

Comprehensive Food Security and Vulnerability Analysis (CFSVA)

Kenya 2016



vam
food security analysis

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1

Introduction



This report aims to give the first county level overview of food security and nutrition in Kenya since the process of devolution began in 2013. It aims to answer the following key questions:

1. What is the comparative state of food security, wealth and nutrition of Kenyan households at county level?
2. Who are most vulnerable to food insecurity, poverty and undernutrition?
3. What are the key drivers of food insecurity and undernutrition?
4. Are there geographic patterns in vulnerability, i.e. worse and better off areas. What are the reasons for these differences?

Methodology

The data and analysis for the 2016 Kenya Comprehensive Food Security and Vulnerability Analysis (CFSVA) is drawn

from the 2014 Kenya Demographic and Health Survey (KDHS), which was designed to monitor and evaluate population and health situations in Kenya. This was the sixth DHS conducted in Kenya since 1989 but the first such survey to provide estimates for selected demographic and health indicators at the level of the 47 counties that serve as devolved units of administration, created in the new constitution of 2010. It was also the first time that food security indicators were included in any DHS survey, allowing for the analysis presented in this report.

The survey sampling approach was designed to provide representative data at the national level, and for urban and rural areas separately. Additionally, for many indicators, the survey was designed to provide representative data for each county. See the DHS report for a full description of the sampling methodology.¹

Table 1: DHS sample (completed interviews/measurements)

	TOTAL number of households	Sample size SHORT questionnaire only	Sample size FULL questionnaire (also received short questionnaire)
Household questionnaire	36,430	19,021	17,409
Women's questionnaire (15-49 years)	31,079	16,338	14,741
Men's questionnaire (15-54 years)	12,819	0	12,819
Number of children under five years with anthropometric measurements (part of household short and long questionnaire)	20,524	20,524	
Number of women 15-49 years with weight and height measures (part of household long questionnaire)	13,215	0	13,215

¹<http://www.knbs.or.ke/>

Fieldwork for the main survey took place from May 7 to October 20, 2014. Some 36,430 households were successfully interviewed. Half of the households received the full-length questionnaires consisting of a long household, woman's and man's questionnaire while the other half received the shorter household and woman's questionnaire.

Our analysis of the DHS data for the CFSVA is meant to be additive, not duplicative. The analysis explores two key food security indicators - the food consumption score (FCS) and coping strategy index (CSI) that were included in the full questionnaire. It attempts to profile food secure and food insecure households, and discusses possible causes of food and nutrition insecurity through analysis of DHS data as well as secondary data sources to complement the analysis.

Acknowledgments

The WFP team who worked on this report would like to thank Zachary Mwangi, Director General of the Kenya Bureau of Statistics (KNBS), Macdonald Obudho, Director of Population and Social Statistics, Andrew Imbwaga and Michael Musyoka at

KNBS for their tireless support in ensuring that food security was included in the 2014 DHS.

How food security is assessed in this report

Food security defines a situation in which all people at all times have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (FAO, 1996). The 2010 Kenyan Constitution states that all Kenyans should at all times have access to safe food of sufficient quantity and quality to satisfy their nutritional needs for optimal health.

This depends upon food being available in sufficient quantity and quality and communities, households and individuals having enough resources to access it, mainly through purchase and home production. Even if food is available and can be accessed, inadequate utilisation of it will lead to malnutrition. Proper child care, providing a diet with enough energy and nutrients, safe drinking water, adequate sanitation as well as knowledge of food storage, processing, illness management and basic nutrition are essential to achieving adequate food utilisation.

This report uses two indicators to assess food security in Kenya:

The food consumption score (FCS)²

This combines food diversity, food frequency (the number of days each food group is consumed) and the relative nutritional importance of different food groups. The FCS uses standardized thresholds that subsequently divide households into three groups: poor food consumption, borderline food consumption and acceptable food consumption. In this report it serves as a proxy for food security with those with poor and borderline consumption being classified as food insecure.

Coping strategies index³

When confronted with sudden negative events such as a natural disaster, food price rises, illness of household member or loss of employment etc. households compromise by, for example, buying cheaper products and/or switching to less preferred food, limiting portion size and reducing the number of meals eaten in a day. The coping strategies index (CSI) is a composite calculation of the frequency and severity of coping strategies that households adopt and is used as a food insecurity indicator. A higher CSI score indicates a more serious food security situation. The maximum possible score is 56.0.

The percentage of households that reported not having enough food or money to buy it in the preceding week were split into roughly three equal size groups. This yielded four groups: zero CSI, low CSI (1-9 score), middle CSI (10-22 score), and high CSI (23-56). Those with zero CSI did not face a time in the previous week when they had no food or money to buy it.



²http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp203207.pdf

³http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf

Map1: Kenya's counties and their headquarters



Limitations

Data collection took place over five months, spanning different seasons. This might have influenced the results.

Household food security analysis in this report is limited to just two indicators. The FCS is used as a proxy indicator for food security, but because of the weight it attaches to milk consumption it may not fully capture the severity of food insecurity in pastoralist communities that are highly milk dependent.

2

Background

This chapter uses secondary reports and data to assess national level issues that impact on household level food security



The economy

A country's macro economy and outlook are highly relevant to household level food security because food security is dependent on availability (or supply in economic terms) and access (demand). Individual and household access to food is determined by the prices people have to pay for food and other basic needs, their income and entitlement to state benefits and subsidies. Employment opportunities and the prices at which labour, goods and services are exchanged are all dependent on the macro-economic prices, the wage rate, the interest rate and the foreign exchange rate. Kenyans are highly dependent on markets for their food, so macroeconomic shocks, such as inflation and devaluation of currency can have an immediate impact by inflating food prices.

Kenya has one of the most dynamic economies in Africa and in September 2014, it was reclassified from low-income to lower middle-income economy status. It has experienced recent stable economic growth, averaging 5.7 per cent in 2013, 5.3 percent in 2014 and 5.6 percent in 2015.⁴ It has the largest economy of the East Africa Community (EAC), with its Gross Domestic Product (GDP) counting for 40 per cent of the region's five members.⁵

However, the United Nations Human Development Report of 2014 ranks it 147 out of 187 countries (two positions down from 2013) and it must overcome a number of economic, social and environmental obstacles if it is to achieve its sustainable development goals.

According to the Economic Survey 2016, agriculture continued to be the major driver of the economy in 2015, by contributing 30 percent of GDP, followed by manufacturing whose share remained at around 10 percent. Growth in the agricultural sector recovered from the 3.5 percent recorded in 2014 to 6.2 percent, driven by improved rice, wheat, maize and horticulture production largely thanks to abundant rainfall characterized by the El Niño weather phenomenon. Production of the biggest cash crops – tea and coffee – fell, though in terms of value tea continued to be the main export commodity in this sector.

The most significant growth was in construction (13.6%), mining and quarrying (11%), electricity supply (9.7%), and financial and insurance services (8.7%).

The tourism sector contracted (international visitor arrivals were down by 12.6% and earnings by 2.9%) for the third year in a row, mainly due to the terrorist attacks that have hit the country since 2012/2013 and health concerns associated with Ebola.

The discovery of oil, gas and coal in 2012 might have the potential to boost Kenya's overall socio-economic development, but exact deposit quantities as well as fiscal and economic impacts are yet to be fully estimated.⁶

The rate of industrialisation is low and the current external account is in deficit. The total public debt in October 2015 was four times that of 2005 and five times that of 1999 at Ksh 2.9 trillion, comprising Ksh 1.5 trillion external debt and Ksh 1.4 trillion domestic debt. This rapidly increasing debt is more than half of Kenya's 2014 GDP, (Ksh 5.3 trillion).⁷

⁴Kenya National Bureau of Statistics, Economic Survey 2016

⁵Kimani and Kibe, 2014

⁶Country Strategy Paper 2015, African Development Bank

⁷Institute of Economic Affairs, 2016

Generally Kenya's exchange rate has considerably depreciated against the world's major currencies, pushing up the price of imported food and fuel as well as the price of agricultural inputs such as fertilizer and pesticide. On February 10, 2016 the US dollar exchanged at Ksh 101.9 compared with Ksh 79.23 at the end of 2010. Similarly, the Kenyan shilling has also lost value against the euro and sterling mainly as a result of a strengthened US economy that has affected other currencies as well.

In addition, Kenya's large trade deficit (over the last five years exports averaged 27% of GDP and imports 46%) has resulted in increased supply of Kenyan shillings in the international market leading to its low demand.⁸ This structural trade imbalance makes the country vulnerable to exogenous shocks and represents a significant risk to macroeconomic stability. However, the balance of trade improved from a deficit of KSh 1,081 billion recorded in 2014 to a deficit of KSh 997 billion in 2015 due to an 8.2 per cent rise in exports and 2.5 percent decline in imports mainly driven by the fall in import prices of mineral fuels.

There was a steep rise in the price of commodities in Kenya during 2015, with inflation increasing from 5.53 percent in January to 8.01 percent in December. This represents an increase of 2.48 percentage points.⁹ Overall the inflation rate was 6.6 percent in 2015.¹⁰ Such high levels of inflation reduce the purchasing power of the shilling, thus raising the cost of living for all Kenyans, but hit the poor the hardest.

Poverty and geographical disparities

Economic growth can be a powerful driver for increased food security if it is inclusive and reaches the poor and marginalised, including women, smallholder farmers, the elderly and disabled, so they can use the additional economic assets to improve their diets in both quantity and quality.

Although Kenya has experienced economic growth over the last decade, it has not been sufficiently inclusive and persistent high levels of poverty and regional disparities remain. According to KNBS, the average national poverty rate in 2015 stood at 45.2 percent, levels that have reportedly

Table 2: Trends in economic and social indicators 2010 - 2014

Description	2010	2011	2012	2013	2014	2015
1 Population (million)	38.5	39.5	40.7	41.8	43.0	44.1
2 Real GDP growth (%)	8.4	6.1	4.6	5.7	5.3	5.6
3 GDP per capita (KSh)	80,688	83,297	84,721	87,105	89,240	91,588
4 Consumer Price Index: (Feb 2009=100)	106.3	121.2	132.5	140.1	149.7	159.6
5 Inflation (index number)	4.1	14.0	9.4	5.7	6.9	6.6
6 Foreign exchange rates - KSh to 1 US\$	79.2	88.81	84.53	86.12	87.92	98.18

Source: KNBS, Economic Survey (2016)

⁸Institute of Economic Affairs, 2016

⁹Institute of Economic Affairs, 2016

¹⁰KNBS, Economic Survey 2016

remained relatively unchanged for the last 20 years. Among the rural population, which accounts for around 75 percent of the total population, almost 17 million are classified as poor.¹¹ Turkana county has the highest rate (87.5%) followed by Mandera and Wajir at 85.8 percent and 84.2 percent respectively.¹² The country's Gini coefficient¹³ of 47.7 compares less favourably with other main economies in the region: e.g. Ethiopia 29.8, Tanzania 37.6 and Uganda 44.3. While Nairobi's Human Development Index (HDI) would put it firmly into the medium human development bracket, certain counties have such a low HDI (i.e. below 0.4) that they would be ranked at the very bottom of the index, namely Wajir, Taita Taveta, Garissa, Kajiado and Kitui.

Unemployment and under-employment

Performance of the labour market remained modest with employment growing at 5.9 percent to an estimated 15.2 million jobs in 2015. Employment within the informal sector - for instance *jua kali*¹⁴, self-employment, small-scale agriculture and pastoralism - dominated job creation, resulting in a six percent increase in its share of total employment to 82.8 percent of all working people (12.6 million people).¹⁵ The labour market is thus characterized by poorly paid and highly insecure jobs, which are often seasonal. This means official unemployment figures (14.6%¹⁶) appear lower than the reality as many are underemployed in the formal sector or 'working but poor', especially in rural areas.

Kenya's population is estimated at 44.9 million people¹⁷ and is growing. 'The overarching strategic challenge facing the country today is to create employment opportunities for its continuously growing labour force, notably the youth,' notes the African Development Bank's Country Strategy Paper.

The report stresses the need to promote private sector activity and enhance the skills of Kenya's workforce. Several challenges prevent Kenya's private sector from reaching its full potential, chiefly infrastructure deficits, corruption, an unfavourable regulatory environment and a lack of trained workforce, as well as security challenges.

Climate

With significant climatic variability between coastal, interior and highland regions and around 80 percent of the country classified as arid or semi-arid, Kenya is highly susceptible to weather-related shocks. Frequent flooding and unreliable rainfall and drought create food shortages and increased levels of acute malnutrition in arid and semi-arid regions. These disasters are particularly profound for small-scale farmers who rarely have irrigation. As the population grows land size declines and becomes degraded with over-use, overstocking and deforestation.¹⁸

The extensive use of biomass as an energy source is exacerbating the impacts of climate change. Approximately 42 percent of Kenya's GDP and 70 percent of employment is derived from natural resource-based sectors,

¹¹IFAD 2015

¹²KNBS 2015

¹³The Gini index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality while an index of 100 implies perfect inequality. (World Bank)

¹⁴The literal translation of *Jua Kali* in Kenyan Kiswahili is "fierce sun"; it refers to an informal sector person, businessman, or entrepreneur who can fix or do anything upon request.

¹⁵KNBS Economic Survey, 2016

¹⁶World Bank

¹⁷World Bank 2014

¹⁸NEMA 2011

including agriculture, water, energy, forestry and tourism.¹⁹ While climate change will impact all sectors, agriculture, which is mainly rain-fed, stands apart as highly vulnerable to shifting rain patterns and droughts. Average temperatures have increased by 1°C since 1960 and there have been observed changes in rainfall patterns, which have become increasingly unreliable during the long rains (March–April) and heavier during the short rains (October–December). It is anticipated that climatic changes will continue to affect Kenya, with temperatures expected to rise by a further 1°C by 2020 (albeit with regional variation), alongside a mean decrease in annual rainfall.

The Government recognises that the transition to a green economy represents a strategic opportunity to foster sustained economic growth, reduce environmental degradation, including the impacts of climate change, create jobs and promote inclusive growth. Kenya ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and submitted its first national communication to the UNFCCC in 2002.

Urbanisation

Almost one in three people now live in urban areas compared with 16 percent 20 years ago. It is projected that by 2033, half of the population will be residing in towns and cities.²⁰

Urban growth is both natural and driven by rural-urban migration as people seek employment and to escape the effects of climate change. Demand for space in urban areas is pushing property prices up, forcing many into slums without basic amenities such as safe drinking water, toilet/sewerage systems, drainage systems and other

infrastructure. A major challenge is how to feed this growing population, who are dependent on purchasing their food in an environment in which secure jobs are scarce.

The country's national climate change response strategy recognises that “population displacement and migration from climate disaster-prone areas (e.g. drought-prone northern Kenya and the coastal region where sea levels are rising) are expected to increase. It is expected that most of those on the move will head towards urban agglomerations where assistance, income opportunities and infrastructure may be perceived to be more accessible and readily available. This will create an enormous social, health, infrastructure and management challenge for cities, subjecting them to unplanned population growth.

Although urbanisation can be interpreted as an indicator of economic progress, at the same time the unplanned urban expansion raises many challenges regarding the living conditions and wellbeing of city dwellers. Most migrants to cities live in high density, informal settlements along railways, rivers and power plants, for example. For many, cities provide a springboard out of poverty, but the promises of better income are not always realised. The darker side of urbanisation is urban poverty and food insecurity. People often struggle to pay the high cost of city living or are unable to afford sufficient food to meet their minimum nutritional requirements. Unhygienic, crowded living environments with poor access to public services exacerbate the effects of urban slum dwellers' food insecurity. Moreover, the urban poor frequently have a less diverse range of coping strategies to employ in the face of food insecurity than do their counterparts in rural areas: for example they do not have access to land to grow their food and inter-generational support networks tend to be weaker.

¹⁹Kenya Country Strategy Paper 2014-2018, African Development Bank

²⁰Kenya Country Strategy Paper 2014-2018, African Development Bank



3

Key findings



Food availability

Kenya is not self sufficient in terms of food production and has to rely on formal and informal food imports to feed its growing population. Growth in the country's main economic sector has not kept pace with that of other sectors, falling from 5.2 percent in 2013 to 3.4 percent in 2014.²¹ Agriculture is facing major challenges including stagnant or declining productivity levels, under-exploitation of land, inefficiencies in the supply chain due to limited storage capacity, lack of post-harvest services, poor access to input markets and low value addition of most agricultural exports. Only about 6-8 percent of the land has been irrigated, leaving smallholders highly vulnerable to droughts and floods.

The arid and semi-arid lands (ASALs), which cover about 80 percent of the country's landmass, are characterized by erratic, low rainfall and are prone to prolonged drought and flash floods. Some counties have experienced a high number of droughts between 2001 and 2016, namely Turkana, Marsabit, Samburu, Isiolo, Wajir, Taita Taveta and Kajiado. The highly drought-prone areas also experienced a high number of poor growing seasons for both the short and long rains during that time.

Market integration and food prices

Rural households are highly market-dependent, purchasing around 76 percent of their food consumption days. Households in the poor, pastoralist counties such as Mandera, Garissa, Wajir, Isiolo and Samburu are even more market-reliant. Most of the markets in these areas are weakly integrated both amongst themselves and with the main supply markets because of poor infrastructure and low population densities.

In the arid lands food availability in markets is seasonal, depending on the production cycles and climatic conditions in the food producing areas of the country and transport conditions. It can take up to four days to reach remote markets during the dry season. In the rainy season routes are sometimes impassable, increasing supply times, reducing availability and pushing up prices. Prices are generally lower between November and May. The highest market prices are indeed in the most remote counties of Turkana and Mandera, where they are more than 100 percent above those of the base market on average, followed by Garissa, Wajir, Marsabit, Samburu and Kajiado.

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²¹Kenya Bureau of Statistics

Household food security

The majority of households (88%) in Kenya have acceptable food consumption scores. In terms of numbers 155,500 households have poor consumption and 879,000 borderline, using the 2009 population census data. According to the KDHS, average household size is 3.9, giving a figure of at least four million food insecure Kenyans.²² Rural households are more likely to be food insecure than urban households (14% vs 9%).

Almost one in ten (9%) rural households have low dietary diversity i.e., they consumed four food groups or fewer in the previous week (IFPRI threshold). The prevalence of low diversity reaches some 38 percent in Marsabit followed by 33 percent in Turkana. In West Pokot, Mandera, Baringo, Tana River, Garissa, Busia and Wajir 14-19 percent of households have poor diversity.

Food access issues

Nationally almost one in three households reported having faced shortages in the preceding week (36% rural vs 23% urban). Lack of food was most extreme in Turkana where some 86 percent had to cope with not having enough food or money to purchase it. Besides Wajir and Baringo, which are counties that also face climatic challenges, the western counties by Lake Victoria (Busia, Siaya, Homa Bay and Migori) all faced very high household prevalence of food shortages (more than 60%). 'High' levels of food-related coping were most prevalent in Marsabit, Tharaka-Nithi, Samburu, Baringo and Siaya.

Nutrient value of food consumed

The diet of those with unacceptable food consumption consists chiefly of cereals (maize, millet, sorghum or rice) accompanied by green vegetables and oil. The food insecure may occasionally eat potatoes, cassava, sweet potatoes and pulses, but their diet is severely lacking in any other food groups, namely meat, eggs, fish, dairy and fruit. Nationally almost one in three households ate no food rich in HEME iron in the week before the survey, though the prevalence was double that in Wajir, Kitui, Murang'a and West Pokot. Consumption of foods rich in vitamin A and protein was more encouraging. Overall 72 percent of surveyed households ate protein-rich food daily in the previous week peaking at 91 percent in Wajir. However, in Turkana, West Pokot and Baringo around one in 10 households consumed no protein-rich food at all in the previous week.

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²²Those with poor and borderline – or unacceptable scores – are grouped together as the food insecure.

Geographical location of food insecure households

Turkana stands out as being far more food insecure than any other county in Kenya. The next most food insecure counties are Samburu, Tana River, Baringo, West Pokot, Busia and Siaya. The four pastoralist counties (Marsabit, Mandera, Garissa and Wajir) that are relatively food secure by the FCS - because their high milk consumption inflates their score - have very low dietary diversity. These very poor counties, where the overwhelming majority of household heads have little or no education, are undoubtedly highly vulnerable to food insecurity because of their regular exposure to drought and food price inflation.

While food insecurity prevalence is highest in rural counties, the highest number of food insecure households is in the capital Nairobi, where 96,356 households have poor or borderline consumption.

Profile of the food insecure

Food insecure households are typically poor rural households dependent on daily agricultural labour. Low-income agriculture is the most common type of livelihood. By comparison with food secure households, the food insecure have fewer livestock, and less agricultural land.

Households headed by women and by the elderly are more likely to be food insecure. In total, 68 percent of households are headed by men and 32 percent by women, rising to 60 percent in Turkana, 59 percent in Mandera and more than 40 percent in Kitui, Samburu, Makueni, Homa Bay, Vihiga, Siaya and Isiolo. Female household heads are less educated than their male counterparts. There is also a strong association between higher fertility rates and food insecurity.

The link between lack of education and food insecurity by the FCS indicator is clear: almost half (48%) of household heads in rural areas have little or no education reaching more than 80 percent in Wajir and Mandera and more than 70 percent in Turkana and Marsabit. Completing secondary or above radically improves a household's chance of being food secure.

Undernutrition

With 4.1 percent of 6-59 month old children wasted, acute malnutrition in Kenya is considered acceptable by WHO cut-offs,²³ a marked improvement since the 2008 DHS prevalence of 6.7 percent. However, levels are 'poor' for children in the poorest households, in households with poor food consumption, and in households with high coping strategies, and 'serious' for children whose mothers have no education. Children born to thin mothers are also more likely to be wasted.

Stunting among Kenyan children under five years old is considered 'poor' by WHO thresholds with 26 percent either moderately or severely stunted down from 35 percent in the KDHS 2008. However, there is a marked urban/rural difference: the prevalence rises to 29 percent in rural areas versus 20 percent in urban, which is almost 'acceptable' by WHO cut-offs.

Geographical location of the malnourished

Wasting of under fives is 'critical' in the country's northern counties of Turkana, Marsabit and Mandera and 'serious' in West Pokot, Wajir, Samburu and Garissa.

In Kitui and West Pokot the prevalence of stunted under fives is considered 'critical' i.e more than 40 percent of children are stunted. Levels are 'serious' in Kilifi, Bomet, Mandera, Tran-Nzoia, Tharaka-Nithi, Narok, Elgeyo Marakwet, Nandi, Uasin Gishu, Baringo, Nyandarua and Samburu.

Factors associated with malnutrition

Each county with a serious or critical prevalence of wasting has well above average levels of: poverty, poor sanitation and drinking water quality, poor education of the household head and underweight women of childbearing age. A high percentage suffer times when they don't have enough food or money to buy food and have to resort to high use of corrosive food-related coping mechanisms.

Similarly, counties with critical or serious levels of stunted children also have high levels of poor sanitation and drinking water quality, poverty and lack of education. It's worth noting that some of the counties with high stunting levels – namely Kilifi, Kitui, Bomet, Mandera and Narok - are relatively food secure by both FCS and CSI indicators, underlining that there are other factors that lead to child undernutrition.

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²³The cut-offs for child undernutrition are provided in the WHO publication The management of nutrition in major emergencies, Geneva 2000.

Nationally 15 percent of households consume water that is from an unimproved source and either not treated or 'inappropriately' treated. The prevalence rises to 23 percent in rural areas and more than 40 percent of households in Narok, Baringo, Samburu, West Pokot, Turkana, Mandera and Wajir.

Around two thirds of rural Kenyan households (64%) use a non-improved toilet, most commonly a pit-latrine without a slab or an open pit. In Turkana, Tana River and Samburu more than 80 percent of households use unimproved toilets.

Women's nutritional status

Nationally, women of child-bearing age are more likely to be overweight (22.7% overweight and 10.1% obese) than underweight (8.9%). The poorer the household, the greater the likelihood of its female occupants being thin. The richer the household, the higher the chances of them being overweight or obese.

Thin women are more prevalent than overweight in Turkana, Samburu, Garissa, Tana River, Wajir, Mandera, Marsabit, West Pokot and Baringo.

4

Food availability

The production of crops and animal products depends on various factors such as rainfall, water and pasture availability, irrigation and inputs for agricultural production. Since households in Kenya are highly dependent on buying food, this chapter also examines the availability and prices of food traded in markets.



KEY MESSAGES

- Agriculture is the mainstay of the economy, but Kenya is a food deficit country, meeting the requirements of its growing population through formal and informal imports of maize as well as rice and wheat.
- The high level of imports makes the country vulnerable to international price fluctuations as well as to trade barriers sometimes imposed by neighbouring countries from which it imports.
- Smallholders, mainly farming plots of less than 0.5 hectares and with very limited access to irrigation and inputs, dominate the agriculture sector.
- Households are highly dependent on buying their food.
- The cost of maize generally peaks in July and is more expensive in remote northern markets in the country's poorest counties.
- Livestock production, most of which is concentrated in the arid and semi-arid lands (ASALs), plays a major role in food security there.

Agriculture is the mainstay of the Kenyan economy, contributing 30 percent directly to GDP,²⁴ even though only about 10 percent of the total land area is arable.²⁵ Tea and horticulture are the backbone of agricultural exports followed by coffee. The sector is not only the driver of Kenya's economy, but also the means of livelihood for the majority of Kenyan people.

While the country's ability to feed itself has improved significantly, Kenya is still far from being self sufficient in terms of food production and has to import food, both formally and informally. Growth in the sector is variable, chiefly reflecting rainfall patterns: it picked up from 3.4 percent in 2014 to 5.6 percent in 2016 thanks to abundant rainfall.²⁶ The sector is facing major challenges including stagnant or declining productivity levels, under-exploitation of land, inefficiencies in the supply chain due to limited storage capacity, lack of post-harvest services, poor access to input markets and low value addition of most agricultural exports.

Rainfall

Rainfall data is vital in the analysis of food availability in Kenya since most of the crop growing and livestock rearing areas are predominantly rainfall dependent. Only about 6-8 percent of the land has been irrigated, leaving smallholders highly vulnerable to drought and flooding.

■
²⁴KNBS Economic Report 2016
²⁵World Bank

²⁶Kenya Bureau of Statistics

The arid and semi-arid lands, which cover about 80 percent of the country’s landmass, are characterized by erratic, low rainfall and are prone to prolonged drought and flash floods. The medium- to high- rainfall cropping and livestock zones make up the remaining 20 percent.

