FEWS NET
FAMINE EARLY WARNING SYSTEMS NETWORK

KENYA FOOD SECURITY BRIEF

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FROM THE AMERICAN PEOPLE

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ABOUT FEWS NET

Created in response to the 1984 famines in East and West Africa, the Famine Early Warning Systems Network (FEWS NET) provides early warning and integrated, forward-looking analysis of the many factors that contribute to food insecurity. FEWS NET aims to: inform decision-makers and contribute to their emergency response planning; support partners in conducting early warning analysis and forecasting; and provide technical assistance to partner-led initiatives.

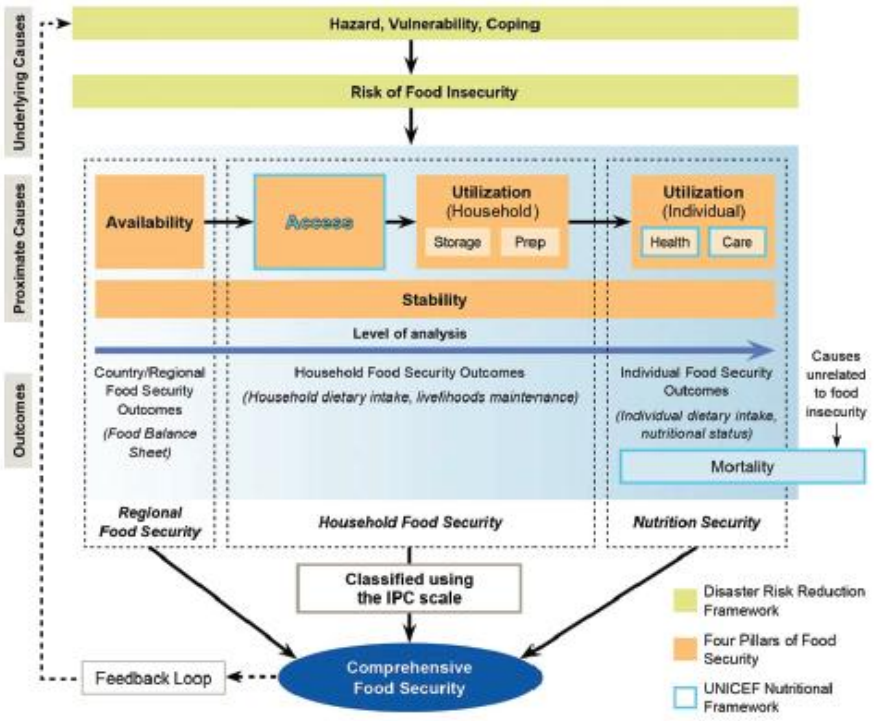
Introduction

This Food Security Brief is a starting point for anyone seeking a deep understanding of the range of factors influencing food security in Kenya. It draws on decades of FEWS NET data and information on livelihoods, household vulnerability, nutrition, trade, and agro-climatology, as well as an array of other sources. It provides an overview of the food security context, the main determinants of chronic and acute food insecurity, and areas at most risk of food insecurity.

The brief is organized around the FEWS NET Household Livelihoods Analytical Framework (Figure 1), which looks at underlying and proximate causes of food insecurity as a means to anticipate outcomes at regional and household levels. FEWS NET's approach integrates aspects of the Disaster Risk Reduction Framework, the Four Pillars of Food Security, and the UNICEF nutritional framework.

At the core of this analysis is an understanding of livelihoods—that is, the means by which households obtain and maintain access to essentials such as food, water, shelter, clothing, health care, and education—both in good years and in bad. Using the Household Economy Approach, or HEA, FEWS NET brings a livelihoods perspective to its analysis of household vulnerability to shocks and coping capacity.

Figure 1. FEWS NET Household Livelihoods Analytical Framework



Source: FEWS NET

The following definitions guide the analysis of the Food Security Brief:

- *Food security:* a situation where all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.[1] These conditions are underpinned by the "four pillars" of food security: availability, access, utilization, and stability. Availability, access, and utilization are hierarchical, in that food availability is necessary but not sufficient for access, and access is necessary but not sufficient for utilization.[2] Chronic food insecurity is typically due to a complex combination of some or all of the four pillars, resulting in long-term lack of sufficient food in quantity or quality.

- *Food availability:* The supply side of food security, food availability refers to the physical existence of food, from a household's own production or from markets, including commercial food imports and food aid. Adequate availability is a prerequisite for people to meet basic food needs, but often the mere presence of food does not ensure access to "sufficient, safe, and nutritious food."

- *Food access:* Related to demand, food access refers to a household's ability to obtain foods for a nutritious diet though a combination of production, purchase, gifts, and transfers. Access is influenced by physical access (infrastructure), sociopolitical access (e.g., traditional rights to common resources), and economic access (ability to generate income, purchasing power, and the evolution of real incomes and food prices). Additional factors include access and control of productive resources, such as land, seed and water; governance; legal and regulatory frameworks; the macroeconomic environment; gender dynamics; HIV/AIDS and other diseases; and emergencies and conflicts.[3]

- *Utilization:* refers to how well individuals utilize the food they access, including sufficient energy and nutrient intake and the ability to absorb nutrients. These factors are influenced by care and feeding practices, food preparation, the diversity of the diet, and intra-household distribution of food. Nutrient absorptive capacity can be influenced by factors including sanitation and hygiene conditions and disease.

- *Stability:* underpins the other three pillars and captures the level of uncertainty or vulnerability to future disruptions in food security. Risks to stability include climatic change, conflict, price shocks, and disease, among other factors.

Most sections of this report identify related "Key FEWS NET Resources." For additional FEWS NET resources on Kenya, including FEWS NET Outlook reports and Outlook updates, visit the FEWS NET Kenya page.

Executive Summary

Food security in Kenya is closely tied to domestic agricultural production, the impact of poverty on access to food and basic services, population dynamics, shifting climate patterns, and changing demographics. This Brief explores some of the major factors affecting the key food security pillars of availability, access, utilization, and stability.

CONTEXT AND DEMOGRAPHICS

Kenya has one of the world's fastest population growth rates. Over the past 30 years, the population has more than tripled, greatly increasing pressure on food supplies, natural resources (arable land, water, pasture), basic services (education, health), infrastructure (housing, transportation), and employment opportunities.[4] The population is expected to nearly double in the next two decades, further straining food and income resources. At the 2012 growth rate of 2.44, the population is expected to grow from 44 million in 2012 to about 77 million in 2030.

Urbanization is another key feature of Kenya's food security situation. Rural populations typically have been at the forefront of food security concerns, but urban dwellers represent an increasingly important share of the food insecure and malnourished. Due to population growth and relative lack of development in rural areas, migration to urban areas is likely to increase considerably in the coming decades. Urban populations are vulnerable to certain shocks, such as food price spikes.

AVAILABILITY

The agricultural sector is a key component of Kenya's economic development, the main source of food availability at the national level, and a primary source of food and income for most households – despite the fact that only about 20 percent of the total land area is arable. Agriculture provides about 25 percent of Gross Domestic Product (GDP), and directly and indirectly supports more than 75 percent of the population. Of the 70 percent of the population living in rural areas, 80 percent are dependent on agriculture as a source of food and income. Despite the importance of the sector, Kenya has a structural production deficit of several staples, including maize. Imports are an important source of food at the national level. Cereal imports have increased steadily in recent years, driven primarily by population growth and urbanization.

Despite recent increases in maize yields, agricultural development continues to be hindered by numerous challenges including vulnerability to weather-related shocks (droughts and floods), limited access to inputs by some farmers, pests and disease, and lack of credit. Furthermore, insecure tenure systems have led to

SELECTED FEWS NET KENYA RESOURCES

FEWS NET Kenya Outlook reports and Outlook updates

Kenya Livelihood Zone Descriptions

FEWS NET Kenya Price Bulletins

FEWS NET Production and Trade flow maps

Kenya Urban Comprehensive Food Security & Vulnerability Analysis (KU-CFSVA) and Nutrition Assessment

Review of Trade and Markets Relevant to Food Security in the Greater Horn of Africa

FEWS NET/FAO/WFP Cross-Border Trade Bulletins

Understanding Nutrition Data and the Causes of Malnutrition in Kenya

East Africa Seasonal Monitors

A Climate Trend Analysis of Kenya

low investment in land improvement and productivity in some parts of the country. The impact of climate change will pose a significant challenge to agricultural productivity, as the frequency of drought is expected to increase both in intensity and extent.

ACCESS

About 40 percent of the country's population lives below the national poverty line. Most of the poor lack adequate access to basic services, including education, water and sanitation, and healthcare. While the percentage of people living in poverty has declined over the last decades, almost 20 million people are below the national poverty line.

Acute and chronic food insecurity is highest among households in the arid and semi-arid lands (ASALs), which cover 80 percent of the country's land area but are home to only 25 percent of the population. Poverty, low education levels, lack of economic development, and limited access to basic social services are characteristic of most parts of the ASALs. Households have low resilience to shocks as a result of repeated exposure to drought (and other climate-related hazards) and continued depletion of assets. Increasingly, agriculture is less viable as a means of earning a livelihood in some marginal areas because of diminishing land holdings, declining land productivity, and limited use of productive technologies. With limited livelihood alternatives, many households depend on food assistance to meet basic food needs, even during non-crisis years. Markets in the ASALs tend to be isolated with poor infrastructure links to other markets, affecting the ability to purchase food.

In rural areas of the country, households depend on agricultural production for about 20 percent of household food consumption; they rely on the market for the rest. In urban areas, market dependence is much higher. Given this high degree of market reliance, most households are vulnerable to regional and international price shocks. Poor households are particularly vulnerable to maize price shocks, as they spend the greatest portion of their food expenditures (about 20 percent) on maize.

The high unemployment rate – estimated at 40 percent – affects the ability of households to maintain stable income sources. Although the numbers of jobs have increased, particularly within the informal sector, they have not kept pace with the increasing number of Kenyans of working age. Nominal earnings have remained relatively constant but real wages have declined due to inflation, thus reducing household purchasing power and access to food. At the same time, domestic staple food prices have been volatile and above average in recent years.

UTILIZATION

Malnutrition is a pervasive and chronic problem in Kenya. Although the prevalence of undernourishment (the proportion of the population estimated to be at risk of caloric inadequacy) has declined fairly steadily since 2001, the number of people undernourished has increased due to population growth.

Malnutrition is attributed to several factors including insufficient caloric intake, inadequate diversification of food production and consumption (with a persistent bias towards maize), poor care and feeding practices, a high disease burden (especially HIV/AIDS and malaria), a lack of potable water, and improper hygiene.

Nationally, 35 percent of children under five are stunted (low height-for-age), with 14 percent severely stunted. The prevalence of wasting (weight-for-height Z score <-2) and severe wasting (weight-for-height Z score <-3) is 6.7 percent and 1.9 percent, respectively. However, there are significant geographical disparities in the burden of acute malnutrition, with malnutrition most severe in the ASALs. A 2006 FEWS NET analysis of malnutrition in northern Kenya found that frequent illness, poor hygiene, a lack of clean potable water supply, and care practices, particularly infant feeding practices, are significant contributors. For example, in the North Eastern province, 20 percent of children under 5 are wasted. In the Western province, just 2.3 percent are wasted.

Kenya increasingly faces the "double burden" of obesity and undernutrition. Changing lifestyles and eating habits have resulted in diet-related non-communicable diseases, including cardiovascular disease, cancer, and diabetes, especially in

urban areas. These are mainly caused by excessive energy intake associated with purchased meals and processed foods, and decreasing levels of physical activity. [5]

STABILITY

Climate-related disruptions to crop and livestock production, and an attendant decrease in household income, are a major cause of instability in the food supply. Agricultural production in Kenya is almost exclusively rainfall-dependent, and most farmers are exposed to the risks of unreliable rainfall or prolonged drought. With climate change, droughts are expected to increase both in frequency and intensity.[6] Without investment to increase yields and appropriate mitigation and adaptation measures, these changes will have an increasing impact on the stability of the food supply and the ability of households to cope with fluctuating income.

Another source of instability is frequent price fluctuations, which are influenced by world markets, a heavy reliance on maize as a staple crop, effects of droughts and/or floods, pest and diseases, political insecurity, and other factors. While dependence on world markets can bring a measure of stability, prices of key imports such as wheat, rice, and maize can increase dramatically depending on global price patterns. This price volatility affects household ability to access food on markets.

Conflicts over resources, including access to and ownership of land, livestock, and other property, are longstanding issues that hinder access to food and disrupt the stability of the food supply. While conflict is most prevalent in northeastern and eastern pastoral areas, it has become frequent in parts of the southeastern and coastal marginal agricultural zones. Conflicts disrupt livelihood activities and cause displacement and loss of assets. In conflict-affected areas, prices for basic goods and services tend to be higher due to higher transactions costs.

Country Context

DEMOGRAPHIC CONTEXT

Kenya has one of the world's fastest population growth rates, ranking 31 out of 231 countries in 2012 in terms of population growth.[7] The population is expected to nearly double over the next two decades, putting enormous pressure on resources for food and income. At the 2012 growth rate of 2.44, the population is expected to grow from 44 million in 2012 to about 77 million in 2030.[8] The population is also young, with 43 percent of the population under 15 years of age and only four percent over 65.[9]

About 75 percent of the population lives in the medium to high potential agricultural areas of the center and west of the country, where population density is six times the country's average. These areas comprise about 20 percent of the country's territory. The most food insecure parts of the country are in the Arid and Semi-Arid Lands (ASALs), which cover the vast majority of the country's land area but are home to only one quarter of the population, due to less economic opportunity and remoteness. Despite the potential for livestock production, these areas have the highest incidence of poverty (about 65 percent), along with very low access to basic social services, such as infrastructure and education facilities.

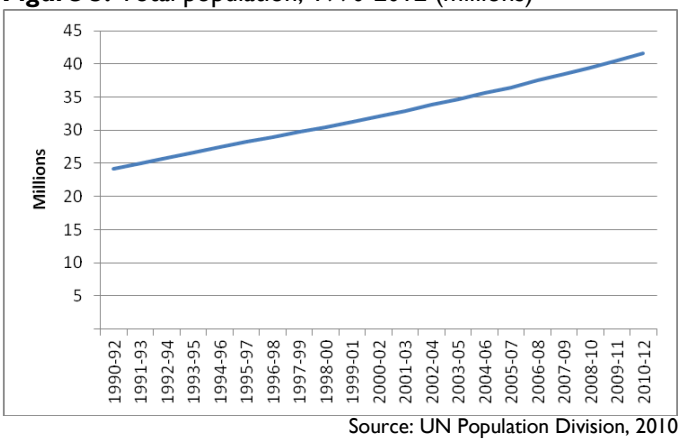
Figure 2. Political map of Kenya

Source: Geology. com

Although 70 percent of the population lives in rural areas, the country is urbanizing at a pace faster than the population growth rate. Kenya's urban population has grown at 5 percent per year over the last decade, compared to an average of 2.3 percent for sub-Saharan Africa (Figure 3). Today, 30 percent of the population lives in cities, compared to 7 percent in 1960. Most of Kenya's future population growth is expected to be urban: while total population will double by 2045, the urban population will more than quadruple.[10] By 2033 the country will reach a "spatial tipping point," when half of Kenya will reside in urban areas.[11]

Food insecurity in Kenya is typically seen as a rural issue, but urban dwellers are an important share of the food insecure. An estimated 40 percent of the urban population resides in slums, with low and variable sources of income. Unplanned settlements are cropping up without the corresponding services to meet basic food and non-food needs. Almost half have no access to safe drinking water and sanitation coverage is very poor.[12] In the future, growth of urban centers may benefit the economy, leading to decreased poverty rates and greater economic opportunities, but only if critical investments in urban infrastructure are made.

