



# Comprehensive food security and vulnerability analysis (CFSVA) and nutrition assessment Kenya high density urban areas



# RAPID URBANIZATION EXPOSES TOWN DWELLING KENYANS TO FOOD INSECURITY AND MALNUTRITION

Food security analyses for developing countries have mainly focused on rural areas because factors underlying food insecurity and malnutrition such as poverty, low education levels, poor sanitation and lack of access to healthcare and competitive markets, are generally more severe.

But rapid urbanization in developing countries, coupled with food price inflation, is heightening poverty and food and nutrition insecurity in towns and cities, particularly in Sub-Saharan-Africa. With economic growth unable to keep pace with such expansion, growing urban poverty is likely to hinder access to food with increasing force.

Kenya is a low-income, food-deficit country with a GDP per capita of about US\$775 (World Bank, 2010) and a Gross National Income (GNI) of US \$1,492 (UNDP, 2011). The 2011 UNDP Human Development Report ranked it among the “low human development” countries of the world, placing it 143rd out of 187 countries.

Its urban population has grown at 5% over the last decade, much faster than the average increase for Sub-Saharan Africa (2.3%). Town and city dwellers now account for an estimated 35% of the population. By 2020, a projected half of all Kenyans will live in cities and urban centres including unplanned urban settlements.

Almost all high density urban settlements in Kenya are informal - often on railway lines, river banks and near power plants. In Nairobi more than a fifth live by rubbish dumps while across

## The livelihood clusters

The urban population is often mistakenly classified as one homogeneous group. Communities vary widely according to location, market specialization and proximity to a specific pre-urban and urban border.

Nine livelihood clusters were identified for this assessment:

1. Nairobi
2. Towns in NW pastoral
3. Towns in NE pastoral
4. Agro-pastoral (semi-arid) towns
5. Towns in the SE marginal agricultural zone
6. Towns in the high potential mixed farming zone
7. Towns in the high potential dairy and cereal zone
8. Towns in the coast marginal agricultural zone
9. Towns in the mixed farming marginal zone

the country up to 20% of the urban poor live on land that is too steep for human habitation. The households are often exposed to hazards such as fires, vehicle and train accidents, landslides and pollution.

The objective of this survey is to analyze the food security, nutritional status and vulnerability of the urban population of Kenya, to provide baseline information to the policy-makers and practitioners, and to identify necessary interventions. High population density urban areas only were considered<sup>1</sup>. It presents the findings of the assessment conducted in August and September 2010.

<sup>1</sup>Low density urban areas who do not share the usual characteristics of urban areas were eliminated from the sample universe. See the method section.

# THE STATE OF FOOD CONSUMPTION AND NUTRITION

## Poor dietary diversity underscores insecurity

Overall just 13% of high density urban households have unacceptable food consumption (poor and borderline FC) and fewer than 5% have poor FC. But in NW pastoral the proportion with poor FC is as high as 24%. Nairobi has the highest proportion of households with borderline FC (12%) followed by the coastal marginal zone (11%).

Poor dietary diversity is the key driver of food insecurity in urban Kenya. The 87% of urban households that have acceptable FC eat cereals and tubers, vegetables, sugar and oil on a daily basis. They also consume milk almost daily with animal proteins (meat and fish) and fruits on an average of three days a week. But those with poor and borderline FC have diets that are severely deficient in protein and micronutrients as they very rarely consume animal proteins, milk or fruits. Animal protein, milk and fruit consumption is lowest in NW pastoral which also has the lowest FC score.

Conversely NE pastoral households consume animal protein five days a week. Here the FC score is highest even though other factors associated with food insecurity are serious.

Households with unacceptable consumption are also lacking in energy. While urban Kenyans consume an average of 2005Kcal a day,<sup>2</sup> which is slightly below the recommended minimum dietary energy requirement of 2,133kcal per adult per day to lead an active and healthy life, (FAO 2004), those with unacceptable FC consume fewer than 1800 kcal each a day.