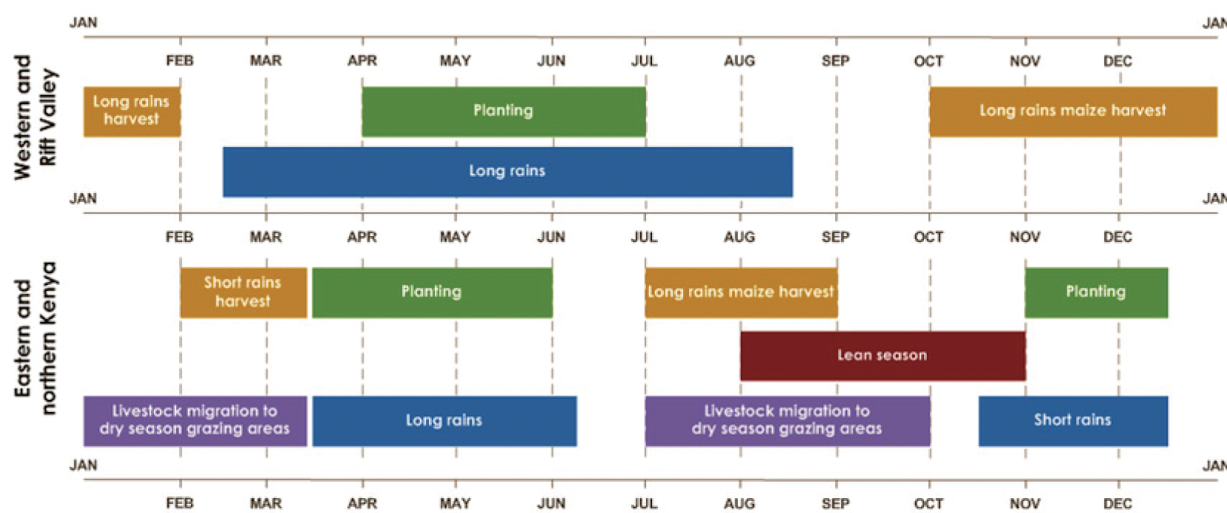
There are two rainy seasons: the short rains (October – December) are important for pasture growth in the northern and north eastern dry lands (e.g. Mandera, Wajir and Garissa counties) and the south eastern and coastal marginal agricultural areas. The long rains (March/April – May/June) are important for cereal production in the Rift Valley and western areas with harvesting taking place in October – February.

The seasonal calendar below presents the major rainy seasons, harvests, livestock migration periods and lean season in a typical year. It shows that in a normal year

the pastoral hunger season lasts from August to November before the short rains, which coincide with the lambing/calving/ kidding season, when milk availability improves. Prior to the two rainy seasons pastoralists move most of their livestock in search of grazing i.e. January – March and July – October, but leave some of the milking herd behind with the women and children.

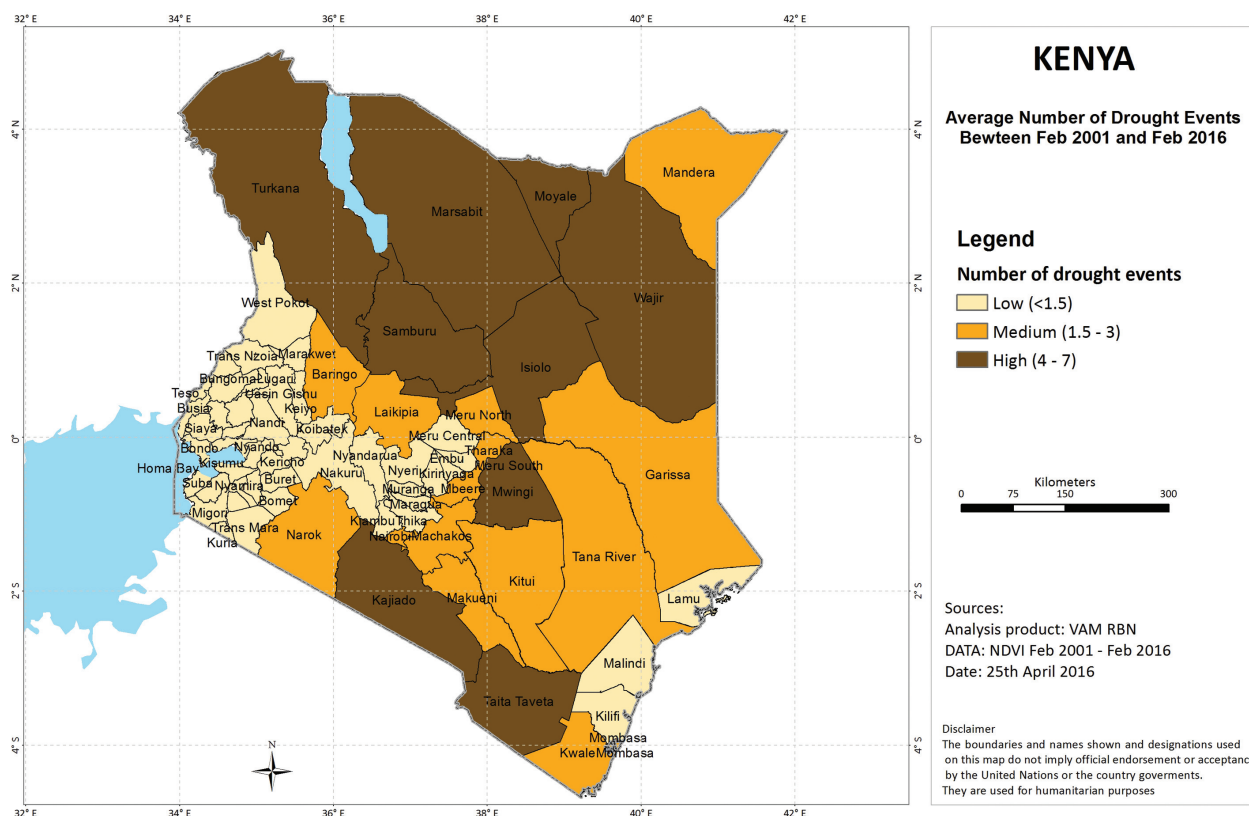
However, not every year is typical. Map 2 shows the average number of drought events between February 2001 and February 2016. Some eight counties have experienced a high number of droughts in that time, namely Turkana, Marsabit, Samburu, Isiolo, Wajir, Taita Taveta, Kajiado and parts of Kitui. Maps 3-4 show that the highly drought prone areas also experienced a high number of poor growing seasons for both the long and short rains between February 2001 and February 2016.

Figure 1: Seasonal calendar

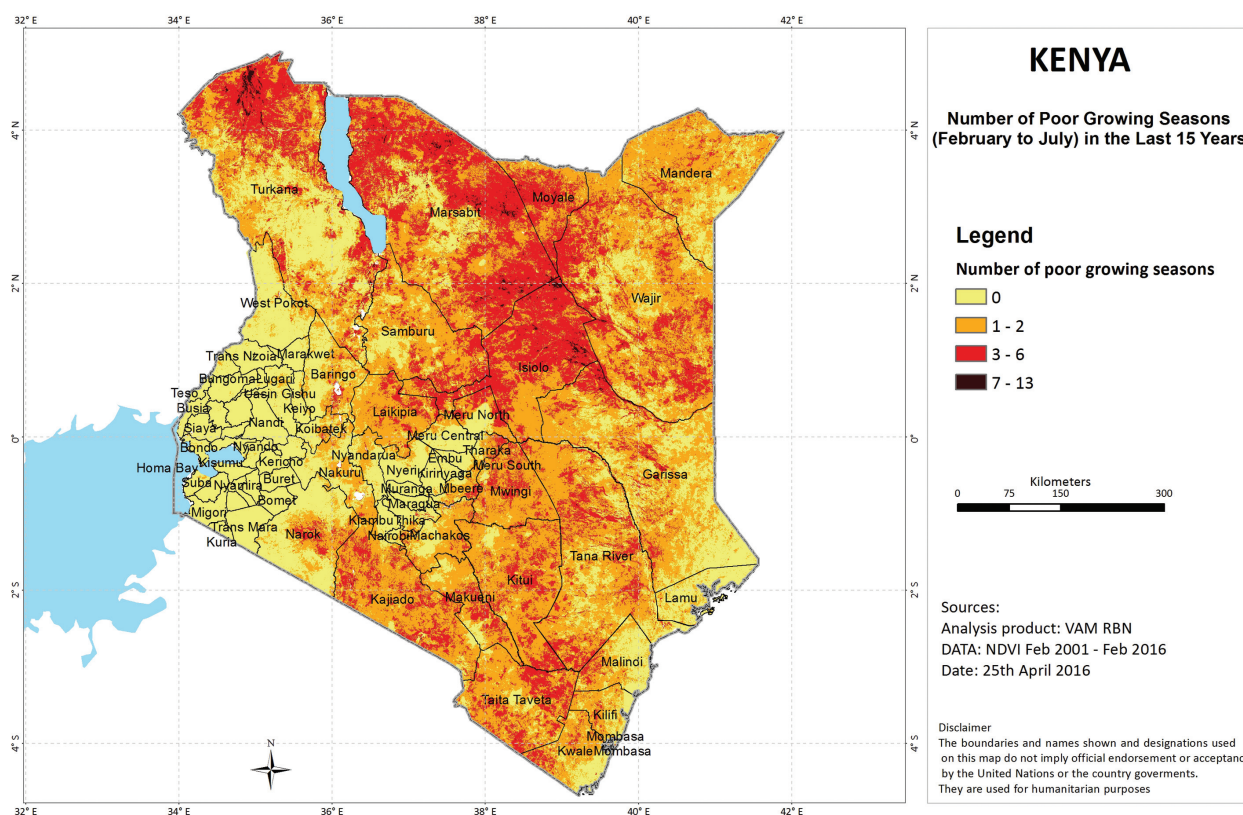


Source: FEWS NET

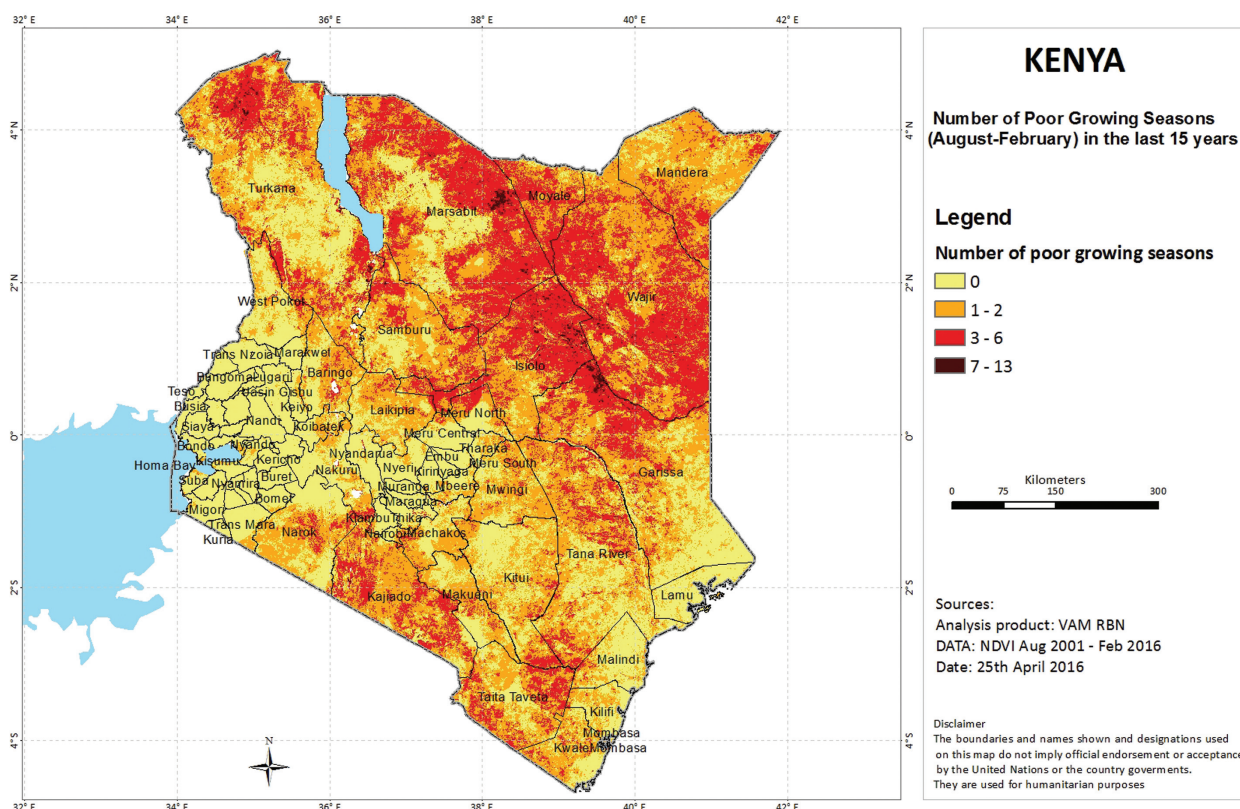
Map 2: Average number of drought events 2001 - 2016



Map 3: Average number of poor growing seasons, February-July, 2001 - 2016



Map 4: Average number of poor growing seasons, August-February, 2001 - 2016



National maize supply situation

Maize is the main staple food crop, contributing significantly to food security by providing roughly a third of both calories and protein in the Kenyan diet.²⁷

It is grown by 98 percent of Kenya's 3.5 million smallholder farmers. Small and medium scale farmers produce about 75 percent of the crop, while large-scale farmers (farms over 25 acres) produce the rest.²⁸

Parts of the Rift Valley Province, especially the counties of Trans Nzoia and Uasin

Gishu, produce a large surplus, primarily on medium and large farms. Most other regions are self-sufficient or face a maize deficit on an annual basis.

Total national consumption of maize increased from about 2.89 million tonnes in 2005 to around 3.5 million tonnes by 2015.²⁹ The number of bags produced increased by 9 percent from 39 million in 2014 to 42.5 million in 2015.³⁰ During normal to good years, national production may cover 98.5 percent of consumption, but in drought years it may fall to as low as 62 percent as was the case in 2009.³¹

²⁷De Groote and Kimenju 2012

²⁸Analysis of price incentives for maize in Kenya 2005-2013, FAO

²⁹Ministry of Agriculture

³⁰KNBS Economic Report 2016

³¹Analysis of price incentives for maize in Kenya 2005-2013, FAO

The total maize production in 2015, from both the long and short rains, is estimated at 3.1 million metric tons (MT), approximately nine percent above the five-year average. Cross-border imports continue to boost food availability in the markets. However, maize imports from Uganda and Tanzania are expected to reduce by around nine percent between July 2015 and June 2016. This is attributed to increased household stocks and market supplies in Kenya and tightening supplies and increasing prices in Tanzania because of its 10 percent below-average production in May-August 2015 and an anticipated below-average January-February 2016 harvest.³²

Milk, meat and fish production

Milk production in the formal milk sector increased from 523 million litres in 2013 to 600 million litres in 2015.

Meat production increased by 94 percent, from 210 MT in 2013 to 409 MT in 2014. Beef was the main meat produced, increasing by 17.2 percent to 113.5 MT in 2014. Goat, mutton, pork, rabbit, poultry and camel meat all recorded an upward trend due to increased demand in major towns (Economic Review of Agriculture 2015).

Total fish output declined by 14.3 per cent from 168,400 MT in 2014 to 144,300 MT in 2015, dominated by fresh water fish from Lake Victoria (76.7% of all fish landed) and fish farms (14.4%).

According to the State Department of Agriculture's food production report published in January 2016, the national maize stocks stood at 1.21 MT tons at the end of that month. This indicates that the country will have a surplus after May of about 0.41 million MT.³³

Challenges in food production, marketing and trade policy in Kenya

According to the Ministry of Agriculture, the key constraints to improving agricultural production, productivity and marketing include: low use of modern technology; lack of access to affordable credit; frequent droughts and floods; reduced effectiveness of extension services; high incidence of HIV and AIDS, malaria and water-borne and zoonotic diseases, which undermine agricultural workers' productivity levels; low and declining fertility of land; high cost of key inputs such as fertilizers, pesticides and improved seeds; and pests and diseases. About 20 to 30 percent of the harvest is lost because of pests and diseases, and lack of appropriate storage facilities. Aflatoxin³⁴ contamination is among the key causes of post-harvest losses. In Kenya, acute aflatoxin poisoning results in liver failure and death in up to 40 percent of cases.³⁵

Constraints in producer and market linkages include: inadequate markets and marketing infrastructure; inadequate quality control infrastructure; unfavourable trade conditions, such as protective trade barriers, stringent sanitary and phytosanitary conditions; and lack of storage and processing facilities.

³²KFSSG, 2016

³³Source: Kenya Food Security Steering Group (KFSSG), the 2015 short rains season assessment report, February, 2016

³⁴Aflatoxins are naturally occurring toxic substances found in cereals such as maize, sorghum, millet, rice, wheat, and groundnuts among other crops. Aflatoxin is produced by various species of *Aspergillus* fungi, which live in the soil in many parts of the world including Sub-Saharan Africa. Contamination mostly occurs when crops come into contact with soil during harvesting, threshing, drying and processing.

³⁵International Food Policy Research Institute (IFPRI), (2010). Aflatoxins in Kenya: An Overview

There are also major institutional arrangements that dominate marketing and trade policy in Kenya. These include high interest rates that continue to constrain investment in the agricultural sector, the decline in world commodity prices and tariffs and non-tariff barriers imposed by developed countries. An out-dated agricultural legal and regulatory framework means the capacity of the key institutions supporting agriculture is weak. Farmers and agro-processors are subjected to multiple taxes from local authorities and Government departments. Women are not proportionately represented in decision-making: gender-based constraints have been shown to reduce productivity by as much as 20 per cent.³⁶

A nation of smallholders

Just 16 percent of land is high to medium potential. The rest is arid and semi-arid and, therefore, of low agricultural potential. Out of the ASAL's 48 million ha, only half is useful for nomadic pastoralism. The rest can support some commercial ranching and irrigated agriculture but only with added technological input.

According to the DHS data almost 80 percent of rural households own some land. The high and medium potential areas have been reduced to small-scale farms of 0.5 – 10 ha. As a matter of fact, most (37% of all rural households) own plots of less than 0.5 hectares. A further 18 percent own between 0.6 and one hectare and 14 percent own between 1.1 and two hectares. A very small minority own two hectares or more.

Considering that the population growth rate is 2.6 percent³⁷ the pressure on land is

continuously reducing its capacity to sustain food production and cash crop farming.

We have seen above that smallholder farmers face multiple constraints that hinder them from increasing yields. As a result, rural households are highly market dependent for their food, purchasing around 76 percent of their food consumption days.

In the north east counties of Garissa, Wajir and Mandera land ownership is virtually unknown so households in these counties are highly market reliant, purchasing 88 percent, 86 percent and 91 percent of their food consumption days respectively. Land ownership is also rare - and market dependency high - in Turkana, Marsabit, Isiolo and Samburu.

Livestock ownership

For subsistence pastoralists, livestock ownership is critical in times of stress because they survive on meat and milk when market prices rise.

In times of prolonged drought pastoralists lose livestock to disease and lack of pasture and water. Flash floods can also wash away weakened animals. This is compounded by the high cost of fodder during droughts.

If a household can destock before drought takes hold and animals become sick, it can perhaps avoid distress sales and recover, but there is still a cultural resistance to doing so. The traditional strategy is to increase herd sizes rather than attempt to save money. During times of food scarcity animal fodder becomes more expensive as does food for the household.

³⁶Government of Kenya – Agriculture sector development support programme (ASDSP, 2011) programme document.

³⁷World Bank

Four out of five rural households own livestock, including chickens, cattle, goats, sheep, horses/donkeys/mules and camels. Tropical Livestock Unit (TLU) is a convenient method for quantifying a wide range of different livestock types and sizes in a standard manner. The standard used for one TLU is one cow with a body weight of 250 kg.³⁸

Poor roads hamper market supply

According to the Kenya National Bureau of Statistics, just 25 percent of Kenya's classified roads were paved as of December 2014. Sections of the 63,100 kilometres of earth/gravel roads often become impassable in the rainy season, especially for bigger trucks.

For instance, according to the WFP-led logistics cluster capacity assessment (2014), the 838 km Nairobi – South Sudan route usually takes 3-4 days, but in the wet season trucks often get stuck at certain points between Kapenguria and Lokichoggio for up to four days until the road dries up. The 546 km Nairobi – Somalia route via Garissa and Dadaab usually takes 2-3 days but the final section is in very poor condition and prone to flooding and washouts during the rains. The 705 km Garissa – Somalia road via Wajir and Mandera is impassable in places because of swamps, poor surfaces and hilly sections where seasonal rivers dissect the road and cause many washouts.

The average number of TLUs nationally is 2.3, which is equivalent to, for example, 14 goats (1.3 in urban areas vs. 3.0 in rural areas). The average is much higher in Marsabit, Garissa and Narok, where they own at least 10, followed by Wajir, Samburu, Isiolo, Baringo, Mandera and Tana River.

Markets and trade³⁹

Throughout the country households are highly market-dependent for their daily food needs. Unsurprisingly urban households purchase a higher proportion of their food consumption days than rural households: 94 percent versus 76 percent. Besides Mombasa and Nairobi, the counties that are most market-dependent for their food are Mandera, Isiolo, Kiambu, Kajiado, Kisumu, Nakuru, Machakos, Garissa, Tana River, Kitui, Samburu, Wajir and Laikipia, where households source more than 85 percent of their food consumption days from the market. So the ability to access functioning markets is crucial. And food prices play a key role in household food security.

Maize flows from the grain basket of western Kenya and vegetables are mostly produced in the central and western regions. Short maturing vegetables, such as cowpeas and green leaves, are available during both rains for 1-2 months from the marginal agricultural areas.

Market integration is a measure of the degree to which market systems in different geographical areas are connected to each other. When markets are integrated critical

³⁸The DHS collected data on cattle (1), cows/bulls (1), horses/donkeys/mules (0.8), goats (0.166), sheep (0.166) and chickens (0.004). The figure in brackets refers to the weighting to convert these animals to Tropical Livestock Units. These weighting factors are estimates, as the actual size of the animals is not shown. Additionally, data on camels were not collected, so this is not reflected in the TLU calculation. Households were then categorized into the number of TLUs they owned: zero TLU, less than 1, 1-2, 2-3... 6 or more.

³⁹Market dynamics and financial services in Kenya's arid lands, WFP 2013

food and non-food items will flow more easily from surplus to deficit areas; from producers to consumers; from ports and border crossings into more remote areas.

In the arid lands only livestock and milk are locally produced and traded. Access to markets is crucial for the sale of products such as milk, meat or leather as well as the purchase of maize, pulses, fruit, vegetables and oil. Hence market integration is fundamental in ensuring a consistent food supply throughout the year.

Most of the markets in the arid lands are weakly integrated both amongst themselves and with the main supply markets in Kenya. This is due to poor infrastructure and low population densities, which lead to sparsely located domestic markets. The county headquarters and a few other large supply markets positioned on the transport corridors are the only ones in the arid lands that show signs of adequate integration with the producing areas. Markets off the main transport routes within the arid lands are weakly integrated with their respective supply sources.

Food availability in markets in the ASALs is seasonal, depending on the production cycles and climatic conditions in the food producing areas of the country and transport conditions. It is more available following the long rains harvest in western Kenya (October – February) and decreases steadily between March and September. It can take up to four days to reach remote markets during the dry season. In the rainy season routes are sometimes impassable, increasing supply times and reducing availability. By contrast markets in the high potential mixed farming zone are better integrated

within the zone and with key urban centres, largely due to a fairly sophisticated trade infrastructure. Distances from markets are relatively low, coupled with a considerable number of market participants across the marketing chain, which minimizes transaction costs.

Food price trends

Poor households are highly vulnerable to food price increases since they tend to spend a high percentage of their budget on food, so when prices rise they have no choice but to cut the quality or quantity of food consumed by the household as well as reduce spending on other necessities. Price fluctuations of staples and vegetables are mainly determined by the harvest performance and by transport costs, among other things. In the arid lands lower prices are generally observed between November and May.

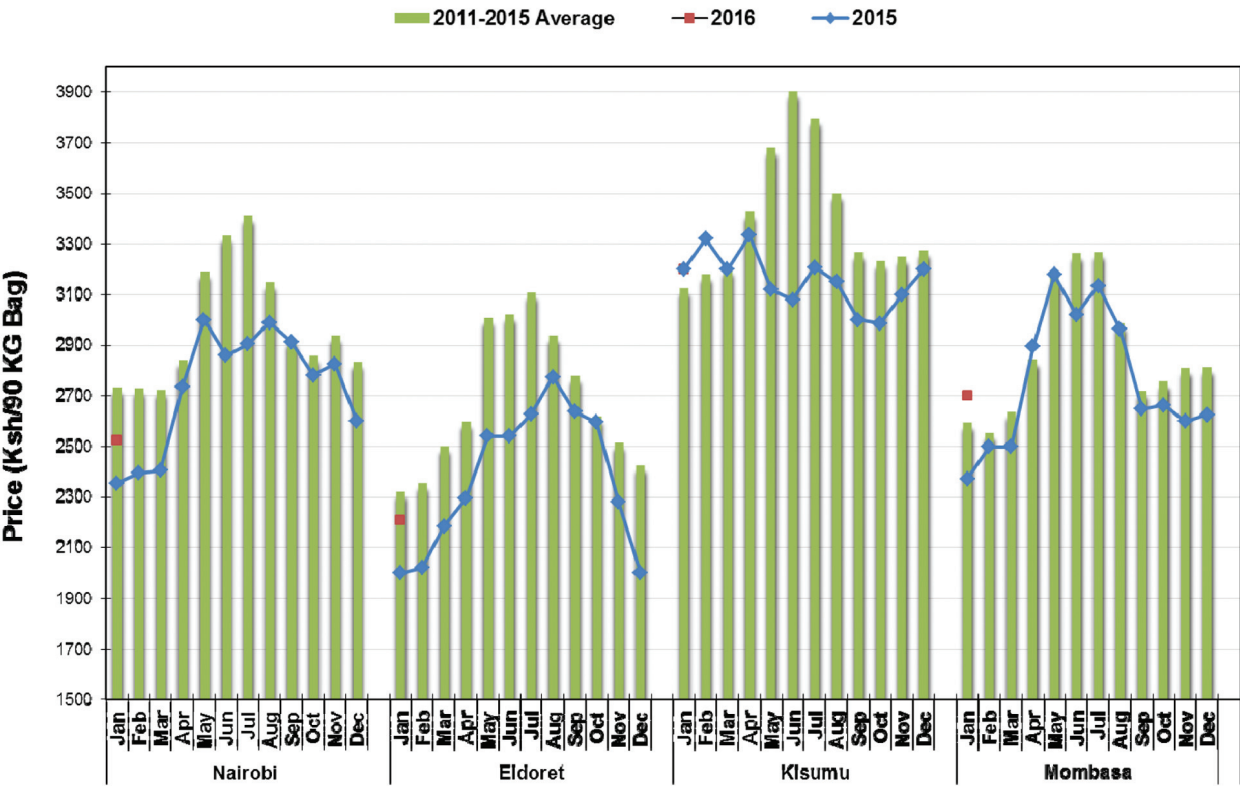
In the arid lands prices increase by about 1.3 percent for every additional hour of delivery time from the hub market to the county headquarters and 1.8 percent for each hour between the county headquarters and the remote markets off the corridor. Map 5 of the percentage change in prices from the base market shows that the biggest price increases are indeed in the most remote arid lands of Turkana and Mandera, where they are more than 100 percent above those of the base market on average, followed by Garissa, Wajir, Marsabit, Samburu and Kajiado. In Taita Taveta, Kitui, Embu, Tharaka-Nithi and Meru prices are actually below the base market average. These counties are largely short rains dependent and have an average to above-average short rains harvest, which lowers the staple prices.

