



Counting the Beans

The True Cost of a Plate of Food Around the World



World Food Programme

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Counting the Beans

The True Cost of a Plate of Food Around the World

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“If you thought a meal was expensive in a country like Norway, try Malawi.”



FOREWORD

by David Beasley
WFP Executive Director

The observation at the heart of *Counting the Beans* stems from decades of relief work in dozens of countries: in the developing world, food tends to be expensive. Crises, which often drag on for years, make it even more so.

At the World Food Programme (WFP), a specialist unit is tasked with mapping fluctuations in the price of food: we use these as an indication of the nutritional status of entire populations. Our economists and statisticians have repeatedly cited the unaffordability of food (as opposed to the mere absence of it) to explain why hunger has historically proven so hard to beat.

That food works out pricey in poor countries is, in other words, something we've known for a while. Yet it's only recently that we've come up with the idea of a global index to pin down the *relative* cost of food, in various countries, against a single baseline.

You will find the concept explained in more detail in the pages that follow. But, broadly speaking, it goes like this: you calculate the price of a basic plate of food in a poorer part of the world, and express it as a percentage of average daily income. Then you suppose that a person in a rich country has to pay as much, in proportion to their income, for an equivalent plate of food – and see what you end up with.

The results are, in many cases, staggering: if you thought a meal was expensive in, say, Norway – well, try Malawi. By adjusting for purchasing power, we shine a stark light on inequalities in the affordability of food. Think of it as a reverse take on *The Economist's* Big Mac index, if you will: rather than focus on the product's nominal price, we focus on the price as *perceived* by those meant to purchase the product.

Or think of the perspective games of *Alice in Wonderland*, where the heroine and her environment keep growing and shrinking in relation to each other. Picture Alice as the consumer, and the scene around her as the cost of the meal. The changing ratio between them represents affordability. A big Alice is a consumer in a highly developed market: for her, a plate of food is a near-microscopic concern. By contrast, the smaller the Alice, the more the plate of food looms large, and the closer we come to the prevalent scenario in the poorest countries.

Earlier this year, we presented our Plate of Food index – or its prototype – at the World Economic Forum. It drew a great deal of interest. At the time, we'd only



crunched the numbers for a handful of countries. And in a nod to the Davos setting, we used Swiss income levels as our benchmark and expressed our sums in Swiss francs.

Among those who took notice was Mastercard. Our collaboration began in 2012, when the company put its muscle behind our project to offer “digital food” to refugees, the displaced, the furthest behind: it helped us leapfrog years of trial and error. Five years later, Mastercard still shares our commitment to ending hunger. Its support has allowed us to expand our Plate of Food calculations to include 33 countries.

There is further to go until ours becomes an established global index. In an effort to align our work with other international surveys, we have switched to New York as our baseline, and to US dollars as our currency of reference. We hope that over the coming year, our data points will grow to encompass most of the world. But even as we pursue our research on numbers, we have wanted to delve into the whys and wherefores of food unaffordability – and explore ways to reduce it.

The result is this publication – part atlas, part report, part manifesto for change. Alongside our thought-provoking take on the “true” cost of food, you will find: a presentation of food systems as complex equilibriums (neglect or damage a single lever, and food becomes unaffordable for most); a typology of what can go wrong with supply chains, whose role in the pricing of food is paramount; and – more demanding still – an assessment of the cost of securing *appropriately nutritious* food for diverse demographics. All of this content is underpinned by national case studies. And all of it is balanced with potential solutions as devised or deployed by WFP and its partners, from restored mountain trails in Nepal to school meals in Sri Lanka.

Finally, let me emphasize that ours is an open, inclusive project. *Counting the Beans* is aimed as much at food and nutrition professionals as at humanitarians, development practitioners, policymakers and the general public. It is an opening salvo rather than a finite piece of scholarship, and I sincerely hope it will trigger further reflection and spirited debate.

The conversation starts here.

In 2016
795 million
people
were hungry.
This number is
expected to rise
in 2017.



1

THE COST OF A PLATE OF FOOD

If people go hungry, it is often because food is unaffordable: our world is riddled with disparities in the cost of basic nourishment.

In richer countries, most people spend a small part of their income on feeding themselves. In poorer nations, by contrast, buying the ingredients for a single meal can erase a significant portion of a person's earnings. Where there is conflict or economic collapse, it can exceed these earnings outright.

In seeking to measure the “true” cost of a plate of food around the world, we have discarded nominal prices: when incomes are as polarized as they are, these tell us little. Instead, we have measured the proportion of daily income that a person in a developing or conflict-stricken country might spend on a basic plate of food. We then retro-projected this ratio onto the income of a developed-nation citizen, such as a resident of New York State. So that while a New Yorker might expect to spend just 0.6 percent of their daily income on the ingredients to make a simple 600 kilocalorie bean stew, someone in South Sudan would need to spend as much as 155 percent of *their* income. Or, to approach it from the other end, it would be as if a resident of the Empire State were to pay US\$321 for their stew.

We arrived at these figures in five steps.

- 1 A standard meal was put together – a stew made of beans or other pulses, paired with a carbohydrate component that matches local preferences. The quantity of each ingredient was worked out, and estimates made of the total weight of purchased food items and final edible weight of the meal.
- 2 The cost of the ingredients for a single serving was calculated in the national currency of each country covered.
- 3 An average daily budget per person was estimated in the local currency, derived from national GDP per capita figures. Where these were unavailable, we turned to alternative data sources.
- 4 The meal-to-income ratio was calculated, providing the proportion of the daily budget spent to purchase one serving of the meal.
- 5 A theoretical price was then calculated by retrospectively applying the meal-to-income ratio for an individual in a developing country to the daily budget of a New York consumer.

Bringing Home the Cost of a Plate of Food

THE COST OF A PLATE OF FOOD
 The amount residents of New York State would have to pay for a simple plate of food *if they spent the same proportion of their daily income** as people in these selected countries 2016