In the month running up to the survey one in ten urban households resorted to seven food related compromises mainly to cope with decreased income and/or food price increases. These coping mechanisms include relying on credit to buy food, eating fewer or smaller meals, restricting adult consumption, borrowing food and eating cheaper products. Again the proportion was the highest in the NW pastoral (35%) and it was considerably higher for poor (44%) and borderline (40%) FC households.

Household food shortages are seasonal with a higher proportion (31%) reporting difficulties feeding their families in January and between April and July – months when expenditures are also highest. The NW pastoral reported very high levels of difficulty in acquiring food, especially from December to February and June to August.

About 12% of households reported having received food aid (mainly maize) over the last year rising to some 40% in the drier NW pastoral. About 14% of those in Nairobi's informal settlements receive food aid. Aid is more likely to go to elderly and women headed households.

## More than a quarter of children are stunted

The nutritional status of urban children is better than that of rural Kenyans, based on weight for height, height for age and weight for age, probably because of better access to health care services, higher income levels, and better infrastructure and market integration that increases availability and accessibility to a variety of foods.

<sup>2</sup>The State of the World Food Insecurity, FAO, 2010

The rate of acute malnutrition is within the WHO acceptable rate (less than 5%) in all the livelihood clusters except NE pastoral (11%) where it is considered 'serious' based on the WHO guidelines<sup>3</sup> and agro pastoral (8%) and NW pastoral (7%) where it is considered 'poor'. Apart from the chronic food insecurity because of prolonged drought in the arid and semi-arid pastoral lands, the areas have poorly developed infrastructure particularly in NW and NE pastoral, limiting availability and accessibility to a variety of foods and to health services.

At 26.5% stunting rates are above the WHO acceptable level (20%) with the exception of NE pastoral. The high stunting rates may be indicative of the impact of chronic food

insecurity and/or repeated infections, poor IYCF practices and inadequate access to maternal and child health services.

The highest rates (>30%) are in the mixed farming (cash crop and dairy) zone, coastal marginal, Nairobi, and agro-pastoral, where the nutrition situation is considered "serious" based on the WHO cut-off-points of 30– 39%.<sup>4</sup> The stunting levels in high potential mixed farming, marginal mixed farming, NW pastoral and SE marginal are categorized as "poor".

The global underweight rate for all the livelihood clusters is 13.1% with proportions peaking in NW pastoral, coastal marginal, agro pastoral, NE pastoral and SE marginal. The lowest rate is in Nairobi.

## Prevalence of malnutrition

Livelihood zone	Global acute malnutrition (GAM)	Severe acute malnutrition (SAM)	Global chronic malnutrition	Severe chronic malnutrition	Global underweight	Severe underweight
Agro-pastoral	8.2	2.4	29.6	7.9	16.0	6.1
Coast marginal	4.1	1.3	30.7	10.3	17.3	3.8
Mixed farming HP	2.6	1.0	28.8	9.7	9.4	1.9
Marginal mixed farming	2.7	0.6	20.7	8.0	6.7	0.6
Mixed farming (Cash crop & dairy)	3.3	0.6	32.5	13.6	12.4	3.0
Nairobi	2.4	0.7	30.5	9.7	10.1	1.7
NE pastoral	10.7	2.7	16.3	6.9	14.9	1.6
NW pastoral	7.1	1.1	22.7	7.1	18.6	4.2
SE marginal	3.8	1.4	28.5	9.7	13.5	2.0
<b>OVERALL</b>	5.0	1.3	26.5	9.2	13.1	2.7
<b>URBAN (national level)*</b>	5.3	1.3	26.4	8.7	10.3	1.2
<b>RURAL</b>	7.0	2.0	37.1	15.3	17.3	4.1
<b>NATIONAL (urban + rural)*</b>	6.7	1.9	35.3	15.3	16.1	3.6

<sup>3</sup>WHO cut off points for wasting using Z scores (<-2 Z scores in populations: <5% acceptable; 5-9% poor; 10-14% serious; >15% critical).