Figure 3. Total population, 1990-2012 (millions)

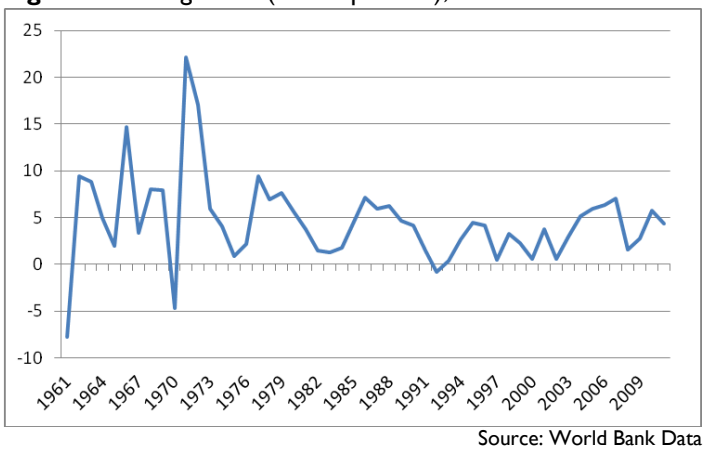


Source: UN Population Division, 2010

POLITICAL AND ECONOMIC CONTEXT

Economic growth over the last 30 years has failed to keep pace with population growth. Decades of mostly flat economic performance (Figure 4), along with rapid population growth, have resulted in reduced income per capita and worsening unemployment.

Figure 4. GDP growth (annual percent), 1961-2012



Source: World Bank Data

Weak economic performance is attributed to a number of factors: heavy dependence on a few agricultural exports that are vulnerable to world price fluctuations, internal structural problems (e.g. weak institutions, deteriorating infrastructure), climate-related disruptions, income inequalities, governance issues, and corruption.[13,14] More recent declines in economic growth have been driven by domestic and external shocks, including post-election violence in 2007-2008, high food and fuel prices, severe drought in 2009, and the global financial crisis. [15]

Following widespread violence after 2007 elections, peaceful national voting took place in March 2013, with one of the highest turnouts in Kenyan history. The election was widely regarded as free and transparent, with only isolated incidences of violence. Kenya's fourth president, Uhuru Kenyatta, was the first elected under the new August 2010 constitution. As of late 2013, President Kenyatta faces trial at the International Criminal Court over the 2007 post-election violence.

The transition of power following the elections renewed business confidence and strengthened prospects for economic growth.[16] Macroeconomic management, the financial sector, and Information and Communications Technology (ICT) sectors remain very strong, but the port of Mombasa and agriculture are weak.[17] The economy remains vulnerable to external shocks such as low agricultural commodity prices and global recessions.

The country is undergoing a major political transition with the implementation of the new 2010 constitution. Among other provisions, the Constitution calls for the reorganization of local administrative units and decentralization of important functions and funds from the national government to 47 county governments. These changes are expected to dramatically expand local government power related to administration, provision of basic services, and data and information collection. Implementation of the new structure will be capital-intensive and likely to reduce financial outlays for development.

AGRO-CLIMATOLOGY CONTEXT

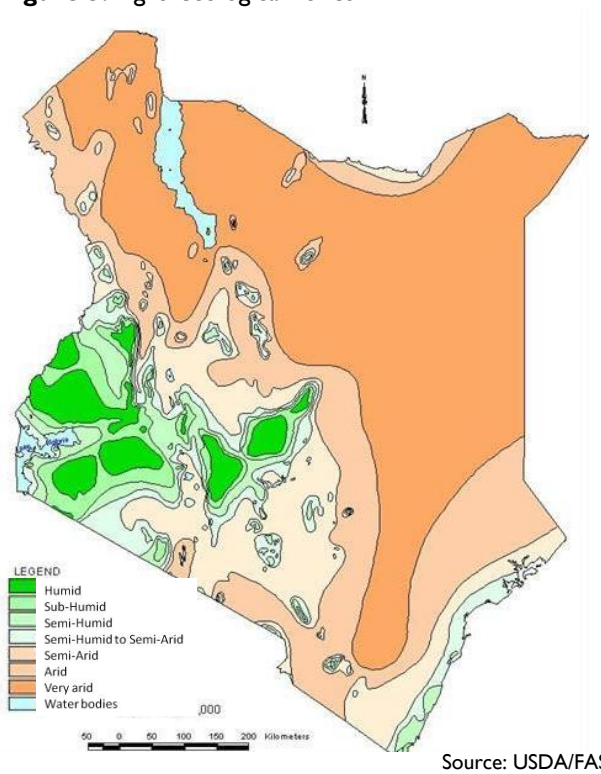
Agro-ecological zones

The country's agro-ecological zones (Figure 5) can be categorized in three broad zones, with some overlap: humid, semi-humid, and the ASALs (arid and semi-arid lands).

Humid regions (humid, sub-humid, and semi-humid): These include the highlands on both sides of the Great Rift Valley, the Rift Valley floor, and humid lowlands in coastal areas. Most agricultural production takes place in these areas, even though they are less than 20 percent of the country's land mass. Dertile soils and high rainfall totals make these areas one of the most productive agricultural regions in Africa. The major permanent rivers passing through the drier lowlands, such as the Tana River (Kenya's longest river), originate in the highlands.[18]

- *Agricultural potential:* Most of Kenya's agricultural output is grown in the highlands including tea, coffee, sisal, cotton, sugar, pyrethrum, maize, and wheat. Major maize-producing counties include Trans Nzoia, Uasin Gishu, Kericho, Bomet, Nakuru, and Nandi counties in Rift Valley Province, and Bungoma and Kakamega counties in Western Province. A narrow plain of land along the coast is suitable for crops such as fruits, nuts and cotton.

Figure 5. Agro-ecological zones



Source: USDA/FAS

KEY FEWS NET KENYA AGRO-CLIMATOLOGY RESOURCES

East Africa Seasonal Monitors

A Climate Trend Analysis of Kenya. August 2010. USGS and FEWS NET.

FEWS NET / National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center

U.S. Geological Survey (USGS) FEWS NET Data Portal

Semi-humid (Semi-humid and semi-humid to semi-arid): These areas are mostly middle elevation areas, with some lower elevation areas.

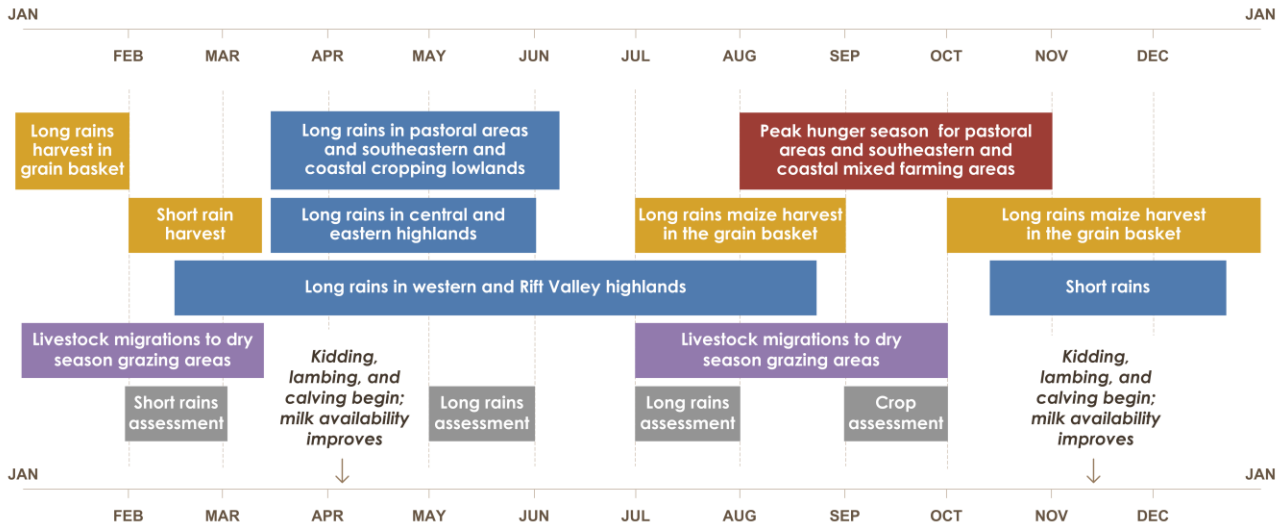
- *Agricultural potential:* These areas have lower productivity compared to the humid regions, and tend to offer a mix of crops and livestock production. Though crops are viable in some areas, production is highly variable and crop failure is frequent, given the variability and relatively low levels of rainfall. Maize is the predominant crop, accounting for close to 80 percent of the cropped land, despite agro-ecology more suited to drought-tolerant sorghum, millet, and pulses.

Arid and Semi-Arid Lands (semi-arid, arid, and very arid): About 80 percent of the country's landmass is considered part of the ASALs, which receive little rainfall (less than 500 millimeters (mm) annually) and are at mostly low elevations.

- *Agricultural potential:* These areas are mostly unsuitable for rainfed cultivation; less than 20 percent of the land is arable. The ASALs predominantly support pastoral activities, hosting more than 50 percent of the country's livestock.

Seasonal calendar and typical events

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



Source: FEWS NET

Rainfall and temperature patterns

Variations in terrain and altitude – from sea-level to over 5,000 meters – create contrasts in the country's climate. Kenya's rainfall correlates roughly to topography, with the highly elevated regions receiving over 1,100 mm annually and low plateaus receiving less than 300 mm. The climate ranges from hot and humid tropical along the coast to temperate in the interior and very dry in the east, north, northeast, and northwest. The climate is also influenced by the inter-tropical convergence zone. [For more on changing climate patterns, see the Stability section.]

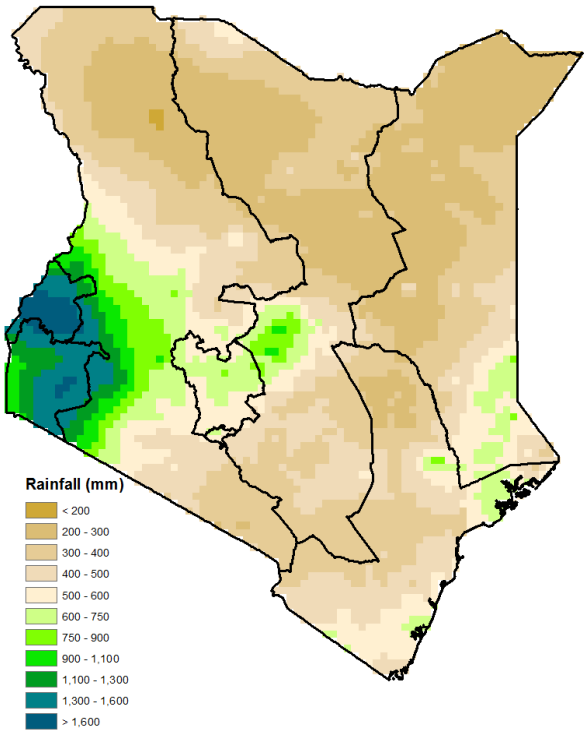
Mean temperatures in Kenya are consistent over the year, but considerable seasonal spatial variations exist, mostly related to altitude. The highlands tend to have the lowest temperatures, while the low-lying northern, northeastern and eastern regions are the hottest.[19] In the ASALs, daytime temperatures are high and mostly in the 30s°C, rising to around 40°C in some desert areas. At a national level, the hottest period of the year is from February to March, with average temperatures of 13°C to 28°C, The coldest period is from July to August, with average temperatures of 11°C to 23°C.

Kenya's rainfall is generally bimodal, with the two distinct seasons referred to as the long rains (March to May) and the short rains (October to December). Two dry seasons punctuate the rainy seasons. The long rains are typically considered more reliable in the high- and medium-potential areas while the short rains are more reliable in the southeast and parts of coastal marginal agriculture and pastoral livelihood zones in northern Kenya. This trend has been marked in recent years. Some western areas, including the Rift Valley and Western provinces, have a unimodal rainfall pattern. In these areas, the rainy season is nearly continuous throughout the year, though most rain falls between April and August.

While rainfall totals vary greatly, most parts of the country receive about 400-600 mm annually (Figure 6):

- Northern and northeastern areas: approximately 200-400 mm.
- South and southeastern areas: 300-500 mm.
- Some coastal areas: more than 500 mm.
- Western and central Kenya: more than 700 mm.

Figure 6. Average Annual Total Rainfall

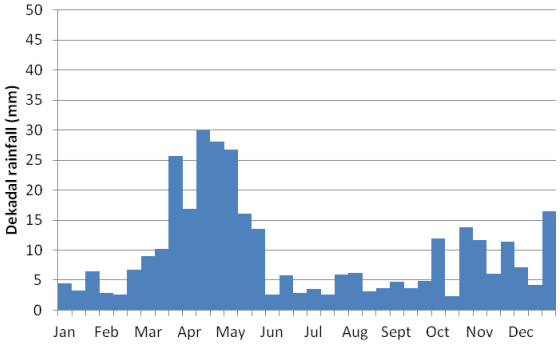


Source: FEWS NET / USGS

Timing of peak rainfall patterns varies geographically. In parts of central and western Kenya, rainfall occurs throughout the year. In coastal areas, the greatest amount of rain falls between April and July. In southeastern areas, maximum precipitation takes place between October and December. Around the Central Kenya highlands, maximum rainfall is experienced between December and May, while in the Rift Valley highlands, the heaviest rain is between March and September. In eastern and northeastern areas, maximum precipitation tends to be during the March to May period. Figures 7-10 below demonstrate the variation in seasonal rainfall patterns across the country.

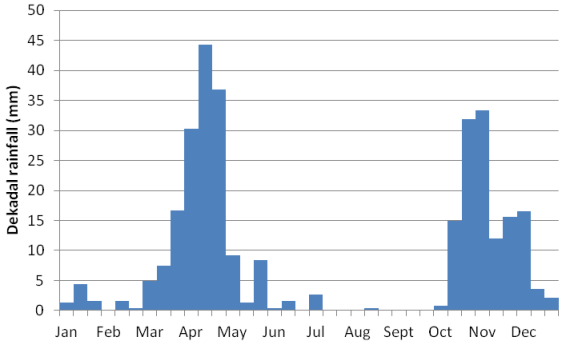
Given the geographic variation in intensity of seasonal rainfall, agricultural production differs regionally. In most parts of the country, the long rains are the principal production season, contributing about 70 percent of annual maize production. However, in the southeastern marginal agricultural areas and the coastal lowlands (to locate these areas, see the Livelihoods map), the long rains account for about 30 percent of annual maize output, while the short rains provide 70 percent of annual output.

Figure 7. Average 10-day rainfall, Turkana County (northwest)



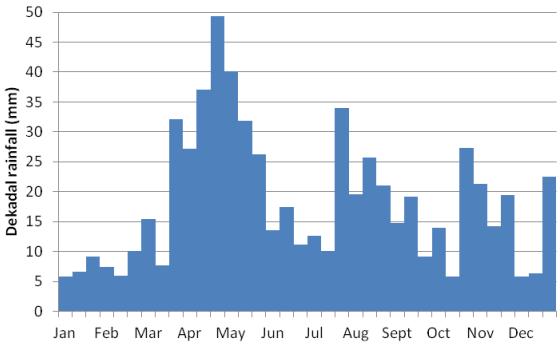
Source: FEWS NET/ USGS

Figure 8. Average 10-day rainfall, Wajir County (northeast)



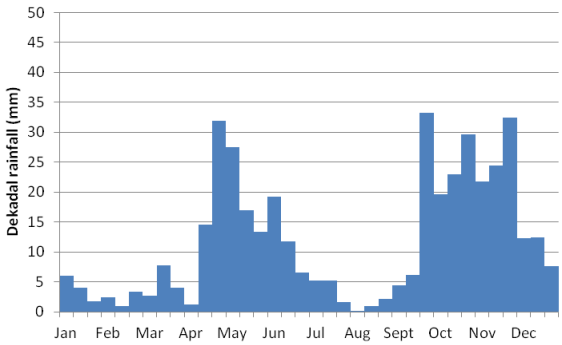
Source: FEWS NET/ USGS

Figure 9. Average 10-day rainfall, Baringo County (Rift Valley)



Source: FEWS NET/ USGS

Figure 10. Average 10-day rainfall, Malindi County (coast)



Source: FEWS NET/ USGS

Major Livelihood Zones

The 2010 Kenya Livelihoods Zoning Activity, conducted by FEWS NET, the U.N. Food and Agriculture Organization (FAO), the National Drought Management Authority (NDMA), and the U.N. World Food Program (WFP), defined 24 livelihood zones in the country (Kenya Livelihood Zone Map). These zones can be classified into six main categories: **pastoral; agropastoral; marginal agricultural; urban; high potential mixed farming; and high potential cereal and dairy (Figure 11).** Over 80 percent of Kenya's land area falls within the pastoralist, agropastoral, and marginal agricultural livelihood zones, which are typically the most food insecure zones. The sections below provide general information on these livelihood clusters.