According to data from the State Department of Agriculture an adequate availability of food commodities in most markets in the country in January thanks to imports and the short rains harvest was keeping food prices stable. Wholesale maize prices in the major urban markets of Nairobi, Mombasa and Kisumu remained fairly stable and/or declined between October 2015 and January 2016. In Eldoret, prices increased by 11 percent between December and January, mainly attributed to the National Cereals and Produce Board (NCPB) buying maize from farmers for the Strategic Grain Reserve.

Retail maize prices between December 2015 and January 2016 also remained stable in the pastoral markets, especially in Wajir, Turkana, Samburu and Garissa, and declined by up to 10 percent in Isiolo, Marsabit, Tana River and Mandera.

Figure 2 below shows the average price of maize per 90 kg bag in the four main markets for 2015 and January 2016 compared with the long term average (2011 – 2015). It shows that prices vary significantly by market. Prices are consistently higher in Kisumu and lower in Eldoret. Overall, prices in 2015 tended to be below the previous five-year average.

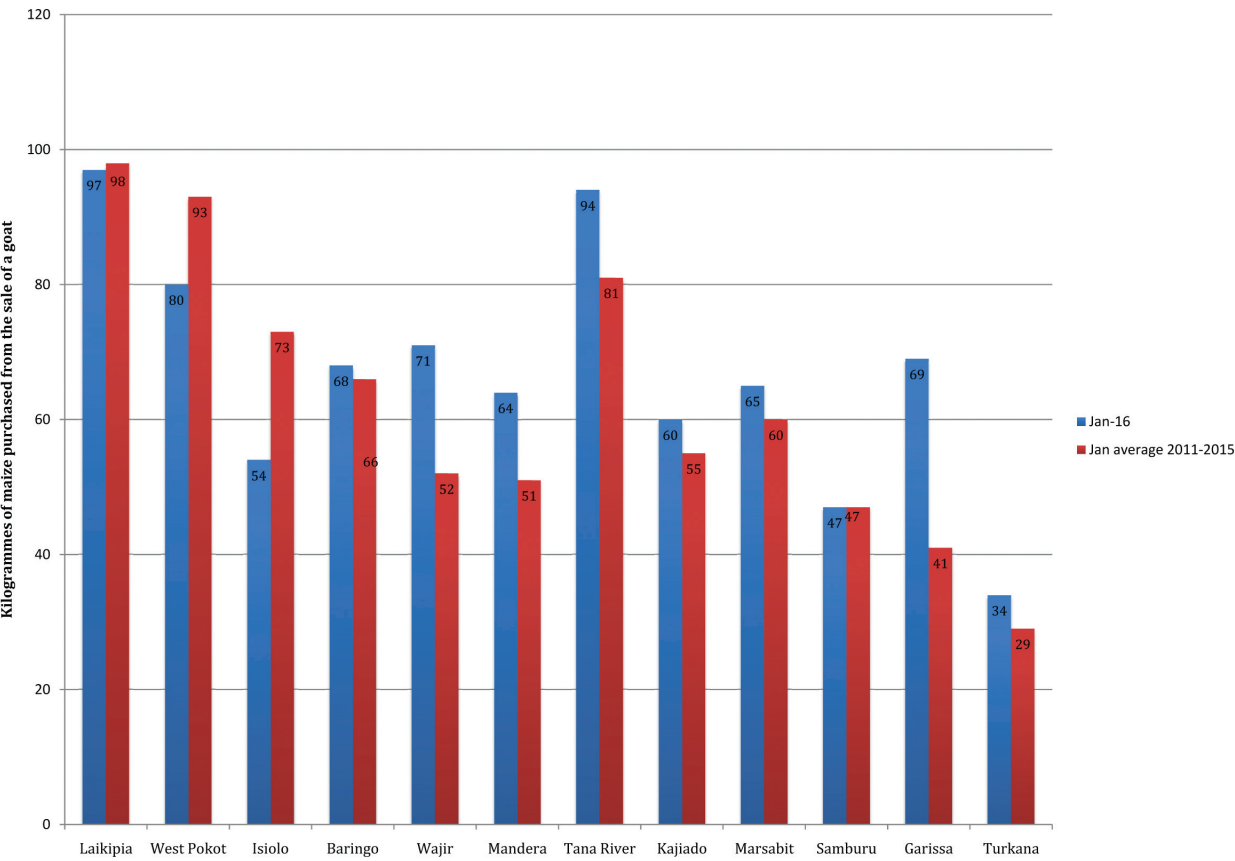
Figure 2: Average price of maize in four markets, 2015 versus LTA (2011 – 2015)



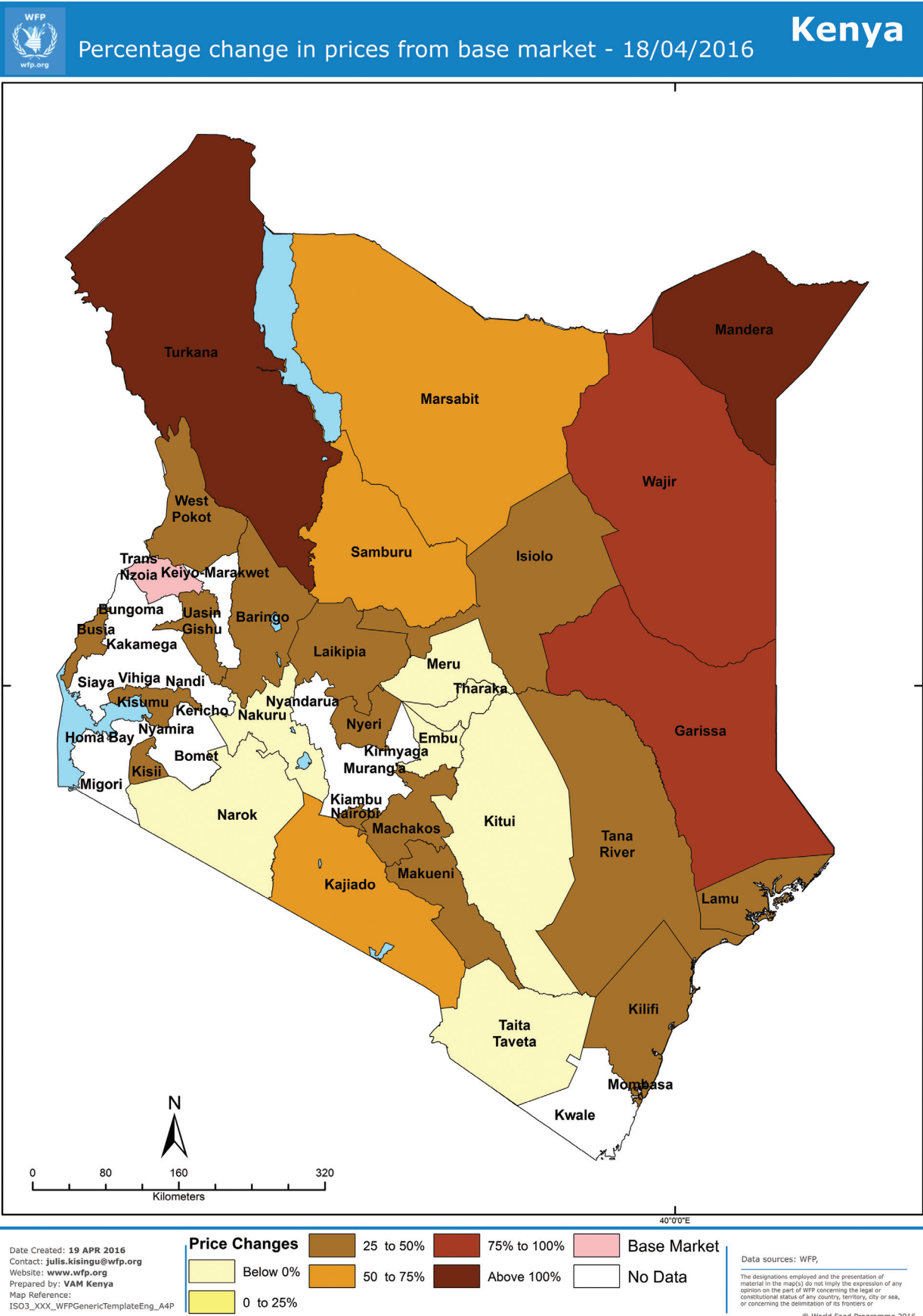
Livestock prices in most pastoral areas in January 2016, just after the short rains, were favourable and above their respective averages. Apart from Isiolo, where goat prices were near the average, goat prices in the other pastoral markets were 6-50 percent above average, with notable variations between markets. With staple food prices stable, the livestock-

to-cereal terms of trade were good for pastoralists, meaning they could purchase more kilogrammes of maize than they normally would during that period. With the exception of Isiolo and West Pokot, the January terms of trade were 8- 60 percent above average in most counties as shown in figure 3.

Figure 3: Cereal to livestock terms of trade in pastoral counties (kg of maize purchased from sale of one goat)



Map 5: Percentage change in prices from average at base market



5

Food security status

This chapter looks at the food insecurity situation at the time of the survey, at what people consume and whether this allows them to lead a healthy and productive life



KEY MESSAGES

- Most households have acceptable food consumption (88%)
- Turkana stands out as being far more food insecure than any other county
- The four pastoralist counties that are relatively food secure by the FCS have very low dietary diversity, namely Marsabit, Mandera, Garissa and Wajir
- The diets of around four million people (12% of households) with unacceptable consumption consist chiefly of a staple, flavoured with green vegetables and oil
- In Turkana, Busia, Homa Bay, Baringo, Siaya and Wajir most households faced food shortages in the previous week
- 'High' levels of food related coping are most prevalent in Marsabit, Tharaka-Nithi, Samburu, Baringo and Siaya
- Almost one in three households ate no food rich in HEME iron in the week before the survey, while consumption of foods rich in vitamin A and protein was more encouraging.

The food consumption score

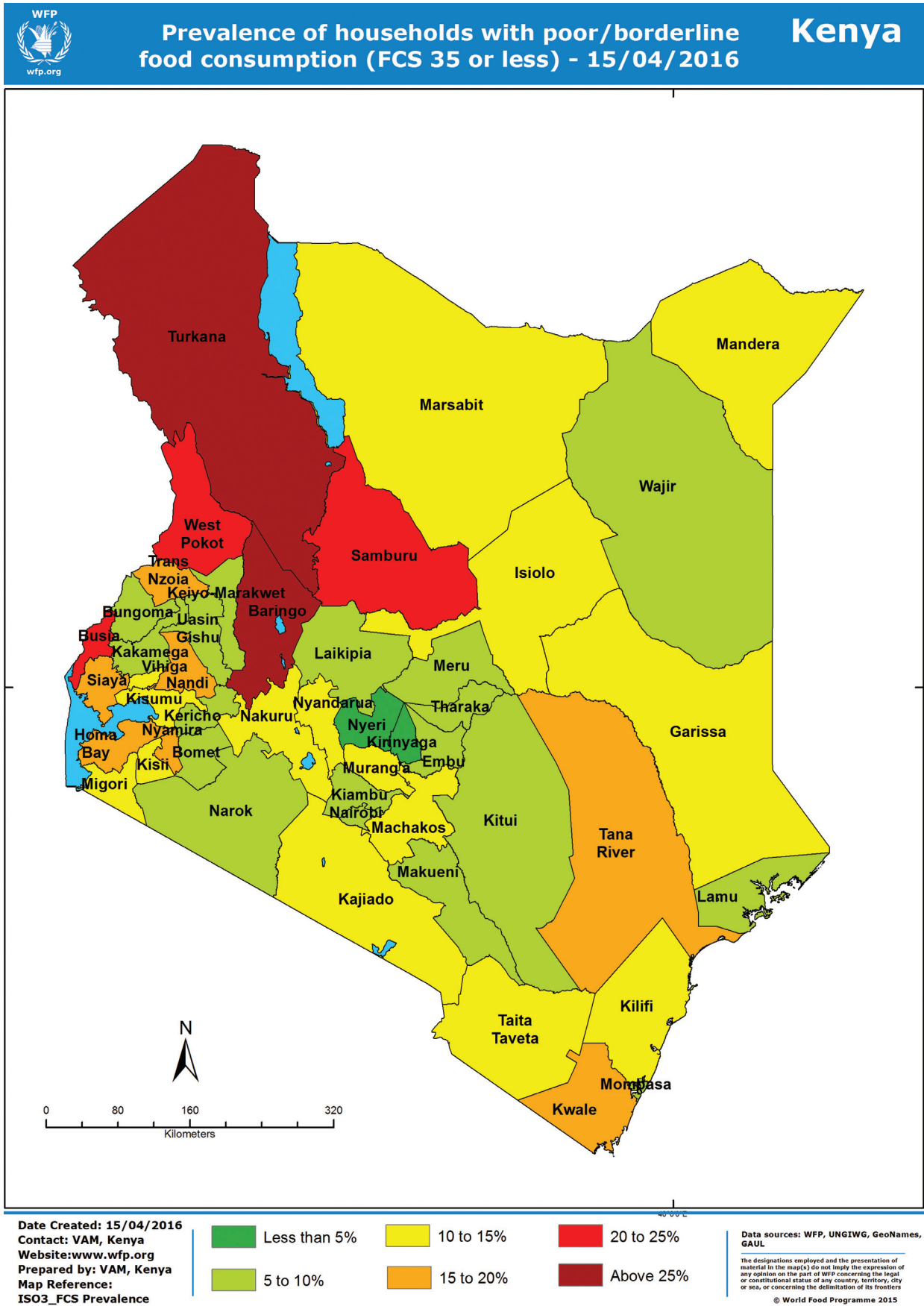
In this report adequacy of consumption is measured using the food consumption score (FCS). As described in chapter 1, the FCS is a composite calculation that combines dietary diversity (the number of food groups consumed by a household over a seven-day period), food frequency (the number of

days a particular food group is consumed), and the relative nutritional importance of different food groups. It is intended to describe short-term food security at the time of data collection. Food consumption scores are divided into poor, borderline and acceptable food consumption groups. In this report the poor and borderline food consumption score is used as a proxy indicator for food insecurity.

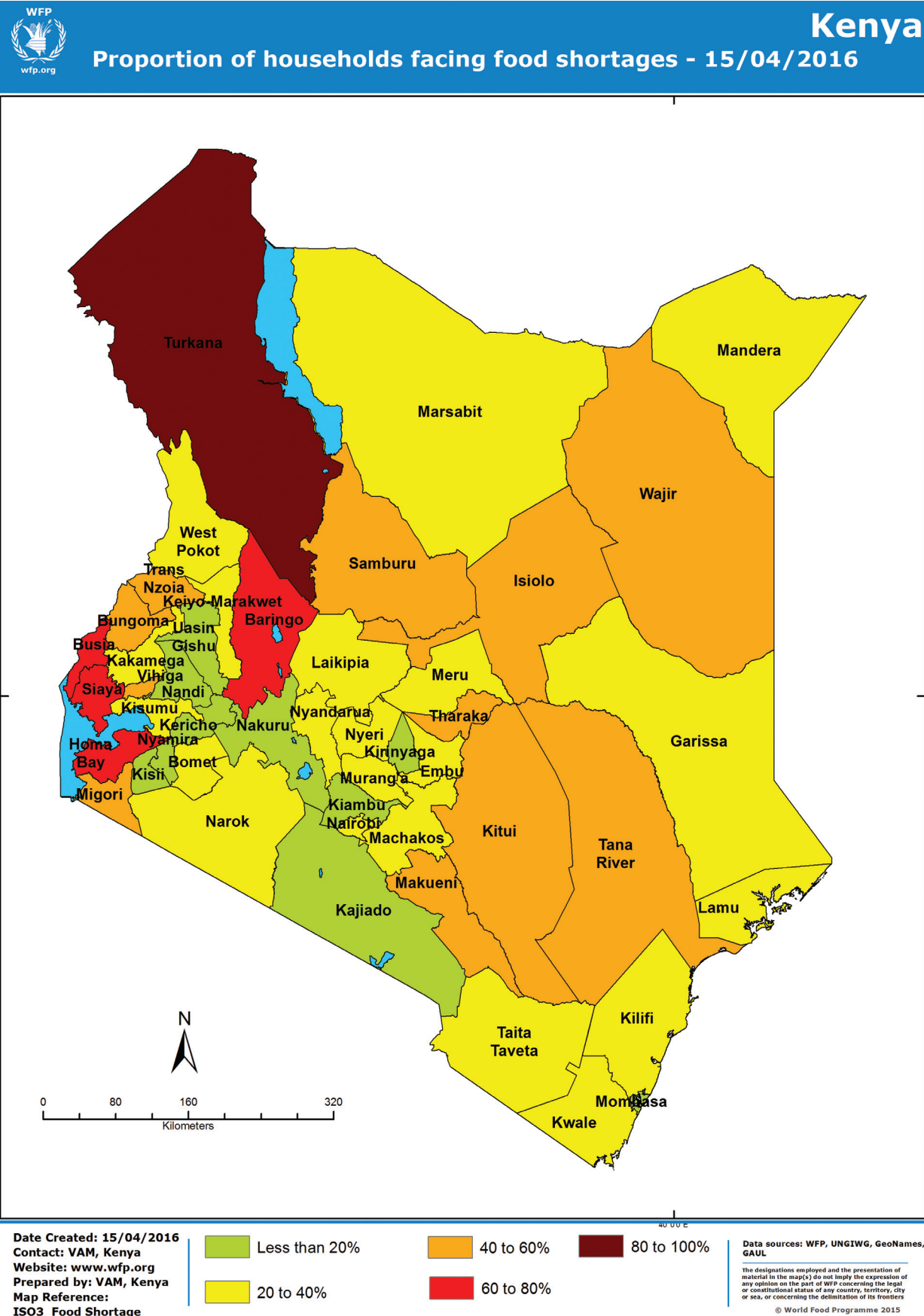
The majority of households (88%) in Kenya have acceptable food consumption scores. Two percent of households have poor food consumption and 10 percent borderline. In terms of numbers this translates into 155,500 Kenyan households having poor consumption and 879,000 borderline, using the 2009 population census data. According to the KDHS, average household size is 3.9, giving a figure of at least four million food insecure Kenyans.

The diet of those with unacceptable food consumption consists chiefly of cereals (maize, millet, sorghum or rice) accompanied by green vegetables and oil. They may occasionally eat potatoes, cassava, sweet potatoes and pulses, but their diet is severely lacking in any other food groups, namely meat, eggs, fish, dairy and fruit. Rural households are more likely to be food insecure than urban households (14% vs 9%). As map 6 shows, Turkana stands out as being far more food insecure than any other county in Kenya: almost one in five households (19%) have poor consumption and a further 24 percent borderline. No other county comes close to this level of food insecurity. The next most food insecure counties are Samburu, Tana River, Baringo, West Pokot, Busia and Siaya.

Map 6: Prevalence of food insecure households (poor/borderline FCS) by county



Map 7: Percentage of households that experienced food shortages in the week before being surveyed



Food shortages and household coping

When confronted with negative events such as livestock losses, crop failure, food price rises, depressed crop and livestock producer prices, illness of a household member (especially a working one) or loss of employment etc, households may not have enough food or money to buy food. Respondents were asked if there were any days in the previous seven when their household was in this situation.

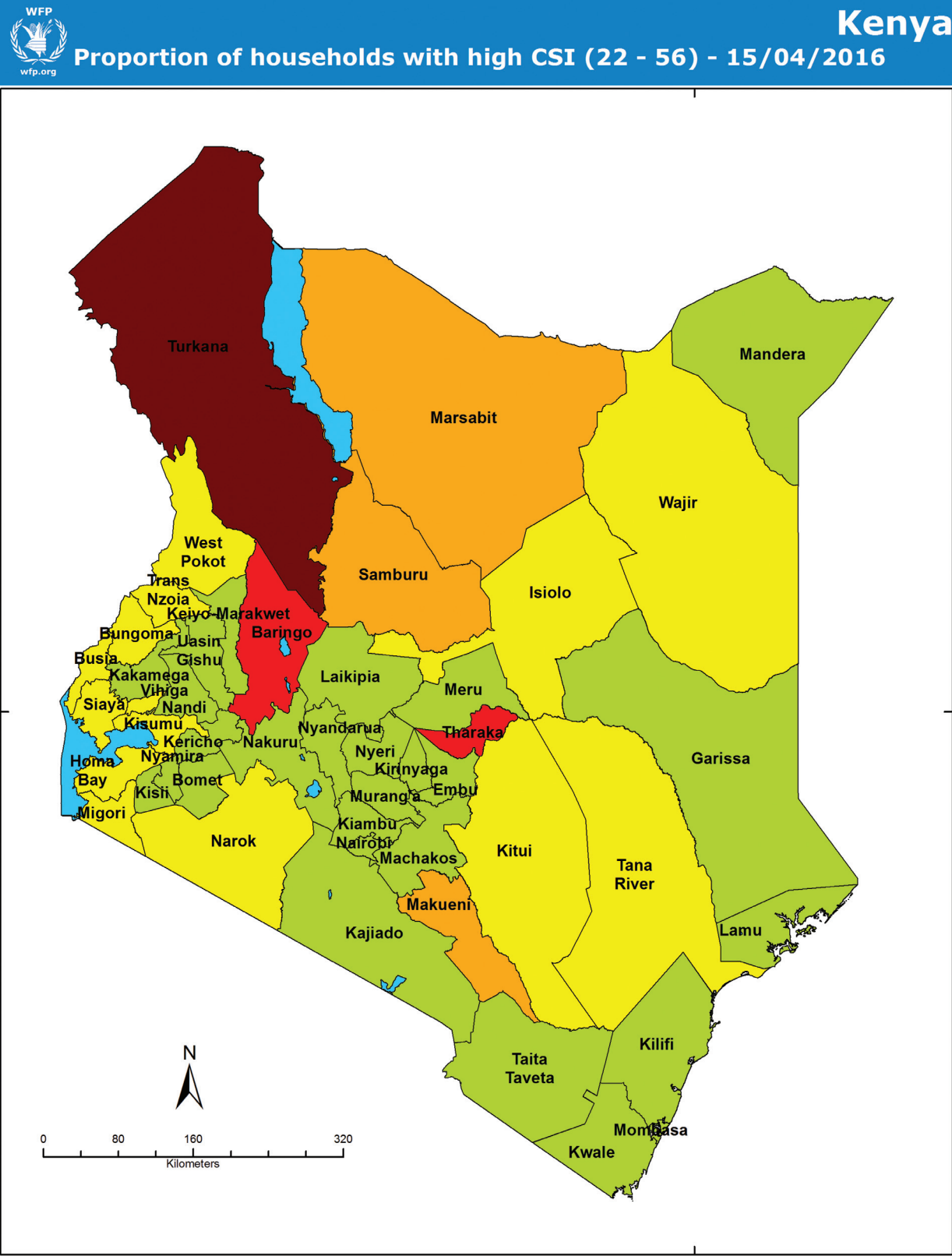
On average almost one in three households (31%) reported having faced shortages in the preceding week. Again, rural households were more likely to experience shortages than urban (36% vs 23%). There was great variation between counties: while in several counties a lack of food availability or access was very rare, in 11 counties more than half of households faced food shortages in the preceding week. As map 7 shows, lack of food was most extreme in Turkana where some 86 percent had to cope with not having enough food or money to purchase food. Besides Wajir and Baringo, which are

counties that also face climatic challenges, the western counties by Lake Victoria (Busia, Siaya, Homa Bay and Migori) all faced very high household prevalence of food shortages (more than 60%). We will interrogate why this may be in the following chapter.

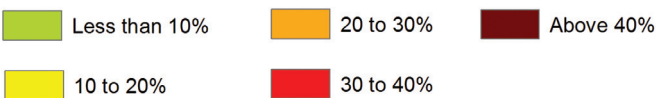
Respondents who answered 'yes' to the question about not having enough food or money to buy it were asked to indicate on how many days in that week their household had to employ food-based coping strategies, such as relying on less preferred or borrowed food, reducing the number or size of meals, and/or cutting what adults ate in order for small children to eat.

The results show that rural households were more likely to resort to food-related coping than urban (36% versus 23%). Households in Turkana were more likely to employ severe strategies, frequently: some 62 percent had a high CSI score. Marsabit, Tharaka-Nithi, Samburu, Baringo and Makueni also had a well above-average percentage of households with high CSI. See map 8.