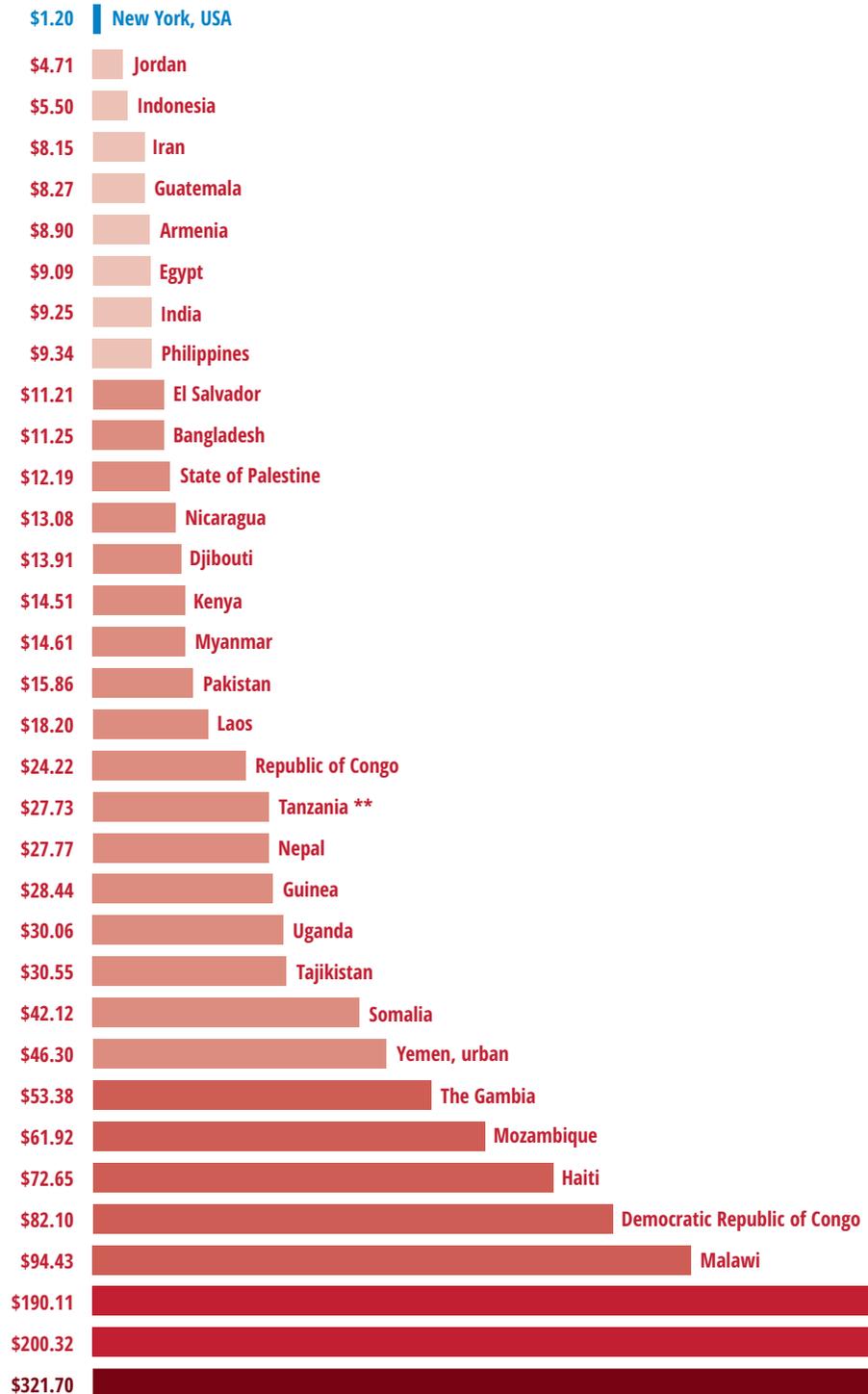
Further information

* Daily budget for New York State based on GDP per capita estimates from the Bureau of Economic Analysis (BEA). For comparison with countries where national GDP figures are not available, or when the Plate of Food Index refers to a selected area of a monitored country, BEA's 2016 personal income estimate for New York State is used as an alternative income measure. New York State's daily GDP per capita was US\$207.79 and its personal income US\$165.85 in 2016.

** Due to unavailability of vegetable oil prices, relative quantities of other food components were adjusted to maintain the same caloric content of the meal without oil.

† Daily budget estimated from per capita remittance inflows and wage rates for non-qualified labour adjusted for the number of working days per week and number of economically dependent individuals within a typical household. To ensure comparability, the BEA figure for New York personal income was used in this case.

‡ Personal income estimates for Adamawa, Borno, Jigawa and Yobe provided by 2016 Food Security and Vulnerability Survey.



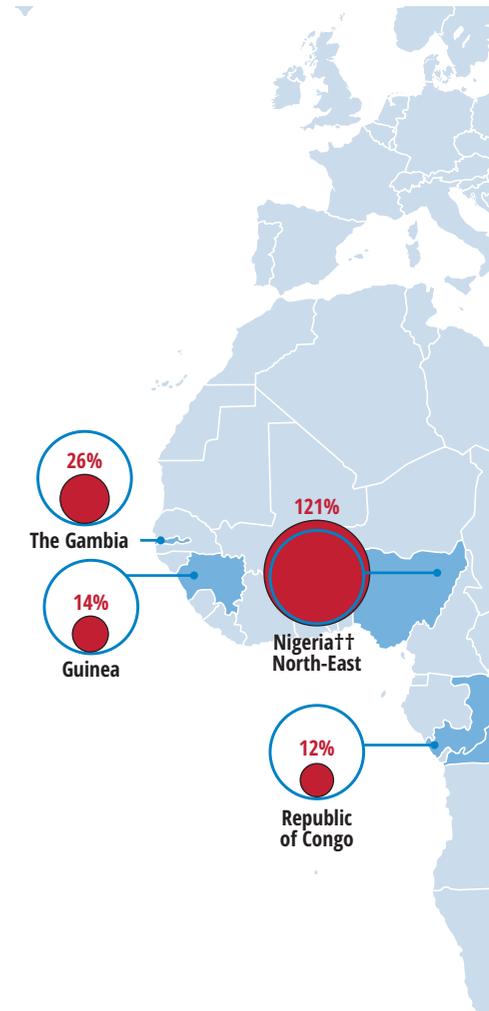
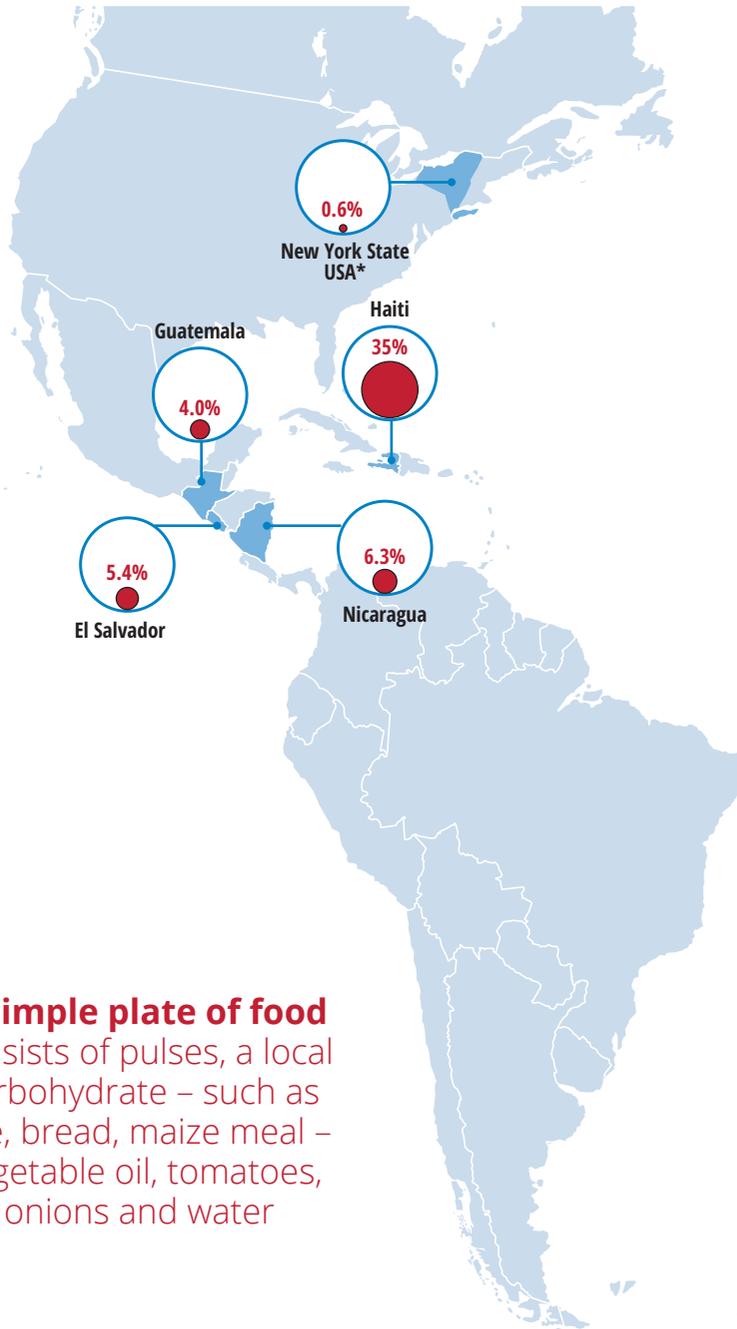
While someone living in **New York** might spend just **0.6%** of their daily income on the ingredients to make a simple bean stew, someone in **South Sudan** would need to spend **155%** of their daily income