KEY FEWS NET KENYA LIVELIHOODS RESOURCES

Kenya Livelihood Zone Map

Kenya Livelihood Zone Descriptions

Kenya Urban Comprehensive Food Security and Vulnerability Analysis (KU-CFSVA) and Nutrition Assessment. 2010. Jonathan Nzuma and Sophie Ochola. World Food Programme, FEWS NET, FAO, Government of Kenya.

PASTORAL LIVELIHOOD CLUSTER

The pastoral livelihood cluster, generally one of the most food insecure in the country, **mostly covers Turkana, Marsabit, and Moyale, Samburu, Mandera, Wajir, Garissa, Isiolo, Ijara, Tana River, Narok, and Kajiado counties.** These areas face highly variable rainfall, with frequent droughts and floods. The duration of droughts has become longer and more frequent over the past 10-15 years. Annual rainfall is very low and ranges between 250-400 mm.[20]

The economy is dominated by pastoralism (a mix of fully settled, semi-nomadic, and nomadic). Households are overwhelmingly dependent on livestock for income by selling live animals and milk. In the ASALs, the livestock sector accounts for more than 90 percent of employment and contributes more than 80 percent of income (Figure 12). The remaining 20 percent of income comes from crop production (3 percent) and off-farm sources (17 percent) such as formal and casual wage labor, small businesses, petty trading, firewood collection/charcoal production, gum collection, and remittances.[21] Poorer households also depend on gifts (zakat) and other forms of social support. The potential for diversification to alternative activities such as crop production or business is hampered by lack of reliable water, low technical skills and knowledge, and poor access to markets for inputs and outputs.[22]

Despite the natural potential for livestock production, these areas have the highest incidence of poverty (about 65 percent) and very low access to basic social services, such as infrastructure and education facilities.[23] Livestock production is constrained by various factors including poor market access, low prices for animals, high civil insecurity and risk of raids along trading routes, frequent shortages of drinking water for livestock and people, shortages of pasture and browse, high cost or restricted supplies of veterinary drugs, poor or low yielding animal genetic stock, and the prevalence of endemic livestock pests and diseases.[24]

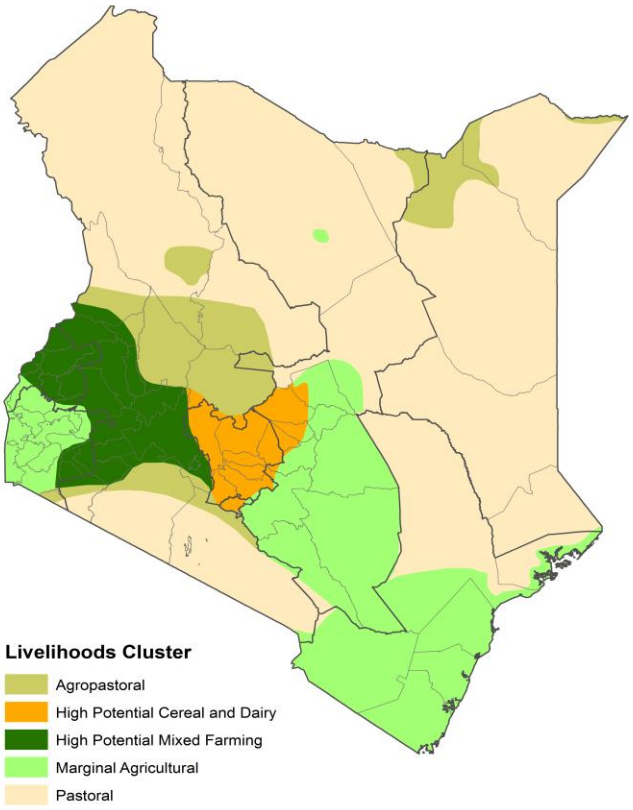
Market purchases account for most sources of food (65 percent), resulting in high vulnerability to price fluctuations. Other sources of food include gifts/food aid (14 percent), own crops and livestock products (12 percent), and hunting/gathering (9 percent) (Figure 13).[25] Markets are poorly connected, due to lack of market and transport infrastructure, impacting the ability to purchase cereals and other food and non-food commodities, and to trade livestock.

AGROPASTORAL LIVELIHOOD CLUSTER

Agropastoral livelihoods are found in parts of many counties of the country, including Baringo, Koibatek, West Pokot, Nyeri, Laikipia, Samburu, Trans Mara, Narok, Turkana, Isiolo, and Kajiado counties. Agropastoral areas share some similarities with pastoral areas, though a more mixed economy is present in agropastoral areas and households have greater income diversification. Households in these areas engage in rain-fed and irrigated agriculture, small-scale businesses based on dryland products, and conservation or tourism-related activities.[26] Other income generating activities include firewood collection, charcoal production, agricultural labor, petty trade, and land leasing. Poorer households also depend on gifts from better off households to make ends meet.[27]

Crop production is a viable option in agropastoral livelihood zones, though it is susceptible to rainfall variability, which ranges from 300-600 mm annually. Unreliable rainfall, combined with degraded soils, leads to frequent crop failure. On-farm crop production accounts for just over 30 percent of food needs, and food purchases provide about 60 percent of total household food needs. Livestock production accounts for over 50 percent of total household income, while crop production contributes about 30 percent (Figure 12).[28]

Figure 11. Livelihood Clusters



Source: FEWS NET

MARGINAL AGRICULTURAL LIVELIHOOD ZONES

The marginal agricultural livelihood is a predominant feature in the southeastern areas and coastal lowlands of the country, including Tharaka, Mbeere, Meru North, Makueni, Machakos, Mwingi, and Kitui counties in the southeast, and Taita Taveta, Malindi, Kilifi, Lamu, and Kwale counties in coastal areas. Maize is the main crop, accounting for close to 80 percent of the cropped land, in an area more suited to drought-tolerant sorghum, millets and green grams (mung beans). Agricultural production is marginal due to low use of inputs and low and poorly distributed rainfall, with drought tending to occur during the March-May long rains season. The October to December short rains season is normally more reliable, accounting for close to 70 percent of crop output, particularly in the southeastern lowlands.[29]

Income is derived from own crop production (about 40 percent), followed by livestock (30 percent) and off-farm activities (30 percent), including remittances. About 20 percent of household members migrate to neighboring high potential livelihood zones for labor opportunities in agriculture, tourism, or wage labor in urban or semi-urban areas.[30] While the marginal agricultural farm households rear livestock, the tropical livestock units (TLUs) normally range from three to five, which are insufficient to compensate for recurrent losses in crop output. Livestock production is also limited by low productive capacities of indigenous breeds that are nevertheless able to tolerate drought conditions.[31]

Most households produce more than half the maize consumed, as well as some sorghum, beans, and vegetables. Wild foods are also consumed, particularly during periods of stress. Livestock production provides a modest contribution to annual food needs. Market purchases make up the remainder and include the purchase of wheat, barley, bread, rice, beans and cooking oil.[32]

The southeastern marginal mixed farming zone is characterized by market gluts, especially during good seasons when virtually all households sell their harvest. Lack of proper storage capacity or alternative income sources compels even poor households with meager cereal harvests to sell during these periods, often at low prices, only to repurchase months later at more than double the price. [33]

URBAN LIVELIHOOD CLUSTER

Due to population growth and relative lack of development in rural areas, migration to urban areas is expected to increase considerably in the coming decades. The urban population has grown from about 8 percent of the population in 2000 to approximately 30 percent today.[34] High rates of urbanization have increased the population dependent on markets for food. At the same time, food price volatility is a concern while nominal wages remain relatively constant and real wages decline, worsening purchasing power and food access. The strain on the existing urban infrastructure, particularly on housing, transportation, educational and health facilities, and employment, has created new challenges.

Urban food insecurity is increasing, even in traditionally food secure regions, due to the expansion of urban centers. The continued high rate of urbanization has led to increased urban poverty and inadequate access to services. Urban areas have an overall poverty incidence of 49 percent and chronic food insecurity of 38 percent.[35] Information on the scope and characteristic of urban food insecurity and malnutrition is very limited.

Figure 12. Percent of income among different livelihood clusters

Livelihood cluster	Crop Production	Livestock Production	Off-farm Sources
Pastoral	3	81	17
Agropastoral	31	50	19
Marginal agricultural	41	30	29
High potential	50	31	19
High potential	60	28	12
Urban (casual wage labor/ petty	9	10	81

Figure 13. Percent of food among different livelihood clusters

Livelihood cluster	Own farm produce	Market purchase	Hunting and gathering	Gifts / food aid
Pastoral	12	65	9	14
Agropastoral	25	60	3	12
Marginal agricultural	30	59	1	10
High potential	42	56	1	1
High potential	65	34	0	1
Urban (casual wage labor/ petty	6	91	1	1

Source: Kenya Livelihood Database (2008)

An estimated 40 percent of the urban population resides in slums, with low and highly variable sources of income. Almost half have no access to safe drinking water, while sanitation coverage is less than 40 percent. This issue is particularly severe in Nairobi, where around 2 million people live in slums. They comprise more than half the capital's population yet occupy only 5 percent of the city's residential areas, and 1 percent of all land in the city.[36]

According to a Concern report in 2011, low-income urban populations in Nairobi suffer from relatively poor sanitation and health, with high rates of HIV, diarrheal diseases, and respiratory problems.[37] Although urban households benefit from a wider range of goods, services and jobs than available in most rural areas, this livelihood zone is the most exposed to price, production, and labor shocks, often without the extensive informal support systems available to rural populations. Low levels of food consumption, poor dietary diversity, and minimal education have negative implications for future productivity and reliance on external support.[38]

HIGH POTENTIAL MIXED FARMING LIVELIHOOD ZONES

Most (75 percent) of the country's population live within the medium to high potential agricultural areas. This zone, located within the central, eastern, western and Nyanza highlands, receives reliable rainfall ranging from 1,350-1,700 mm per year. Households within this densely populated livelihood cluster are generally food secure.

Food and income sources, highly diversified in this zone, include food, cash crop, and livestock production. Off-farm activities are a critical income source, as many of the high potential areas are adjacent to urban centers. Household income is derived from on-farm crop production (50 percent); livestock production (30 percent), and off-farm income (20 percent). In terms of food sources, own crop production meets about 40 percent of needs, with the remainder mostly coming from the market. [39]

Markets in the high potential mixed farming livelihood are highly integrated within the zone and with key urban centers, largely due to a fairly sophisticated trade infrastructure. Food price fluctuations are fairly low during normal years compared to most other livelihood zones. [40]

HIGH POTENTIAL CEREAL AND DAIRY LIVELIHOOD ZONES

The high potential cereal and dairy livelihood zone is mostly located in the highlands of the Rift Valley, covering Uasin Gishu, Trans Nzoia, Nandi, Kericho, Bungoma, Nakuru and Bomet counties. Households are mostly food secure in this livelihood zone, commonly referred to as Kenya's "grain basket." Close to 50 percent of total national maize output (and 60 percent of long-rains output) comes from these areas. Total annual rainfall ranges between 1,200-1,500 mm.[41]

Production in these counties largely determines domestic maize availability and prices. Maize is the predominant crop grown in land holdings that average between 2-15 hectares. High-yielding milking herds are the main livestock reared. Close to 60 percent of household income is derived from crop production, 30 percent from livestock, and about 10 percent from off-farm activities. More than 70 percent of household food needs are met by on-farm production. Purchases account for the remainder of food needs.[42]




ADDITIONAL RESOURCES

Kenya Livelihood Zone Descriptions. 2010. USAID and FEWS NET.

The Impact of Rising Food Prices on Disparate Livelihood Groups in Kenya. July 2008. The Kenya Food Security Steering Group (KFSSG).

Kenya Urban Comprehensive Food Security & Vulnerability Analysis (KU-CFSVA) and Nutrition Assessment (2010). Jonathan Nzuma and Sophie Ochola. World Food Programme, FEWS NET, FAO, Government of Kenya.

Evaluation of Concern Kenya's Korogocho Emergency and Food Security Cash Transfer Initiative. Ian MacAuslan and Lilly Schofield. Concern Worldwide. January 2011.

Vision 2030 Development Strategy for Northern Kenya and the Arid Lands. March 2012. Government of the Republic of Kenya.

Availability

KEY FACTS

- Although agriculture is the mainstay of the economy, Kenya has a structural production deficit in several staples, including maize. Deficits are filled through formal and informal imports from regional and international markets.
- About one-half of Kenya's total agricultural output is subsistence production.
- Maize is the strongly preferred main staple food, and also the most common crop grown by rural poor households. Other major food crops include beans, tubers (potatoes and cassava), wheat, rice, cassava, sorghum, and millet.
- Imports of cereals (mostly maize, wheat, and rice) have steadily increased in recent years, driven primarily by urbanization and population growth, and changing consumer preferences. About 80 percent of wheat and rice are imported even though Kenya is a major producer of rice and wheat compared to other countries in the East Africa region. The high level of imports makes the country vulnerable to the impacts of price fluctuations.
- Despite recent increases in maize yields, agricultural development is hindered by numerous challenges including vulnerability to weather-related shocks (droughts and floods), limited access to inputs by some farmers, pests and disease, complex land use policies, and lack of credit. In addition, unsustainable land management practices have degraded natural resources.
- Livestock production, most of which is concentrated in the Arid and Semi-Arid Lands (ASALs), plays a major role in food security and the country's economy, contributing about 3.3 percent of total GDP, and one quarter of national agricultural production. However, Kenya remains a livestock importer as demand outstrips production.

NATIONAL FOOD SUPPLY

Domestic agricultural production

Agriculture is the mainstay of the Kenyan economy, contributing 25 percent directly to GDP, and another 25 percent indirectly, despite the fact that only about 20 percent of the total land area is arable. The sector accounts for 65 percent of Kenya's formal exports, with high-valued exports such as fruits, vegetables, and flowers, along with coffee and tea, as the backbone of agricultural exports. Agriculture employs 75 percent of the work force, including 15 percent in formal employment and more than 60 percent in informal employment in rural areas.

Agricultural sector performance has declined over the last two decades, from 4.7 percent following independence to only 2 percent in the 1990s, and negative growth in 2000 and 2008. Although maize yields have increased in recent years, growth in the agricultural sector was hurt by factors including droughts and floods, decreased area under irrigation, and increased costs of inputs and labor.

Maize is the strongly preferred main staple food, and domestic maize production accounts for about 90 percent of consumption in the country. Other major food crops (and also main sources of food) include beans, tubers (potatoes and cassava), wheat, rice, cassava, sorghum, and millet.

About 75 percent of overall maize production is carried out by smallholder farmers, and nearly all smallholders grow maize. The remaining 25 percent of production is grown by medium and large-scale farmers, most of whom are located in the Rift Valley.[43]

Maize production has fluctuated over the last decade (Figure 14) but demand has steadily increased due to the high rate of population growth. Average maize production is about 2.8 million MT annually. Rice production has increased over the last decade, with metric tonnage nearly tripling (Figure 15). Rice is becoming an important staple in urban areas along the coast.[44] Average rice production is about 80,000 MT annually, less than a week's national consumption of maize.

Maize yields per acre have shown consistent improvements in recent years. Findings from the Ministry of Agriculture and panel survey data from eight agro-ecological zones over a 10-year period (covering the 1996/1997, 1999/2000, 2003/2004 and 2006/2007 cropping years) show that overall mean maize productivity grew from 6.6 bags (90 kg bags) per acre in 1997 to 9.3 in 2007.[45] The rising maize yield at a national level is attributed to increased usage of fertilizer and improved seeds, and adoption of modern farming techniques and technologies.[46] However, over the same period, per capita land owned and per capita cultivated land declined, due to population pressures and land fragmentation in many areas of the country.[47] Despite the increased maize yields, overall agricultural sector performance has declined over the

KEY FEWS NET KENYA MARKETS AND TRADE RESOURCES

Review of Trade and Markets Relevant to Food Security in the Greater Horn of Africa. June 2007. FEWS NET.