Map 8: Proportion of households with high CSI by county



Date Created: 15/04/2016
Contact: VAM, Kenya
Website: www.wfp.org
Prepared by: VAM, Kenya
Map Reference: ISO3_High_CSI



Data sources: WFP, UNGIWG, GeoNames, GAUL
The designations employed and the presentation of material in the map(s) do not imply the expression of any opinion on the part of WFP concerning the legal or constitutional status of any country, territory, city or sea, or concerning the delimitation of its frontiers
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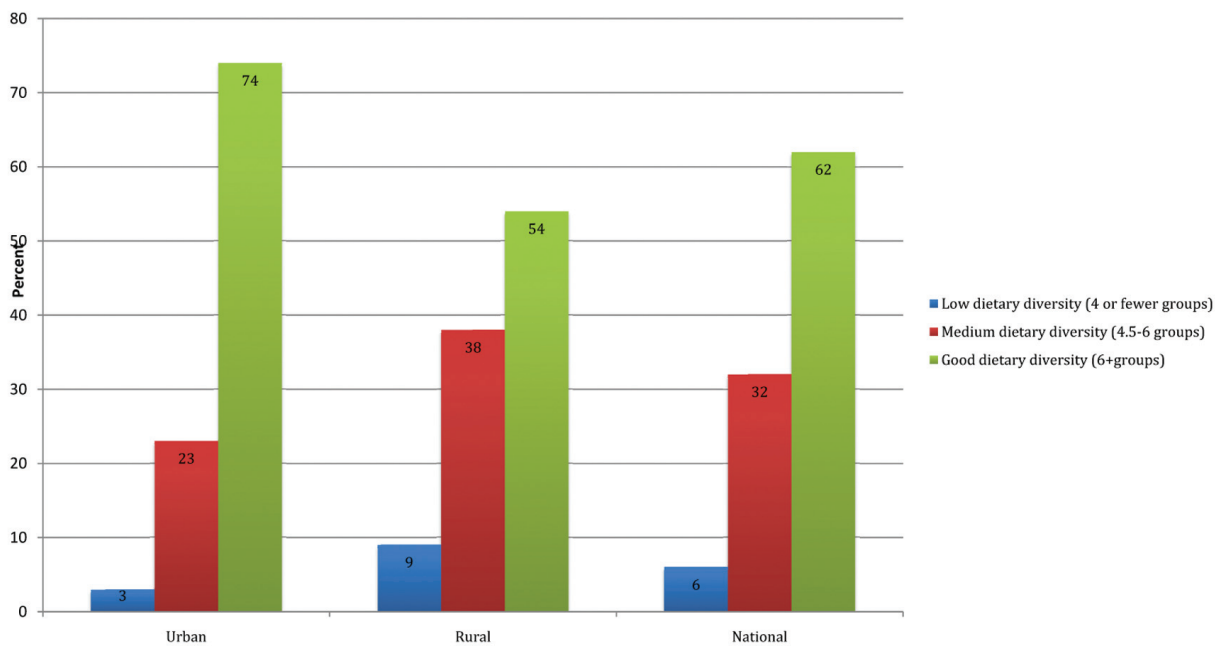
Dietary diversity

The dietary diversity indicator is the number of food groups consumed over a given reference period of time. It gives an estimation of the quality of the diet. Participants in the 2014 KDHS were asked on how many days during the seven days preceding the survey members of their household consumed items from eight food groups (staples, pulses, vegetables, fruits, meat, dairy, oil and sugar).

On average urban households consumed seven of these food groups and rural households 6.4. In only five counties were average household dietary diversity scores below six,⁴¹ namely Wajir, Marsabit, Turkana, West Pokot, which are all drought-prone pastoralist counties, and Busia, which we will interrogate further in the following chapter.

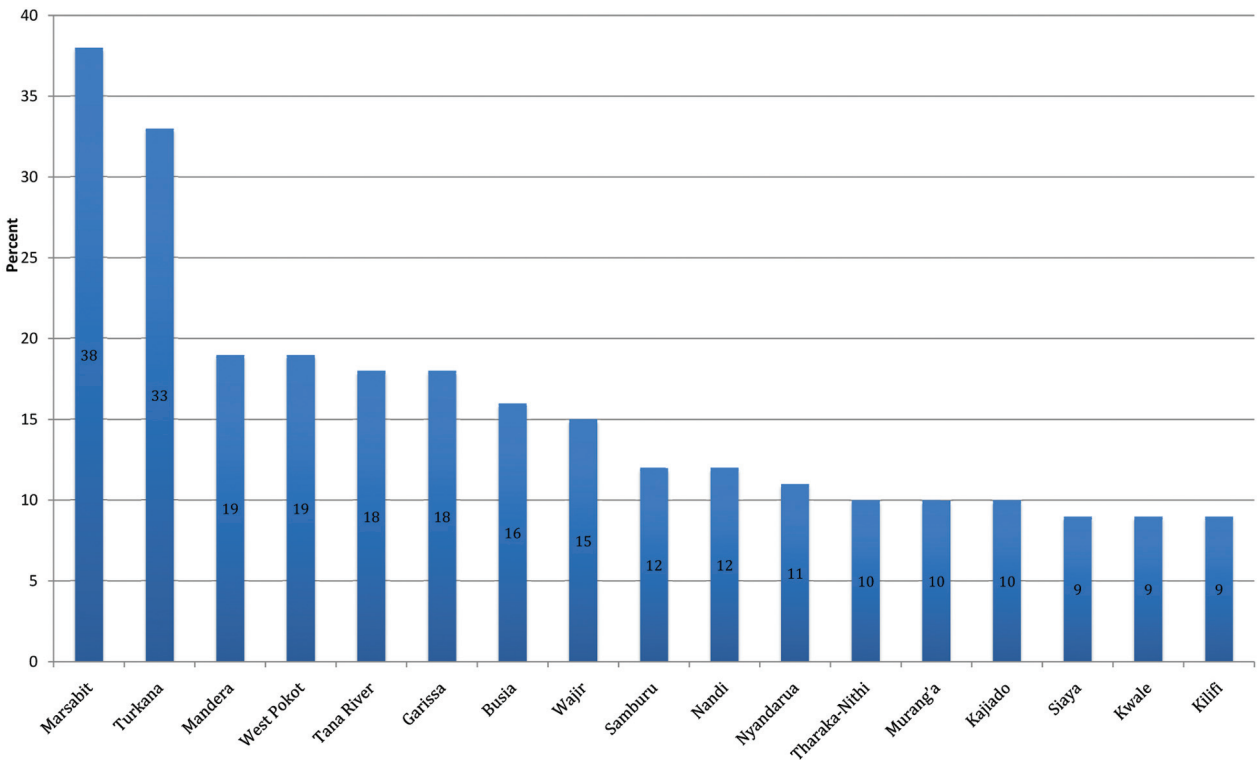
As figure 4 shows, almost one in ten (9%) rural households had low diversity i.e., they consumed four groups or fewer in the previous week (IFPRI threshold).

Figure 4: Percentage of households with poor, medium and good dietary diversity, urban vs rural



⁴¹The IFPRI thresholds for average dietary diversity in population (households) are 6+ = good diversity; 4.5-6 = medium diversity and <4.5 = low diversity. Smith Lisa, Ali Subandoro: Measuring food security using household expenditure surveys/IFPRI

Figure 5: Percentage of households with DDS of four or less (showing only the counties in which 9% or more households had low DDS)

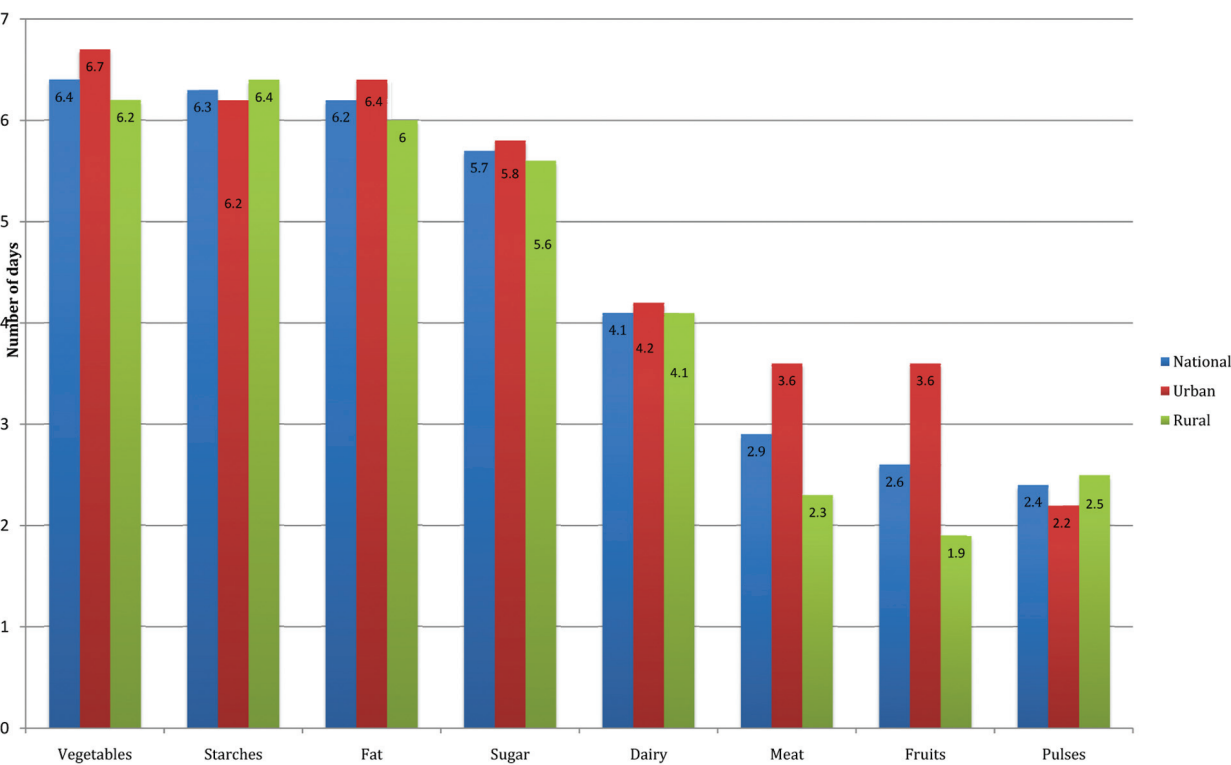


Kenyan households tend to eat starches such as maize porridge, ugali (maize flour, millet flour or sorghum flour), potatoes or chapati, accompanied by vegetables and the use of cooking oil on a daily basis. The diet is quite high in sugar, which is generally consumed about six days a week. On average, households consume pulses – typically ndengu, stewed mung beans - 2-3 times a week but considerably more often in south-eastern marginal agriculture counties such as Kitui, Tharaka-Nithi and Makueni.

On average households tend to only eat meat once a week, but more often in pastoralist communities in Garissa, Mandera, Marsabit, Isiolo and Kajiado (at least twice). Rural households are less likely to eat meat than urban (0.9 vs 1.7 days).

Urban households are more likely to consume fruit (3.6 days versus 1.9 for rural households), but in some counties – especially in the pastoral counties of Turkana, Marsabit and Wajir – it is barely eaten at all. Some pastoralist counties, such as Isiolo, Tana River, Garissa, Mandera, Narok and Kajiado, have above-rural-average fruit consumption.

Figure 6: Average number of days households consumed each food group in the previous week, urban, rural and national

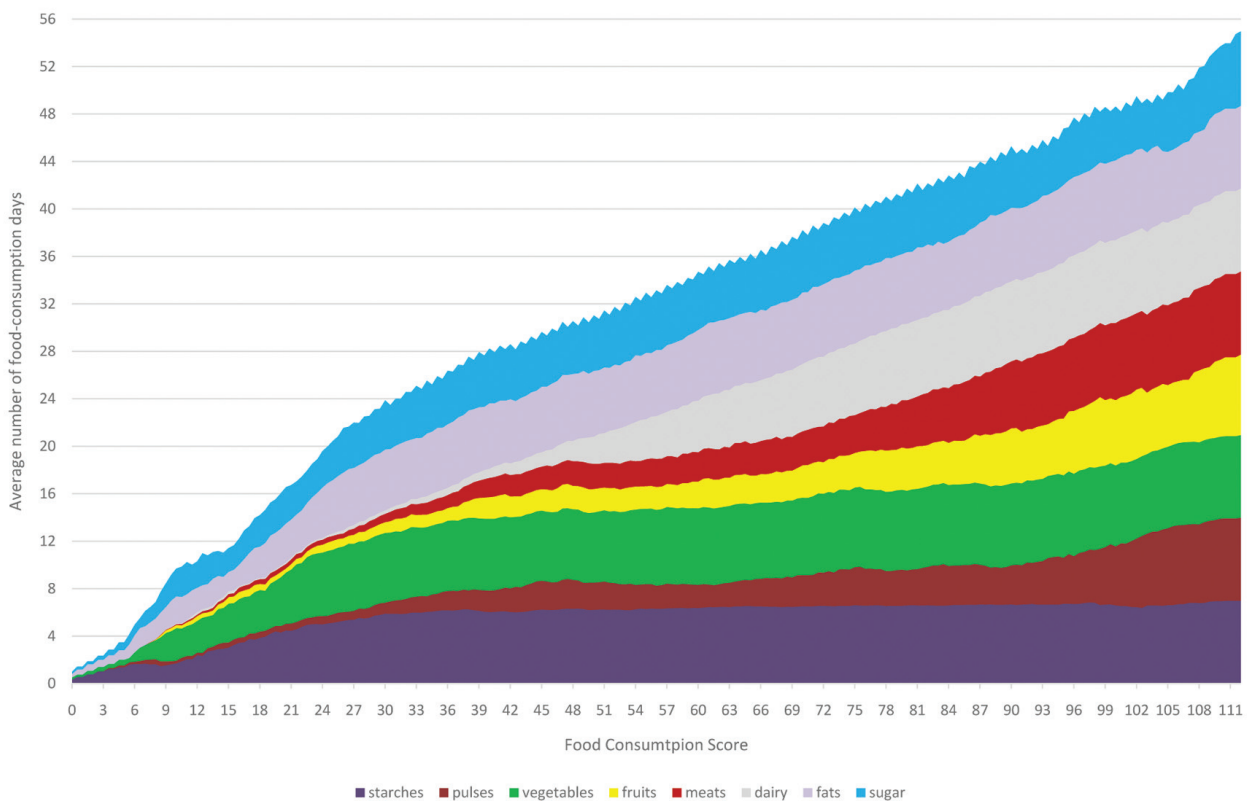


Pastoralist communities, such as the Masai, Turkana, Samburu, Pokot, Boran, Somali, Gabra, Burji, Rendille, Borana, Oromo and Garre eat the by-products of their own livestock, which include cattle, goats, sheep, donkeys and camels. At the national level dairy is consumed on average four days a week but in some pastoralist counties it is consumed more frequently, peaking at six times in Wajir and around five in Marsabit, Isiolo, Laikipia, Garissa and Narok. Some pastoralist counties have below-average milk consumption, particularly Turkana (1.5 days), Baringo, West Pokot and Tana River (just over three).

People living in counties near Lake Victoria (the second-largest freshwater lake in the world) and by the coast are more likely to prepare fish stews, vegetable dishes and rice. Nationally fish is eaten less than once a week (0.7 days), but at least twice in Migori, Homa Bay, Siaya, Lamu and Kilifi.

As figure 7 shows, households with lower FCS have diets that consist chiefly of starches, vegetables, oil and sugar and consume little meat, dairy or fruit.

Figure 7: Average number of days of consumption of each food group by FCS



Vitamin A consumption

Vitamin A (retinol) is an essential nutrient for eyesight, growth and development and maintenance of epithelial cellular integrity, immune function and reproduction (FAO/WHO, 2002). It is found in liver and fish liver oils, egg yolk and dairy products, green leafy and yellow vegetables and yellow and orange non-citrus fruits.

Most Kenyans have a vitamin A-rich diet with 83 percent of households consuming foods containing the vitamin every day in the week before the survey. The wealthier the household the more likely it is to consume foods rich in this vitamin daily (92% of the wealthiest quintile vs 68% of the poorest) and male-headed households are slightly more likely to consume these foods than female-headed.

Vitamin A consumption is much lower in Turkana where 38 percent of households had consumed no vitamin A-rich foods in the previous week, followed by Tana River (15%), Tharaka-Nithi (11%) and Marsabit (10%).

Protein and HEME iron consumption

The Kenyan diet can generally be said to be quite high in protein since the food secure tend to consume plenty of dairy and meat. Overall 72 percent of surveyed households ate protein-rich food daily in the previous week peaking at 91 percent in one of the country's poorest counties, Wajir. However in Turkana, West Pokot and Baringo around one in 10 households consumed no protein-rich food at all in the previous week.

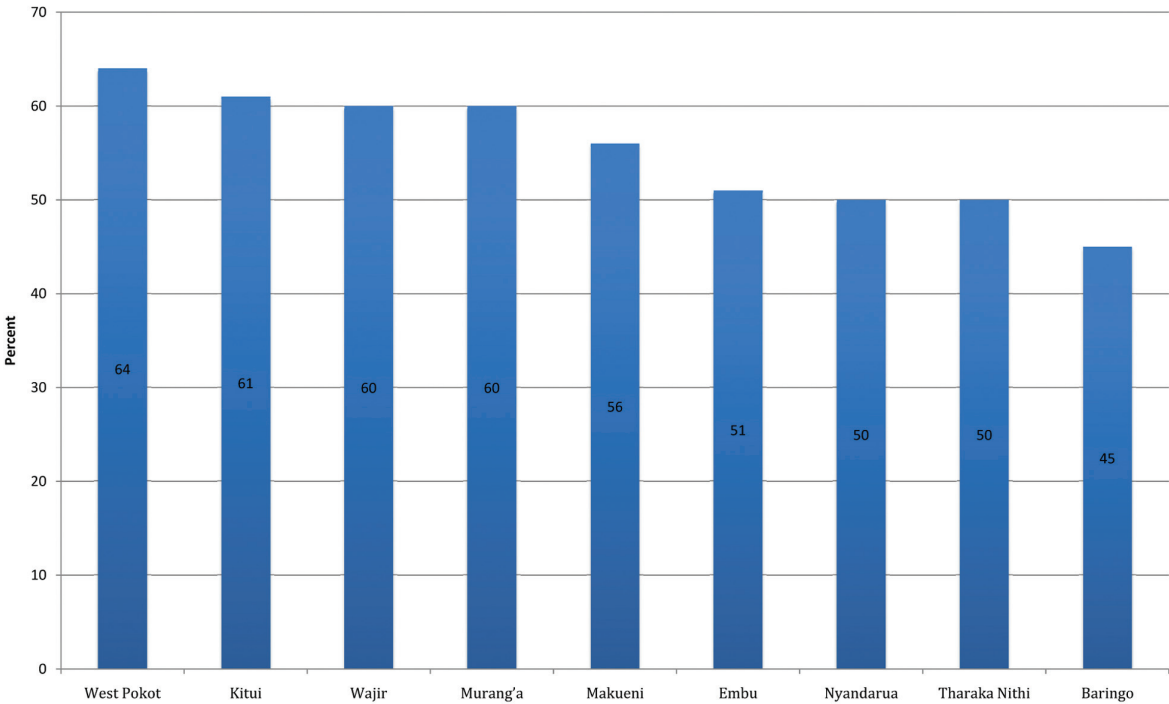
The body absorbs the most iron from HEME sources rather than non-HEME. HEME iron is found in animal foods that originally contained haemoglobin, such as red meats, organ meat and fish.

HEME iron-rich food consumption is not so encouraging at the national level as consumption of vitamin A and protein-rich foods. Almost one in three households ate no food rich in HEME iron in the week

before the survey (22% urban and 39% rural). Again, poorer and female-headed households are less likely to consume these foods than wealthier households and those headed by men.

In four counties more than 60 percent of households consumed no HEME iron-rich foods, namely Wajir, Kitui, Murang’a and West Pokot.

Figure 8: Percentage of households that consumed no HEME iron-rich foods in the past week (nine counties with lowest consumption)





6

A profile of kenya's most vulnerable people

This chapter identifies and locates the households that are most likely to have inadequate diets, face food shortages and have to compromise their eating habits as a result



MARTIN KARIMI

KEY MESSAGES

- While food insecurity prevalence is highest among the rural poor, Nairobi has the country's second highest number of food insecure households
- Those headed by poorly educated women and by the elderly are highly vulnerable to food insecurity
- Agricultural workers and the unemployed, who collectively make up over half of all working age men in rural areas, tend to be poor and food insecure
- In Wajir, Mandera, Garissa and Marsabit high milk consumption means household FCS is average or above, despite high poverty and low education. But dietary diversity is low. These counties are undoubtedly highly vulnerable because of their exposure to drought and food price rises
- In some western counties alongside Lake Victoria, particularly Migori and Homa Bay, a high percentage of households face times when they cannot afford to buy food. They tend to have small plots and a high percentage of men working on other people's land

The urban vs rural dimension

Food insecurity is more prevalent in rural Kenya than urban by both food insecurity indicators. Rural households tend to be poorer, less educated and more likely to work in low paid, informal jobs with poorer access to services, factors that all underscore food insecurity.

However, the highest number of food insecure households is in the capital Nairobi, where 96,356 households have poor or borderline consumption. Of these, 18,967 have poor consumption and 77,389 borderline. Those households with borderline consumption are vulnerable to becoming severely food insecure if they were to experience a shock such as illness, loss of employment, food price rises or any other factor that may limit their ability to purchase the food they need.

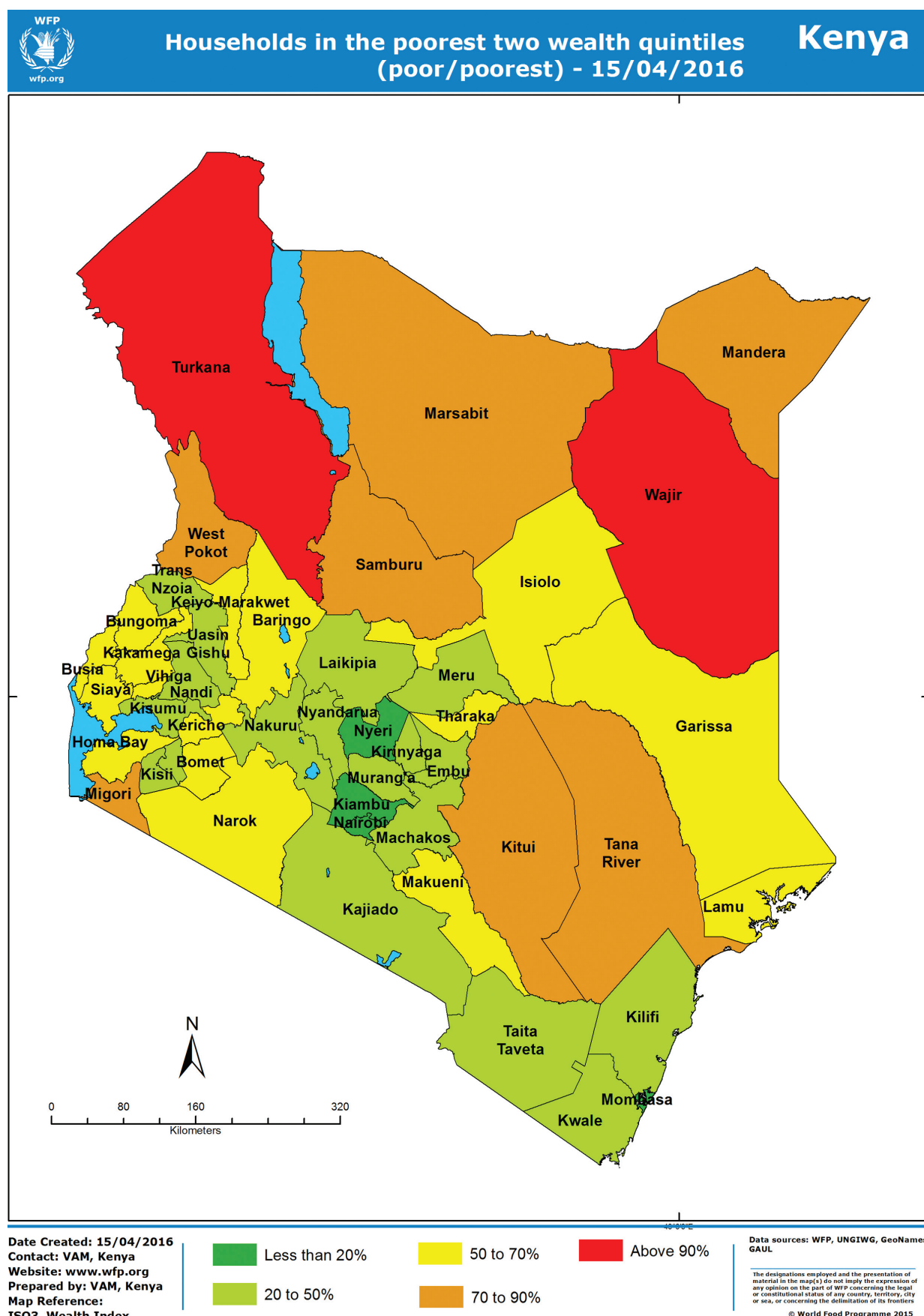
In terms of numbers the only county with a higher number of severely food insecure households is Turkana (23,500).

The poverty dimension

Time and again 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. The wealth index used in this report serves as a proxy for a household's long-term standard of living.⁴²

⁴²The wealth group quintiles used in this report differ slightly from those used in the DHS report in that the DHS' five groups each represent 20 percent of the population of Kenya while this report uses five groups that each represent 20 percent of households in Kenya.

Map 9: Percentage of households in poorest two wealth quintiles by county



The CFSVA analysis shows that poverty is far worse in rural areas than urban: nearly three quarters (72%) of urban households are in the two highest wealth quintiles, while a significantly higher percentage (83%) of rural households are in the lowest three quintiles (and are nearly equally distributed across these three quintiles).

Poverty varies vastly at county level. For instance in Nairobi 86 percent of households are in the two wealthiest quintiles. In Mombasa and Kiambu the prevalence is 79 percent and 77 percent respectively, followed by Nyeri and Kajiado. These five counties, as expected, all have above average food consumption.

However, Wajir and Turkana have some 92 and 95 percent of households, respectively, in the lowest wealth quintile. Tana River, Mandera, Marsabit and West Pokot also have very high poverty levels with more than 80 percent in the lowest quintile. Map 9 shows the percentage of households in the two poorest wealth quintiles.