Deir Ezzor, Syria †

Nigeria, North-East ††

South Sudan

The Relative Cost of a Plate of Food



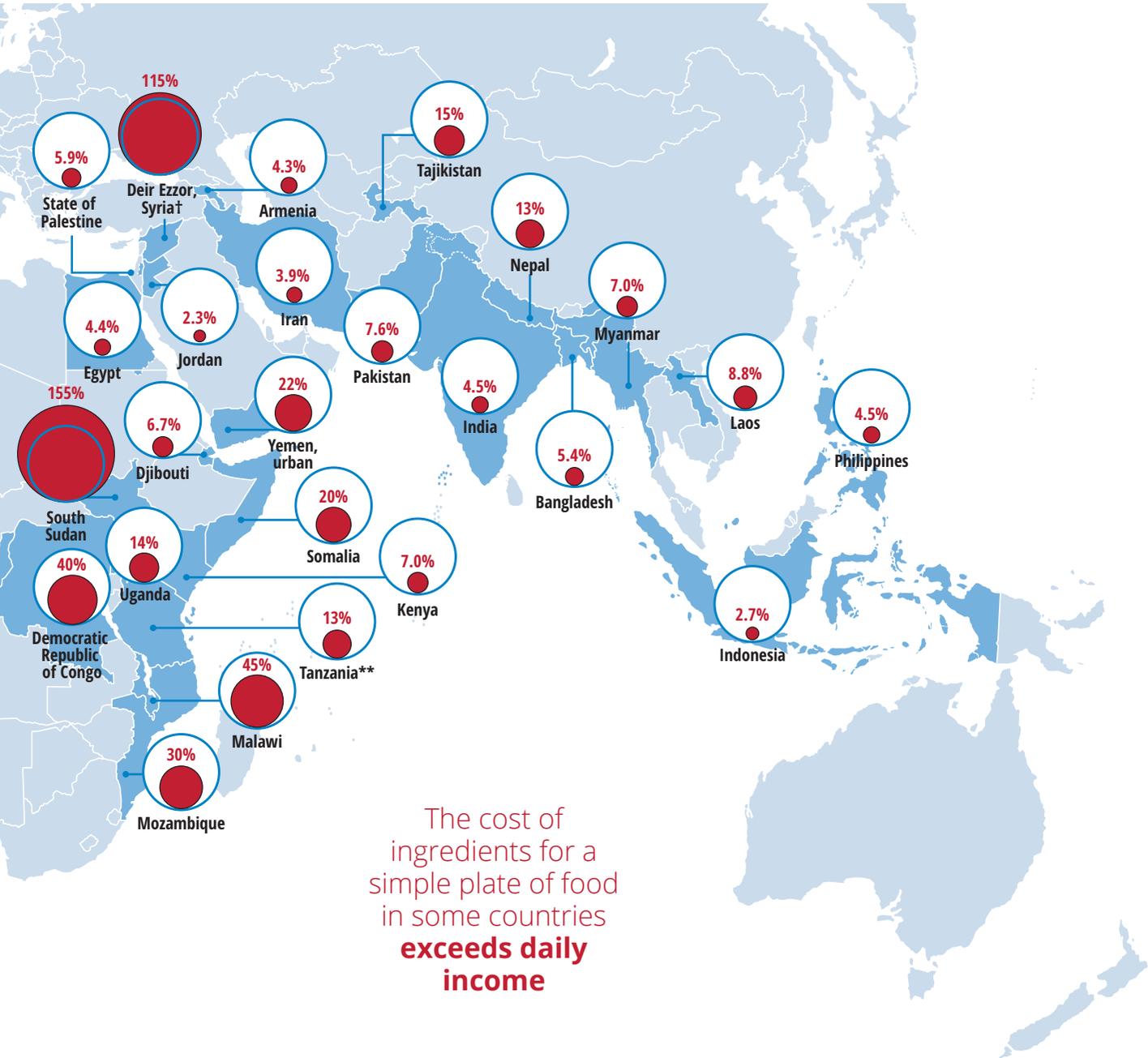
A simple plate of food consists of pulses, a local carbohydrate – such as rice, bread, maize meal – vegetable oil, tomatoes, onions and water

* ** † †† See further information on page 10.

THE COST OF A PLATE OF FOOD
 Percentage of average daily income
 needed to purchase a simple meal
 in selected countries 2016

○ average
 daily
 income

● cost of simple meal
 as percentage of
 average daily income



The cost of ingredients for a simple plate of food in some countries **exceeds daily income**



2

FOOD SYSTEMS: IMPROVING PERFORMANCE

There are many reasons why the same plate of food might cost a day's wages in one country and a handful of small change in another. Most relate to the complex network of relationships that form pathways along which food travels from the people who grow, raise or catch it to those who buy, cook and eat it.

These networks of relationships – which encompass all the activities and services involved in agricultural and fisheries production, the processing, marketing, and purchasing of food commodities, and their eventual consumption – can be characterized as food systems.

The spectre of almost 800 million hungry people globally, and the vast discrepancy in the relative cost of basic foods when compared to income, suggests that food systems do not meet the needs of a large part of society. Even in stable contexts they can be seriously flawed. Conflict, political instability, poor roads and extreme weather can further disrupt them. The implications for hunger – both temporary and long-lasting – are real and urgent.

Short-term concerns include the volume, value and quality of food in the supply chain, the cost of key secondary goods and services, such as packaging and transport, and whether it is possible to deliver food to people in need.

In the longer term, climate trends and political, social and economic conditions all have to be taken into account. How these interact determines the location, volume and cost of food production and processing, which in turn affects whether the food available to vulnerable populations is affordable and safe.

With the aim of improving the supply of affordable food around the world, WFP engages strategically with food systems:

- as a buyer of food and related goods and services
- as an innovator, with an operations-driven, whole-system perspective
- as a manager and disseminator of knowledge about welfare-enhancing and hunger-reducing food-system innovations.

Systemic Problems

There are deeply rooted and related systemic problems in food systems that, when ignored or inadequately addressed, generate chronic hunger.