Monthly Reporting
FEWS NET Kenya Price Bulletins
FEWS NET Price Watch

FEWS NET Production and Trade flow maps
Maize Season 1 Production and Trade Flow Map
Maize Season 2 Production and Trade Flow Map
Beans Season 1 Production and Trade Flow Map
Beans Season 2 Production and Trade Flow Map

Cross-Border Trade Reports
FEWS NET/FAO/WFP Cross-Border Trade Bulletins

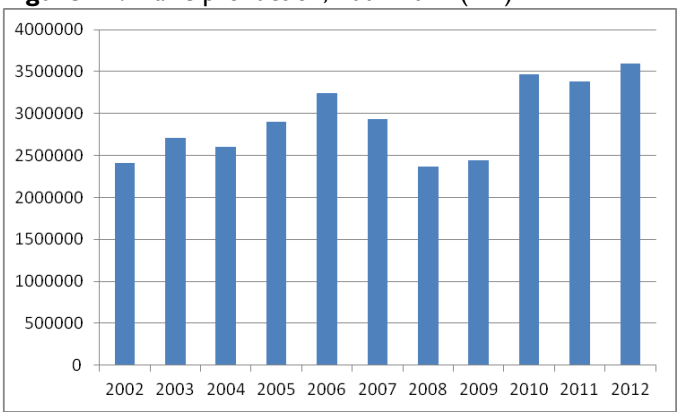
Cross-Border Trade Profiles
FEWS NET East Africa Cross-Border Trade Profiles

last couple decades, due to factors including the impacts of drought or flooding, area under irrigation, and costs of inputs and labor.

Constraints and opportunities in agricultural production

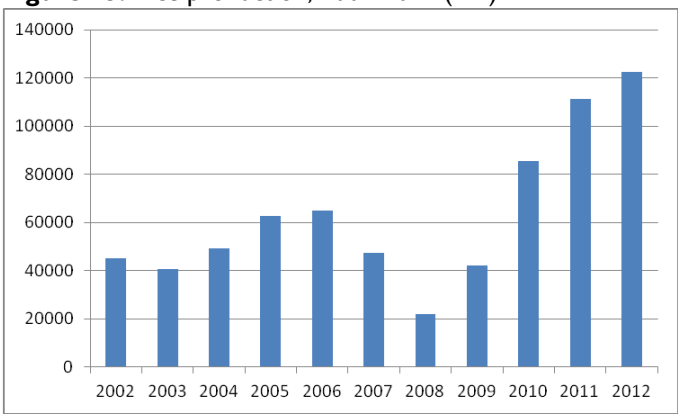
Challenges to increasing agricultural production include pests and disease (e.g., Maize Lethal Necrosis and Lager Grain Borer), complex land use policies, declining soil fertility (partly due to heavy emphasis on maize production), poor access to inputs, and inadequate access to credit. As agricultural production systems are largely rainfed, they are highly vulnerable to droughts and floods. Use of drought-tolerant technologies is limited.

Figure 14. Maize production, 2002-2012 (MT)



Source: FAO Stat

Figure 15. Rice production, 2002-2012 (MT)



Source: FAO Stat

Untapped agricultural potential

In high potential agricultural production areas, irrigation and water management techniques are underutilized. Kenya has the potential to irrigate approximately 1.3 million hectares (ha), but only about 100,000 ha have been developed to date. As of October 2013, plans were in place to irrigate about 1 million hectares. Irrigation could increase crop yields by between 100 and 400 percent, while also reducing pressures on land and forest destruction. Irrigation is low due to inadequate funding, a weak regulatory and institutional framework, poor knowledge of techniques, inadequate research on technologies, and weak land tenure systems.[48]

Post-Harvest Losses

Post-harvest losses are high due to inadequate storage and drying facilities at the farm level. Most post-harvest losses occur in highly food insecure marginal areas. Key producers in the grain basket have access to the National Cereal Production Board's drying and storage facilities. On-farm storage of maize accounts for 80 percent of all harvested maize in Kenya, and approximately 30 percent of all stored produce is lost due to spoilage. Major losses are from insect pests, rodents and pathogens. The Lager Grain Borer and aflatoxin (a toxic mold) can cause localized losses as high as 100 percent.[49]

Declining farm size and related land tenure issues

As in most parts of the developing world, access to land in Kenya is essential to the livelihoods of a majority of the population, predominantly in the ASALs, and most households have no legal title for their land. Prior to the enactment of the 2009 National Land Policy, the most recent National Land Policy was passed at Independence in 1963. The lack of national policy, along with the existence of many incompatible land laws, has resulted in a complex land management and administration system.[50]

Insecure tenure systems have led to low investment in land improvement and productivity in some parts of the country. Customary land holding systems continue to exist, but are not integrated into the formal system. Sources of tenure insecurity include ethnic conflicts over land between neighboring communities, expropriation by the state or local government, and land grabbing.[51] The 2009 National Land Policy is intended to address some of the issues presented by past land administration, particularly incompatibility of the current legal framework.

Ongoing land subdivision and shrinking holdings have accelerated the movement of households from medium and high-potential areas to less productive land in the marginal agricultural areas.[52] Land holdings range between one to five acres

per household. In addition, many large state farms that used to produce seed and breeding stock have been sub-divided and transferred to private ownership.[53] At present, the largest consolidated quantities of land are owned by national and foreign corporations.

Economic and demographic changes in recent years have led to changes in land use, with important repercussions on food production and availability. As a result of rising urbanization, arable land and livestock territory is increasingly converted into settlement areas. Consequences include environmental destruction and increased human-wildlife conflict.[54]

Declining soil fertility

Soil loss through erosion is estimated to be 10 times greater than the rate of natural formation. Most of the decline in soil fertility is attributed to long periods of maize cropping. Unsustainable land management practices in many areas have degraded natural resources, causing a loss of bio-diversity and traditional sources of food and income.[55]

Livestock production

Livestock production, most of which is concentrated in the ASALs , plays a major role in food security and the country's economy, contributing about 3.3 percent of total GDP, and one quarter of total national agricultural production. In the ASALs, the livestock sector accounts for 90 percent of employment and more than 95 percent of household income. It is dominated by small producers.[56]

Milk is the country's most important livestock product, providing about 70 percent of the total gross value of livestock's contribution to the agricultural sector.[57] Up until the mid-1990s, Kenya was a net exporter of dairy products, but since the late 1990s, imports of powdered milk have grown while exports have declined.[58] Annual red meat production is estimated at approximately 360,000 MT.[59]

Constraints on livestock production include poor and uneven access to market information, the high cost of veterinary services and other inputs, poor infrastructure (roads, electricity) for transport and storage, inadequate milk collection and marketing, lack of short and medium-term credit, lack of quality animal husbandry and farming practices among farmers, and adequate research, extension and training services to support the sector.

Fisheries and aquaculture

Fishing is an important food and income source for households in many areas, particularly the coastal areas and around Lake Victoria and Lake Turkana. In the Lake Victoria fishing livelihood zone, fishing provides about half of all income for households. Fish ponds have proliferated in many parts of the country. It is estimated that the volume of fish output in Central and Eastern provinces compares with that from Lake Victoria. The fishing sector is constrained by factors including poor extension services and infrastructure (underdeveloped landing beaches, poor road infrastructure and limited fish processing capacities), inadequate fishing technologies, lack of access to credit, pollution, and lack of entrepreneurial skills. Low stocks also limit the potential contribution of fisheries to livelihoods.[60]

Despite the potential to expand the fishing sector, concerns persist over potential ecological disruption and endangerment of local fish species due to overfishing, pollution, and the use of unauthorized fishing equipment. Lake Victoria's environmental resources, for example, have greatly suffered from decades of overfishing, industrial pollution, erosion, and other factors.

STAPLE FOOD IMPORTS

Although agriculture is the mainstay of the economy, Kenya has a structural production deficit of several staples, including maize. Demand for maize outstrips production (Figure 16), as demonstrated by food balance sheets showing consistent imports over the last decade. National maize production ranges between 24 and 36 million bags per annum, which generally does not keep pace with domestic consumption (e.g. in 2008, consumption was greater than 36 million bags). Over the last three decades, per capita consumption of maize has increased by three percent per annum. Most maize imports are from Uganda and Tanzania, and account for about 5-10 percent of the total internal consumption requirement. Additional imports are from Ethiopia and Rwanda.

Maize imports as a percentage of national consumption is around 9 percent, including both formal and informal imports (formal imports are about 3.5 percent). The self-sufficiency ratio (the ratio of food consumed that is supplied by domestic production) is around 92 percent. In the 1970s, production was such that Kenya was able to export maize. However, with the shift in agricultural policy from self-sufficiency to export orientation, as well as population growth, dependence on imports has increased.[61]

Maize imports have fluctuated over the last decade (Figure 17). Imports in 2009 were estimated at 1.6 million MT, following a series of events that severely strained Kenya's ability to provide affordable maize and maize meal. Civil disturbances and violent clashes following the December 2007 disputed elections resulted in the deaths of hundreds of people, and the destruction of 0.3 million tons of maize. Instability and fighting also caused a 20 percent reduction in the total area planted to maize during the long rains in 2008. This was followed by a drought that affected the next two harvests. As a result, total production fell 19 percent in 2008 and did not recover to normal levels until 2010, according to official estimates.

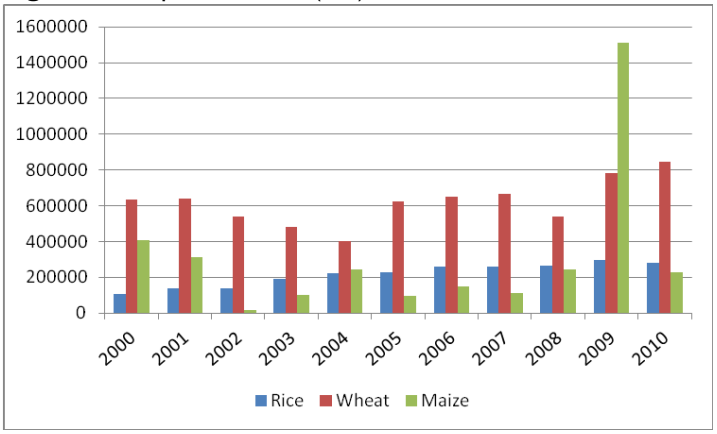
Figure 16. Cereal Supply/Demand Balance Sheet for the 2012/2013 Marketing Year (October/September) (thousand tonnes)

	Wheat	Rice	Coarse grains	Total
Average production, incl. paddy rice (2006/2007-2011/2012)	332	71	3164	3567
Average imports (2006/7-2011/2012	998	309	771	2078
2012/13 Domestic Availability	**300**	**84**	**3905**	**4289**
2012 Production (incl. paddy rice)	300	122	3897	4319
2012/13 Utilization	**1500**	**404**	**4375**	**6280**
Food use	1210	370	3677	5258
Non-food use	260	24	698	982
2012/2013 Import requirements	**1200**	**320**	**470**	**1990**
Anticipated commercial imports	1100	315	418	1833
Food aid needs	100	5	52	157

Source: FAO/GIEWS

Wheat and rice are deficit commodities that are always imported to meet demand requirements. Wheat imports have steadily increased in recent years (Figure 17), due to urbanization, population growth, and changing consumer preferences.[62] About 80 percent of wheat and rice are imported; however Kenya is a major producer of rice and wheat compared to other countries in the East Africa region. Rice imports are also growing steadily in response to the rising gap between national staple food production and consumption requirements. The high and increasing level of imports makes the country vulnerable to the impacts of regional and global price fluctuations.[63]

Figure 17. Import volumes (MT), 2000-2010



Source: FAO Stat

FOOD RESERVES

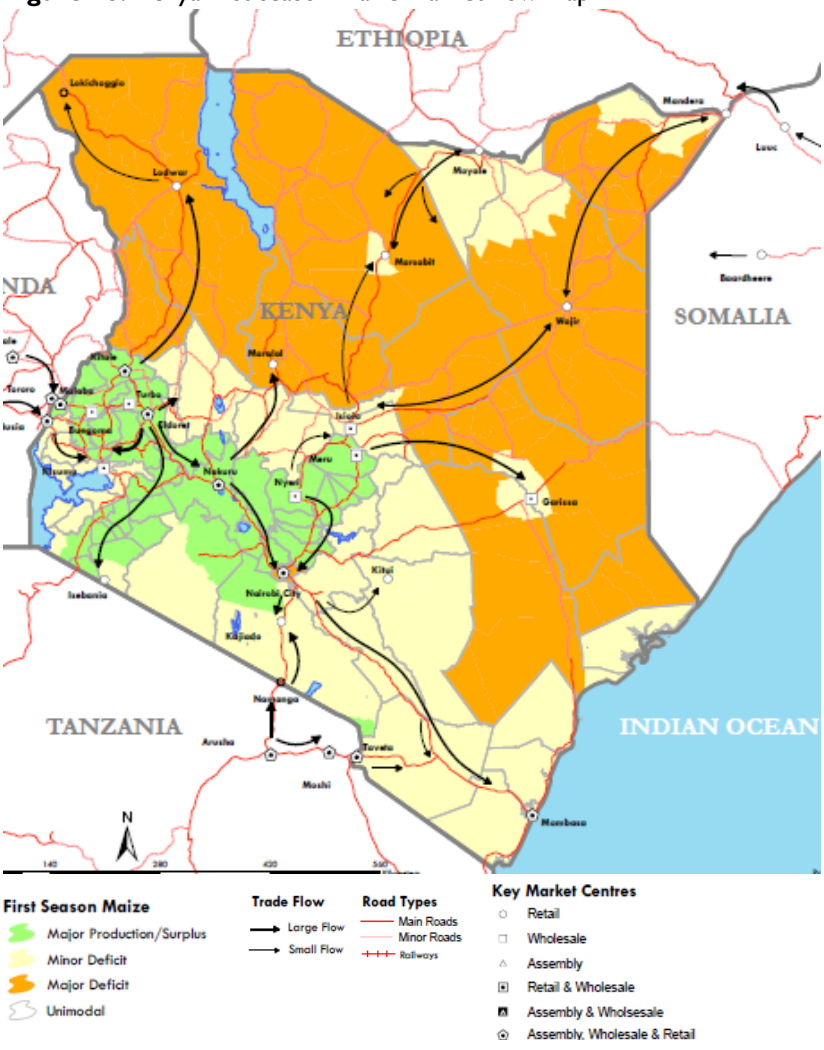
The National Cereal Production Board (NCPB) operates the Strategic Grain Reserve (SGR), whose purpose is to protect farmers from the effects of over-supply during good years and to protect against food deficits in poor years. The SGR has a grain storage capacity of 28 million bags of maize, but remains largely under-utilized with the current use of about 13 percent. [64] The SGR is mandated to maintain a physical stock of 4 million bags of maize and a cash equivalent of a similar volume. Cash reserves allow the Government to purchase commodities in well-functioning markets during crisis periods.[65] (See the 'Access – Agricultural Policy' section for additional information on the NCPB.)

NATIONAL FOOD SYSTEM

Cereal markets

Key surplus-producing agricultural markets are located in the western and central regions of the country, particularly in the highlands of the Rift Valley, covering Uasin Gishu, Trans Nzoia, Nandi, Kericho, Bungoma, Nakuru and Bomet counties (Figure 18, and additional FEWS NET Kenya production and trade flow maps here). This area is commonly referred to as Kenya's "grain basket," and produces close to 50 percent of total national maize output.