So how does this correlate with food insecurity? We have already seen that eight counties have a significantly higher proportion of households with unacceptable food consumption than the national average. Unsurprisingly these counties generally tend to be amongst the poorest in Kenya – namely Turkana, Baringo, West Pokot, Busia, Samburu, Tana River, Kwale and Siaya.

The likelihood of not having food or enough money to buy it increases with decreasing household wealth. However, still 13 percent of households in the highest wealth quintile reported shortages. As figure 9 shows the poorer the household the higher the use of severe and frequent food-related strategies to cope with shocks. We see the same pattern with the FCS indicator (figure 10): food security prevalence decreases with decreasing wealth and vice versa. The poorest wealth quintile is over represented in the poor and borderline food consumption groups.

Figure 9: Percentage of households in CSI groups by wealth quintile

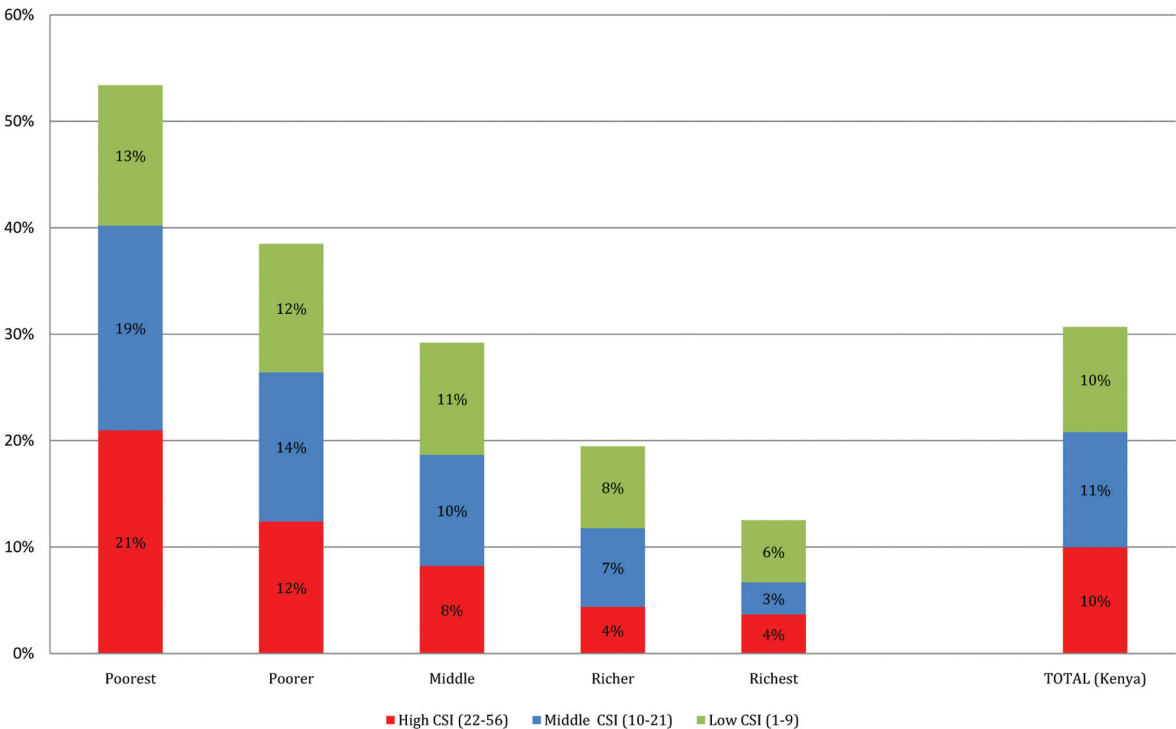
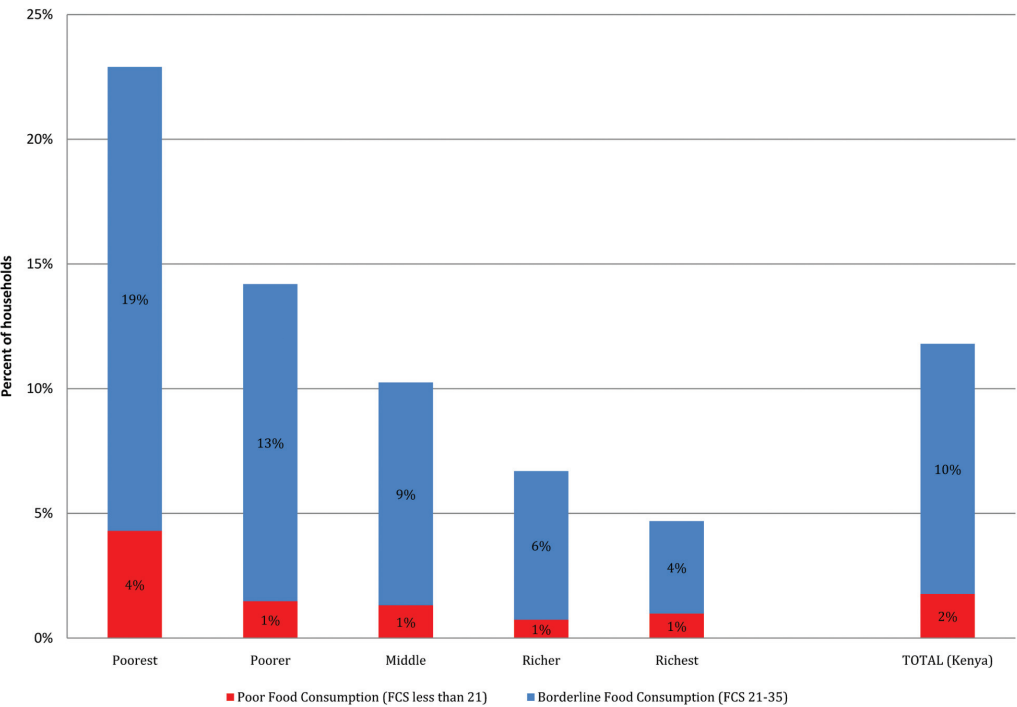


Figure 10: Percentage of households with poor and borderline food consumption by wealth quintile



The gender dimension

Overall about two in three (68%) households are headed by men and one in three (32%) by women, though households in rural Kenya are more likely to have women running them than those in urban Kenya (36% rural vs 27% urban).

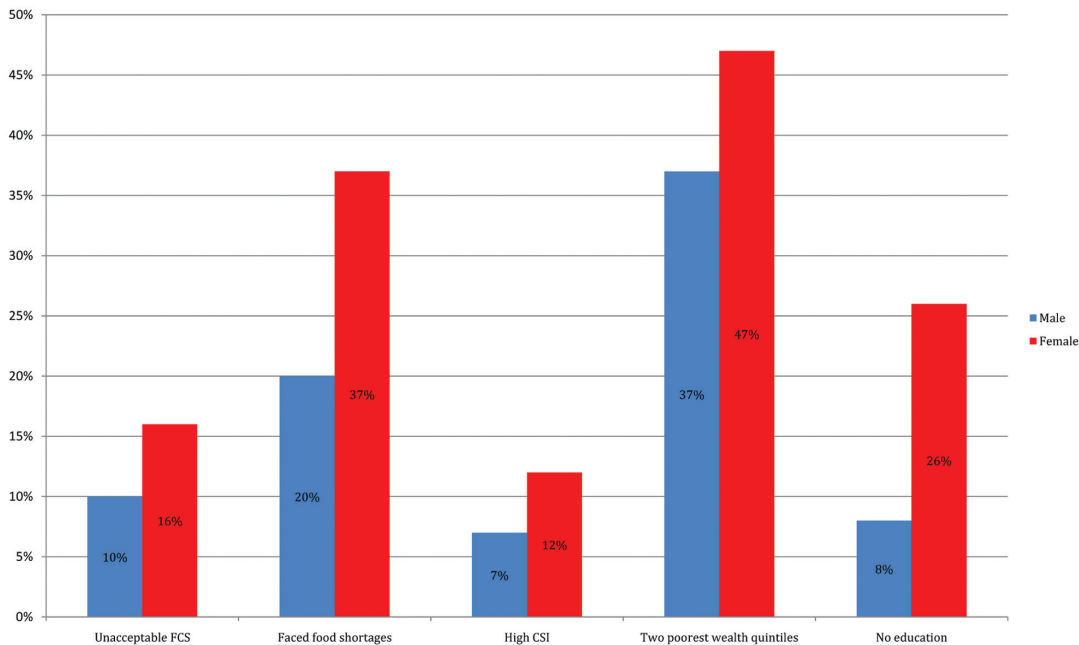
Female-headed households are more likely to be poor: for instance some 47 percent of female-headed households are in the two poorest wealth quintiles compared with 37 percent of male-headed households. The data shows they are poorer by other indicators too: for example, they are more likely to use wood for cooking, less likely to have electricity or a radio, TV, any means of transport, mobile phone or agricultural land. They are more likely to live in lower grade housing with mud or dung floors and walls.

They are also more food insecure: 16 percent of female-headed households versus 10 percent of male-headed households have

unacceptable food consumption. In fact a higher proportion of households with poor food consumption are headed by women than are headed by men. This finding is probably influenced, interestingly, by the Turkana county data, which is the only county with a high proportion of households with poor food consumption (16%) and it has an extremely high proportion of households headed by women at some 60 percent, around double the national average. Other counties in which more than two in five households are headed by women are: Mandera (59%), Kitui and Samburu (both 45%), Makueni and Homa Bay (both 44%), Vihiga and Siaya (both 42%) and Isiolo (41%).

Households headed by women are more likely to have experienced food shortages (37% versus 20% for men) and to have resorted to more frequent and severe food-related coping (12% high CSI vs 7% for men). And they are less likely to have consumed vitamin A, protein and HEME iron rich foods. See figure 11.

Figure 11: Percentage of food insecure, poor and uneducated households, male vs female headed households



There are many reasons why women remain poorer and more vulnerable than men. Firstly it is a fair assumption that women who head households still have to find time to care for children and other vulnerable family members as well as do household chores, collect water etc. alongside generating income to support themselves and their family.

The data shows that women heading households are more likely to be elderly (and probably widowed): some 22 percent are aged over 60 years compared with 17 percent of male headed households.

The difference in education levels between the sexes is also striking. Half of female household heads have little or no education compared with 28 percent of male. Of course

this partly reflects the age of many female heads since such a high proportion are over 60 and were born during an era when girls were highly likely to marry young and the education of boys was given priority. Without education women cannot command secure or reasonably paid jobs and will remain trapped in a cycle of poverty and food insecurity. More broadly, education can help women make more informed decisions that can improve household income, food security and child nutrition.

The fertility rate dimension

The KDHS revealed that the total rural fertility rate is 4.5 and the urban 3.1. This national rate of 3.9 births per woman in 2014 is a marked decrease since 4.9 in 2003 but it is well above the global average of 2.5.⁴³

⁴³2015 World Fertility Patterns, UN. Africa remains the region with the highest fertility at 4.7 children per woman.

The fertility rate is higher amongst those in the poorer wealth quintiles reaching 6.4 for those in the poorest and dropping to 2.8 for those in the wealthiest. There is a very marked county level difference, peaking at 7.8 in Wajir followed by West Pokot (7.2), Turkana (6.9) and Samburu (6.3) compared with 2.3 in Kirinyaga and 2.7 in Nyeri, Kiambu and Nairobi.

For this analysis we looked at the mean number of children ever born to women age 40-49 years.

As figure 12 shows, in Wajir, Tana River and Migori women have had at least seven children on average. The analysis revealed that women in food insecure households have an above average number of children (5.6). Women in households that faced food shortages and have high coping levels also have an above average number: those with high CSI have 6.2 children on average while those with zero CSI 4.7. See figure 13.

Figure 12: Counties with highest mean number of children ever born to women age 40-49 years

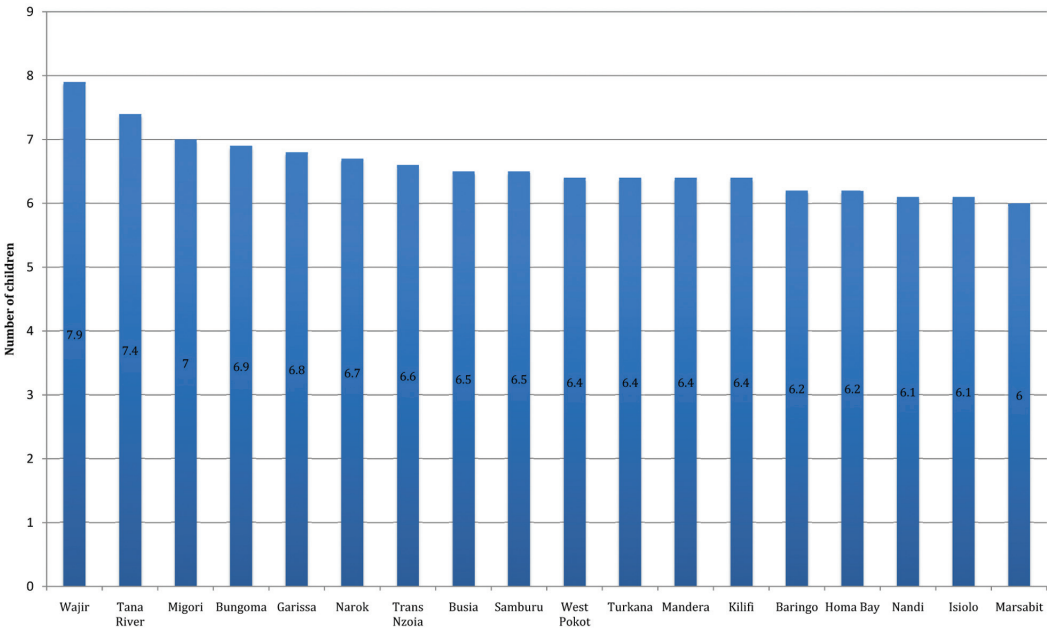
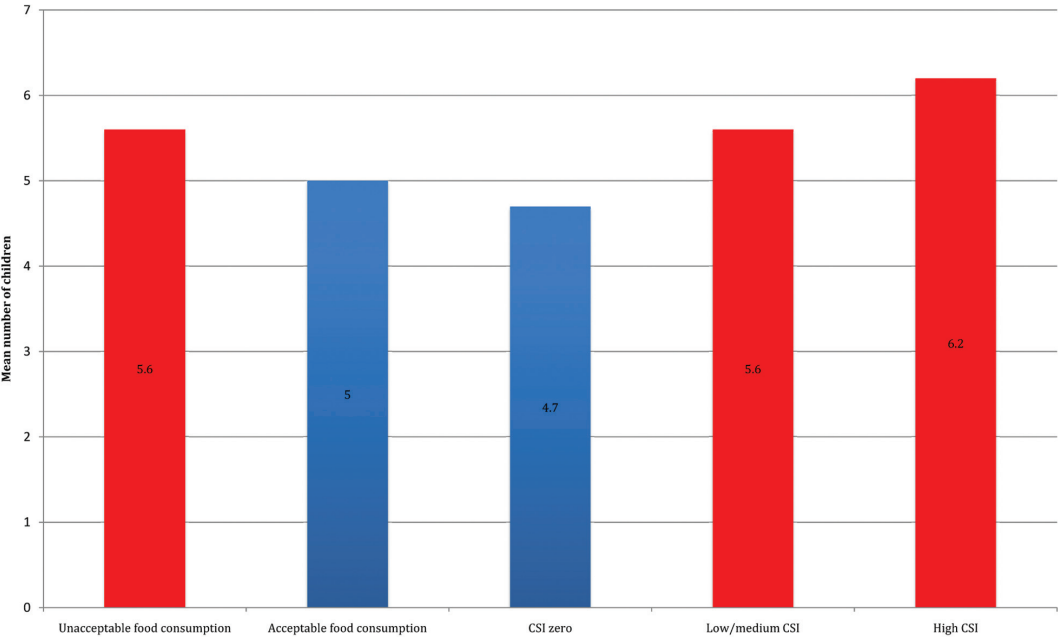


Figure 13: Mean number of children ever born to 40-49 year old women by household classification of food security (FCS and CSI)



The education dimension

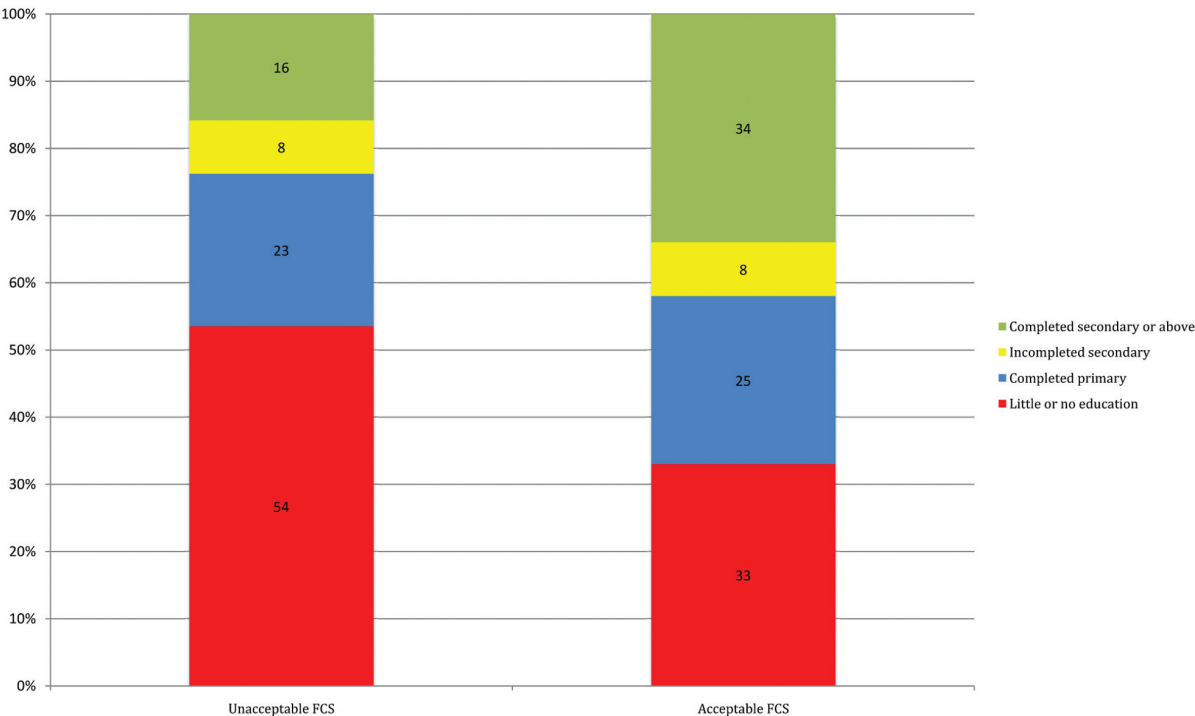
Lack of education is far worse in rural Kenya than in urban. Almost half (48%) of household heads in rural areas have little or no education compared with just 18 percent of their urban counterparts. Half of urban household heads have completed secondary education or higher.

There is an established link between low educational attainment and poverty. Household heads with little or no education are disproportionately represented in the lower two wealth quintiles. Conversely those headed by people with secondary education or above are disproportionately represented in the upper two wealth quintiles.

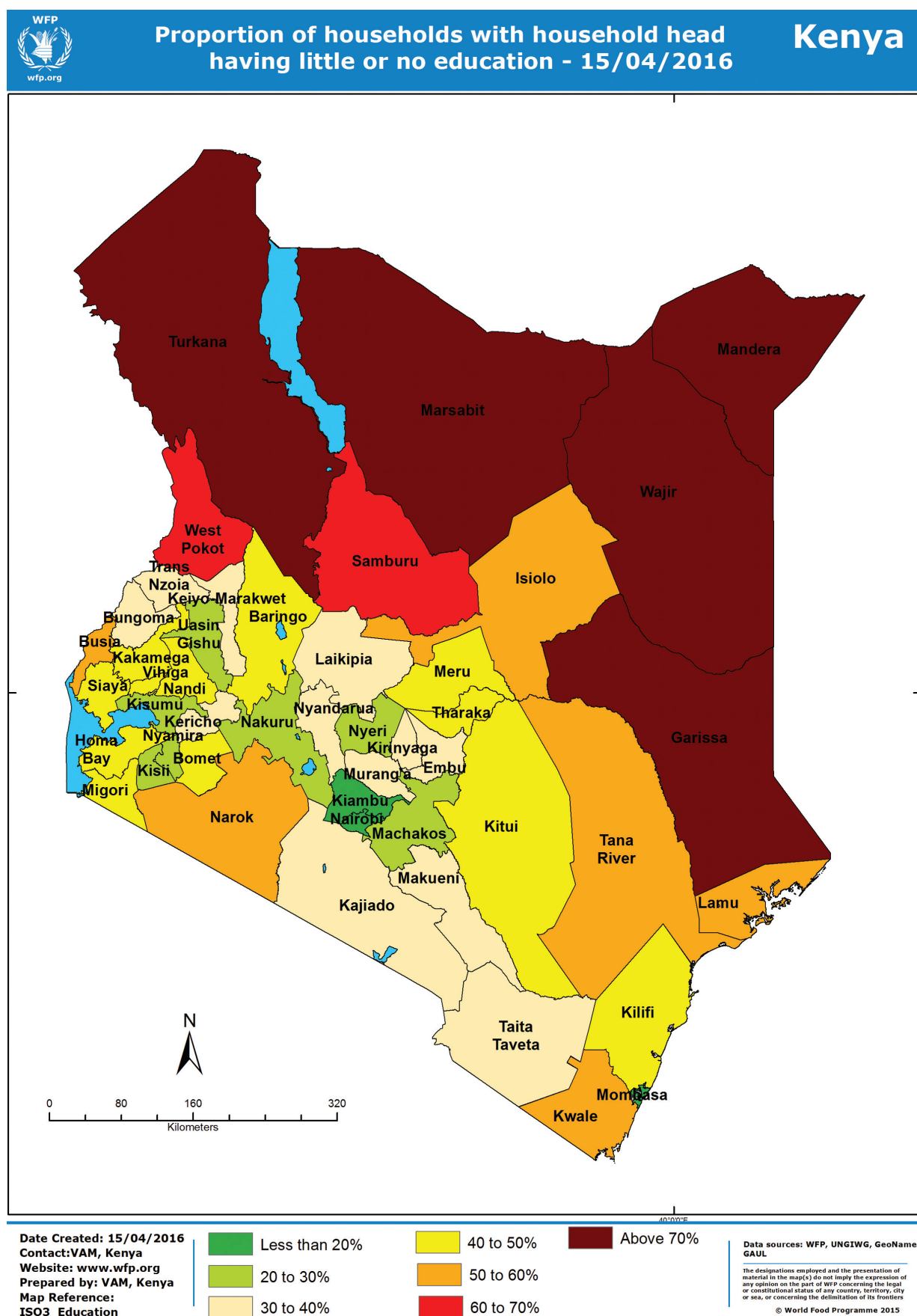
The link between lack of education and food insecurity by the FCS indicator is clear. Figure 14 shows that more than half of households with unacceptable FCS have little or no education. Completing secondary or above radically improves a household's chance of being food secure. There is a very similar pattern by CSI.

The differences in educational achievement between counties are stark (see map 10). In Wajir and Mandera more than 80 percent have no education and in Turkana and Marsabit the prevalence is above 70 percent. The other four counties with low education levels are Samburu, West Pokot, Isiolo and Tana River.

Figure 14: Education of household head by food consumption group



Map 10: Percentage of households headed by someone with little (uncompleted primary) or no education



The age dimension

Most households are headed by a 20-59 year old, especially in urban areas (91% vs 76% in rural). However, in rural areas an elderly person (aged 60 years +) heads almost one in four households. Almost half (48%) of these elderly-headed households are in the lower two wealth quintiles and they are far more likely to be food insecure and to employ more corrosive food-related coping strategies when faced with food shortages. For instance, while they represent 17 percent of all households at the national level, households headed by people over 60 years account for 25 percent of all food insecure households and 24 percent of those with high CSI.

The counties with well above-average proportions of elderly household heads are Vihiga (35%), Siaya (31%), Murang'a (27%), Tharaka-Nithi (26%), Makueni and Embu (both 25%).

The employment dimension

Nationally 16 percent of working age men (aged 15-54 years) had not worked in the past year, rising to 19 percent in rural areas. The prevalence is over 30 percent in Bungoma, Vihiga, Garissa, Wajir, Kwale, Marsabit and over 50 percent in Mandera. However, as outlined in the introduction, these 'unemployment' figures mask the true nature of the problem since most workers are under-employed in insecure, low paid work, especially in agriculture.

Only just over half (53%) of rural men work year round. 'Under-employment' is common: around a fifth (21%) work seasonally and 8 percent 'occasionally'. Seasonal work is most prevalent in Tana River, Embu, Homa Bay, Migori, Kakamega, Bomet and Baringo.

