remainder serious. No adequate information available allows a proper analysis of food insecurity and chronic undernutrition linkages at household or individual level.

Nevertheless, although it may not be sufficient, adequate food access by households is a necessary condition for age appropriate infant and young child feeding and nutritional status. In this sense, the insufficient access to nutrient-rich food groups such as meat, fish, eggs, pulses or dairy products implies the inadequate consumption of these food groups by children in critical growth periods.

In a broader context, the results have shown that household wealth proxies or poverty status and education levels of household members are two main underlying causes of both food insecurity and chronic undernutrition, and therefore, policies and programmes must be oriented to addressing these to tackle food insecurity and chronic undernutrition.

Figure 13 Rain fed and winter maize production in country between 2008 and 2016



Figure 14 Main livelihoods for rural women

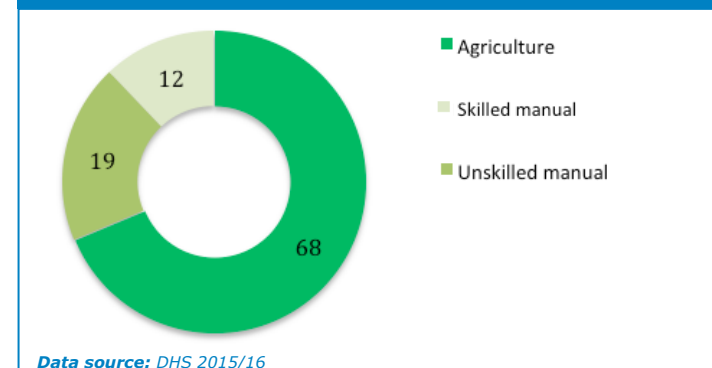


Figure 15 Main livelihoods for rural men

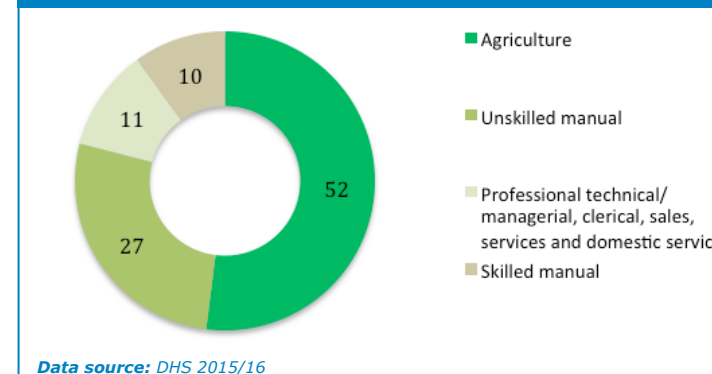


Table 1 Heat chart showing possible underlying associations between child stunting and various variables

District	Under five stunting prevalence	Risk of chronic food insecurity	Low dietary diversity in under fives (% with min. acceptable diet diversity)	% HHs with high (>65%) food expenditure share	% of poor households	% HH heads who never attended school	No. of yrs net maize production was below 1533kcal/person/day
Mangochi	45%		16%	63%	73%	50%	8
Neno	45%		26%	64%	65%	21%	2
Mchinji	44%		27%	48%	56%	20%	0
Dedza	43%		25%	55%	57%	34%	0
Ntcheu	42%		24%	42%	46%	13%	2
Ntchisi	40%		21%	58%	41%	18%	0
Dowa	39%		21%	37%	46%	16%	3
Machinga	39%		13%	66%	75%	42%	9
Mzimba	39%		14%	63%	61%	16%	3
Lilongwe	37%		39%	50%	57%	21%	3
Mulanje	37%		30%	36%	65%	24%	5
Kasungu	36%		17%	39%	34%	10%	0
Thyolo	36%		19%	57%	37%	24%	5
Zomba	36%		18%	34%	57%	17%	7
Salima	35%		22%	53%	41%	27%	4
Balaka	33%		20%	41%	68%	15%	8
Blantyre	33%		27%	33%	40%	18%	9
Chikwawa	33%		21%	61%	82%	44%	9
Chiradzulu	33%		19%	33%	43%	15%	7
Chitipa	33%		30%	63%	76%	13%	0
Nkhata Bay	33%		39%	55%	45%	9%	7
Nkhotakota	33%		30%	45%	32%	15%	3
Nsanje	32%		28%	71%	81%	46%	9
Rumphi	32%		30%	48%	37%	5%	4
Mwanza	31%		25%	64%	63%	20%	2
Phalombe	31%		25%	40%	65%	27%	1
Karonga	28%		21%	59%	62%	13%	6

Note: This heat chart uses the sources and parameters used in the report with red representing critical or high risk, orange severe or medium risk and yellow the least severe/lower risk. However it should be noted that even the yellow cells often do not represent a desirable situation.