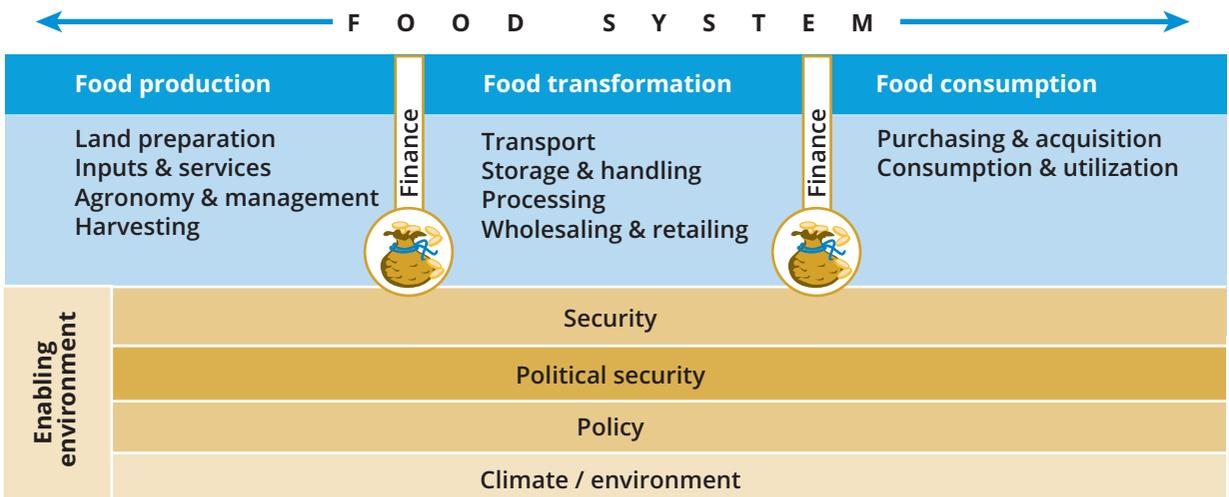
They also make food systems more vulnerable to shocks, leading to emergencies that call for food assistance. The resilience and overall performance of food systems hinges on how effectively these problems are handled.

SYSTEMIC PROBLEMS IN FOOD SYSTEMS



The three problems are manifested in particular areas of the food system. The “last mile” problem relates both to production, in that isolated farmers are unable to access markets, and consumption, in that poor people are unable to afford the food nearest to them. A “bad year” affects consumption, while a “good year” is largely a problem of poor storage and transportation.

THE FOOD SYSTEM



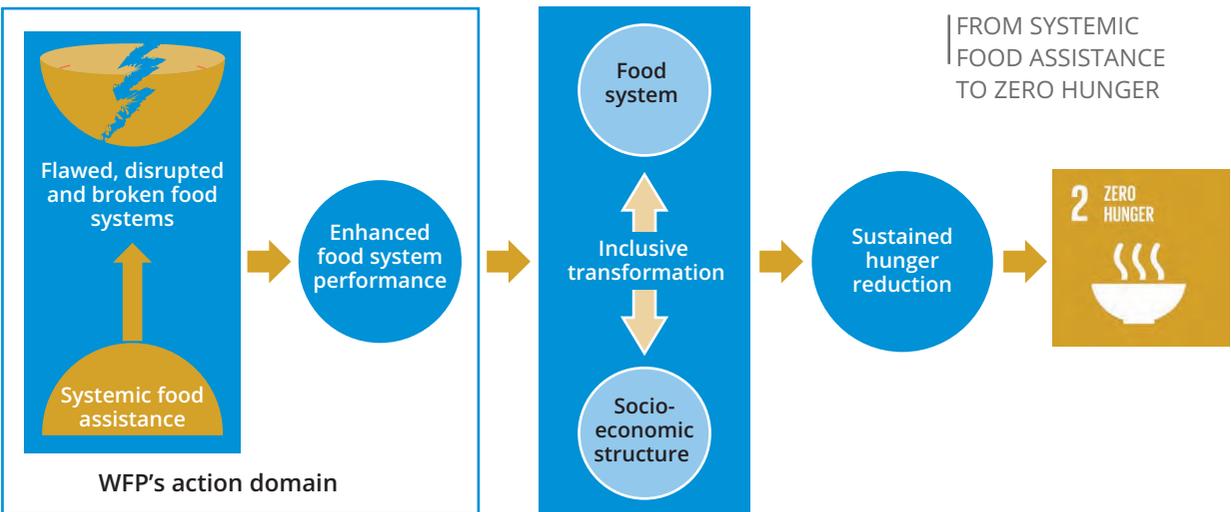
Systemic Food Assistance

Systemic food assistance gets to the root of problems affecting food systems. WFP identifies a humanitarian need for safe and nutritious food in chronically devastated contexts, and turns that need into a driving force for innovative and capacity-enhancing improvements in food systems.

The scale of WFP’s food assistance confirms that vulnerable populations caught in the grip of humanitarian crises borne of poverty, violence and environmental degradation are being let down by food systems. In extreme cases, food systems are arenas of oppression, subjugation and abuse of power. But even in relatively stable contexts, communications, transport, and storage facilities are often poor. Commercial markets might be sharply segmented, with smallholders and small-scale traders lacking the bargaining power to buy or sell through these channels.

Well-performing food systems require structural and economic transformations – more effective food storage or better roads, for example – which bring economic and social advantages, leading to significant reductions in poverty and hunger.

As the next section shows, in most of the contexts in which WFP is called upon to act, there is scope for systemic food assistance that will improve the performance of food systems and significantly reduce hunger. This may involve giving smallholder farmers the chance to purchase effective storage containers for their harvest, improving the roads so that they can get their produce to market, and creating links between smallholders and bulk buyers. Local food processors can be given opportunities to expand their businesses and develop new markets. And from the point of view of consumers, the retail sector can be made more efficient and competitive, thereby making prices more predictable and less volatile.





3

THE SUPPLY CHAIN: RE-FORGING BROKEN LINKS

As food moves along the supply chain, from field or fishpond to the eventual consumer, its price gets higher and higher. Those involved at each stage of the supply chain expect to make a profit from growing and harvesting the food, loading and transporting it, processing and packaging it, stocking and selling it.

The cost of commodities, including food, can be influenced by external factors. Climate-related shocks reverberate rapidly along the supply chain, imperilling lives and livelihoods. Unrest or conflict, a country's governance deficits or difficult political legacy can also rupture the supply chain and cause the price of scarce supplies to soar.

A broken supply chain close to where food is produced – poor storage facilities, a lack of vehicles to transport the produce to market, the absence of a passable road, or a combination of any, or all, of these – might cause the price the farmer receives to fall because of a local glut, but prices to rise further down the chain.

Fresh food in small-town markets may have a relatively short supply chain, but processed food often makes a long journey from field to factory and back again to a retail outlet. Shopkeepers of small local stores have little leverage over wholesalers. They typically have to pay a high price for the goods they stock and then add a substantial mark-up (as much as 15 percent, compared with a more standard 3 to 5 percent in supermarkets). Often, there is little in the way of competition and no incentive for shopkeepers to attempt to attract new customers with special offers. The consumer is expected to take it or leave it.