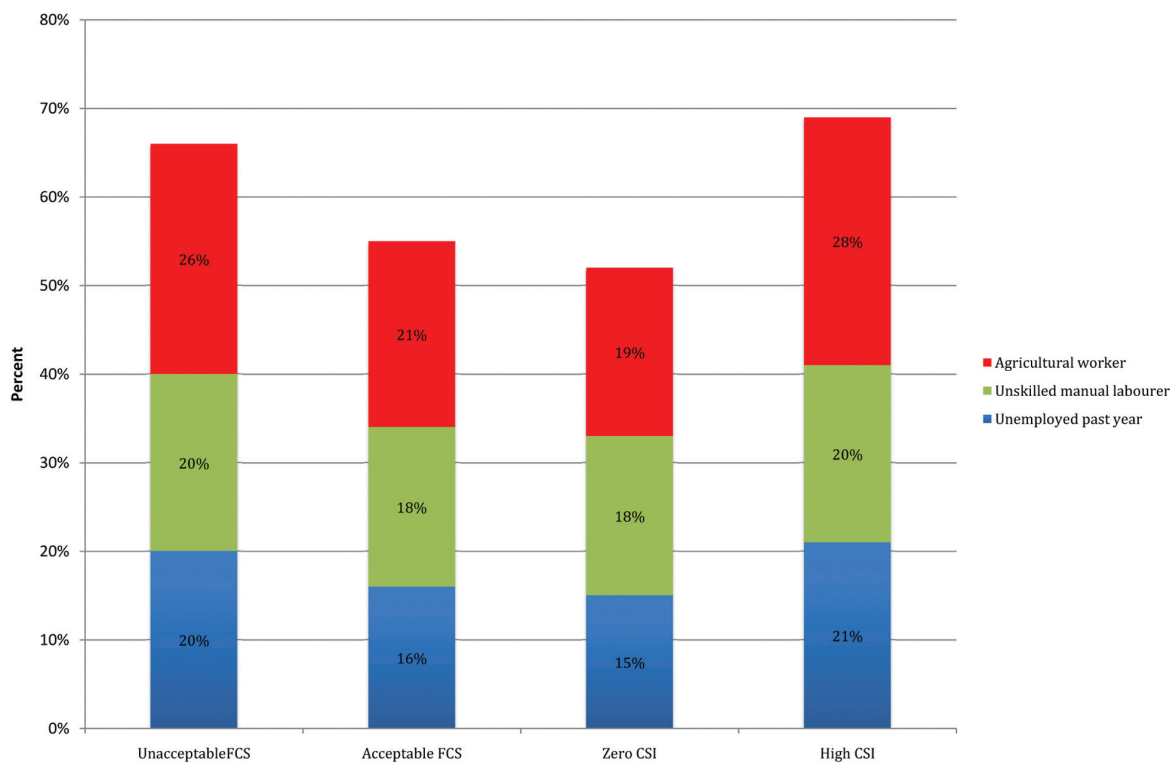
In rural areas those who work are most likely to be 'self employed' in agriculture (33%), work as unskilled manual labourers (17%) or work as household/domestic helps. The unemployed and agricultural workers are over-represented in the two poorer wealth quintiles.

Those who haven't worked or work in agriculture are significantly more likely to be food insecure by both FCS and CSI indicators. For instance, as the figure shows, agricultural workers are over represented in the unacceptable and high CSI bars and under-represented in the acceptable FCS and zero coping. For unskilled manual labourers the correlation is less clear. All other livelihood groupings have average or above-average food security levels. See figures 15-17.

According to the KNBS Economic Survey 2014 private sector agricultural workers are paid less than any other sector with the exception of those working in sewerage and waste management. On average an agricultural worker takes home 6,503 Ksh a month.⁴⁴ The counties with the highest prevalence of agricultural workers are Bomet and Homa Bay where more than half work in agriculture.

■
⁴⁴Ministry of Labour, Social Security and Services

Figure 15: Prevalence of men age 15-54 years practising the three livelihood groupings considered vulnerable, by household food security classification



In urban areas men are more likely to work year-round (70%) and they mainly work as household/domestic helps (23%) or unskilled labourers (21%) followed by ‘professionals’, skilled manual labourers and in services.

Domestic staff, professionals, those working in services and skilled labourers are more likely to be better-off and are not, according to the data, over-represented amongst the country’s food insecure population.

More than one in three women of working age did not work in the year preceding the survey and there was little difference between urban and rural Kenya. Households with non-working women are more likely to be in the poorest wealth quintile and slightly more likely to have unacceptable food consumption.

Women who do work are most likely to be employed as agricultural labourers (accounting for 30 percent of all women workers in rural areas). These households are most likely to be poor (i.e in two lower wealth quintiles), whereas the 18 percent of households with women working in services and in professional positions are more likely to be in the wealthier two quintiles.

Note that the data refers to individuals rather than households, which means cross tabulation with household food security indicators should be viewed with some caution. For example, there are likely ‘non-working’ working-age household members who are supported by a well-paid member and as a result are food secure.

Figure 16: Main occupation grouping of men aged 14-54 urban vs rural

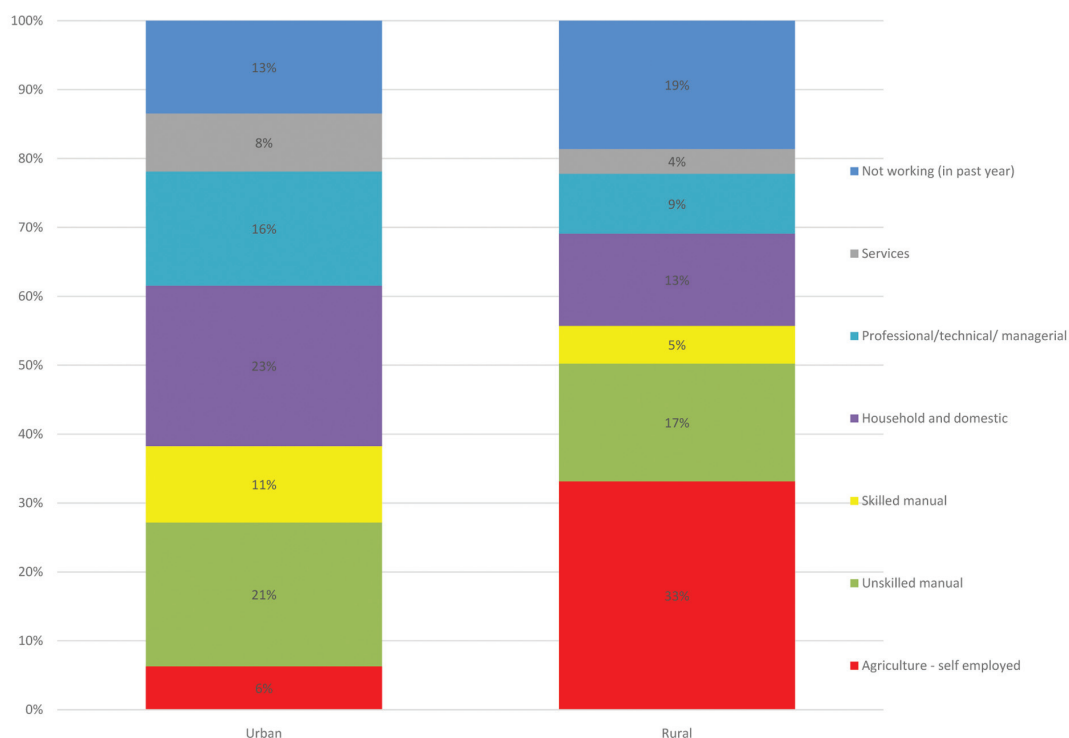
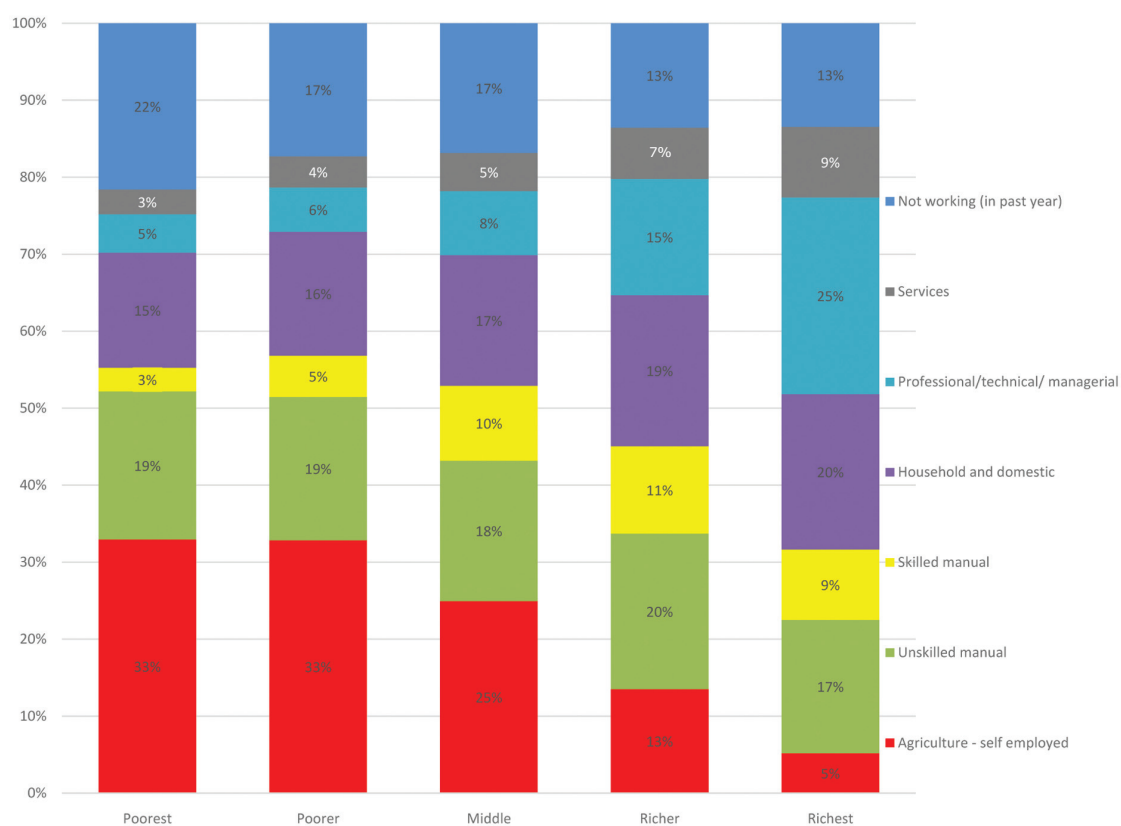


Figure 17: Main occupation grouping of men aged 14-54 by wealth quintile



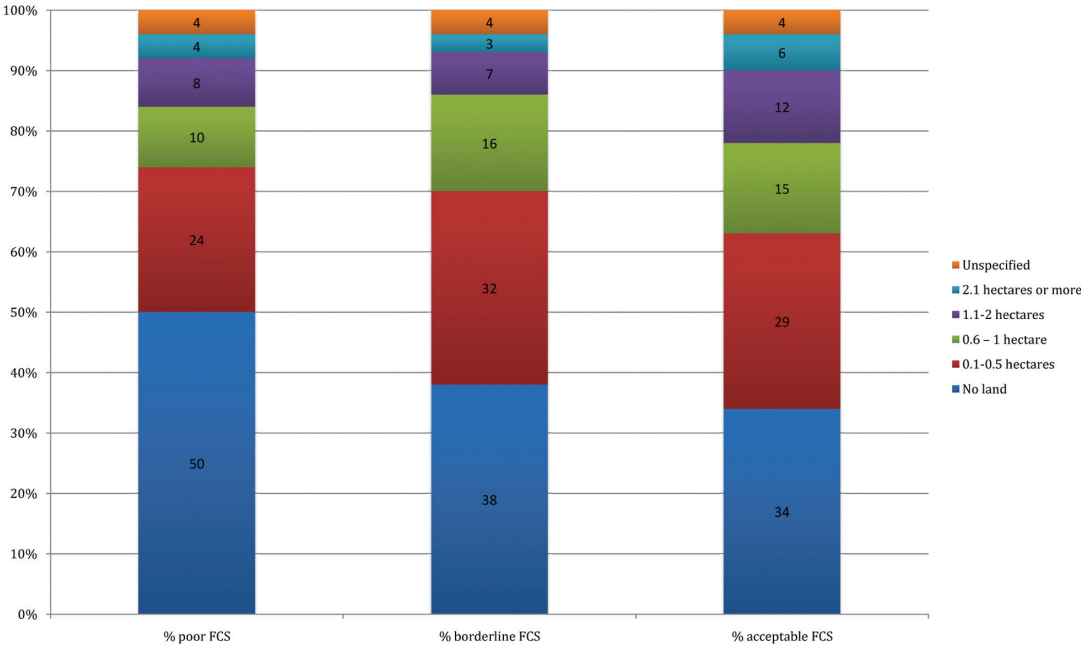
The pastoralist dimension

The survey also yielded some interesting results that indicate that in spite of extremely high household poverty levels some northern pastoralist counties still manage to have an adequate diet by the FCS. In Wajir, Mandera, Garissa and Marsabit household levels of adequate food consumption are average or even above average despite their poverty levels. In Wajir, for example, where 89 percent of households are in the poorest wealth quintile and 83 percent of household heads have no education, some 94 percent of households have acceptable food consumption. This is most likely because their high milk consumption (six days a week) inflates the FCS. However, as noted in the previous chapter, these four counties have a high percentage of households with low dietary diversity.

It is likely that these pastoralist communities are still managing to maintain acceptable diets by migrating when pasture becomes poor so that their livestock can survive and maintain milk levels. The strategy of leaving behind a certain number of milkers with the women and children may suffice when grazing is not completely depleted. However, climate poses a serious threat to the pastoralist way of life. As mentioned above, each successive drought is likely to weaken their animals more and more and further erode their traditional coping mechanisms. That these counties are highly vulnerable to food insecurity is not without doubt.

Overall, the data indicate that households with worse food consumption are less likely to own land. In order to be significantly more food secure a household needs to own more than one hectare. See figure 18.

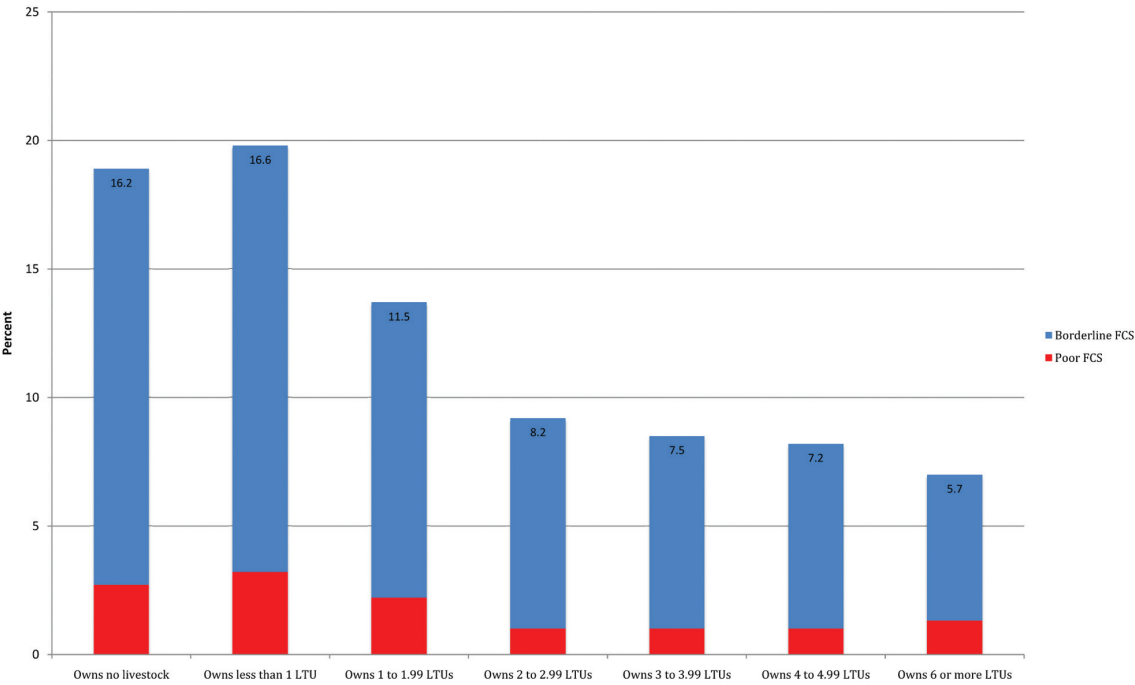
Figure 18: Percentage of households with various plot sizes, food secure vs food insecure



It also appears that livestock ownership is associated with greater food security as long as households own at least two TLUs: households with acceptable food security own on average 2.5 TLUs and those with unacceptable 1.4. Similarly those with 'high coping' own 1.8 versus 2.5 for those with zero coping.

Figure 19 shows the prevalence of acceptable food consumption is about 80 percent for rural households that own less than one TLU, rising to 86 percent for those that own 1-2 and 91 percent for 2-3, and then just slightly higher for more.

Figure 19: Household level TLU ownership by FC group, rural Kenya



The geographic dimension

The table below looks at the most food insecure counties by FCS and also highlights counties that are vulnerable to food insecurity. It re-presents the key indicators and then looks at the possible reasons for their vulnerability.

TURKANA 43 PERCENT UNACCEPTABLE FCS 62 PERCENT HIGH COPING	Kenya's poorest county with 90 percent of households in the lowest wealth quintile. It is in the drought-prone north west where markets are poorly integrated and prices more erratic - market prices are more than 100 percent higher than those in the source market. Unemployment levels are high and a very high proportion of households are headed by women (60%). Some 74 percent of household heads have no primary education. Fertility rates are very high at 6.9 children per woman in the three years preceding the survey. Consumption of milk is well below the four days a week average at just 1.5 days. Households have lower than rural average number of TLUs (2.5). Vitamin A consumption is very low.
BARINGO 28 PERCENT UNACCEPTABLE FCS 32 PERCENT HIGH COPING	It experiences dry, arid conditions with households facing shortages of grazing and water for their livestock. Market access is poor: 78 percent of food consumption days are purchased and maize prices are 25-50 percent higher than in the source market. Protein consumption is the lowest in the country: 12 percent of households consumed no protein-rich food in the previous week. Consumption of milk is below-average although households own above-average numbers of livestock. Most men work, but seasonal work is very prevalent (95% of men were working at the time of the survey, but mainly in agriculture or as unskilled manual labourers). The mean number of children ever born to women aged 40-49 years is high (6.2). Food shortages are common - more than 60 percent could not satisfy their food needs in the previous week.
WEST POKOT 25 PERCENT UNACCEPTABLE FCS 16 PERCENT HIGH COPING	This county also experiences erratic rains. It is very poor (73 percent lowest quintile) and almost three in four HHS have little or no education. Fertility rates are very high at 7.2 children per woman, the second highest in the country. Diets are lower in protein than average with one in 10 households consuming no protein-rich food in the week before the survey. Milk consumption is below average and HEME iron consumption low. Maize prices are 25-50 percent higher than in the source market.
BUSIA 24 PERCENT UNACCEPTABLE FCS 11 PERCENT HIGH COPING	This county faces very high levels of food shortages (64%) although poverty levels are only a little higher than the rural average. Education levels are below the rural average (56% have little or no education) and the percentage of working age men who haven't been employed in the last year is well above the rural average at 26 percent. Those who can find work mainly do so in agriculture, a livelihood associated with food insecurity. Livestock ownership is low (1.4 TLUs). Maize prices are 25-50 percent higher than in the source market.

SAMBURU 21 PERCENT UNACCEPTABLE FCS 15 PERCENT HIGH COPING	<p>This north western county is very poor - some 65 percent of households are in the lowest wealth quintile. A high percentage of households are headed by women (45%) and two in three household heads have little or no education. The total fertility rate is high at 6.3. The majority (68%) do not own any agricultural land, but a high percentage work in agriculture, likely in the commercial wheat farms in the agro pastoral zones. More than half (54%) faced food shortages in the previous week. Households purchase more than 85 percent of their food days. Maize prices are 50-100 percent higher than the source market.</p>
SIAYA 20 PERCENT UNACCEPTABLE FCS 20 PERCENT HIGH CSI	<p>Householders in Siaya have very small plots: 45 percent own less than 0.5 hectares. A high percentage of households are headed by women (42%) and a high percentage headed by the over 60s (31%). Households tend to have diets that are higher in fish (twice a week) and lower in dairy (1.9). Food shortages are common with more than 60 percent unable to meet their food needs in the previous week.</p>
TANA RIVER 20 PERCENT UNACCEPTABLE FCS 15 PERCENT HIGH CSI	<p>Tana River is a drought-prone, extremely poor county in which 64 percent of household heads have little or no education. Vitamin A intake is the second lowest in the country after Turkana. Milk consumption is below average at 3.2 days a week and 18 percent have low dietary diversity vs 6 percent average. Although most men worked in the year preceding the survey it was mainly in informal, poorly paid jobs in agriculture and a high percentage are employed seasonally. Households are highly market dependent, purchasing more than 85 percent of their food days. Maize prices are 25-50 percent higher than the source market. Women in their forties have at least seven children on average.</p>
KWALE 20 PERCENT UNACCEPTABLE FCS 6 PERCENT HIGH CSI	<p>Kwale has high poverty levels (54% lowest wealth quintile) and very high unemployment levels: almost one in three working age men had not worked in the year before the survey.</p>
HOMA BAY 16% UNACCEPTABLE FCS 19% HIGH COPING	<p>A high level of households faced shortages (more than 60 percent). It has the highest percentage of household heads working as agricultural labourers (51%), many of them seasonally, and a very high percentage owning small plots (42% own less than 0.5 hectares). This implies that household heads may be too busy working on other people's land to farm their own. More than two in five households are headed by women.</p>

MARSABIT 15% UNACCEPTABLE FCS 22% HIGH CSI	<p>More than 80 percent of households are in the lowest wealth quintile and more than 70 percent of household heads have no education. Some 38 percent of households consumed four or fewer food groups in the week before the survey. Just 14 percent own land. Unemployment rates are high: more than 30 percent of working age men hadn't worked in the past year.</p> <p>Maize prices are 50-100 percent higher than in the source market.</p>
MIGORI 14% UNACCEPTABLE FCS 17% HIGH COPING	<p>Similarly to Homa Bay more than 60 percent of households faced times when they could not afford to buy food. Households are likely to own very small plots and work for others as seasonal agricultural labourers (42%). It has the third highest mean number of children born to women age 40-49 years. Poverty levels are very high.</p>
WAJIR 6% UNACCEPTABLE FCS 13% HIGH COPING	<p>Unemployment and poverty levels are very high and education levels low in this drought-prone county. More than 80 percent of household heads have no education. On average women aged 40-49 have at least seven children. Land ownership is rare and market dependency very high (more than 85% of food consumption days are bought). Maize prices are 75-100 percent higher than the source market. More than 60 percent faced food shortages in the previous week. HEME iron consumption is very low.</p>
GARISSA 13% UNACCEPTABLE FCS 2% HIGH COPING	<p>Dietary diversity is below average. Very few households own any land (10%) and market dependency is very high (more than 85%). Maize prices are 75-100 percent higher than the source market. More than 30 percent of working age men hadn't worked in the past year. Education levels are very poor.</p>
MANDERA 12% UNACCEPTABLE FCS 3% HIGH COPING	<p>Conflict, remoteness and drought threaten food security in this pastoralist north eastern county. Dietary diversity is below average. Households source more than 85 percent of their consumption days from the market and maize prices are more than double those of the source market. It has the country's highest unemployment rates with more than half of working age men not having worked in the past year. More than 70 percent of household heads have little or no education and more than two in five are headed by women. Households are able to benefit from trading with markets in Somalia.</p>
THARAK-NITHI 10% UNACCEPTABLE FCS 31% HIGH CSI	<p>Households consume less Vitamin A rich foods than average. A high percentage work as agricultural labourers. Elderly people commonly head households.</p> <p>Note the high coping levels in spite of average food security levels.</p>

7

Undernutrition

This chapter looks at the DHS findings regarding child stunting and wasting and the links to food security as well as finding out why some counties have such high levels of chronic and acute malnutrition



MARCUS PRIOR

KEY MESSAGES

- At county level, wasting of under fives is 'critical' in the northern counties of Turkana, Marsabit and Mandera.
- Counties with such high levels of acute malnutrition also have high levels of poverty, poor sanitation and drinking water quality, poor education of the household head and underweight women of childbearing age
- Very few infants receive the minimum acceptable diet in Kenya's northern counties
- Chronic malnutrition in rural Kenya is 'critical' in two counties – West Pokot and Kitui and 'serious' in 12 others
- Counties with high stunting levels are more likely to have a high percentage of poor food consumption, lowly educated households with unsafe drinking water and poor sanitation
- The counties with the highest levels of child malnutrition are not necessarily the most food insecure

When deprived of nutritious food, a child's long term physical and cognitive development is impaired: he or she is less likely to reach his or her cerebral potential and more likely to become ill or even die. The critical period in terms of nutrition is the first thousand days from conception to two years. Adults who were malnourished during this time are less productive and more likely to be poor and food insecure.

Malnutrition is not a simple problem with a single cause. Underlying causes include inadequate dietary intake and illness, which

can create a vicious cycle: a malnourished child's resistance to illness is lowered and when he/she falls ill, malnourishment worsens. Children entering this malnutrition-infection cycle can fall into a potentially fatal spiral as one condition feeds off the other.

These causes are related to underlying issues: insufficient health services, an unhealthy living environment (poor sanitation, drinking water and hygiene practices) and inadequate knowledge regarding feeding practices, which itself may be influenced by education levels.

Acute malnutrition

Wasting is a measure of acute malnutrition characterized by considerable weight loss or failure to gain weight, resulting in a child's weight being substantially below that expected in a healthy child of the same height. It is associated with inadequate food intake, incorrect feeding practices, disease, infection or a combination of these factors. It can show marked seasonal patterns.

With 4.1 percent of 6-59 month old children wasted, acute malnutrition in Kenya is considered acceptable by WHO cut-offs.⁴⁵ This is a marked improvement since the 2008 DHS reported a prevalence of 6.7 percent. However, as figures 20 -21 show, levels are 'poor' for 6-59 month old children in the poorest households, in households with poor food consumption, and in households with high coping strategies, and 'serious' for children whose mothers have no education. Children born to thin mothers are also more likely to be wasted (9% of children whose mothers have BMI<18.5 are wasted versus 3.4% whose mothers have normal BMI).