<sup>4</sup>WHO cut off points for stunting using Z scores (<-2 Z scores in populations: <20% acceptable; 20-29% poor; 30-39% serious; ≥40% critical).

# A PROFILE OF THE FOOD INSECURE AND MALNOURISHED

## Rising urban poverty drives food insecurity and malnutrition

Although poverty in Kenya has largely been perceived as a rural phenomenon, the proportion of the urban poor has been rising steadily. Recent World Bank estimates suggest that by 2020, urban poverty will represent almost half of the total poverty in the country.

The socio-economic status of urban households is more likely to influence food access and the nutritional status of children because the households' main source of food is through purchase compared to rural areas where food is more often home produced. The poorer the household the more likely it is to have poor or borderline FCS. A quarter of the poorest have an unacceptable FCS.

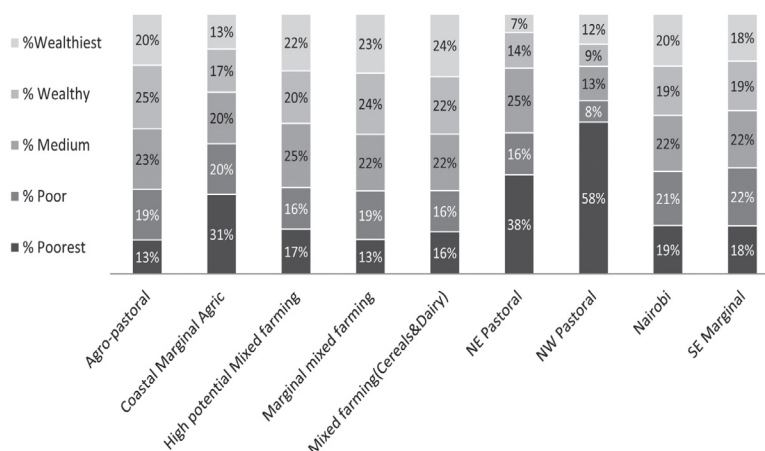
## Household FCS by wealth groups

	Wealth quintiles				
	Poorest	Poor	Medium	Wealthy	Wealthiest
Poor FCS	11.4%	3.6%	4.0%	1.6%	0.4%
Borderline FCS	13.4%	9.5%	9.5%	6.1%	5.7%
Acceptable FCS	75.2%	86.9%	86.5%	92.3%	93.9%

The highest proportions of very poor households are in the NW and NE pastoral and coastal marginal agric clusters. More than half of poor casual labourers are in the two poorest wealth quintiles (a quarter of urban workers are classified as poor casual labourers, though it's a third in Nairobi and agro-pastoral.) This group is considerably more likely to have an unacceptable FCS.

Unsurprisingly, dependents (beggars, borrowers, remittance receivers) are also likely to be very poor (42% in the poorest quintile) and a quarter of them have unacceptable food consumption. There are a particularly high percentage of dependents in NE pastoral.

## Wealth quintiles by livelihood cluster



Those with unacceptable FC spend far less on food than those with acceptable. Food expenditure is lowest in the NW pastoral zone, and highest in NE, even though it's the second poorest zone. But both zones have the highest proportion of expenditures devoted to food purchases (62% and 65% respectively).

### The poor are at the whim of market forces

Urban households are highly dependent on buying their food - chiefly maize meal, milk, sugar, wheat flour, pasta, rice and bread - purchasing between 97% and 100% of their food from markets.

Supply to remote markets is erratic. Nearly 40% of traders reported inadequate supplies especially in January, March and August rising to 57% in remote NE and NW pastoral zones where infrastructure is poor.

Prices are also erratic: maize prices generally increased between 2008 -2010, tending to be higher in Nairobi, marginal mixed farming, NW and NE pastoral livelihood clusters. Food prices generally start rising from November to April. But in NW and NE pastoral prices usually peak in August during the lean season.