WFP is working to innovate in areas such as contracting, bulk purchasing and retail transport to lower the cost of the food on the shelf. Experience in making the retail sector in refugee camps in Kenya more efficient, and building transport networks in South Sudan, have demonstrated how small adjustments can have a substantial impact, lowering prices for customers and enabling farmers to get their produce to local towns.

Almost
50%
of Syria's
population
**needed food
assistance**
in 2016

Conflict in Syria has had a devastating impact on the country's food supplies. The entire food system – agricultural production, the preparation, processing and transportation of food stuffs – has been disrupted. Even when food is available, high prices can make it unaffordable for many people.

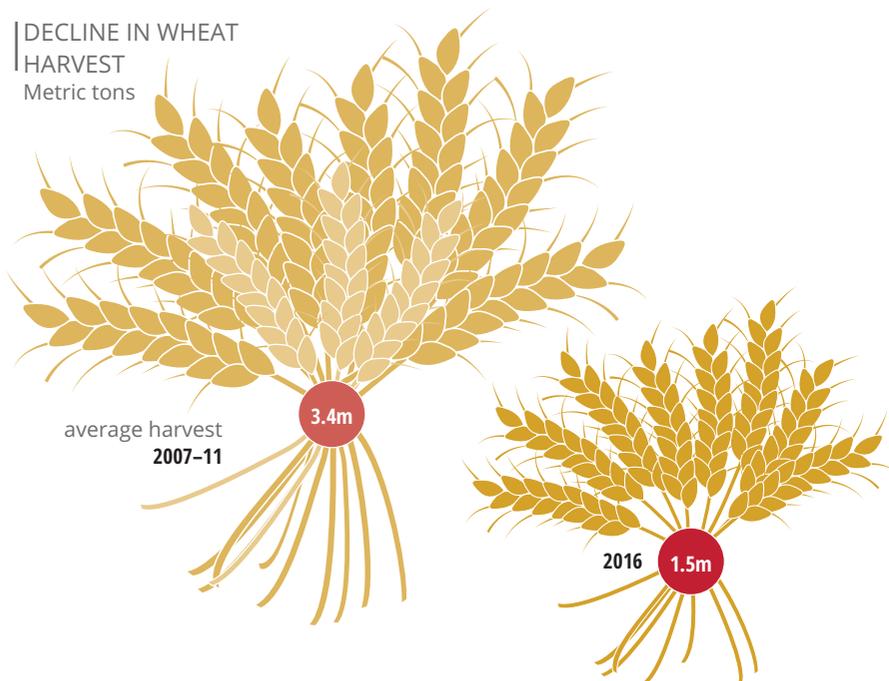
The area of land under cultivation has shrunk to less than 70 percent of its 2011 extent, and the number of cattle and sheep has been similarly affected as farmers have lost the battle to find fodder for their herds. Much of the country's irrigation system and agricultural machinery has been destroyed, and a shortage of electricity and fuel renders much of what survives unusable.

Trade in foodstuffs has been badly affected by hostilities, with many routes impassable. The result has been desperate food shortages and widespread hunger in many regions, exacerbated by the internal displacement of 6.5 million Syrians.

Before the conflict started in 2011, Syria was a middle-income country, but by 2016 four in five Syrians were living in poverty, struggling to find or to buy enough food. Almost 75 percent of the population (13.5 million people) required humanitarian assistance, and 9 million people were deemed by WFP to be in need of food assistance.



DECLINE IN WHEAT HARVEST
Metric tons



Rebuilding the Food System

Syria was WFP's largest operation in 2016 in terms of quantity of food purchased and delivered. While WFP sources an average of 55 percent of its annual global commodity requirements in local and regional markets, the disruption of the food system meant that WFP obtained less than 2 percent of its food supplies from within Syria from 2014 through to 2016.

Local sourcing is increasing, however, with an expansion in the quantity and variety of commodities procured in-country to include not only date bars and salt, but bulgur, rice, pulses, sugar and parcels of ready-to-eat food. WFP plans to scale up local procurement to about 10 percent of its total purchases in Syria.

Working closely with the government and local partners, rebuilding Syria's food system will not only facilitate the delivery of food assistance to those in need but, in the long term, will help make the food system sustainable.



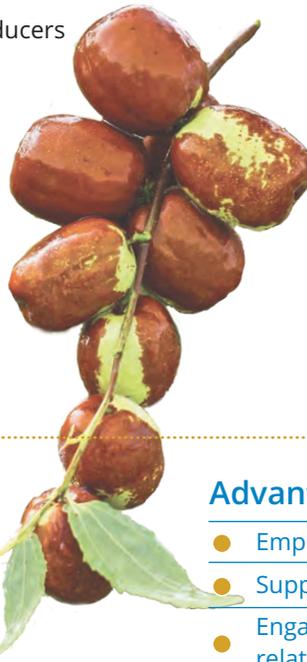
LOCAL PRODUCTION OF FORTIFIED DATE BARS

WFP provided partial funding to two producers of fortified date bars, enabling them to purchase machinery and improve their production lines.

Planned combined capacity (Aug 2017): **660 MT per month**

Monthly requirement for school feeding of date bars: **600 MT per month**

WFP will be able to source all date bars needed to feed **260,500 children**



Advantages:

- Knowledge transfer regarding fortified food
- Funds and technical guidance provided by WFP
- A boost for local production of food and packaging

The two factories will employ about **400 people**



PACKAGING OF FOOD RATIONS

In a unique operation for WFP, approximately **80%** of food rations dispatched every month to vulnerable families in Syria are packaged at local facilities.

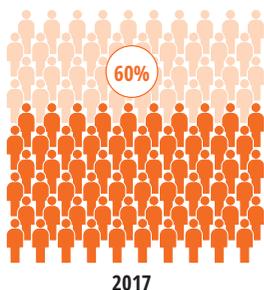
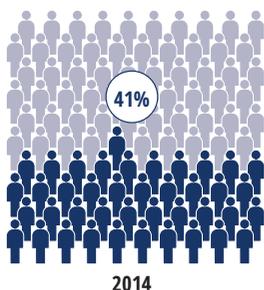


Number of food ration packs: **680,000 per month**

Advantages:

- Employment
- Supporting local factories
- Engaging local companies to provide related services
- 2013: 3 service providers
- 2017: 19 service providers
- Greater cost efficiency
- Jan 2013 – Apr 2017: **WFP saved approx. \$48.7 million**
- Shorter lead times, better quality, fewer operational risks and more flexibility

FOOD INSECURITY
Percentage of Yemeni households unable to obtain sufficient food



Yemen's cereal production provides less than **20%** of its total needs for food and fodder

A chronic food shortage has been exacerbated by an increasingly bitter conflict. Amid extensive suffering and the hardship linked to escalating prices, WFP is using the capacity of local suppliers to import and distribute food assistance through retail outlets.

The poorest country in the Middle East, Yemen has suffered from decades of chronic food insecurity. In 2015, an already fragile situation deteriorated rapidly as conflict broke out. By 2017, more than two-thirds of people were struggling to feed themselves, with millions in need of emergency food assistance.

Since the crisis started, household incomes have fallen. Many public-sector workers have gone for months without being paid. At the same time, food prices have increased. With 80 percent of Yemenis in debt in 2017, more than half of all households have had to buy food on credit. Many have resorted to reducing portions or skipping meals altogether.