■
⁴⁵The cut-offs are provided in the WHO publication The management of nutrition in major emergencies, Geneva 2000. <5% acceptable; 5-9% poor; 10-14% serious and ≥15% critical

Figure 20: Percentage of wasted 6-59 month old children by household wealth quintile

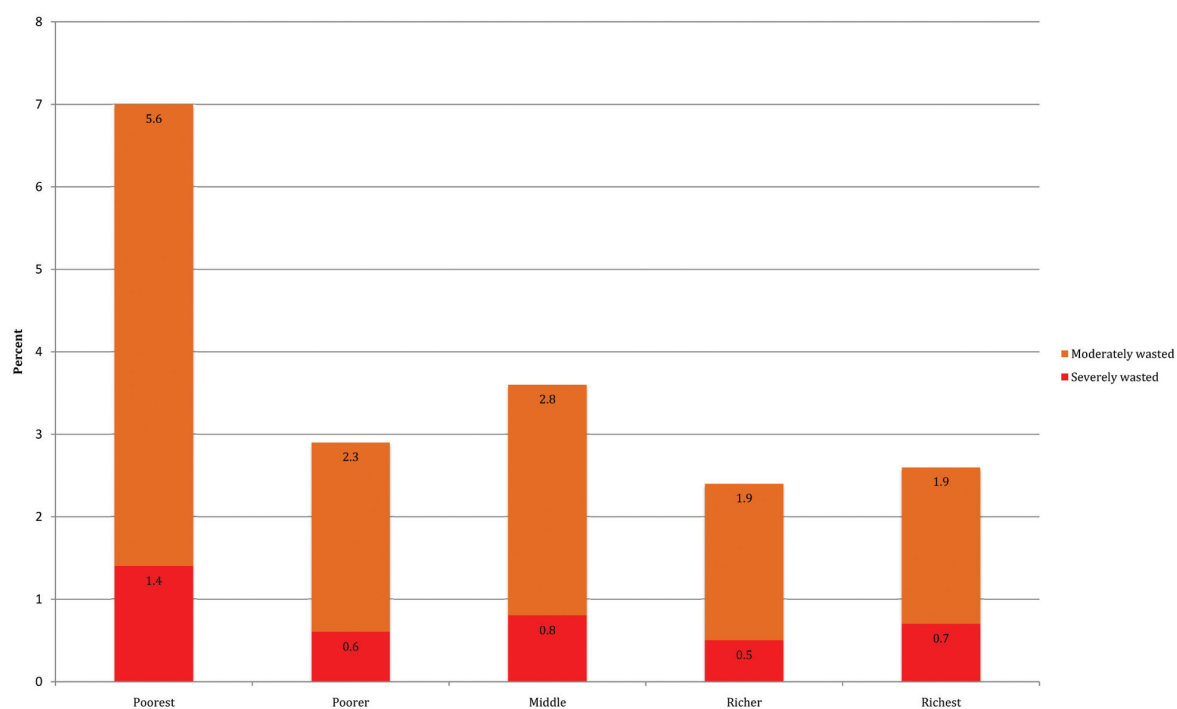


Figure 21: Percentage of wasted 6-59 month old children by household food consumption group

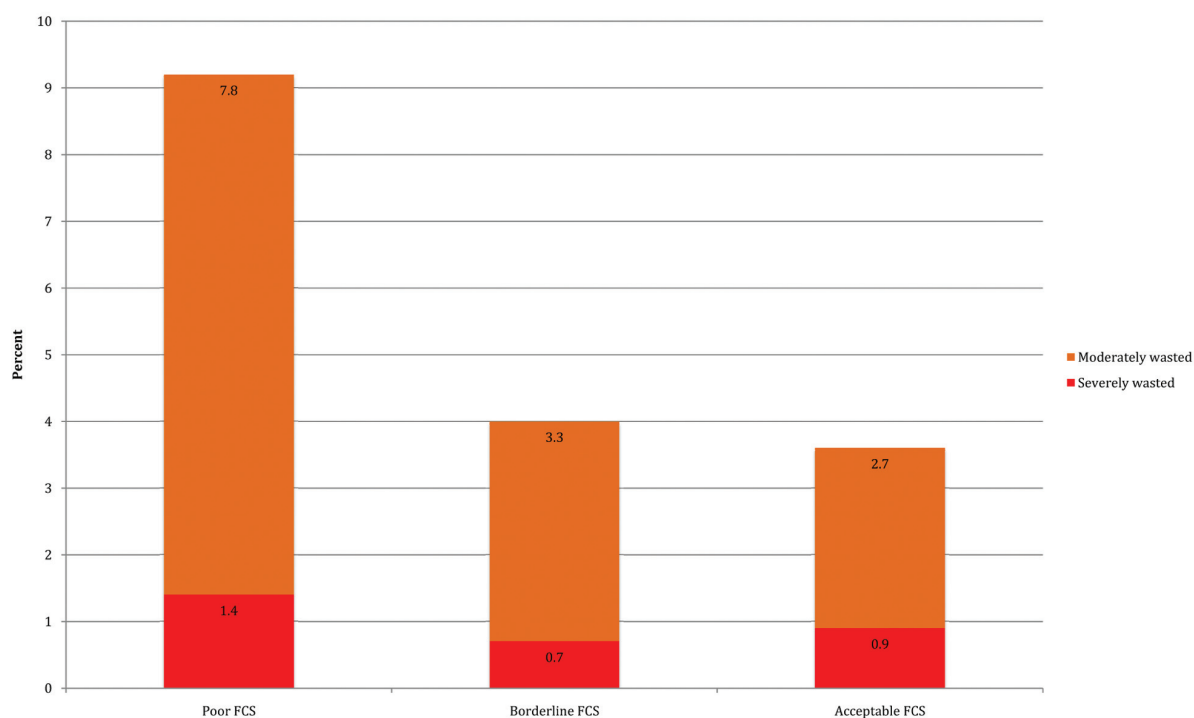


Figure 22: County level prevalence of households with unacceptable FCS and child wasting

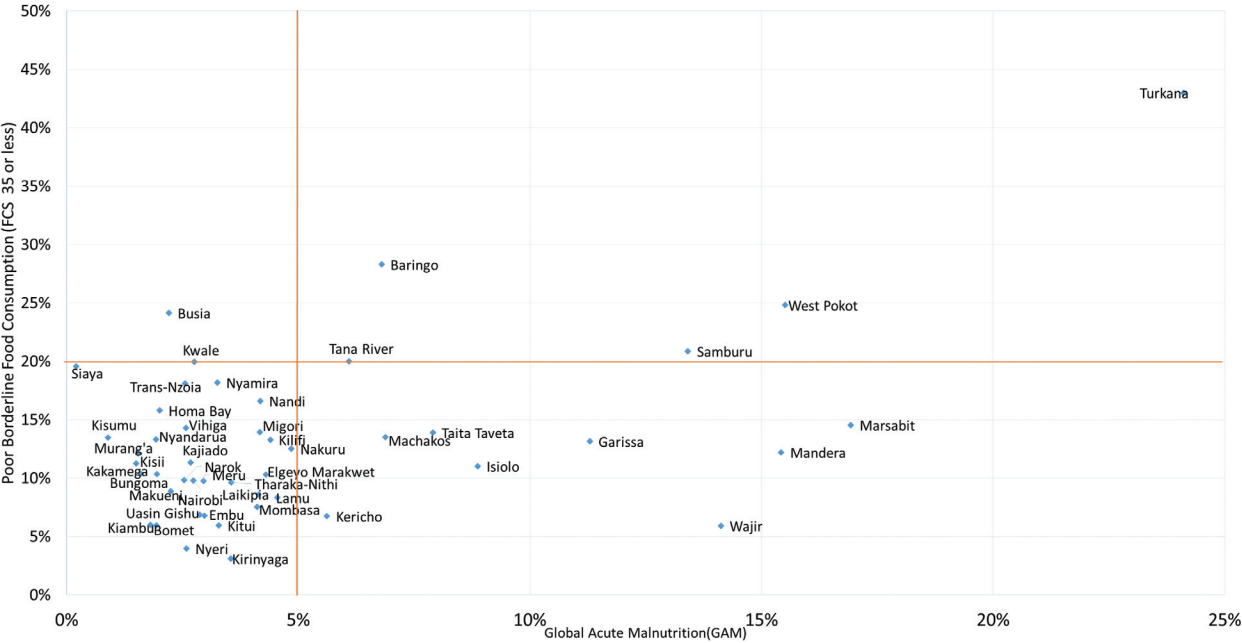
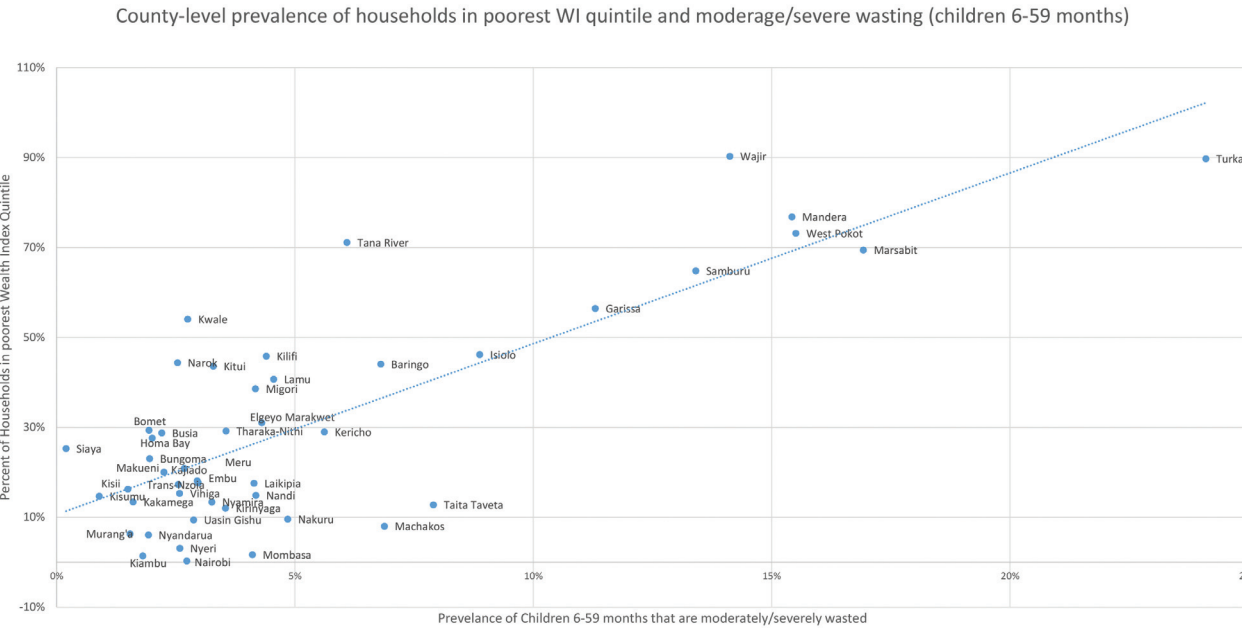
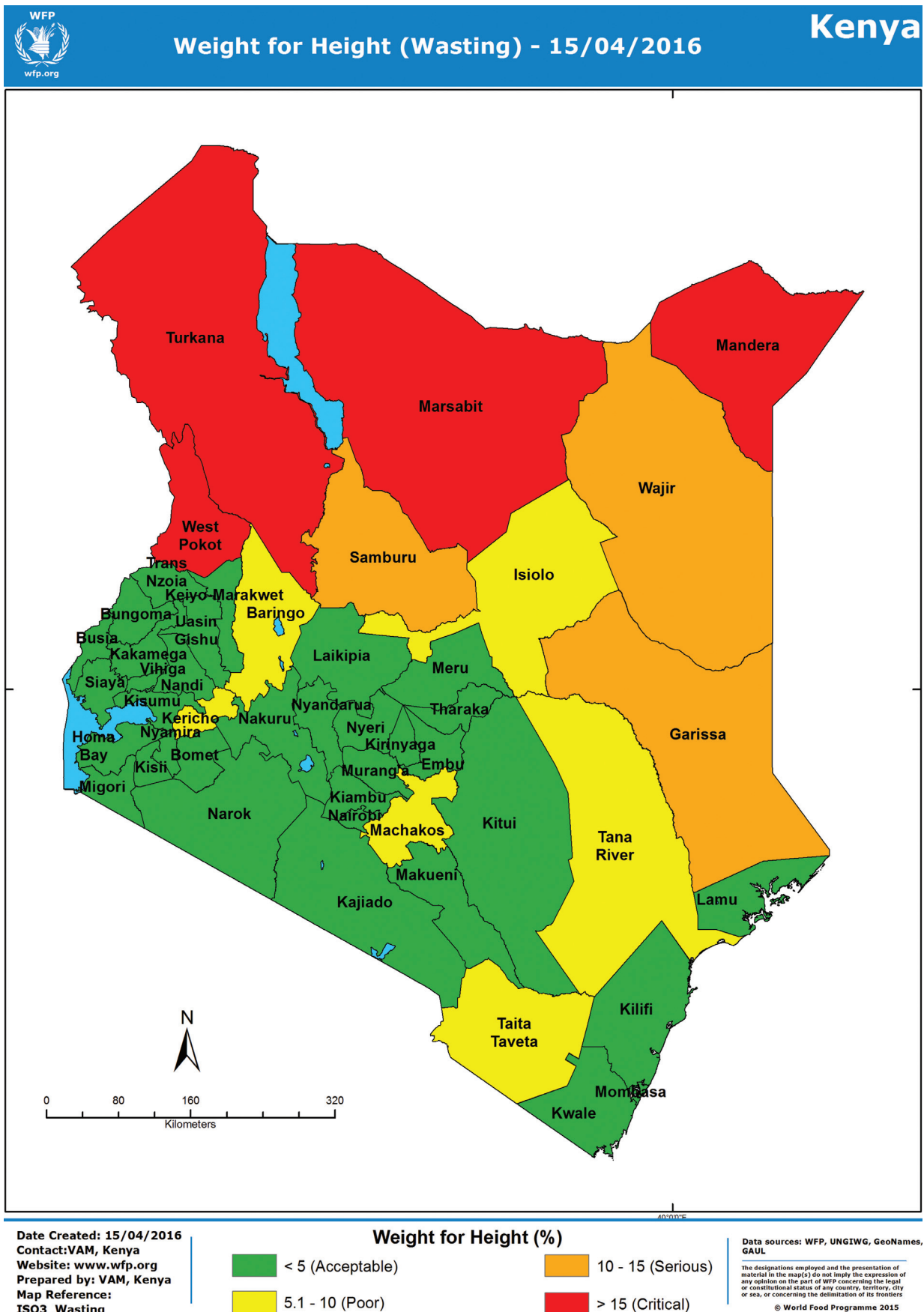


Figure 23: County level prevalence of households in the poorest wealth index quintile and moderate/severe wasting of 6-59 month old children



Map 11: County level prevalence of wasting of 6-59 month old children



As map 11 shows, wasting of 6-59 month old children is ‘critical’ in the country’s northern counties of Turkana, Marsabit, Mandera and West Pokot and ‘serious’ in Wajir, Samburu and Garissa.

Table 3 attempts to identify some reasons why these counties suffer such a high prevalence of wasting among children by highlighting indicators that may underlie wasting. The high number of red and orange cells in the table demonstrates that each county with a serious or critical prevalence of wasting has well above-average levels of: poverty, poor sanitation and drinking water quality, poor education of the household head and underweight women of childbearing age. A high percentage suffer times when they don’t

have enough food or money to buy food and have to resort to high use of corrosive food-related coping mechanisms. Low dietary diversity levels (four or fewer food groups) are well above-average. Most counties with high wasting also have higher levels of unacceptable food consumption with the exception of Mandera and Wajir.

Figure 22 shows the association between unacceptable food consumption and levels of wasting for each county. It demonstrates that there are five counties that have both high levels of food insecurity and wasting. These are Tana River, Baringo, West Pokot, Saburu and Turkana. As figure 23 shows there is a positive correlation between poverty and wasting.

Table 3: Counties with ‘serious’ or ‘critical’ levels of wasted children aged 6-59 months⁴⁶ and various indicators

	% of wasted children	% of HHS with unacceptable FCS	% of households with low dietary diversity (4 food groups or less)	% of households with unimproved toilets	% of households with unsafe drinking water	% of households with high CSI	% of households facing food shortages in last week	% of households in lowest 2 wealth quintiles	% of household heads with little or no education	% of underweight women (BMI < 18.5)
National average	4	12	6	47	15	10	31	40	25	9
Turkana	23	43	33	88	49	62	86	95	87	45
Marsabit	16	14	38	66	37	22	40	74	76	27
West Pokot	15	25	19	68	59	16	39	87	71	23
Mandera	14	12	19	67	37	3	30	82	90	23.5
Wajir	14	6	15	78	47	13	60	92	89	28
Samburu	14	21	12	80	40	25	54	72	66	41
Garissa	11	13	18	51	30	2	25	63	79	33

⁴⁶The colours in this table correspond with the parameters used in WFP mapping and usually represent quintiles. The level of seriousness progresses from green to yellow, light orange, dark orange and red.

Chronic malnutrition

Stunting is a measure of chronic malnutrition characterized by a slowing in a child’s growth and his or her failure to reach their expected height/length by comparison with a healthy, well-nourished child of the same age.

As documented in the DHS report stunting among Kenyan children aged six months to five years is considered ‘poor’ by WHO thresholds with 26 percent either moderately or severely stunted down from 35.3 percent in the KDHS 2008. However, there is a marked urban/rural difference: the prevalence rises to 29 percent in rural areas, which is almost ‘serious’ versus just under 20 percent in urban which is ‘acceptable’ by WHO cut-offs.

Stunting 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.

The data shows a clear correlation between poverty and stunting (figure 24). While under fives who are stunted are more likely to have unacceptable food consumption the link between stunting and CSI groupings is less clear (figures 25 and 26). There is however a very strong correlation with a mother’s education level.

Seven counties - Tana River, West Pokot, Baringo, Samburu, Busia, Turkana and Kwale - have both high levels of food insecurity and stunting, as shown in figure 27 which demonstrates the association between unacceptable food consumption and stunting for each county.

Figure 24: Percentage of stunted 6-59 month old children by household wealth quintile

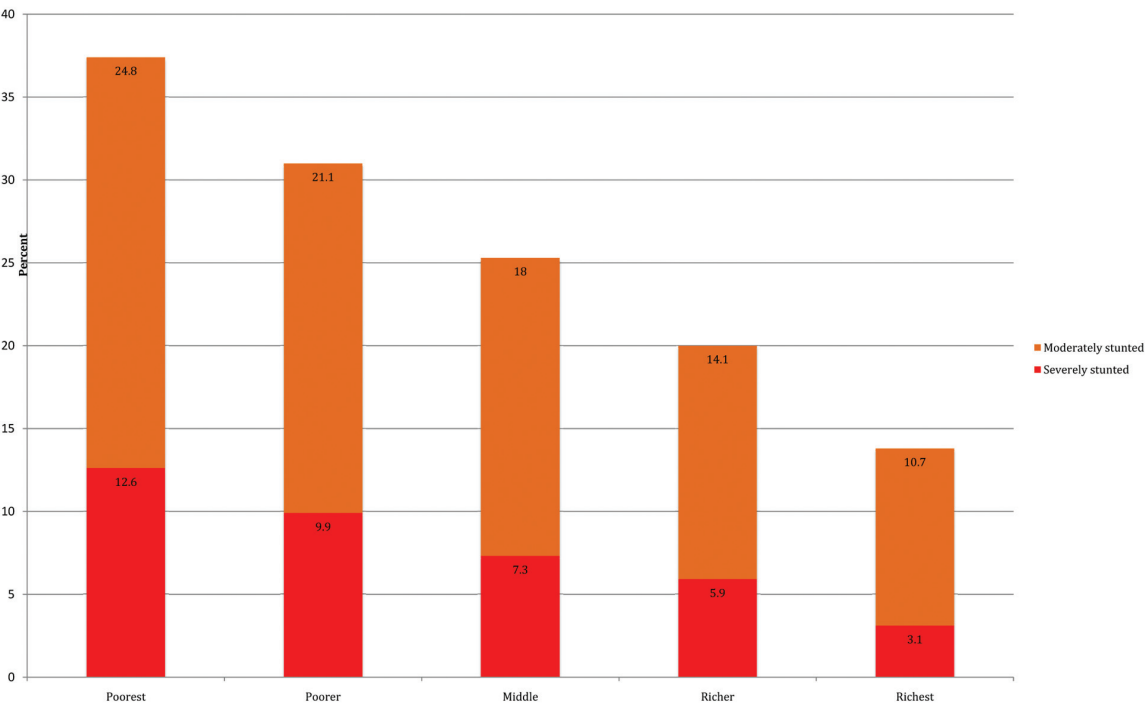


Figure 25: Percentage of stunted 6-59 month old children by household food consumption group

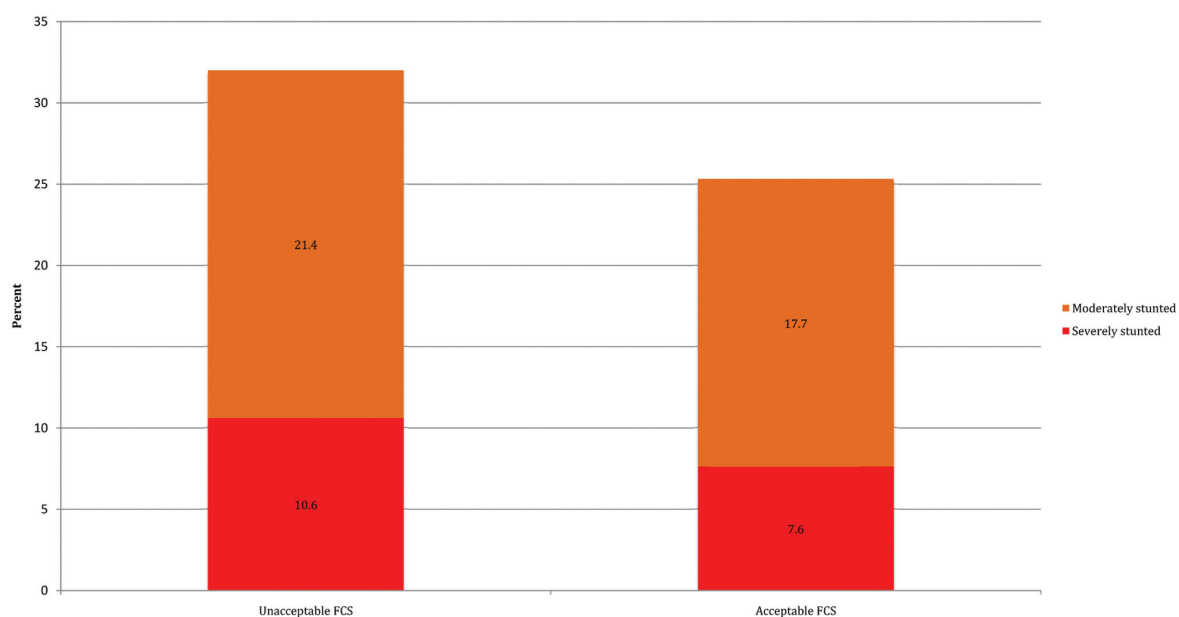
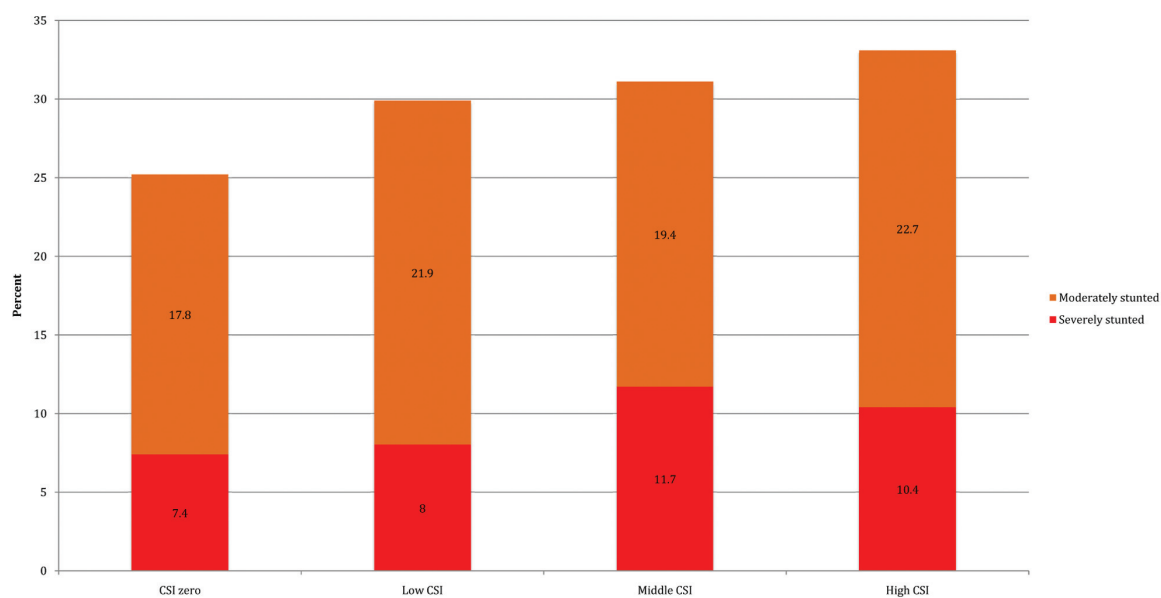


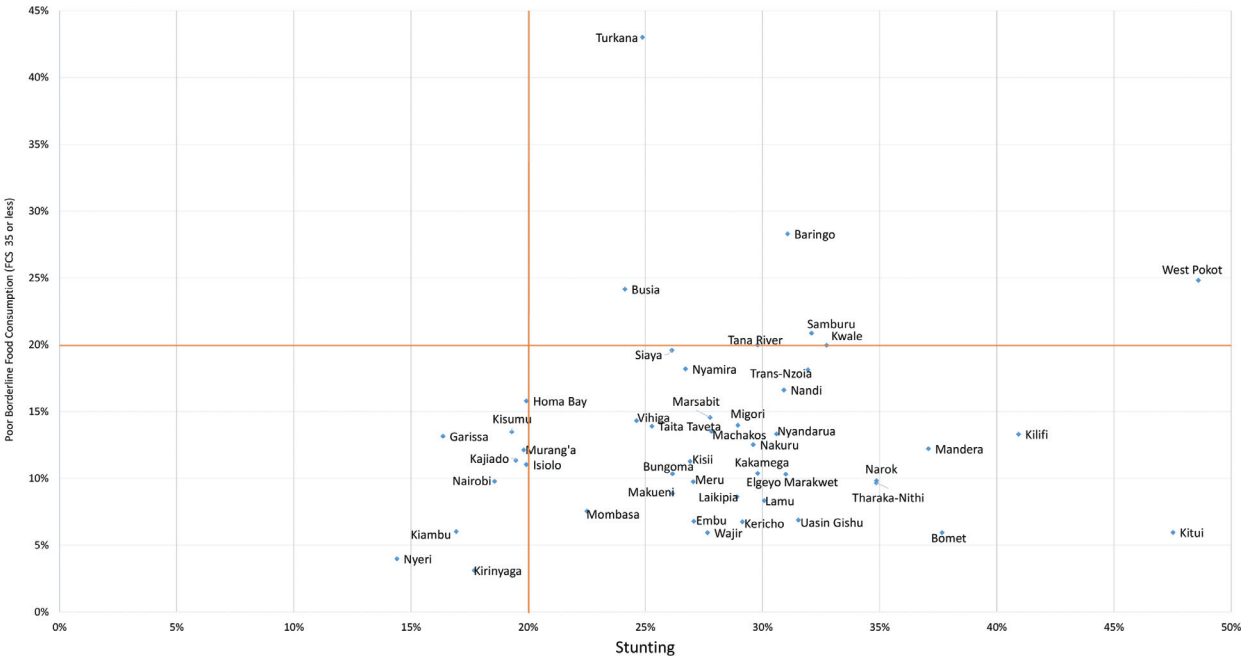
Figure 26: Percentage of stunted 6-59 month old children by household CSI group



The figures presented in the DHS report show a wide disparity at county level (see map 12). Just to recap briefly, in Kitui, West Pokot and Kilifi the prevalence is ‘critical’ - in fact almost half of all children of this age group are chronically malnourished in

Kitui and West Pokot. In Bomet, Mandera, Tran-Nzoia, Tharaka-Nithi, Narok, Elgeyo Marakwet, Nandi, Uasin Gishu, Baringo, Nyandarua and Samburu, stunting levels are ‘serious’ i.e., between 30 and 39 percent of 6-59 month olds are stunted.