Figure 18. Kenya first season maize market flow map



Source: FEWS NET

Livestock markets

Unlike neighboring countries in the Horn of Africa, Kenya is a livestock importer rather than exporter.[66] Supply of red meat from domestic cattle, shoats, and camels falls short of demand, and about 20 percent of the nation's beef is traditionally supplied by cattle walked across Kenya's borders from Somalia, Tanzania, Uganda, Sudan, and Ethiopia. More than 80 percent of the beef consumed in Kenya is produced by pastoralists, either domestically or in bordering countries.[67]

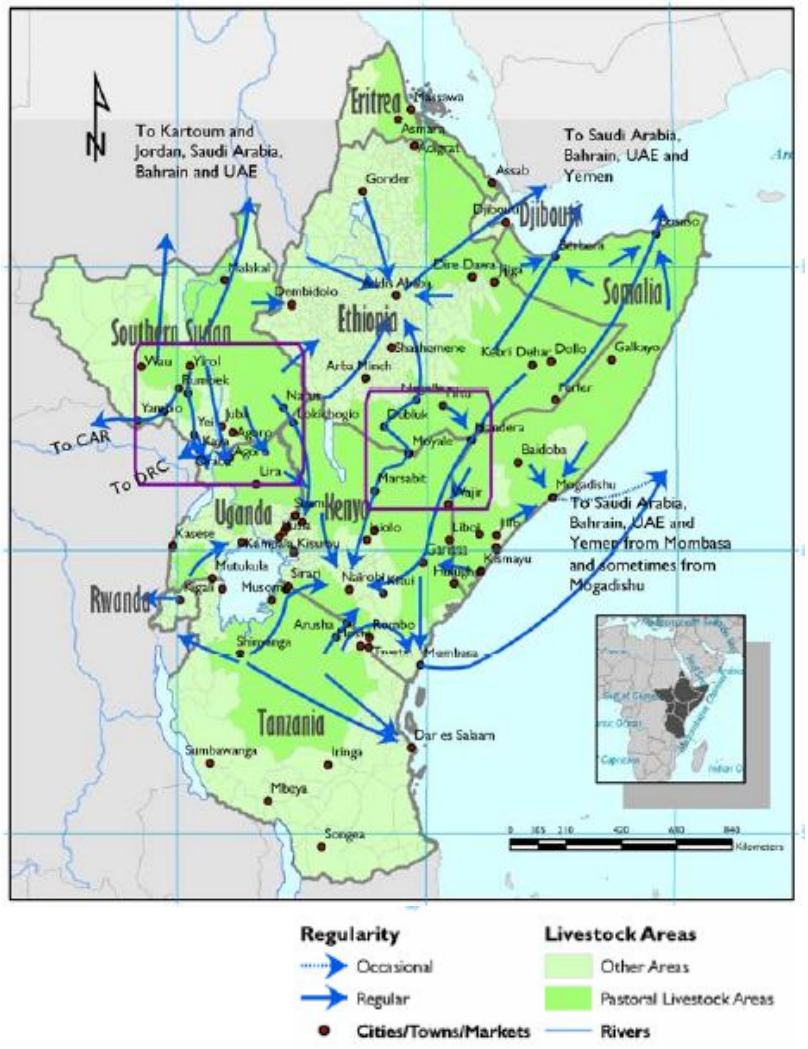
Livestock trade is a critical source of livelihoods for pastoral populations in the borderlands in Somalia, Ethiopia and Kenya, and has experienced phenomenal growth in the past couple decades.[68] Livestock supply in Kenya results from a complex set of market arrangements and channels between the three countries. Clan relations are an important aspect of livestock trade in the borderlands of the three countries, and have helped to facilitate market transactions.[69]

Procurement begins in remote villages of southern Somalia and southeastern Ethiopia, where "bush traders" procure animals from pastoral households.[70] Although livestock from Ethiopia are an important source, most livestock in Kenya are imported from Somalia.[71] These animals are brought to primary markets, such as Mandera, El-Waq and Wajir. Garissa in northeastern Kenya is a large secondary market that hosts animals from both Ethiopian and Somali primary markets. While livestock are usually trekked from village markets to primary and secondary markets, traders truck their animals to the terminal markets of Nairobi and Mombasa.[72] Other major livestock marketing hubs in Kenya include Moyale, Habaswein, and Namanga (Figure 19). Local markets throughout pastoral areas support livestock and milk trade. The southern part of Ethiopia's Somali Region is linked to Kenyan livestock markets such as Mandera, Wajir and Garissa, while the northern part is linked to the Somali and central Ethiopian markets. The dominant route in this trade is the Filtu/Dolo–Suftu/ Mandera route.[73]

The Somalia-Kenya and Ethiopia-Kenya borderlands are important for regional economic integration because they connect prime livestock-producing areas of southern Somalia and southeastern Ethiopia to the region's largest livestock markets, including Garissa, Nairobi, and Mombasa.[74] Livestock trade continues to flourish in these areas despite frequent ethnic conflict, human and livestock movement controls, and border closures. Cross-border movements are very difficult to control in this region, for a number of administrative, logical, political, and social reasons. [75]

There is great potential for regional integration through increased economic relationships and political stability in the Somalia-Kenya-Ethiopia borderlands.[76] However, numerous challenges remain: escalating market taxes, regulations on movement, difficulties obtaining livestock permits, poor veterinary services, and weak physical and administrative structures. [77]

Figure 19. Greater Horn of Africa main livestock trading routes



Source: *FEWS NET*

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Growth and Food Security Through Increased Agricultural Productivity and Trade: A Medium-Term Investment Plan for Kenya's Agricultural Sector: 2010-2015

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Livestock Trade in the Kenyan, Somali and Ethiopian Borderlands. Hussein A. Mahmoud. Chatham House Briefing Paper. Africa Programme. September 2010. AFP BP 2010/02

Stakeholder Perceptions of Agricultural Land Policies in Kenya. July 2000. H.C.K. Kinyanjui, S.N. Obanyi, D.D. Onduru, L.N. Gachimbi, S.M. Nandwa. IIED.

Tegemeo Agricultural Policy Research and Analysis (TAPRA) Project, Kenya

Access

KEY FACTS

- About 40 percent of the country's population of 44 million lives below the national poverty line.
- Most of the poor are net buyers of food, especially the urban poor, who are entirely net buyers. Given the high dependence on the market for food, most households are vulnerable to price shocks.
- Poor households are particularly vulnerable to maize shocks, as they spend the greatest portion of their food expenditures (about 20 percent) on maize.
- High rates of unemployment persist despite increasing levels of employment, particularly within the informal sector. While nominal earnings have increased, real earnings have declined due to inflation, thus reducing household purchasing power and access to food.
- Domestic staple food prices have been volatile and above average in recent years, due to high inflation, fuel prices, and other factors.
- Physical access to markets is constrained by poor infrastructure, particularly in the ASALs, as well as conflict in some parts of the country.

SOCIO-ECONOMIC ACCESS

Poverty data

Kenya's poverty level is estimated to have declined from 47 percent in 2005, to between 34 to 42 percent in 2013 (imprecise estimates due to the fact that the last household survey was conducted in 2005-06).[*] According to 2009 census data, those in rural areas are 84 percent of the total poor population, and 71 percent of the total extreme poor population.

[*] These figures are based on the following definition of the poverty rate: In 2005, the cost of basic food and non-food needs per month for one adult was established at KES 1,562 for rural areas and KES 2,913 for urban areas. The poverty rate or

The spatial distribution of poverty rates varies markedly across Kenya. Most of the areas with the highest percentage of the population below the poverty line are located in the ASALs .[78] However, since these areas are sparsely populated, the absolute numbers of poor people are highest in western and central areas of the country.[79]

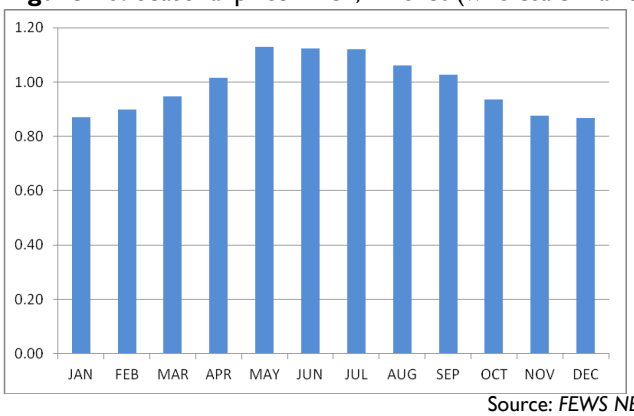
Prices and impact on household purchasing power

Prices of staple agricultural food products and livestock typically fluctuate widely throughout the year, with variations depending on local and regional market availability. In high producing areas of the country (e.g., Eldoret market, Figure 20), prices tend to peak in the May-July period, before the main long rains harvest, which takes place from approximately August to January in the grain basket areas. Prices tend to decline in the post-harvest period. Prices show less of a seasonal pattern in the southeastern marginal agricultural areas (e.g., Kitui market, Figure 21), and tend to be lowest following the short rains harvest (February-March), the major harvest in those areas. In pastoral areas (Figure 22), prices are highest during the July-November period.

Marginal agricultural areas are characterized by market gluts, especially during good seasons when virtually all households sell their harvest. Wholesalers and "middlemen" tend to benefit from the seasonal nature of production since small-scale producers have difficulty reaching terminal markets.[80] A combination of a poor household storage infrastructure; highly variable market integration and a desire to meet other financial obligations has often resulted in farmers selling their produce soon after harvest at floor prices, only to purchase commodities three months later at multiples of the original selling price.[81]

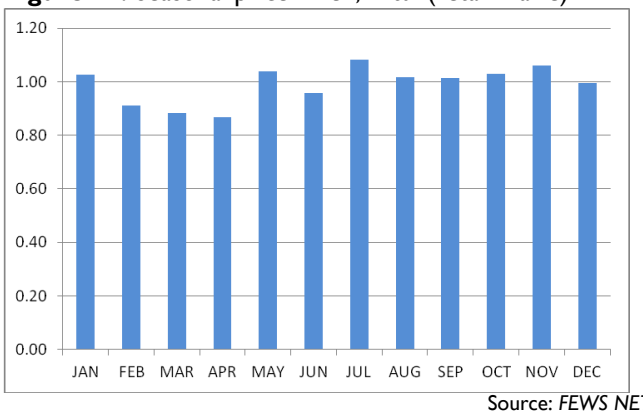
In the last few years, domestic staple food prices in Kenya have been volatile and high – among the highest in eastern Africa. The consumer food price index (an index of the price of food in the country relative to the price of the generic consumption basket) has steadily increased since 2002 (Figure 23). Price behavior in Kenya is influenced by a number of factors:

Figure 20. Seasonal price index, Eldoret (wholesale maize)



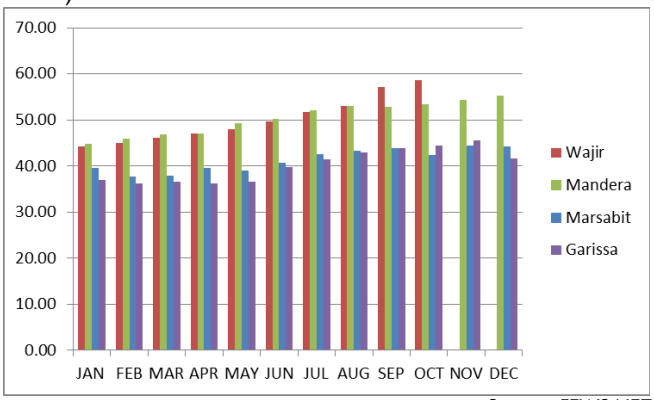
Source: *FEWS NET*

Figure 21. Seasonal price index, Kitui (retail maize)



Source: *FEWS NET*

Figure 22. Seasonal price index, pastoral markets (retail maize)



Source: *FEWS NET*

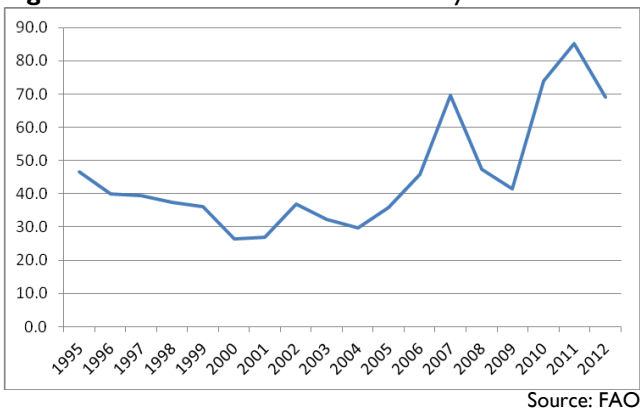
- *Market liberalization policies:* Increasing prices are due, in part, to market liberalization policies (as discussed earlier) that removed government controls and price support programs, resulting in higher prices.

headcount refers to people living in households with per adult equivalent expenditures below these amounts. Adjusting for increases in prices since 2005 using the Consumer Price Index (CPI), the approximate value of the rural poverty line in 2012 was KES 2,900 per month for rural areas and KES 5,400 per month for urban areas. Kenya's poverty lines expressed in 2005 international dollars – the unit of measure used by the global 1.25 "dollar per day" measure of poverty—were approximately 1.57 dollars per day per person for rural areas, and 2.9 dollars per day per person for urban areas.

- *Rising dependence on staple food imports:* Increasing volumes of wheat, rice, and maize imports in Kenya increase the vulnerability to regional and global food price fluctuations.

- *High producer price policy*: Kenya's price policies benefit the small but influential group larger-scale producers that are net sellers on a year-to-year basis (about 10 percent of farmers). Because 70 percent of Kenya's maize that is sold/marketed is estimated to be produced by roughly one percent of the farm population (mainly large farmers in the North Rift Valley), and because 65 percent of the rural small-scale farm families are typically net buyers of maize,[82] policies that raise maize price levels benefit only a very small percentage of farmers. The state-owned National Cereals Production Board (NCPB) is a major player in the market among medium and large-scale farmers in the Rift Valley, where it sets prices and provides some price stabilization.[83] A significant proportion of the key maize output (about 10-20 percent) is sold to the NCPB soon after harvest, primarily due to low market prices, ample maize availability on markets, and the NCPB's logistical capacity (including storage). NCPB tends to offer buying and selling prices that are constant throughout the marketing year, which eliminates incentives for grain storage.[84] By fixing a price floor well above market levels, the NCPB has kept the price of maize high.[85]

Figure 23. Domestic Food Price Volatility



Source: FAO

Note: Domestic food price volatility is defined by FAO as a measure of variation of the Domestic Food Price Level Index. It is computed as the standard deviation of the deviations from the trend over the previous five years.

- *Regular import duties on grains:* Kenya levies regular import duties on grains from most countries. These tariffs were initiated in order to support maize prices in the main growing areas after liberalization. They are typically only suspended in times of crisis. Since the inception of the East African Custom Union in January 2005, maize imports from other COMESA countries have been taxed only at the rate of 2.75 percent, while maize imports from outside COMESA have 50 percent import tariffs. Both tariff and nontariff barriers to regional trade continue to put upward pressure on domestic maize prices. Restricting imports ultimately hurts Kenyan consumers, who bear the additional tax burden.[86] For example, during Kenya's food crisis in 2008/09, maize prices rose dramatically, while the government maintained a 50 percent tariff on maize imports long after the need for major grain imports was realized in mid-2008.[87]

- Additional factors driving price behavior include inflation rates (which were as high as 32 percent in 2008), high fuel prices that are putting additional upward pressure on marketing costs and retail prices, and high internal production costs, given the cost of inputs and other production outlays.

Expenditures

- **Close to 70 percent of the Kenyan population – mostly urban, pastoral, and marginal agricultural households – are market-dependent and net buyers of food.** On average at the national level, consumption from own farm produce accounts for 15 percent of food sources, while other food sources apart from the market include gifts and food aid. In rural areas, consumption from own farm produce is 23 percent, in contrast to three percent in urban areas.[88] Food purchases account for about 70 percent of the total food acquisition in urban areas. Due to this high level of dependence on the market for a significant proportion of food requirements, most households are highly vulnerable to domestic and international price, production, labor, and macroeconomic shocks.

- **Poor households spend the greatest portion of their expenses on maize.** The lowest income quartile of the Kenyan population spends close to 30 percent of its income on maize. Among urban households, maize accounts for nearly 20 percent of total food expenditures among the poorest 20 percent of households, declining to 1 percent of total food expenditures among the wealthiest 20 percent.[89] As a result, maize price shocks are likely to affect poor households the hardest.

Income sources and employment

There are three broad labor categories in Kenya: the agricultural sector (mostly self-employed), the informal sector, and the formal sector.