Although agriculture is the main source of livelihood for at least 60 percent of Yemeni households, the country has for many years been heavily dependent on imported grain, not only to feed its people, but as fodder for its livestock.

The crisis has severely limited imports, leaving up to 1.5 million households unable to obtain seeds, fertilizer and fuel for irrigation, and 860,000 households unable to feed their livestock. Many pastoralists have had to sell their herds to cover household expenses. Crop and livestock diseases are going untreated, and emergency agricultural support is urgently needed.

The situation has been compounded by a crisis involving Yemen's Central Bank, with a shortage of US dollars and other hard foreign currency. This, alongside restricted port access, has prevented businesses from opening letters of credit and bringing in food – a critical situation in a country now almost totally dependent on imported food staples such as wheat and rice. The impact of dilapidated road infrastructure and destroyed bridges on secondary and tertiary markets also compounds the problem.



Using Local Knowledge

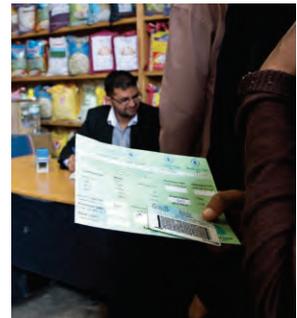
When a country's supply chain is so unpredictable and many people are hard to reach, WFP has to take a flexible approach. Where appropriate, it seeks to work with local businesses and suppliers, thereby helping support the local economy.

In Yemen, WFP provides assistance through a combination of food distribution and the innovative Commodity Vouchers through Traders Network (CVTN), which makes the most of existing market capacity in urban areas and the logistics networks of local traders.

By creating relationships with local distributors, wholesalers and retailers in urban areas, WFP has ensured that food is always available for CVTN beneficiaries even when there are delays to WFP's general food distribution.

The CVTN system strengthens the capacity of the private sector and creates more jobs – around 380 since the start of CVTN, according to the contracted wholesalers. It also injects dollars – an average of US\$5m per month in 2016 – into the local economy and results in more food being imported.

By the end of 2016, WFP had expanded the CVTN scheme to four governorates across Yemen, and delivered assistance to over 900,000 people through local retail networks.



Wheat (grain) 51,310



5,224

Vegetable oil



4,958

Pulses



2,505

White sugar



652

Iodized salt

Total MT: 64,649

CVTN DISTRIBUTION
Quantities distributed through CVTN vouchers 2016
metric tons

Smallholders produce 80% of Malawi's food

Smallholder farmers have seen their families' future food supply destroyed by droughts and floods. These seem to be increasing in frequency and require a rapid and flexible response.

Malawi is a landlocked, low-income country with a rapidly expanding population. More than 80 percent of its people are smallholder farmers, relying on tiny parcels of densely cultivated land.

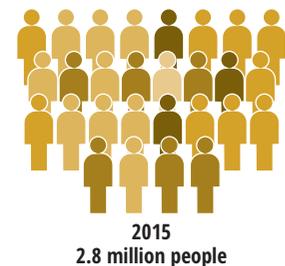
Most rural families live in poverty, with those headed by women suffering most. All are highly vulnerable to the effects of natural disasters, such as floods and droughts.

Two years of drought, followed by catastrophic floods in 2015, hit farmers and food production hard, especially in the south of the country. A year later, the most severe El Niño event in 35 years struck, causing widespread erratic rains, dry spells, failed harvests and an even higher food deficit. As many as 6.7 million people found themselves at risk and in need of assistance.

Malawi is normally self-sufficient in maize, but in 2016 its government predicted a shortfall equivalent to a quarter of the country's annual requirement. It asked WFP to import, on its behalf, 146,000 tonnes of maize.

FOOD INSECURITY
The number of people unable to access sufficient food

 = 100,000 people



MAIZE SHORTFALL
2016



Creating a Flexible Supply Chain

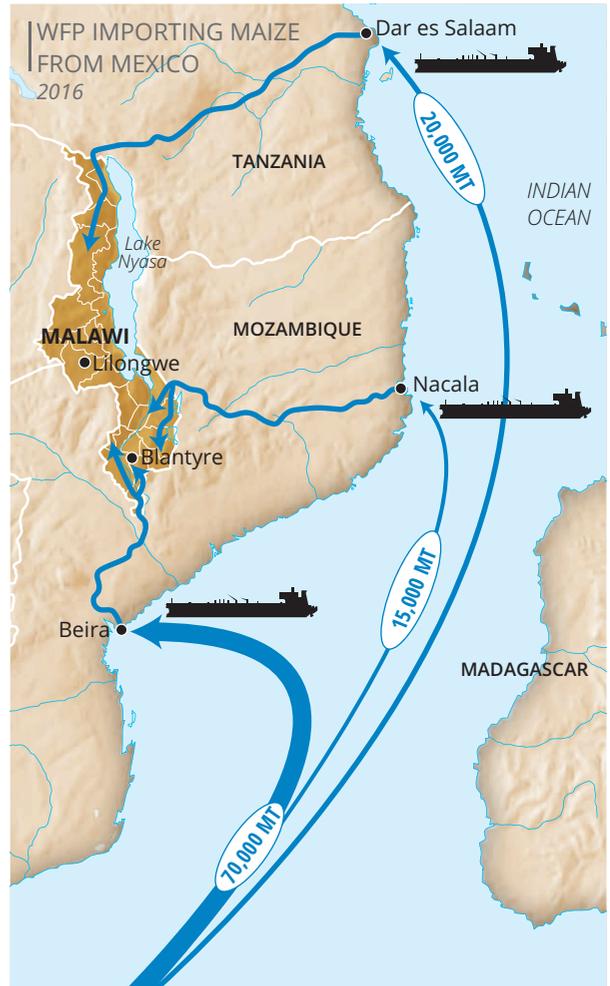
Malawi's need for grain imports in 2016 was urgent. WFP arranged for a shipment of maize (from Mexico) to arrive at Port Beira, Mozambique within three weeks. To avoid congestion, two further shipments were sent to Nacala, Mozambique and Dar es Salaam, Tanzania.

Bypassing normal procedures, whereby the grain would be sent to the government's Strategic Grain Reserve silos in the centre of the country, WFP managed the supply chain and organized transport and distribution directly from the ports to the affected areas. Grain was also imported from Zambia.

WFP installed five temporary bridges in areas that had been cut-off by floods, and positioned grain in mobile storage units at 76 strategic sites, giving the operation a high degree of flexibility. It also engaged cooperating partners with capacity to manage secondary warehousing and last-mile transport, so that Extended Delivery Points could be established in strategic locations within Malawi.

A swamp boat was purchased to ensure deliveries in case of flooding. And, with rural roads impassable due to heavy rains at the end of 2016, WFP employed a wide range of alternative forms of transportation, including boats and canoes, to avoid delays.

By March 2017, the 6.7 million people considered food insecure had received food assistance, and the 2017 maize harvest was projected to come in at near-average levels.



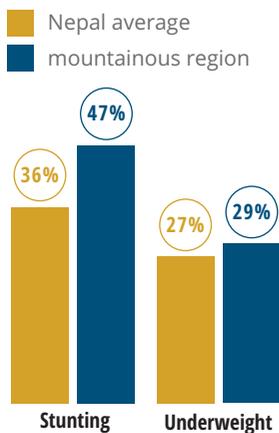
A poor and largely underdeveloped nation, Nepal is among the ten countries most affected by disasters, in terms both of the frequency of events and the number of people killed by them.