Figure 27: County level prevalence of households with severely/moderately stunted children and unacceptable food consumption



Map 12: County level prevalence of stunting among 6-59 month old children

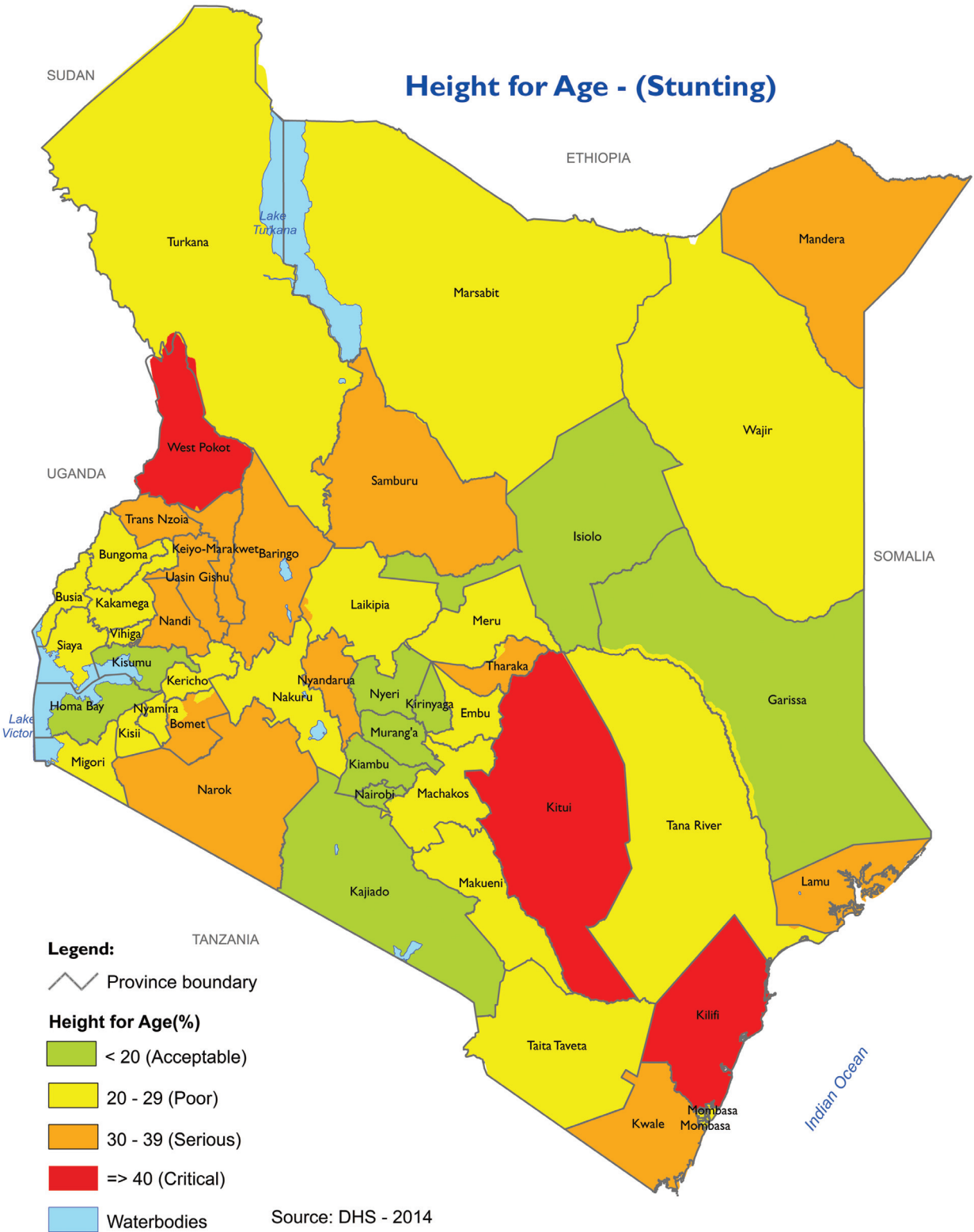


Table 4 highlights indicators that may be able to shed some light on why these counties have such high stunting levels. The highlighted cells are those with above average levels for that particular indicator.

It's worth noting that some of the counties with high stunting levels – namely Kilifi, Kitui, Bomet, Mandera and Narok - are relatively food secure by both indicators. In these counties there appears to be a stronger correlation with poor sanitation and drinking water quality, poverty and lack of education.

Table 4: Counties with 'critical' and 'serious' levels of stunted children aged 6-59 months showing possible underlying causes⁴⁷

	% of stunted 6-59 month olds	% of households with unacceptable FCS	% of households with low dietary diversity	% of households facing food shortages in previous week	% of households with unimproved toilets	% of households with unsafe drinking water	% of households with high CSI	% of underweight women (BMI < 18.5)	% households in 2 lowest wealth quintiles	% of household heads with little or no education
National average	26	12	6	31	47	15	10	9	40	25
West Pokot	49	25	19	39	68	67	16	23	87	71
Kitui	48	6	3	52	54	59	16	9.5	71	49
Kilifi	41	13	9	29	41	20	5	11	57	45
Bomet	38	6	4	26	74	54	6	10	60	42
Mandera	37	12	19	30	67	53	3	23.5	82	90
TharakaNithi	35	9	10	57	60	47	31	11	58	47
Narok	35	10	7	31	33	63	12	10	64	52
Samburu	32	21	12	54	80	48	25	41	72	66

We have already looked at food security indicators alongside the wealth, education, gender, fertility rate and employment dimensions in the previous chapter. Here we take a closer look at the other indicators that may underlie malnutrition, namely IYCF practices, the mother's nutritional status, child illness, drinking water and sanitation.

Child health

The 15 percent of under five year olds who suffered from diarrhoea in the fortnight before the survey are more likely to be in poor households and slightly more likely to be food insecure. The prevalence of diarrhoea is above 20 percent in Kilifi, Tana

⁴⁷The colours in this table correspond with the parameters used in WFP mapping and usually represent quintiles. The level of seriousness progresses from green to yellow, light orange, dark orange and red.

River, Tharaka-Nithi, Kakamega, Vihiga, Bungoma, Homa Bay and Migori. Around one in four children suffered a fever in the two weeks before the survey and again they are more likely to be in the poorer wealth quintiles. The counties with the highest levels of fever are Kilifi, Narok, Bungoma, Busia, Siaya, Kisumu, Homa Bay and Migori.

In certain counties (Baringo, Vihiga, Bungoma and Migori) more than half of children reportedly had a cough at some stage in the previous fortnight compared with a national average of 36 percent. Reporting of child illness should be interpreted with some caution since whether or not a respondent considers their child to be sick can be a matter of perception. Interesting to note that in counties where a low prevalence of say, coughing, is reported, diarrhoea and fever prevalence is also often low. For instance, the pastoralist counties of Garissa, Mandera, Turkana and West Pokot

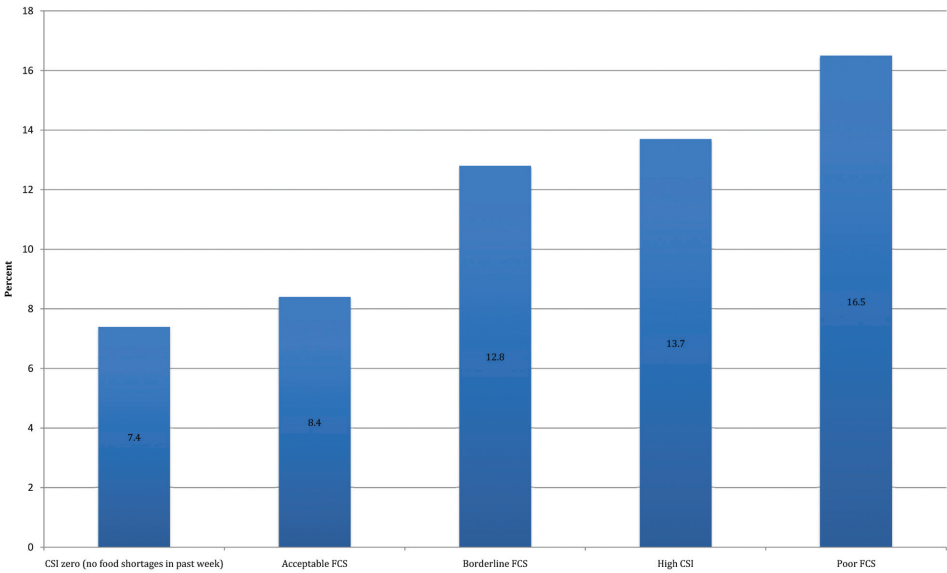
report very low rates of all three conditions.

Women’s nutritional status

Nationally, women of child-bearing age are more likely to be overweight than underweight: 8.9 percent have a BMI of less than 18.5 while 22.7 percent are overweight (BMI 25-29.99) and 10.1 percent obese (BMI ≥ 30). The poorer the household, the greater the likelihood of its female occupants being thin. The richer the household, the higher the chances of them being overweight or obese.

As figure 28 shows, thin women are slightly under-represented in households that did not face food shortages in the previous week and in households with acceptable food consumption. More than 16 percent of women in severely food insecure households are considered thin and almost 14 percent in households that used corrosive and/or regular food-related coping.

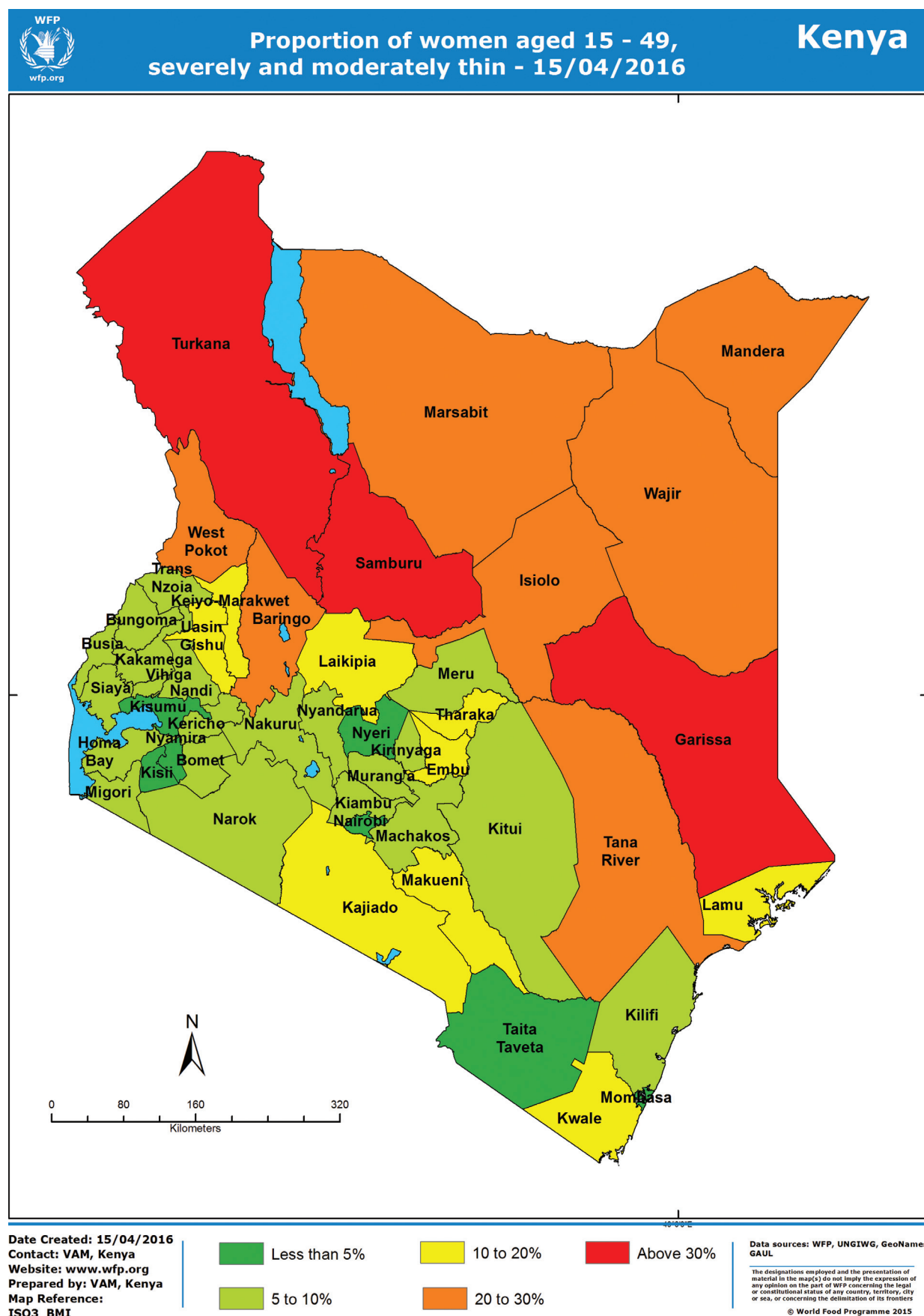
Figure 28: Prevalence of women aged 15-49 with low BMI by FCS and CSI grouping



In most of Kenya’s counties women are more likely to be overweight than underweight with the exception of Tana River, Garissa, Wajir, Mandera, Marsabit, Turkana, West Pokot, Samburu and Baringo where the reverse is true. The prevalence of thin

women is highest in Turkana (45.3%), Samburu (40.8%) and Garissa (33.2%). See map 13. The counties with critical and serious levels of wasted children also have a very high prevalence of women with low BMI.

Map 13: Proportion of women of child-bearing age with low BMI



Infant feeding practices

Exclusive breastfeeding in infants aged 0-23 months has improved markedly since the 2008 DHS: now 61.4 percent of children are exclusively breastfed compared with 31.9 percent then and just 12.7 percent in 2003.

Complementary feeding of infants and young children in Kenya is still very poor. Nationally some 41 percent have minimum dietary diversity, 51 percent receive minimum meal frequency and only 22 percent the minimum acceptable diet. In the north eastern part of the country where wasting levels are critical just 11.6 percent receive the minimum diversity, 26.1 percent minimum meal frequency and 2.7 percent the minimum acceptable diet. Mothers with no education are far less likely to be able to provide their children with minimum acceptable diets (7.7%).

Drinking water and sanitation

Improved water sources include piped water into the dwelling, yard or plot; a public standpipe or borehole; a protected well or protected spring water; rainwater and bottled water. Unimproved sources include unprotected wells or springs, water delivered by tanker trucks and surface water. The DHS also added 'no or not

appropriate' water treatment to unimproved sources. Appropriate treatment methods include boiling, bleaching/chlorine, filtering/straining and solar disinfecting. Inappropriate treatment methods include covering the water container and letting the water stand and settle.

Nationally 15 percent of households consume water that is from an unimproved source and either not treated or 'inappropriately' treated. The prevalence rises to 23 percent in rural areas versus five percent in urban. As we have seen in the wasting and stunting tables above, some counties have very high levels of unsafe drinking water levels at 40 percent of households or more in Narok, Baringo, Samburu, West Pokot, Turkana, Mandera and Wajir. The tables show that households with high levels of stunting and wasting also have high levels of unsafe drinking water.

Around two thirds of rural Kenyan households (64%) use a non-improved toilet, most commonly a pit-latrine without a slab or an open pit. In urban areas the prevalence is 24 percent. However in 31 out of the 47 counties more than half of households use unimproved toilets peaking at more than 80 percent in Turkana, Tana River and Samburu. Again, as the tables above demonstrate, counties with high levels of undernutrition also have high levels of poor sanitation.

8

Recommendations

This section presents broad recommendations - for the Kenyan Government, WFP and partners - to protect and strengthen those households that are most vulnerable to food insecurity.



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- 1** There needs to be a concerted effort to support agricultural development activities that build the capacity of smallholder farmers to generate a sustainable income. The Government needs to create a new policy framework to make the agricultural sector more profitable, competitive and sustainable.
- 2** Lobby the Government to continue to accelerate the improvement of road infrastructure, which is key to economic development in the arid lands.
- 3** Ensure universal primary education for all children and advocate for school meals programmes in all schools.

Advocate for adult literacy and numeracy training in geographically targeted counties with extremely low adult education levels. Emphasis is needed in the seven counties where more than 60 percent of household heads have little or no education (Wajir, Garissa, Marsabit, Mandera, Turkana, Samburu and West Pokot).
- 4** Focus on integrated programming, which includes natural resource management, resilience building and food security that also reinforces disaster risk reduction, preparedness and response measures, including continued support for improved Early Warning Systems with county ownership.
- 5** Redouble efforts to understand the complexity of issues that urban households face, to address their food insecurity in a systematic manner, ensuring that food security interventions are as relevant for urban populations as for their rural counterparts.
- 6** Reinforce efforts to increase the nutritional content of food items consumed, focussing on food rich in proteins and iron. Efficiency gains could be realised by equipping agricultural extension service workers with the skills to provide household-level nutritional advice –for instance, on complementary feeding, food preparation, crop diversification and child care practices.
- 7** Continue to advocate for land reforms and adoption of land policy principles that would facilitate access to land and land rights for farmers, pastoralists and other vulnerable groups, including involving these groups in decision-making.
- 8** Continue to work towards universally accessible, quality and responsive health systems with the aim of substantially reducing morbidity and mortality. Improve maternal, neonatal and child survival rates, reduce malnutrition and the incidence of communicable and non-communicable diseases as well as stabilize population growth.
- 9** Ensure that the formal and informal sectors, in both urban and rural economies, create employment that is safe, healthy, secure, productive and profitable and is equitably accessible, particularly for women, youth and vulnerable groups.
- 10** Ensure that the social protection systems that aim at eradicating severe poverty and hunger are integrated, adequately resourced, well-coordinated, effective, efficient and sustainable at national and county levels.
- 11** 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. In addition, increase efforts to improve overall sanitation practices at household level.
- 12** Increase awareness of nutritional issues that cause weight gain and promote healthy diets, especially in growing urban areas.

Key food security and under nutrition indicators

TOTAL (KENYA)		POOR FCS	BORDERLINE FCS	UNACCEPTABLE FCS	DIETARY DIVERSITY SCORE	LOW DIEATARY DIVERSITY	HIGH CSI	UNDER 5 STUNTING	UNDER 5 WASTING
Type of place of residence	Urban	1%	8%	9%	7.0	3%	7%	20.9%	3.4%
	Rural	2%	12%	14%	6.4	9%	12%	30.8%	4.4%
Wealth Index	Poorrest	4%	19%	23%	5.8	17%	21%	37.4%	7.0%
	Poorer	1%	13%	14%	6.5	7%	12%	31.0%	2.9%
	Middle	1%	9%	10%	6.7	4%	8%	25.3%	3.5%
	Richer	1%	6%	7%	7.0	3%	4%	20.0%	2.4%
	Richest	1%	4%	5%	7.3	2%	4%	13.8%	2.6%
Food Consumption Groups	Poor	100%	0%	100%	3.5	77%	36%	27.1%	9.1%
	Borderline	0%	100%	100%	5.0	32%	25%	34.1%	4.0%
	Acceptable	0%	0%	0%	6.9	2%	8%	26.7%	3.6%
CSI score Groups	CSI of zero	1%	6%	7%	6.9	4%	0%	25.2%	3.4%
	Low CSI	3%	14%	17%	6.5	8%	0%	29.9%	4.3%
	Middle CSI	4%	17%	21%	6.2	11%	0%	31.1%	3.5%
	High CSI	6%	25%	32%	5.7	19%	100%	33.1%	5.1%
Sex of head of household	Male	1%	8%	10%	6.8	5%	8%	27.0%	3.9%
	Female	3%	13%	16%	6.5	9%	13%	28.8%	4.4%
County	Coast							0.0%	0.0%
	■ Mombasa	1%	7%	8%	7.1	2%	4%	22.5%	4.1%
	■ Kwale	2%	18%	20%	6.3	10%	6%	32.7%	2.8%
	■ Kilifi	1%	12%	13%	6.5	9%	5%	40.9%	4.4%
	■ Tana River	5%	15%	20%	6.0	18%	15%	29.8%	6.1%
	■ Lamu	0%	8%	8%	6.7	4%	5%	30.1%	4.6%
	■ Taita Taveta	2%	12%	14%	6.8	3%	9%	25.3%	7.9%

TOTAL (KENYA)		POOR FCS	BORDERLINE FCS	UNACCEPTABLE FCS	DIETARY DIVERSITY SCORE	LOW DIEATARY DIVERSITY	HIGH CSI	UNDER 5 STUNTING	UNDER 5 WASTING
		2%	10%	12%	6.7	6%	10%	27.5%	4.1%
COUNTRY	North Eastern								
	■ Garissa	2%	11%	13%	6.2	18%	2%	0.0%	0.0%
	■ Wajir	3%	3%	6%	5.7	14%	13%	16.4%	11.3%
	■ Mandera	2%	10%	12%	6.0	18%	3%	27.7%	14.1%
	Eastern								
	■ Marsabit	3%	11%	15%	5.1	37%	22%	0.0%	0.0%
	■ Isiolo	3%	8%	11%	6.7	8%	12%	27.8%	16.9%
	■ Meru	1%	9%	10%	6.5	8%	8%	19.9%	8.9%
	■ Tharaka-Nithi	2%	7%	10%	6.4	11%	31%	27.0%	3.0%
	■ Embu	1%	6%	7%	7.0	2%	4%	34.9%	3.6%
	■ Kitui	0%	6%	6%	6.5	3%	16%	27.1%	3.0%
	■ Machakos	1%	12%	14%	6.7	2%	10%	47.5%	3.3%
	■ Makueni	1%	8%	9%	6.8	3%	21%	27.8%	6.9%
	Central								
	■ Nyandarua	2%	12%	13%	6.4	10%	8%	26.2%	2.3%
	■ Nyeri	0%	3%	4%	6.9	5%		0.0%	0.0%
	■ Kirinyaga	1%	2%	3%	7.2	2%	7%	30.6%	1.9%
	■ Murang'a	1%	11%	12%	6.6	10%	1%	14.4%	2.6%
	■ Kiambu	2%	4%	6%	7.0	3%	10%	17.7%	3.5%
	Rift Valley								
	■ Turkana	19%	24%	43%	5.0	33%	62%	19.8%	1.5%
	■ West Pokot	3%	22%	25%	5.8	19%	2%	16.9%	1.8%
	■ Samburu	5%	16%	21%	6.1	13%		0.0%	0.0%
	■ Trans-Nzoia	3%	15%	18%	6.5	7%	25%	24.9%	24.1%
	■ Uasin Gishu	0%	7%	7%	6.7	4%	18%	48.6%	15.5%
	■ Elgeyo						3%	32.1%	13.4%
	■ Marakwet	1%	9%	10%	6.5	5%	3%	31.9%	2.6%
								31.5%	2.9%
							5%	31.0%	4.3%

TOTAL (KENYA)		POOR FCS	BORDERLINE FCS	UNACCEPTABLE FCS	DIETARY DIVERSITY SCORE	LOW DIEATARY DIVERSITY	HIGH CSI	UNDER 5 STUNTING	UNDER 5 WASTING
		2%	10%	12%	6.7	6%	10%	27.5%	4.1%
<ul style="list-style-type: none"> ■ Nandi ■ Baringo ■ Laikipia ■ Nakuru ■ Narok ■ Kajiado ■ Kericho ■ Bomet WESTERN ■ Kakamega ■ Vihiga ■ Bungoma ■ Busia NYANZA ■ Siaya ■ Kisumu ■ Homa Bay ■ Migori ■ Kisii ■ Nyamira NAIROBI 		1%	16%	17%	6.2	12%	8%	30.9%	4.2%
		7%	21%	28%	6.1	18%	32%	31.1%	6.8%
		1%	8%	9%	6.7	7%	9%	28.9%	4.1%
		1%	12%	13%	6.8	4%	2%	29.6%	4.8%
		1%	9%	10%	6.7	7%	12%	34.9%	2.5%
		2%	9%	11%	6.7	9%	3%	19.5%	2.7%
		1%	5%	7%	6.8	2%	5%	29.1%	5.6%
		1%	5%	6%	6.7	4%	6%	37.7%	1.9%
								0.0%	0.0%
		2%	9%	10%	6.8	4%	8%	29.8%	1.6%
		1%	13%	14%	6.6	7%	11%	24.6%	2.6%
		1%	9%	10%	6.7	4%	17%	26.2%	1.9%
		4%	20%	24%	5.9	16%	11%	24.1%	2.2%
								0.0%	0.0%
		3%	17%	20%	6.2	9%	20%	26.1%	0.2%
		2%	11%	13%	6.9	3%	12%	19.3%	0.9%
		3%	13%	16%	6.5	6%	19%	19.9%	2.0%
		1%	13%	14%	6.6	7%	17%	29.0%	4.2%
		1%	10%	11%	6.7	6%	4%	26.9%	1.5%
		0%	18%	18%	6.6	7%	1%	26.7%	3.3%
		2%	8%	10%	7.1	3%	10%	18.6%	2.7%

This CFSVA was produced by a team of six people managed by Yvonne Forsen, head of VAM and nutrition in Kenya. The data analysis was carried out by Peter Horjus, it was written by Katy Williams and designed by Kiran Maharjan. Further technical and editorial support was provided by Allan Kute and Julius Kisingu.