Traders are often unable to cope with increased demand mainly because of lack of capital, competitors or taxes, low profits, lack of credit, lack of supply, insecurity and lack of transport.

Households headed by women are more likely to be food insecure (6.5% have poor food consumption compared with 3.3% of male-headed households). This is most likely because they are poorer because they spend less time in income generating activities, are less likely to be employed, are paid less than men for the same task/period, and are less likely to get access to credit.

### Illness underscores food insecurity and malnutrition

Overall one in five individuals experienced some form of sickness - chiefly acute respiratory infections (ARIs), malaria, fever and diarrheal disease, in the fortnight before the survey. Poorer households are slightly more likely to have ill members than wealthier.

The prevalence of child morbidity in urban Kenya is high with over a third being ill in the fortnight running up to the survey. Long episodes of illness, particularly of diarrheal diseases, ARI and malaria compromise the nutritional status of children. On average, the duration of the last episode of illness was long - about one week. Rehabilitating and treating such a child is likely to take longer and be more costly.

Infections cause deterioration of the nutritional status by depleting the critical body stores of protein, energy, minerals and vitamins. The loss of nutrient stores compromises the immunity status of children, rendering them more prone to infections. The cycle of malnutrition-infection-further nutritional deterioration-more infections is a powerful pathway. A dual response on

nutrition and infection is needed to improve and prevent the nutritional status of children from deteriorating.

Timely health seeking was sought for less than half of children, dipping to 15.2% in coast marginal, mainly because of high costs and inaccessibility. About a fifth seek no assistance for their sick child because they view the illness as mild, but the *cost* of treatment is the main deterrent for 37% of those who did not seek care.

A worryingly high proportion of mothers/caregivers endanger their children's health by buying self prescribed drugs from shops/kiosks.

### Elderly-headed households are more vulnerable to hunger

Over 22% of households headed by an elderly person have unacceptable FCS compared to 12% headed by the non elderly. Of these 7% have poor food consumption compared with 4% of non-elderly headed households.

### Densely crowded households are more food insecure

Households with poor FC have on average four individuals per room compared to three for those with an acceptable FC. Houses are generally small with nearly half having just one room. The crowding index is highest in the NE pastoral zone where about five people share a room, possibly a reflection of prevailing cultural practices. Again more crowded houses are more likely to be poor.

### FCS by sex, age, household size and crowding index

	Gender of head		Elderly Headed		Household size	Crowding index
	Male	Female	Yes	No		
Poor FCS	3.3%	6.5%	6.9%	4.0%	5.5	4.1
Borderline FCS	8.6%	9.4%	15.2%	8.1%	5.6	3.9
Acceptable FCS	88.1%	84.0%	78.0%	87.8%	5.0	3.1

### Food insecurity and malnutrition are higher in households with unimproved sources of water and unimproved sanitation

Taps and boreholes for drinking water and toilet facilities are accessible to the majority of urban households with the exception of the NW and NE pastoral zones and SE marginal zone where the risk of water borne disease outbreaks are high, particularly during the rainy season. Overall about a fifth of households still access water from unprotected sources, where water is more impure.

The main factors that restrict access to water include long waiting times at water points and the relative high cost of water. The treatment of drinking water is poor and nearly half of households do not treat or boil water before consumption though the percentage is considerably lower in NW pastoral and coast marginal agriculture.

Most urban households (93%) have access to improved sanitation, including 59.5% using traditional pit latrines, 19% using improved pit latrines and 12% using flush toilets. That still leaves about 7% with no toilet facilities rising to more than a quarter in NE pastoral and almost a fifth in NW pastoral.

Households living in high density urban settlements mainly share pit latrines with a large number of individuals. When full, they are closed or demolished and new ones are constructed nearby, or they are emptied manually. It is reportedly not uncommon to see open areas used for excreta disposal, a serious health and water pollution risk.