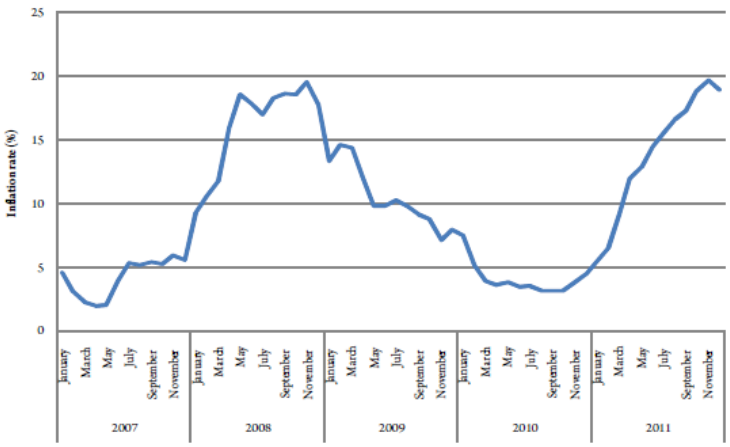
- ***Agricultural sector labor:*** Kenya's agricultural sector employs more than 75 percent of the workforce. Women provide 75 percent of the labor force in smallholdings and directly manage 40 percent of smallholder farms in rural areas. Kenya is undergoing a long-term shift out of family farming, with less than half of working Kenyans engaged on family farms today compared to two-thirds two decades ago.

- ***Informal sector:*** The second largest category of employment is in the informal sector, which includes self-employment in non-agricultural unregistered household enterprises and wage-laborers of informal employers. Wage workers and the non-farm self-employed are growing at the same time as the country is undergoing a demographic transition, a scaling-up of education, and urbanization. As more Kenyans move out of family farming, even as wage work expands, the number of the Kenyans working in low-productivity self-employment will grow.[90]

- ***Formal sector:*** This includes the entire public sector, self-employed in registered non-agricultural private enterprises, and wage laborers of formal employers. Incomes are generally higher in the formal than informal sector. Formal and informal micro and small enterprises (MSEs) play a key role in off-farm employment. However, MSEs face various challenges including an unfavorable policy environment, an inhibitive legal and regulatory environment, limited access to markets and financial services, inadequate skills and technology, limited access to infrastructure and information, and weak linkages with large enterprises.[91]

Stable sources of income are critical given that most households rely on market purchases for food. While nominal earnings have increased, real earnings have declined due to inflation, thus reducing household purchasing power and access to food. In recent years, high inflation rates, particularly in 2008 and 2011 (Figure 24), have impacted household purchasing power and access to food. The recent high inflation in the country is mostly driven by oil prices and an expansionary monetary policy. The consumer price index has steadily continued to rise (Figure 24).

Figure 24. Annual inflation rate, 2007-2011



Source: Kenya Facts and Figures, 2012

Crop income is a major component of household income, contributing 40 percent in 1997, 50 percent in 2000, 46 percent in 2004 and 44 percent in 2007. Variations over time in agriculture income shares are mostly influenced by weather patterns.[92] Income from livestock showed a decline across most regions of the country from 1997 to 2007, from 21 percent of household income to 16 percent.[93] The proportion of income from business rose from 13 percent to 21 percent during the same period.[94]

Due to poor economic performance in recent years, the economy has been unable to create jobs in line with population growth. Unemployment was at 12.5 percent in 2009. The vast majority of employment is held in the informal sector, constituting about 80 percent of total employment, with the remaining 20 percent in modern sector employment.[95] The informal sector is characterized by lower wages and returns than in the formal sector.[96]

PHYSICAL ACCESS

Market infrastructure varies among the different regions and livelihood zones of the country. In parts of the high potential farming livelihood zones, markets are highly connected within the livelihood zone and with key urban centers, due to a fairly sophisticated trade infrastructure. In these areas, distances from markets are relatively low, and there are a number of market participants across the marketing chain, thus minimizing transaction costs. Subsequently, food price fluctuations are fairly low during normal years in these areas compared to variation in most other livelihood zones.[97]

Most deficit-producing parts of the country lack sufficient infrastructure for effective transport, distribution, and marketing of staple food commodities. Poor market infrastructure, particularly in northern parts of the country, restricts access to markets and results in higher transactions costs, more price fluctuations and volatility, and higher prices.[98] As of 2009, 14 percent of the total roads were paved in the country. The road density – the ratio of the length of the country's total road network to the country's land area – was 10.67 percent in 2009.[99]




ADDITIONAL RESOURCES

FAO GIEWS Food Price Data and Analysis Tool

The Impact of State Marketing Board Operations on Smallholder Behavior and Incomes: The Case of Kenya. David Mather and T.S. Jayne. International Development Working Paper #119. November 2011.

Tegemeo Agricultural Policy Research and Analysis (TAPRA) Project, Kenya

Utilization

KEY FACTS

- The prevalence of undernourishment has declined fairly steadily since 2001, but the number of people undernourished has increased due to population growth.
- Nationally, 35 percent of children under five are stunted (low height-for-age), while the proportion that are severely stunted is 14 percent. The prevalence of stunting is greater among children living in rural (37 percent) vs. urban (26 percent) areas.
- The prevalence of wasting (weight-for-height Z score <-2) and severe wasting (weight-for-height Z score <-3) are 6.7% and 1.9%, respectively.
- There are significant geographical disparities in the burden of acute malnutrition. Malnutrition is most severe in the ASALs, given the frequent recurrence of high levels of acute food insecurity. North Eastern province in the ASALs has extraordinarily high levels of wasting: 20 percent of children under five are wasted and 8 percent are severely wasted.
- Both over and under-nutrition can be caused by food insecurity and poverty, and Kenya increasingly faces the "double burden" of obesity and undernutrition. The national prevalence of overweight and obesity among women (15–49 years old) in Kenya was 23 percent in 2009.

HOUSEHOLD FOOD CONSUMPTION

Consumption preferences and indicators

Maize is the favored staple food. Annual per capita consumption of maize was estimated at 98 kg in 2013, contributing about 65 percent of total staple food intake and 35 percent of total food caloric intake. Most Kenyans prefer white maize flour to produce *ugali*, a cooked maize dish that is a main part of most households' daily food intake, to varying degrees among regions.[100] Another key staple food is beans, which are very often consumed with maize. Wheat accounts for 17 percent of staple food consumption. Urban consumption surveys indicate that wheat products have overtaken maize in terms of expenditures in urban areas, and the share of rice in urban food consumption is also rising.[101] Plantains, potatoes, and rice each constitute less than 5 percent of staple food calories and 3 percent or less of total food calories.

The prevalence of undernourishment (the proportion of the population estimated to be at risk of caloric inadequacy) has declined since 2001 (Figure 26). Prevalence of undernourishment is the traditional FAO hunger indicator, adopted as an official Millennium Development Goal indicator. FAO data from 2011-2013 indicate that the proportion of undernourished was 25.8 percent. Using the same indicator, the number of people undernourished (the estimated prevalence of undernourishment applied to the total population) has continued to increase (Figure 27) due to population growth. The number of undernourished in 2011-2013 was 11 million people.

According to FAO, the average person in Kenya consumes 2,155 kilocalories of food per day.[†,102] Of this, 1,183 kilocalories (55 percent) are in the form of the main staples: maize, wheat, beans, potatoes, plantains, and rice. Over the last 40 years, caloric intake per person appears to have been roughly constant, decreasing in the early 1990s but rising gradually since then.[103] The diet composition is 68 percent carbohydrates, 11 percent total protein, 3 percent animal protein, and 20 percent fat.[104]

In 2005/2006, the Kenya National Bureau of Statistics collected data on food consumption through the Kenya Integrated Household Budget Survey. According to the survey, the daily average Dietary Energy Consumption (DEC) was 1,800 kcal/person. The DEC level in rural and urban areas was 1,690 and 2,060 kcal/person/day, respectively.[105] Figure 25 shows the Dietary Energy Requirement Gap, or the difference between the Minimum Dietary Energy Requirement (MDER) and the Average DEC.

KEY FEWS NET KENYA NUTRITION RESOURCES

Kenya Urban Comprehensive Food Security and Vulnerability Analysis (KU-CFSVA) and Nutrition Assessment. 2010. FEWS NET, FAO, Government of Kenya, WFP.

Understanding Nutrition Data and the Causes of Malnutrition in Kenya. FEWS NET. September 2006.

Figure 25. Dietary energy requirement gap

Province	Minimum Dietary Energy Requirement, Kcal/person/day	Average Dietary Energy Consumption (Kcal/p/d)	Dietary Energy Requirement Gap
Western	1639	1440	-199
Nyanza	1666	1490	-176
North Eastern.	1595	1460	-135
Rift Valley	1675	1600	-75
Coast	1680	1960	280
Central	1731	2110	379
Eastern	1695	2240	545
Nairobi	1745	2530	785
Rural	1670	1690	20
Urban	1733	2060	327
Nationwide	1683	1854	176

Source: KNBS, 2008

[†] According to FAO, dietary energy consumption per person refers to the amount of food, expressed in kilocalories (kcal) per day, available for each individual in the total population during the reference period. Caloric content is derived by applying the appropriate food composition factors to the quantities of the commodities. Per person supplies are derived from the total amount of food available for human consumption by dividing total calories by total population actually partaking of the food supplies during the reference period. However, per person figures represent only the average supply available for the population as a whole and do not necessarily indicate what is actually consumed by individuals. The actual food consumption may be lower than the quantity shown as food availability depending on the magnitude of wastage and losses of food in the household, e.g. during storage, in preparation and cooking, as plate-waste or quantities fed to domestic animals and pets, thrown or given away.

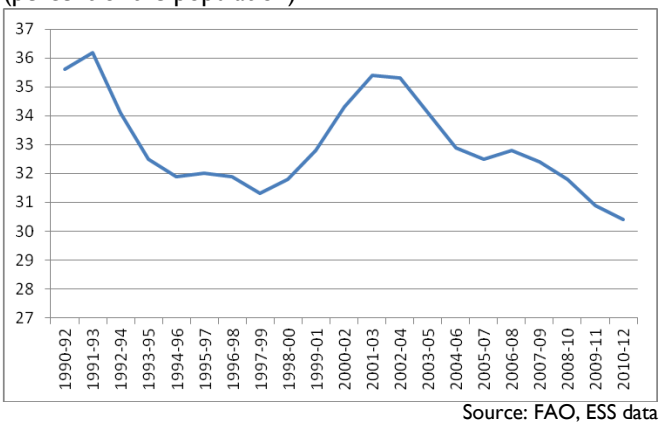
MALNUTRITION

Overview

Malnutrition is attributed to several factors including insufficient caloric intake, inadequate dietary diversity, poor care and feeding practices, a high disease burden (especially HIV/AIDS and malaria), a lack of potable water, and improper hygiene. In addition, changing lifestyles and eating habits have resulted in diet-related non-communicable diseases, including cardiovascular disease, cancer, and diabetes, especially in urban areas. These are mainly caused by excessive energy intake associated with purchased meals and processed foods, and decreasing levels of physical activity in urban settings. [106]

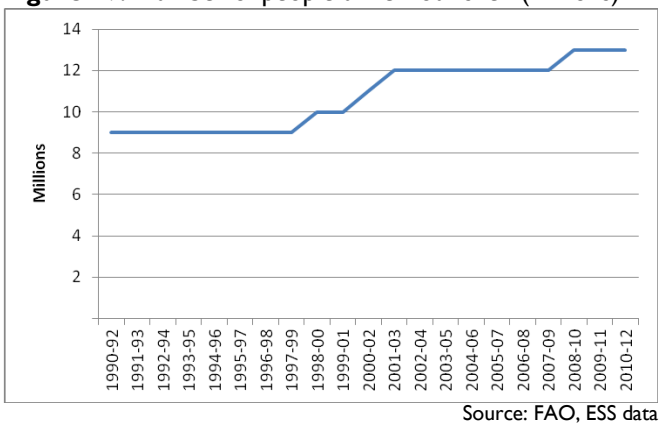
Malnutrition is most severe in the ASALs, given the frequent recurrence of high levels of acute food insecurity. A 2006 FEWS NET analysis of malnutrition in northern Kenya found that the frequent illness (high morbidity), poor hygiene, a lack of clean potable water supply, and caring practices, particularly infant feeding practices, are significant contributors, with poor food consumption, to acute malnutrition in northern Kenya. Severe acute malnutrition is linked to more densely populated areas in these regions, and is more common among those who are on the margins (pastoralist drop-outs, female or grandmother-headed households, the destitute, and those dependent on petty trade).

Figure 26. Prevalence of undernourishment in Kenya (percent of the population)



Source: FAO, ESS data

Figure 27. Number of people undernourished (millions)



Source: FAO, ESS data

Kenya increasingly faces the "double burden" of obesity and undernutrition. The national prevalence of overweight and obesity for women (15–49 years old) in Kenya was 23 percent in 2009. The proportion of overweight and obese women was higher in urban areas than in rural areas, with Nairobi having the highest prevalence at 41 percent. [107]

Nutritional status of children

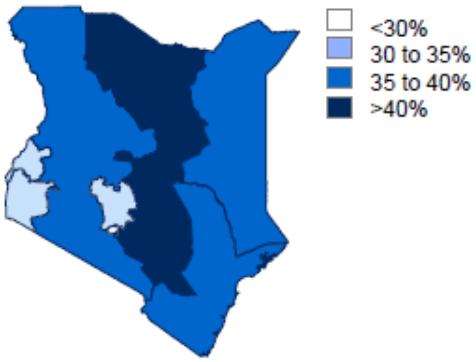
Stunting (low height-for-age)

According to the 2008-2009 Kenya Demographic Health Survey (DHS)[‡], nationally, 35 percent of children under five are stunted (low height-for-age), which reflects chronic undernutrition. The proportion of severe stunting is 14 percent. Analysis of the indicator by age group shows that stunting is highest (46 percent) in children 18-23 months of age and lowest (11 percent) in children less than 6 months of age. Severe stunting shows a similar trend, where children 18-23 months of age have the highest proportion of severely stunted children (22 percent) and those less than 6 months have the lowest proportion (4 percent). A higher proportion (37 percent) of male children under five years are stunted, compared with 33 percent of female children. [108]

[‡] The most recent national data on malnutrition is from the 2008-2009 Kenya Demographic Health Survey (DHS), a nationally representative sample survey. Over the course of a three-month period, from November 2008 to February 2009, the DHS surveyed 8,444 women age 15 to 49, and 3,465 men age 15 to 54, selected from 400 sample points (clusters) throughout Kenya. The DHS is designed to provide data to monitor the population and health situation in Kenya as a follow-up to the 1989, 1993, 1998, and 2003 KDHS surveys. Indicators of the nutritional status of children were calculated using the WHO 2006 growth standards. The next DHS in Kenya is expected to be released in early 2014.

The prevalence of stunting is greater among children living in rural (37 percent) vs. urban (26 percent) areas. At the provincial level, Eastern province (42 percent) has the highest proportion of stunted children, while Nairobi province has the lowest (29 percent) (Figure 28).

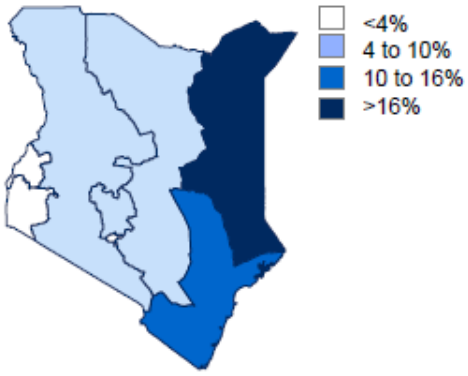
Figure 28. Stunting of children under five years (percent), 2009



Wasting (low weight-for-height)

Wasting reflects acute malnutrition, which results from recent deficits in dietary intake often compounded by morbidity. At the national level, 7 percent of Kenyan children are wasted and 2 percent are severely wasted. The survey data show that the North Eastern province has extraordinarily high levels of wasting: 20 percent of children under five are wasted and 8 percent are severely wasted (Figure 29). These levels may reflect food stress in the province, which is traditionally a region with food deficits. Children whose mothers have no education also have very high levels of wasting and severe wasting (15 and 5 percent, respectively).[109]

Figure 29. Wasting of children under five years (percent), 2009



Source: Kenya Demographic and Health Survey 2008-09.