The country's mountainous terrain means that around 9 percent of its people live in isolated villages, connected to the outside world by narrow trails and aging bridges. The only way to get anywhere is to walk. Food and other goods are transported on mules, where possible, or on dzos (a yak-cow hybrid) at really high altitudes. But a third of trails are too steep or narrow for animals, and hired porters, carrying bundles often exceeding 30 kg, are often the only way of getting what is needed out to the villages.

The precariousness of this supply route can cause the price of food to treble by the time it reaches villagers, making it hard for the poorest to afford a diverse diet. Many children do not receive all the nutrients they need, leading to stunting, which can affect physical and mental development and inhibit their future life chances.

The challenging terrain also makes it difficult for children to reach schools, for pregnant women to get to clinics, and for the government to provide basic services and construct water and sewage systems. Rivers, the main source of drinking water, are contaminated, and epidemics the all-too-frequent result. And that is before natural disasters – floods, landslides, wildfires and earthquakes – have done their work, burying trails, sweeping away footbridges and leaving people clinging to existence.

UNDERNUTRITION
Percentage of children under five who are stunted and underweight 2016



READY TO RESPOND

WFP, as lead of the Logistics Cluster, a humanitarian operational hub, worked with Nepal's Ministry of Home Affairs in anticipation of a major disaster. The Humanitarian Staging Area (HSA) at Kathmandu's international airport, constructed with the support of the UK Department for International Development, opened just one month before Nepal was hit by a 7.8 magnitude earthquake on 25 April 2015, followed by another massive shock in May.

The HSA leapt into action, coordinating the movement of supplies and people. With equipment already on site and satellite hubs quickly set up in remote areas, vital time was saved in the operation to reach nearly 2 million people. Effective disaster preparedness not only saves more lives but uses limited financial resources in the most efficient way. In providing such a rapid response, the HSA is estimated to have saved twice the cost of setting up the facility.

Response to 2015 earthquakes

HSA and 9 satellite hubs:

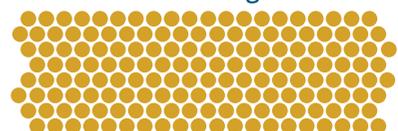


handled
88,807 m³
of aid



weighing

on behalf of 164 organizations



Building Back Better

The devastating earthquakes that struck the country in 2015 killed 8,700 people and destroyed some of its most famous monuments. They also crippled the fragile network of trails in the affected areas, leaving communities unreachable except by helicopter.

WFP, already experienced in reconstructing trails in Nepal, worked with local and international mountaineers and geologists to rapidly open up 880 km of damaged trails. These trails were then used by a network of porters and mules to deliver 2,100 MT of humanitarian cargo to about 130,000 people in remote locations, who had been cut-off by the effects of the quakes. The rehabilitation of these trails also had the longer term effect of improving these remote communities' access to markets and other essential services.



QUICK WIN TRAIL PROJECT

WFP is currently working on a project funded by the UK Department for International Development (DFID), in consultation with the government of Nepal, local government and village committees in two earthquake-affected districts, to establish more durable trails, able to mitigate the effects of landslides and earthquakes. Local contractors employ local people, half of them women, who develop new skills and provide a much-needed boost to the economy of their community.

Aims of the project

Assess and improve trails – **129 km**

Assess trails – **158 km**

Improve the lives of **55,000** people

Preliminary results

Research commissioned by WFP indicates that where people are able to access roads and markets more quickly and easily, households have more diverse diets, spending more on non-staple foods.

Additionally, children living closer to roads and markets are less likely to be stunted.

Advantages of better trails

- More people able to reach medical centres, schools and markets
- Goods brought in more easily, creating new business opportunities
- Reduced prices due to easier access
- Food more available, improving people's diet
- Increased tourism, benefiting the economy of local communities
- Less incentive for migration



Only **5%** of research investment in the past 30 years has been directed towards reducing losses

Agriculture is at the heart of Uganda's economy and society, with smallholders and their families forming the vast majority of the population. But their ability to make the most out of their land is hampered by uncertain land tenure, low levels of technology, limited access to credit, and poorly integrated markets. Even with all these challenges, the biggest barrier to progress is that ineffectively stored crops can cause post-harvest losses as high as 40 percent.

Post-harvest food loss is one of the main contributing factors to long-term food insecurity. Smallholders face some of their biggest challenges after harvest, when crops are rendered inedible by insects, pests, mould and moisture, often because they don't have the right equipment, know-how or facilities to handle and store either staple or cash crops. These losses go beyond a simple fall in income: improper post-harvest handling leads to aflatoxin infestation, a carcinogenic fungus that is one of the leading causes of cancer in Africa.

At times of good harvests, reducing losses enables smallholder farmers to improve the quality of food they eat and control the timing of crop sales – they can wait to sell when prices rise during the lean season. At times of bad harvests, the impact is even greater – the ability to store means farmers are able to feed their families, and make it through the lean seasons when market prices surge. It's during these bad harvests that post-harvest losses ripple out to weaken the health, nutrition and financial security of entire communities.

Traditional storage can result in the loss of **40%** of the harvest



Airtight Food Storage

Improving household food storage systems is one of the most effective ways to increase the amount of food available, help farmers control their own futures – and escape the pervasive cycle of poverty.

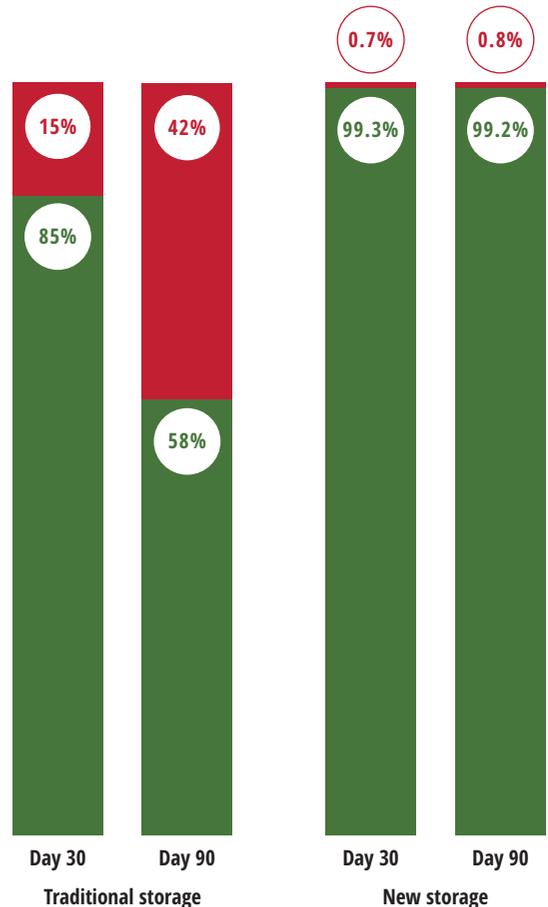
WFP launched the Zero Food Loss Initiative in 2013. Training and support, coupled with airtight storage equipment – ranging from multi-layered plastic bags to plastic and metal silos with airtight seals – enable farmers to retain almost all of their harvest.