The focus group discussion revealed that used water (e.g., soiled water from washing) is normally discarded outside houses, where drainage is generally poor, leading to pools of stagnant water. Solid waste disposal is a major problem in unplanned settlements. In most urban areas it is disposed in open dumps or crude sanitary landfills, is burned or turned into compost. Garbage collection service is very poor. The commonest mode of disposal is dumping along streets, play fields and between houses. According to 1994-1996 Development Plan, the Nairobi City Council only collected a quarter of the nearly 340,000 tons of garbage generated in 1992, a situation that is likely to have worsened in subsequent years.

### Households who do not produce food and/or cultivate fewer than two crops, and those who do not own animals are more likely to have poor FC

Although high density urban households are almost totally market dependent, about a fifth grow some crops (mainly maize, beans, other pulses and vegetables) and 16% own some livestock, chiefly poultry and cattle. Crop production is least frequent in NW and NE pastoral zones, where livestock numbers are highest. The contribution of livestock to household income and food is significant in NE pastoral and agro pastoral clusters. The main constraints to livestock production include parasites and diseases, poor pasture and insecurity or theft.

### The NW and NE pastoral livelihood clusters fair poorly on most factors associated with food insecurity and malnutrition

They have the highest crowding index; most frequent use of unimproved sources of water, sanitation and waste disposal practices; highest proportion of households in the poorest wealth quintile; highest proportion of expenditures devoted to food and among the lowest absolute value of expenditures per capita; high proportion of households adopting a “dependents” livelihood strategy (begging, borrowing, remittances); the lowest immunization, vitamin A and deworming coverage; the most frequent untimely introduction of complementary foods for children; and the lowest proportion of children meeting the minimum dietary diversity. The NW pastoral zone has the highest proportion of households with poor FC, and the highest average score on the coping strategy index. It also has the highest prevalence of underweight children and high prevalence of acute and chronic malnutrition. Households in the NE pastoral zone do not have, on average, worse

food consumption scores than households in other zones. But they have the highest prevalence of acute malnutrition.

**The coastal marginal zone** has a high proportion of households with borderline FC. It has a high percentage of women-headed households, and a higher proportion in the poorest wealth quintile compared to male-headed households. Rates of chronic malnutrition and underweight children are high as is the proportion of children affected by untimely introduction of complementary foods.

**Nairobi** also has a high proportion of households with borderline FC and high rates of chronic malnutrition, highlighting the vulnerability of the population. A large proportion of households are engaged as poor casual wage labourers and few are involved in food production.

**The agro-pastoral zone** where use of unimproved sources of water is frequent and many are engaged as casual wage labourers. Levels of acute and chronic malnutrition are high. Food prices for maize and rice are among the highest.



## WHAT OTHER FACTORS MAY BE DRIVING MALNUTRITION IN HIGH DENSITY URBAN KENYA?

### Vitamin A supplementation is below the WHO cut-off-point of 80% in most livelihood clusters

The frequency of supplementation is inadequate with the majority of 12-59 month olds having received the supplement once and not the expected two times in the 12 month-period preceding the survey. Of concern is the large proportion of children whose supplementation is based on maternal and caregivers' recall and not on documentation. Children with vitamin A deficiency suffer a dramatically increased risk of death, blindness and illness, especially from measles and diarrhoea. Vitamin A is essential for the functioning of the immune system and the healthy growth and development of children.

### De-worming rates are low with no livelihood cluster meeting the acceptable level of 80%

Certain types of intestinal parasites can cause anaemia. Periodic de-worming for organisms like helminthes and schistosomiasis (bilharzia) can improve children's micronutrient and nutritional status. WHO recommends that children in developing countries exposed to poor sanitation and lacking clean safe water should be de-wormed once every six months.

### Infant and young child feeding practices are inappropriate for the majority of children

The impact of under nutrition during the "window of opportunity" (from pregnancy to two years old) has irreversible long term effects on health and on cognitive and physical development. About a quarter of children (and half in NE pastoral) stopped breastfeeding before the WHO recommended two years. The exclusive breastfeeding rate is low. Despite the timely introduction of complementary feeding

for the majority of the children, the frequency of feeding, particularly for 9-23 month olds, is lower than the recommendation for many children. Only two fifths of 6-23 month olds receive the minimum dietary diversity required to provide the necessary variety of nutrients for adequate growth and development. The lowest proportion of children is in NW pastoral (23.5%) probably because of poor knowledge of IYCF practices as well as food insecurity and cultural habits.