Micronutrient deficiencies

The high prevalence of micronutrient deficiencies, particularly at crucial stages of the life cycle, contributes to childhood morbidity and mortality. Vitamin and mineral deficiencies exist even among population groups with sufficient quantities of food. According to the DHS, 77 percent of youngest children aged 6-35 months consumed foods rich in vitamin A the day or night preceding the survey. The proportion of children consuming vitamin A-rich foods increases with age, from 49 percent at 6-8 months to 86 percent at 24-35 months. At the provincial level, children in Central (88 percent) and Western (87 percent) provinces are the most likely to consume vitamin A-rich foods and those in North Eastern province the least likely (27 percent).[110] Survey data indicate that the consumption of iron-rich foods has a similar pattern to that for vitamin A-rich foods although the proportion of children fed iron-rich foods is lower (30 percent).The consumption of iron-rich foods is higher in urban areas (40 percent) than rural areas (27 percent).[111]

CARING AND FEEDING PRACTICES

The major causes of childhood malnutrition include low rates of exclusive breastfeeding, early introduction of complementary foods that lack sufficient energy density and critical micronutrients, low feeding frequency, and inadequate caring capacity at the household and community level. [112] International infant and young child feeding guidelines recommend that all children be exclusively breastfed for the first six months of life. However, according to 2008-09 DHS data, only 32 percent of children under six months of age follow this recommendation. Although the duration of any breastfeeding in Kenya averages 21 months, the median duration of exclusive breastfeeding is less than three months. These rates are similar to those documented in previous KDHS surveys, implying that there has been little change in breastfeeding patterns over time.

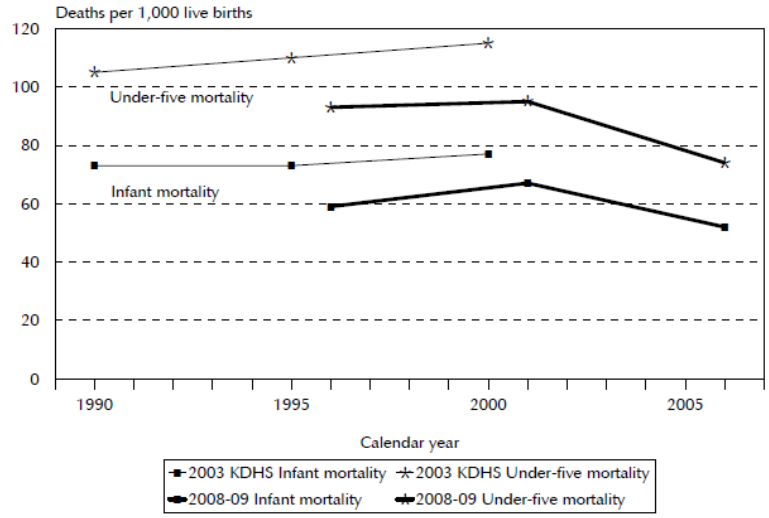
Despite recommended practices, complementary foods are commonly introduced before six months of age in Kenya. Thirty-six percent of children under six months of age are given complementary food. In the 4-5 month age group, 60 percent of children receive foods or liquid besides breast milk. Diets offered after six months of age to complement breast milk are of low quality. Complementary foods are often made from flours that contain high phytate levels, which can inhibit iron and zinc absorption.

Infant and young child feeding (IYCF) practices include timely initiation of feeding solid/semisolid foods from age 6 months and increasing the amount and variety of foods and frequency of feeding as the child gets older, while maintaining frequent breastfeeding.[113] According to the DHS, only 39 percent of all children age 6-23 months are fed in accordance with all IYCF practices. Although 93 percent of children receive either breast milk or other milk products and almost two-thirds are fed the minimum number of times, only 54 percent are fed from the requisite number of food groups. Breastfed children are much more likely to be fed in accordance with IYCF practices than non-breastfed children. Forty-four percent of breastfed children age 6-23 months are fed from the appropriate number of food groups and fed the minimum number of times per day, compared with only 16 percent of non-breastfed children. Increasing the diversity of foods given to children would help to meet the IYCF targets.

MORBIDITY AND MORTALITY

A comparison of the rates from the 2008-09 KDHS and the 2003 KDHS indicates a decline in adult mortality for both women and men Figure 30), but the patterns differ slightly. Female adult mortality rates from the 2008-09 data are lower for all ages, except from age 35 upward, where the rates are nearly the same as those from the 2003 survey. Male adult mortality is lower for most of the age groups, except age groups 15-19 and 45-49. [114]

Figure 30. Trends in Infant and Under-Five Mortality, 2003 KDHS and 2008-09 KDHS



Source: Kenya DHS, 2008-2009

The 2008-2009 Kenya Demographic Health Survey (DHS) results indicate resumption in the decline of child mortality. The under-five mortality rate decreased to 74 deaths per 1,000 live births in 2008-09, down from 115 deaths in 2003. The infant mortality rate had steadily decreased from 119 deaths per 1,000 live births in 1969 to 88 deaths per 1,000 live births in 1979, and then to 66 deaths per 1,000 live births in 1989. The rate increased in 1999 to 77 per 1,000, but resumed its decline in 2009. [115] The infant mortality rate was 52 deaths per 1,000 live births in 2008-9.[116] The improvement in child survival is corroborated by increases in child vaccination coverage, in ownership and use of mosquito bed nets, and in antenatal care coverage.[117]

Malaria is the leading cause of morbidity and mortality in Kenya, with nearly 28 million Kenyans living in areas of malaria risk. Pregnant women and children under five years of age are most at risk of infection (Figure 31).[118] According to the 2010 Kenya Malaria Indicator Survey, investments in malaria control in recent years have reduced infant and child mortality in Kenya between 2003 and 2009, with significant reductions in Coast Province. According to the 2010 malaria survey, children aged 5–14 years have the highest prevalence of malaria (13 percent). [119]

Kenya is experiencing an HIV epidemic characterized as a generalized epidemic among the mainstream population and a concentrated epidemic among the most at risk population.[120] HIV prevalence in most parts of the country is at approximately 7 percent of the adult population. The spread of HIV and AIDS has accelerated mortality levels in both urban and rural areas, and has reduced earlier gains in health standards, life expectancy, and child survival. It has also had major impacts on all sectors of the economy, by slowing productivity, increasing the dependency ratio, and increasing the burden of care on traditional structures.

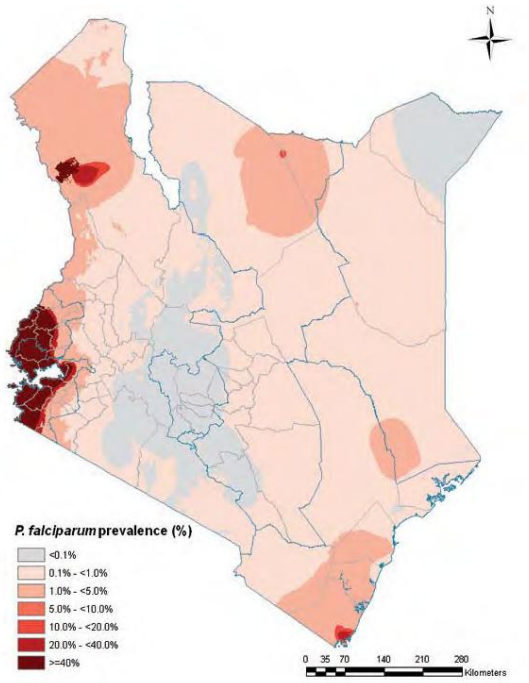
ACCESS TO BASIC SOCIAL SERVICES

Water and sanitation

The percent of the population with access to an improved water source (e.g., household connection, public standpipe, borehole, protected well or spring, and rainwater collection) has slowly increased over the last two decades. According to the 2010 Malaria Indicator Survey, a majority of households (60 percent) obtain drinking water from improved sources, compared with 39 percent from non-improved sources, mainly surface water from lakes, streams, and rivers. A larger proportion of urban households (89 percent) obtain drinking water from improved sources compared with rural households (51 percent). In contrast, a higher proportion of rural households (49 percent) draw water mainly from non-improved sources as compared with only 9 percent of urban households.[121]

One-quarter of households use an improved type of toilet facility, while three in four households use a non-improved facility.[122] Urban households are more likely to use improved sanitation facilities (56 percent) than rural households (13 percent). They are also more likely than rural households to use flush toilets (29 percent and 2 percent, respectively).[123]

Figure 31. Malaria Risk Map, 2009



Source: Kenya DHS, 2008-2009

FOOD SAFETY

Millions of children and adults suffer from the health consequences of food-borne diseases. Concern about food safety is particularly acute in urban and peri-urban areas, where agricultural production typically involves contaminated river water. This discourages urban households from diversifying their diets to include more nutrient-rich vegetables. Street food, particularly in urban areas, often poses food safety problems due to poor sanitation and handling, leading to increased diarrheal diseases. Cooked street food is unregulated by government authorities and risks contamination from lead, dust, or other potentially dangerous substances.[124]

Aflatoxins (dangerous carcinogenic molds that grow on a number of crops) are a threat to food security due to poor post-harvest food storage and milling of complementary flours. Since 2004, 477 aflatoxin poisonings associated with eating contaminated maize have been documented in eastern Kenya, with a case-fatality rate of 40 percent. During the years of outbreaks in 2005 and 2006, 41 percent and 51 percent of maize samples, respectively, had aflatoxin levels above the Kenyan regulatory limit of 20 parts per billion (ppb).[125]




ADDITIONAL RESOURCES

2010 Kenya Malaria Indicator Survey. July 2011. Kenya National Bureau of Statistics, Division of Malaria Control, Ministry of Public Health and Sanitation. ICF Macro.

Comprehensive food security and vulnerability analysis (CFSVA) and nutrition assessment in Kenya high density urban areas. FAO, FEWS NET, WFP.

Kenya Demographic and Health Survey 2008-09. June 2010. Kenya National Bureau of Statistics.

National Food and Nutrition Security Policy. 2011. Government of the Republic of Kenya.

Total War Against AIDS Report. June 2012. Kenya Ministry of Agriculture.

Understanding Nutrition Data and the Causes of Malnutrition in Kenya. FEWS NET. September 2006.

Stability

KEY FACTS

- Kenya is vulnerable to a number of shocks including droughts, floods, disease, price volatility, livestock raids, and civil strife.
- Climate-related disruptions to production are a principal cause of instability in the food supply. Agricultural production in Kenya is almost exclusively rainfall dependent, and most farmers are exposed to the risks of unreliable rainfall or prolonged drought.
- With climate change, droughts are expected to increase both in extent and intensity. Without appropriate mitigation measures, these changes will have increasing impact the stability of the food supply and the potential for households to cope with fluctuating income.
- Price fluctuations are influenced by dependence on world markets, a heavy reliance on maize as a staple crop, effects of droughts and/or floods, pest and diseases, insecurity, and many other factors.\
- Resource-based conflicts in several parts of the country, particularly the highly food insecure pastoral and agropastoral areas, are a long-standing issue with unpredictable impacts on food availability, access, and utilization.

CLIMATE-RELATED DISRUPTIONS TO THE FOOD SUPPLY

Drought is the major climate-related hazard that occurs most frequently in Kenya, with devastating consequences on livelihoods, income, and food security. Figure 32 shows that most incidences of drought since 1981 have occurred in the ASALs, with central and eastern pastoral areas experiencing 9-12 droughts over a 30-year period.

In recent years, drought has become a frequent problem in parts of Kenya. Severe drought in 2009 and 2011 resulted in emergency food crises affecting millions of people. (See the Food Security Outcomes section for more details on these crises.)

The frequency of drought is expected to increase both in intensity and extent as a result of climate change. According to a multi-year effort by FEWS NET to monitor and map rainfall and temperature trends over a 50-year period (1960–2009), the

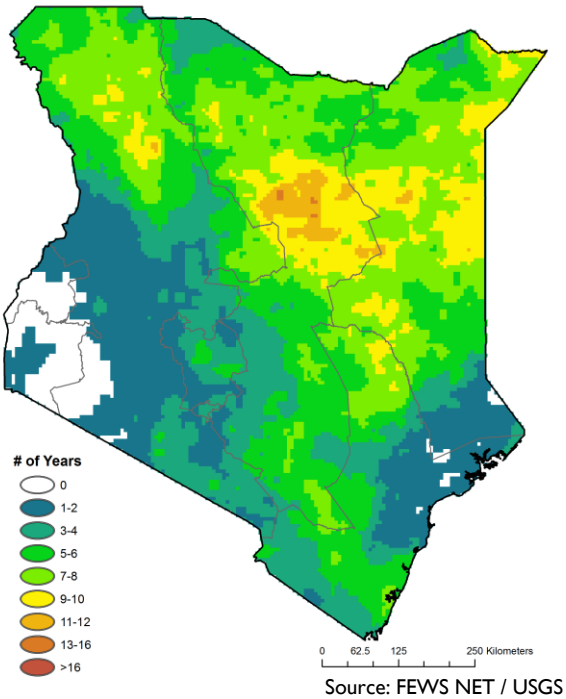
long rains in central Kenya have declined more than 100 millimeters since the mid-1970s.[126] This decline is probably linked to warming in the Indian Ocean, and seems likely to continue.[127] The projected increase in temperatures and rainfall variability will negatively impact crop and livestock production in most areas. Disease and pests associated with high temperatures are also likely to increase.

Drying trends could particularly impact densely populated areas in central Kenya to the east, north, and northwest of Nairobi. Central Kenya is an area that has already experienced, and will likely continue to experience, substantial and important changes in climate as a result of recent and projected trends in rainfall and temperature. Figure 33 demonstrates that the productive crop areas in central and western Kenya have steadily declined since 1960. These areas, around cities like Eldoret, Nakuru, Nyeri, and Meru, have traditionally been important crop production areas, and declining rainfall in them should have impacts on national crop production and food prices. These surplus crop growing areas in Central Kenya are threatened, and the amount of prime arable land could diminish substantially.[128]

Although increasing dryness will reduce per capita harvested area, maize yields may still increase. In recent years, maize yields have been increasing, despite increasing dryness and temperatures.[129] If yields continue to increase, and dryness and temperature continue to increase in Kenya as predicted, the FEWS NET/USGS research indicates that per capita harvested area will drop slightly, but yields may increase by 50 percent in 2025. The research indicates that future maize production may actually increase by approximately 40 percent from current levels.[130]

Flooding occurs regularly in Kenya, particularly in the ASALs, and can have both negative and positive impacts (Figure 34). In some areas, flooding can be beneficial to lives and livelihoods by providing food and income sources. About 1 million people in the lower Tana River areas depend on the river's flooding regime for their livelihoods.[131] However, floods often lead to food emergencies due to destruction caused to homes, schools, assets, as well as loss of lives. Heavy rainfall and floods also increase the burden of human and livestock disease, posing threats to human health and potential impacts on trade.[132] El Niño episodes tend to be associated with heavier rainfall amounts in the country: El Niño events in 1997/1998 and 2006 caused serious flooding and extensive destruction of property, infrastructure, and life in many parts of the country.

Figure 32. Number of years below 70 percent of average annual rainfall, 1981-2012



Source: FEWS NET / USGS

Figure 33. Observed and predicted climate change in Kenya

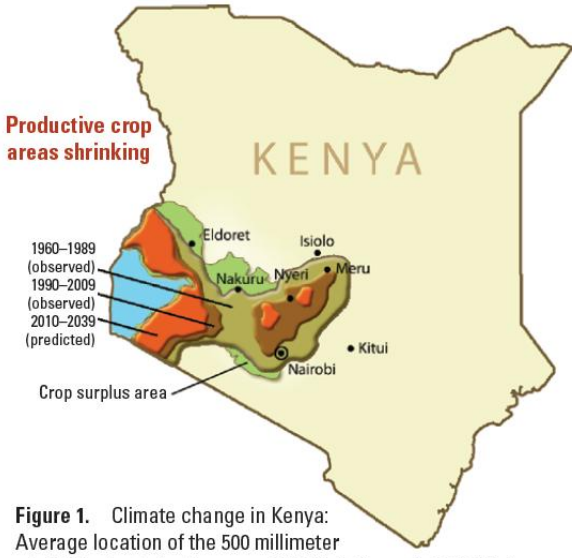


Figure 1. Climate change in Kenya: Average location of the 500 millimeter rainfall isohyets for the years 1975 (light brown), 1995 (dark brown), and 2025 (predicted, orange). The green polygon in the background shows the main crop surplus region of Kenya.