Data source: Various

Information gaps

- Food security in Malawi shows a marked seasonality and annual variability closely associated with the maize production calendar and shocks (mainly dry spells and floods). Standardized **seasonal information on food security** indicators (quarterly or every four months) is crucial to accurately identify the critical periods and stressing factors that compromise households' access to basic food and non-food needs. This information, would allow for the concrete design of long-term programmes and activities to mitigate the impact of unfavourable months or shocks as well as the timely implementation of specific actions.
- Analyse how industrial fortification of food is currently implemented. Identify food items and quantities required to cover a household's macro and micronutrient needs (i.e., a **nutritious minimum food basket composition**) taking into account market prices and people's food habits. Geographical and seasonal food price variation makes the task complex. **Collect regular** data on **prices** of items included in the nutritious food basket to monitor the cost of the minimum food basket across the year. Carry out periodical analysis of household income (wages) versus cost of minimum food basket.
- The current report includes information on food security and nutrition indicators at district level and analyses trends, patterns and food security and nutrition associations at national level. The replication of the current analysis at district level could help organisations to define more effective proposals and district-specific strategies. Availability and quality of information are the main limiting factors for this analysis.
- Develop a better understanding of limiting factors for **effective prevention and adequate treatment of child sickness (diarrhoea and fever) across the year**. An in-depth seasonal analysis regarding access to and quality of health services, hygiene and care practices and access to adequate sanitation and clean water is recommended.
- Identify the reasons behind the **poor Infant and Young Child Feeding practices**: is it lack of availability or economic access to specific food groups, the knowledge and sensitization of caretakers and/or the conflicting priorities and workload of caretakers? The seasonal perspective is again highly recommended, as well as more detailed information on feeding practices including quantities.
- Launch a **survey that includes household food security indicators and individual food consumption**, preferably of child and/or mother.
- Include the regular and standard **micronutrient rich food groups** in household food consumption modules to allow children and women to be grouped into diet diversity standard food groups.

FOOD SECURITY

Support agricultural development activities that build the capacity of poor farmers to generate a sustainable, stable income and increase their purchasing power – allowing them to cover basic food and non-food needs across the year

Target: smallholders and rural poor

- Encourage private investment to increase irrigation to reduce the impact of dry spells and drought and cut the variability in annual production and price volatility.
- Encourage diversifying crop production to increase the availability of diversified food in farming households as well as in markets at a more affordable price – lessening Malawians' high dependency on maize.
- Strengthen market and transport infrastructure to ensure smallholder farmers can get their produce to market at reasonable prices, increasing profits and ensuring transport costs aren't passed onto the consumer.
- Promote livelihood diversification, skills training and reduction of seasonal or annual dependency on casual labour ("ganyu").
- Promote and facilitate savings within community programmes, either at household or group level. Savings accounts can encourage farmers to take greater risks and diversify their crop production as well as grow more lucrative cash crops. They can minimise the risk of catastrophic crop failure and allow households to access enough food across the year, "smoothing" the hungry season.
- Redouble efforts to increase agricultural productivity (minimise land degradation and deforestation; ensure smallholders have greater access to inputs; encourage weeding; increase investment in agricultural research and extension services; improve storage; improve seed varieties; promote diversifying into export crops such as tobacco, tea, sugar and coffee).
- Government needs to create a new policy framework to make the agricultural sector more profitable, competitive and sustainable.

Strengthen resilience to climate related shocks

Target: poor and farming communities in the southern and northern regions

- Mainstream disaster risk reduction into policies, strategies, programmes and annual planning at all levels. Resilient households, individuals, or communities can anticipate disasters, crises and vulnerabilities. They cope with and recover from the effects of shocks and stresses without compromising their well-being (nutrition status, food security, health or other aspects of their lives).
- Establish regular monitoring of food and nutrition indicators.

- Strengthen early warning systems at national and local levels.
- Work in partnership with communication for development experts to create engaging, understandable and informative public service programmes/ announcements that help communities to engage in pre-disaster actions so they can cope without compromising their food security status. Mass media can make technical information more accessible to many people, supporting them to evaluate their choices, and prompting them to take action to build resilience and improve their own lives.

NUTRITION

Improve infant and young child feeding practices and hygienic food preparation and shift social norms around some of the other practices that underlie chronic undernutrition

Target: women and caregivers

- Work in partnership with communication for development experts to create engaging, understandable and informative public service programmes that build awareness of the importance of good hygiene when preparing food, how to minimise child illness and how to ensure infants receive a balanced and nutritious diet that includes meat, fish, pulses, dairy products, vegetable and fruit.
- Use communication channels to promote women's participation in household decision-making and to arm them with knowledge and the confidence to act on it. This could give them the power to increase and stabilize diet diversity across the year, at household and individual level, ensuring they and their children consume foods that are rich in essential vitamins and minerals including iodine and iron which are essential for cognitive development.
- Seek to better understand the reasons behind poor IYCF practices in Malawi.
- Consider seasonal micronutrient supplementation and fortification of staple foods, condiments and complementary foods for young children.
- Evaluate the Malawi government's national nutrition education and communication strategy for preventing stunting (2011-2016).
- Consider using communication to challenge social norms with a view to changing behaviour around young marriage, teenage pregnancy and use of contraceptives.

Promote and facilitate school attendance

- Government-led safety net programmes to encourage access to education since there is ample evidence regarding the link between poor education, poverty and both chronic food insecurity and undernutrition.

Broad recommendations

- Maintain/increase school feeding programmes as part of the national safety net to increase educational outcomes.
- Provide nutrition, healthcare and food preparation support within schools that seek to create behaviour change and create good habits around some of the underlying causes of chronic undernutrition.
- Advocate for adult literacy and numeracy training in districts with extremely low adult education levels.

Improve access to healthcare and family planning clinics for women of childbearing age (from early teens)

- Work towards universally accessible, quality and responsive health systems with the aim of substantially reducing morbidity (especially diarrhoea and fever)
- Reduce the incidence of communicable and non-communicable diseases
- Provide adequate family planning services offering professional advice and contraception to stabilize population growth and reduce household size and dependency ratio, which are associated with a higher risk of chronic undernutrition and food insecurity.
- Invest efforts in preventing and treating acute undernutrition among 6-23 month old children during lean seasons.
- Improve women's nutritional status and anaemia levels through specific micronutrient supplementation during critical pregnancy periods .
- Increase health visits during pregnancy and the postnatal period to sensitize the mother (preferably both parents) to the need for healthy behaviour during this critical period.

Improve water and sanitation

- Promote the use of appropriate technologies for improved access to and utilization of sustainable water and sanitation services, safe hygiene practices and solid and liquid waste management.
- Increase efforts to improve overall sanitation practices at household level.