### Fewer than two thirds of caregivers wash their hands before preparing food and only 35% after handling a child's stool

Of equal concern is the low level (17%) who report washing their hands before feeding a child. And only 30% wash their hands with soap after handling a child's stool and 12% before feeding a child, exposing the child to a higher risk of contracting diseases.

### Hygiene standards and general facilities are often poor at informal child day care centres

These new centres are being set up in response to the need by mothers to leave home in search of work to support their families. Some are overcrowded, putting children at a high risk of cross-infections. Many of the centres lack appropriate child care practices with children left for long periods of time in wet nappies. Some lack water supply.

### Street foods are often prepared and stored in unhygienic conditions

Urban households are eating more and more street foods because they are readily available, cheaper and convenient for many people with limited income and time.

## RECOMMENDATIONS

### Target NW and SE pastoral zones

A comprehensive strategy is needed for the two zones, with an emphasis on increasing access to improved water and sanitation, poverty alleviation and livelihood /skills training for dependent households. Immunization and care practices must be strengthened with the minimum objective of reaching the level achieved in other high density urban areas.

### Urban agriculture

Evaluate the contribution of urban agriculture to food security in the high population density informal settlements.

KFSSG agriculture and livestock sector working group to effectively participate in the formulation of urban and peri-urban policy on agriculture.

Evaluate production per animal and its contribution to consumption and income; assess feed types, quality and sources; determine common livestock diseases (zoonotic diseases); and assess production systems and livestock welfare.

### Markets and trade

Carry out a comprehensive market study for urban high density areas to better understand how market structure, behaviour and performance influences food insecurity in those areas.

Establish a system to monitor prices of main food commodities regularly (maize meal, milk, sugar, wheat flour, pasta, rice and bread)

Address constraints that prevent traders from meeting demand

Improve supply to remote urban markets

Improve coverage of vitamin A supplementation and de-worming. Improve documentation of vaccinations and supplementation on child health cards to prevent unnecessary re-vaccination and reduce the chances of children receiving toxic doses of vitamin A.

Establish or upscale strategies to cut child morbidity prevalence. Provide insecticide treated bed-nets to children under-five and pregnant mothers and advise on how to manage conditions such as diarrhoea and fever.

Scale up ongoing sensitization and education regarding: the importance of seeking medical attention for sick children in a timely way and the dangers of self-prescription of drugs; optimal breastfeeding and complementary feeding practices including providing participatory sessions on how locally available foods can be used to prepare appropriate dishes for children; the importance of personal hygiene practices such as washing of hands with soap after visiting the latrine, before preparing food, before feeding children and after handling a child's faeces.

Work with the government to draw up guidelines for the operation of informal child day care centres.

Work with the department of public health to ensure that street food vendors operate in a clean and safe environment. Vendors should be licensed by local authorities and regularly inspected. Food handlers should undergo medical tests, sanitation should be improved and clean water availability assured.

**Initiate a health and nutrition information database that includes data on:**

- Growth monitoring of under-fives using health facility data (weight-for-age, height-for-age and MUAC)
- Child morbidity rates particularly for diarrheal diseases, malaria, measles, parasitic infections, fever and acute respiratory infections
- Immunization coverage, vitamin A supplementation and de-worming
- IYCF indicators
- Provision of health and nutrition education to women and the community at large
- Maternal ante-natal and post-natal attendance
- Coverage of iron/folate supplementation for pregnant women
- Rate of health facility delivery
- Rate of vitamin A supplementation for lactating women
- Family planning coverage
- Household food dietary diversity and food consumption patterns from results of surveys conducted in informal settlements.



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