Source: FEWS NET / USGS

PRICE STABILITY

Access to food can be disrupted through price volatility. While some annual variability in prices is expected, excess variability can be caused by a number of factors, as discussed in the Access section, including dependence on world markets, effects of droughts and/or floods, pest and diseases, insecurity, political instability and many other factors. While

dependence on regional and world markets brings a measure of stability, prices of key imports such as wheat and rice can increase dramatically depending on global price patterns. Price volatility impacts household purchasing power and ability to access food on markets.

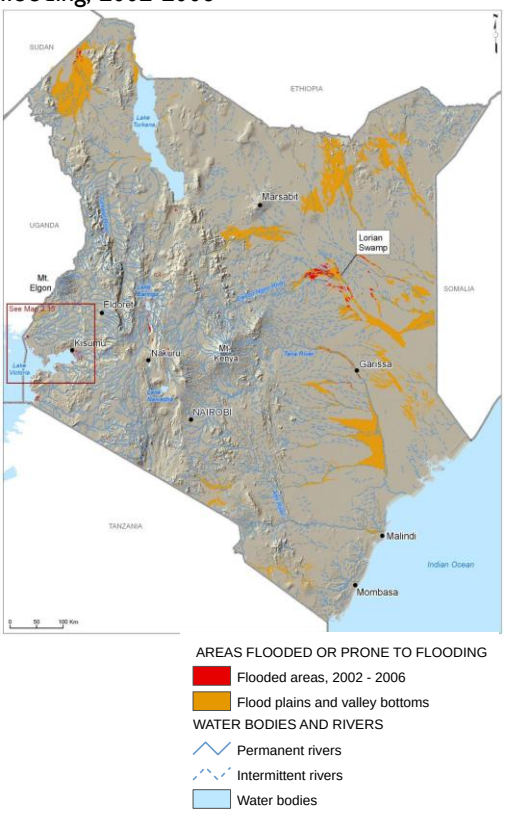
CONFLICT

Conflicts over resources, including access to and ownership of land, livestock, and other property, are longstanding issues that hinder access to food and disrupt the stability of the food supply. While conflict is most prevalent in northeastern and eastern pastoral areas, it has become frequent in parts of the southeastern and coastal marginal agricultural zones. Conflicts disrupt livelihood activities and cause displacement and loss of assets. In conflict-affected areas, prices for basic goods and services tend to be higher due to higher transactions costs. In Kenya, conflicts tend to be influenced by the following factors:

- *Competition over natural resources:* Among pastoral communities and along the international borders, conflict over pastoral land and water is predominant. The border areas include Ethiopia, Somalia, South Sudan, and Uganda. Competition is fueled partly by the cultural practice of livestock raiding.[133] The conversion of arable land and livestock territory into settlement areas has also led to frequent outbreaks of conflict. Climate change has exacerbated existing tensions, as competition over fertile territory becomes more severe during drought years.

- *Tribal conflicts:* Tribal affinities are a source of considerable conflict within Kenya, with diverse ethnic groups competing since independence for land, financial resources, and political power.

Figure 34. Flooded areas, and areas prone to flooding, 2002-2006



Source: World Resources Institute et al, 2007.

- *Political tensions:* In recent years, conflict has erupted following major elections with significant socio-economic impacts. For example, civil disturbances and violent clashes following the December 2007 disputed elections resulted in the deaths of hundreds of people, and the destruction of 0.3 million tons of maize. Instability and fighting also caused a 20 percent reduction in the total area planted to maize during the long rains in 2008.




ADDITIONAL RESOURCES

Kenya Demographic and Health Survey 2008-09. June 2010. Kenya National Bureau of Statistics.

Total War Against AIDS Report. June 2012. Kenya Ministry of Agriculture.

2010 Kenya Malaria Indicator Survey. July 2011. Kenya National Bureau of Statistics, Division of Malaria Control, Ministry of Public Health and Sanitation. ICF Macro.

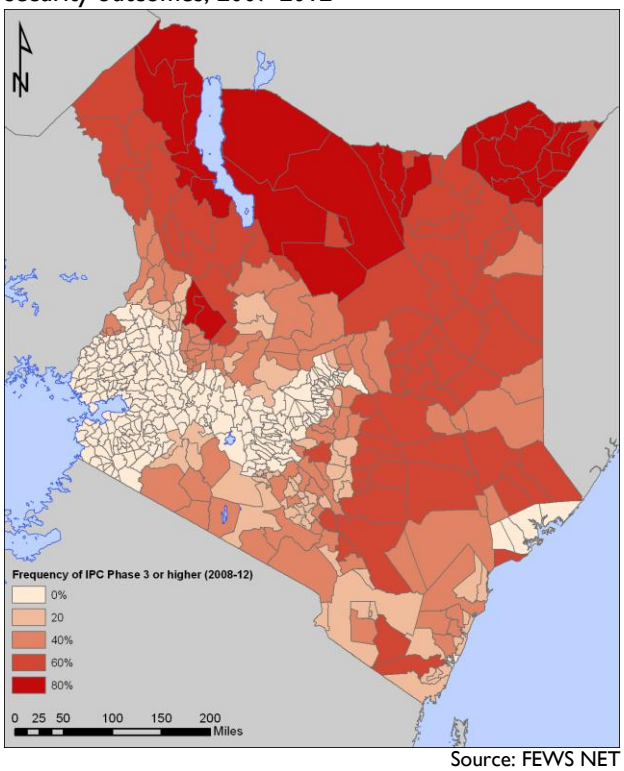
Comprehensive food security and vulnerability analysis (CFSVA) and nutrition assessment in Kenya high density urban areas. FAO. FEWS NET. WFP.

Food Security Outcomes

RECENT MAJOR ACUTE FOOD CRISES

Significant areas of the country have faced repeated acute food security crises. Over the last five years, most acute food insecurity (at IPC Phase 3 levels and above) is present within the ASALs, including pastoral areas, and the southeastern marginal agricultural areas and coastal lowlands (Figure 35). The frequency of Crisis (IPC Phase 3) food insecurity over a five-year period (2007-2012) was highest in the northern pastoral districts.

Figure 35. Frequency of Crisis (IPC Phase 3) food security outcomes, 2007-2012



Source: FEWS NET

Food security crises in 2009 and 2011 are discussed below. In both cases, the proximate driver of the crisis, drought, caused a chain of events that affected households with a high dependence on the market for purchase. Most food insecure households had little resilience in the face of the shock, particularly given their extreme poverty and chronic malnutrition.

2011 Horn of Africa Drought

During the Horn of Africa food security emergency in 2011, approximately 3.75 million Kenyans required emergency food assistance, and over 300,000 children were affected by acute malnutrition. In addition, 500,000 refugees from Somalia, most of whom were hosted at Dadaab camp in northeastern Kenya (at that time the largest refugee camp in the world), required emergency food assistance. The prevalence of global acute malnutrition rates among Kenyan children was at 20 to 27 percent during the crisis. The drought also caused extensive crop damage, and loss of assets, particularly in livestock holdings.[134]

The areas most affected by the drought were the northeastern, northwestern, southern, and northern pastoral areas, and parts of the southeastern marginal agricultural areas, which faced Emergency (IPC Phase 4) levels of food insecurity from July to November 2011.[135]

The crisis was driven by a number of factors, principally several extremely poor consecutive rainfall seasons. In parts of the Greater Horn of Africa, rainfall during the March to May rains was less than 30 percent of the average of 1995–2010, resulting in one of the driest years since 1950/51 in many pastoral zones. The impact of the drought was exacerbated by high local cereal prices, excess livestock mortality, conflict over diminishing grazing resources, and outbreaks of waterborne diseases caused by water scarcity and rising water prices. Excess livestock mortality was reported at 13-17 percent (of the remaining 20-30 percent) of the livestock that had not migrated out. Most marginal areas experienced crop failures, and staple cereal prices approached or exceeded record levels.[136]

KEY FEWS NET KENYA OUTCOMES RESOURCES

FEWS NET Kenya Outlook reports and Outlook updates

FEWS NET Kenya Special Reports

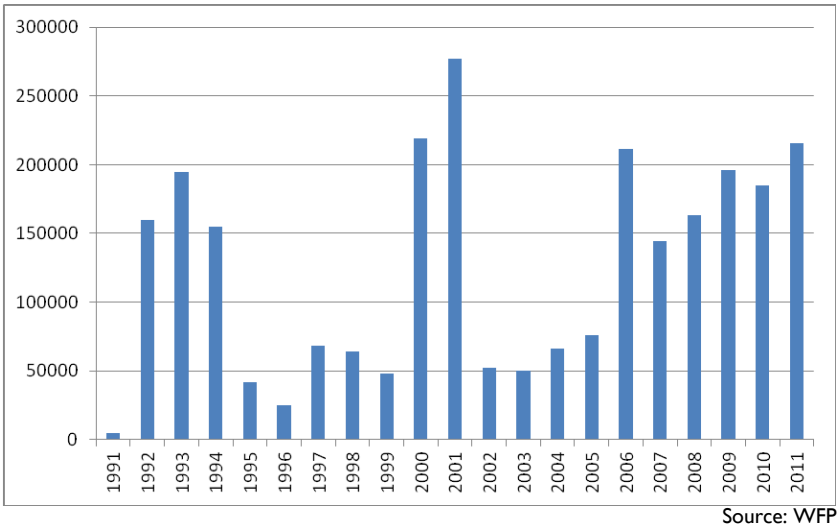
2009 acute food insecurity crisis

A combination of factors, including consecutive droughts resulting in low cereal production, post-election violence, and global food price hikes resulted in a humanitarian and livelihood crisis in Kenya during 2009.[137] The proximate driver of food insecurity was the failed 2008 October-December short rains, which followed three to four consecutive poor seasons. Marginal agricultural households in the southeastern and coastal lowlands were the most affected, due to their disproportionate dependence on the short-rains season.[138]

Pastoral food security was also affected by the poor 2008 short rains season, especially in the northern and northeastern pastoral livelihood zones. The poor rains caused substantial scarcity of water, pasture, and browse, resulting in early and haphazard migrations of livestock. Successive years of drought, compounded by uneven distribution of rainfall, reduced grazing options. Extended trekking distances in search of water and pasture compromised the body and health conditions of livestock and reduced access to milk and livestock products for the most vulnerable sedentary household members. Endemic conflict and disease — most notably *peste de petits ruminants* (PPR) — worsened the situation.

The impact of poor cereal production was exacerbated by global food price increases, which led to a significant increase in food prices in Kenya. Between 2007 and 2008, the price of maize meal increased by 133 percent, beans by 96 percent, vegetables by 55 percent, and oils and fats by 77 percent. Overall, the cost of a basic needs basket for poor households rose by 63 per cent. A combination of high food and non-food prices, reduced household food supply, and successive lowered output all eroded the ability of households to meet basic food needs. The number of people requiring food assistance rose from 650,000 in late 2007 to almost 3.8 million in late 2009 and early 2010.

Figure 36. Emergency food assistance (cereals only) provided by WFP, 1991-2011

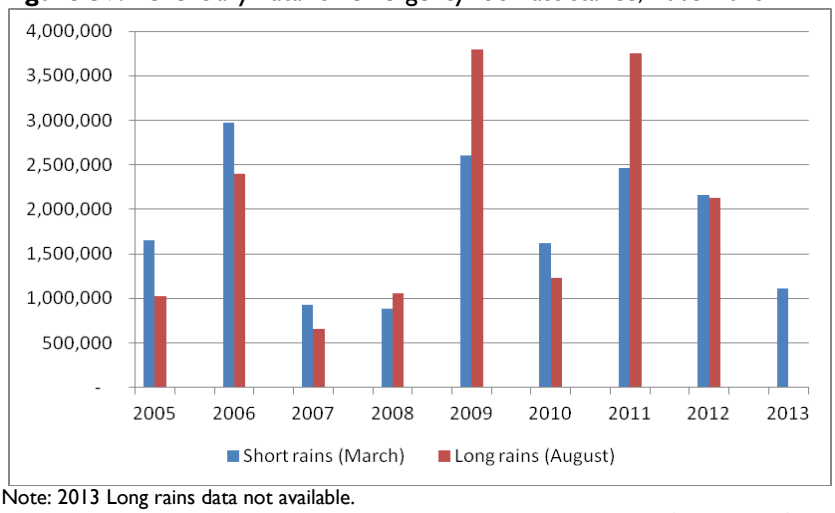


Source: WFP

Emergency food assistance

Due to such acute food insecurity crises, reliance on emergency aid and food assistance in Kenya has increased over the last decade (Figure 36). The country was among the top eight countries receiving WFP food assistance in 2008, and among the top five major recipients of WFP multilateral food aid that year. In nominal terms, the country received US$ 13 million in the 1980s, increasing to US$ 190.24 million in the 1990s. During the period 2000-06, Kenya received US$ 461.21 million, mostly in response to extended droughts (2000-01 and 2004) that had a direct bearing on the proportion of external assistance received as emergency response and disaster management.

Figure 37. Beneficiary data for emergency food assistance, 2005-2013



Note: 2013 Long rains data not available.

Source: FEWS NET

Approximately 2 to 4 million people receive emergency food assistance annually. Figure 37 shows the number of beneficiaries receiving emergency food assistance from 2005 to 2013, following the short and long rains assessments.

AREAS AT GREATEST RISK OF FOOD INSECURITY

ASALs

Households in the arid and semi-arid lands (ASALs) are most at risk of food insecurity, given marginal livelihoods, limited income diversity, and low resilience to shocks as a result of continued depletion of assets and destitution. Chronic poverty, isolation, and lack of economic development are particularly severe in northern and eastern pastoral areas of Kenya. These areas face isolation, insecurity due to inter-tribal conflict or cattle raiding, weak economic integration, limited political leverage, and a challenging natural environment. Eighteen of the 20 poorest constituencies in Kenya, where the vast majority of the population lives below the poverty line, are in northern and eastern Kenya. Factors underlying food insecurity and malnutrition, such as poverty, low education levels, lack of economic development, and very low access to basic social services, are more severe in these zones than other areas. In remote parts of the ASALs, poor infrastructure and limited development investment limit market development and access. Furthermore, malnutrition is most severe in the ASALs, given the frequent recurrence of high levels of acute food insecurity. A 2006 FEWS NET analysis of malnutrition in northern Kenya found that the frequent illness (high morbidity), poor hygiene, a lack of clean potable water supply, and care practices, particularly infant feeding practices, are significant contributors, with poor food consumption, to acute malnutrition in northern pastoral areas.

Households within the ASALs are chronically vulnerable to drought and other climate-related hazards. Drought has become more frequent and intense over the last several decades, resulting in weakened asset bases, reduced coping strategies (e.g., there are now less options for dry season grazing areas), weakened social networks, and generally more fragile livelihoods. Vulnerability to shocks is evident in the recurrence of acute food insecurity in the ASALs.

For some poor and very poor households in the ASALs (about 25-30 percent of the pastoral population), pastoralism is no longer a viable livelihood. Some of these households have shifted out of pastoralism and moved to towns or cities to seek employment. With limited alternative livelihood options, many households depend on food assistance to meet basic food needs, even during non-crisis years.[139] Impoverishment is due to the impact of recurrent shocks, mostly drought, floods, and livestock diseases, which deplete the pastoral asset base and reduce the ability to recover. In addition, access to infrastructure and services in pastoral areas is far below the national average. Recovery is limited by frequent conflicts and cattle raiding within the zone, which hinders access to markets and pasture, and constrains production.[140] The highest rates of poverty are often observed among those who are no longer directly involved in pastoralism, particularly those without livestock who depend on casual labor or petty trade in towns.[141]

Southeastern marginal agricultural areas

In the southeastern marginal agricultural areas, agricultural production is marginal due to low use of inputs and low and poorly distributed rainfall, with drought tending to occur during the May-May long rains season. Food security for households in these livelihood areas is constrained by factors that have limited the development of economic activities. Crop production is limited by shortage of reliable water supply, high input costs, poor soil fertility, and poor access to markets. Livestock production is limited by poor or low yielding livestock genetic stock, shortage of drinking water for animals, and high cost of inputs and veterinary drugs. Small business are limited by poor access to capital and other financial services, high tax burdens and shortage of small business expertise.

Urban areas

Food insecurity in Kenya has typically been seen as a rural issue, but households in urban livelihood zones represent an increasingly important share of the food insecure and malnourished. Due to population growth and relative lack of development in rural areas, the phenomenon of migration to urban areas is expected to increase considerably in the coming decades, with impacts on food and economic resources.

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