The results are game-changing. In just one harvest, most farmers pay off their investment in new storage devices and substantially increase their incomes.

This is particularly significant for women farmers: as the mainstay of agriculture and food preparation in Africa, they gain time to pursue other income-generating activities. More income means more food on the table for farming families, and more farmers' children in school.

CROP LOSSES
Percentage of crop lost 2015

■ losses
■ healthy crop



Unable to sell their produce for a good price, Tanzania's smallholder farmers often live a precarious existence. But by creating reliable demand for their output, WFP is helping them break out of the cycle of low productivity.

Tanzania has vast expanses of arable land, but only 23 percent (10 million hectares) is under cultivation, almost all by hand hoe or ox plough. And while the country is able to grow enough food to meet its needs – the main staples are maize, sorghum, millet, cassava, bananas, rice, beans and wheat – there is huge potential for increasing productivity and increasing market linkages.

The vast majority of Tanzania's rural population are, in fact, smallholder farmers, mostly growing just enough food to feed themselves and their family. They cultivate an average of 2 hectares of land, are dependent on rainfall, use little fertilizer, and lose much of their produce post-harvest to mould and infestations.

When harvests are good, surplus food can be sold or bartered for other goods. When times are bad, hard choices have to be made – between food for the family, fertilizers for the crops, or feed for the animals. A couple of bad seasons in a row can be catastrophic. Breaking out of poverty becomes very hard.

Low prices for their produce, and their inability to obtain credit to purchase tools and fertilizers or to provide effective storage for their crops, lock smallholder farmers into a cycle of low productivity.

Women, who make up the majority of the agricultural workforce, generally find themselves with even fewer options than men.

Population of Tanzania:

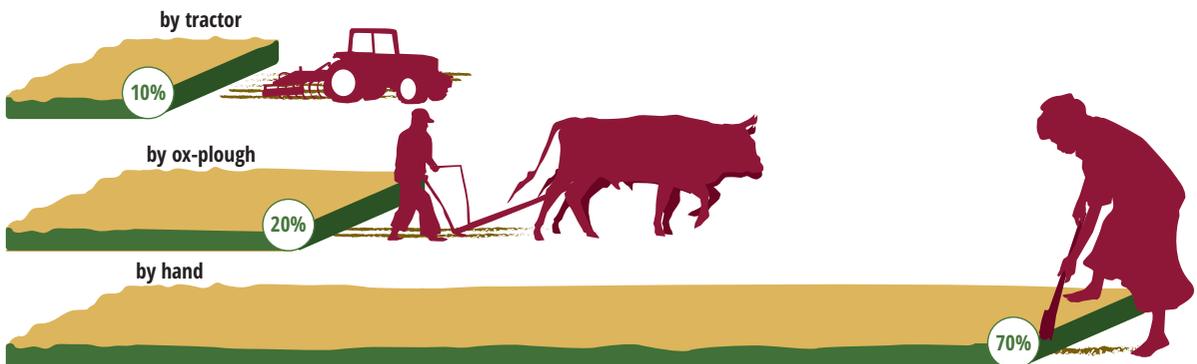
80%

rely on subsistence farming

28%

live below the poverty line

LAND CULTIVATION IN TANZANIA



Farm to Market Alliance

When smallholder farmers do have surplus produce to sell, they often lose out because the prices they get for their crops immediately after harvest in local markets are lower than those in formal markets, which are further away and often harder to reach.

The Farm to Market Alliance (FTMA) is a consortium of eight public and private organizations seeking to transform food value chains in emerging markets by creating long-term links between smallholder farmers, buyers, financiers, suppliers of inputs and technical expertise. The aim is to increase the productivity, profitability and resilience of smallholders so that they can play a reliable part in the market.

Buyers enter into stable relationships with smallholder farmers – typically through contracts extending beyond one season. Smallholders present this stability as collateral to access finance, which they spend on seeds, fertilizer and machinery to improve their productivity and subsequently their equipment to manage their post-harvest losses. This, in turn, makes them less of a business risk for companies wanting to invest in farming.

The more demand there is for their produce, the more money the farmers have to finance productivity improvements. And the more productive they are, the higher the demand.

Ertharin Cousin,
former WFP
Executive
Director,
Davos, 2016



“Half of the 795 million hungry people in the world today are family farmers. [The Alliance] will enable some of the most marginalized farmers to access reliable markets ... This will have a profound impact on food security...”

THE BENEFITS OF FTMA IN TANZANIA

Statistics for the 2015/16 season

Stakeholders

- 21,218 farmers in 29 farmers' organizations
- 3 input suppliers
- 7 buyers
- 2 financial institutions



Market

- Able to negotiate bulk sale and sell at true market price

Maize yield

- *Before:* 1.7 MT/ hectare
- *After:* 3.5 MT/hectare



Inputs

- *Before:* limited access to seeds only
- *After:* access to seeds, fertilizers, herbicides

Finance

- *Before:* no access
- *After:* access to formal credit with lowered interest rates due to structuring of bank guarantee



A more efficient food supply chain, where retailers aggregate their purchases, leads to a more competitive retail sector, with benefits for all purchasers and consumers.

Agriculture continues to power Kenya's economy. But while the highlands are home to some of Africa's most productive farming areas, the country is largely arid or semi-arid and highly dependent on seasonal rainfall. Climatic shocks, such as drought or torrential rain, take a heavy toll on communities reliant on agriculture for their livelihoods. Insecurity in the region acts as a general brake on development and makes basic goods expensive.

In late 2016 and 2017, prolonged and severe drought devastated most pastoral and agro-pastoral areas. Water points ran dry. Foraging cattle found little to feed on. Herders were forced to sell their emaciated livestock at knockdown prices. An infestation of armyworm – a crop-destroying caterpillar – wiped 15 percent off the annual cereal production. Prices surged. Demand for imported cereals escalated. By February 2017, an estimated 2.6 million people were suffering acute food shortages.

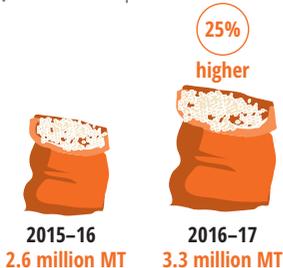
PRICE RISES

March 2017 compared with March 2016



CEREAL IMPORTS

Amount required



BAMBA CHAKULA: BOOSTING PURCHASING POWER

Arid northern Kenya hosts the Kakuma refugee camp, near the borders with Uganda and South Sudan. Together with the smaller nearby settlement of Kalobeyei, Kakuma houses more than 160,000 refugees. In a drought-hit, impoverished region, these long-term refugees are among the most vulnerable residents.

Here, WFP has introduced a system of cash transfers known as Bamba Chakula, or "Get your food" in Sheng, a Swahili-based slang. The money is sent to recipients' mobile phones, enabling them to choose what food to buy – and who to buy it from, among some 200 participating traders.

A similar project has been taking place in the camp of Dadaab, in eastern Kenya.



Retail Engagement

WFP's Kenya retail engagement strategy aims to increase the sustainability and efficiency of local retail markets. This is particularly important in remote areas, where an inefficient supply chain translates into market fragmentation.

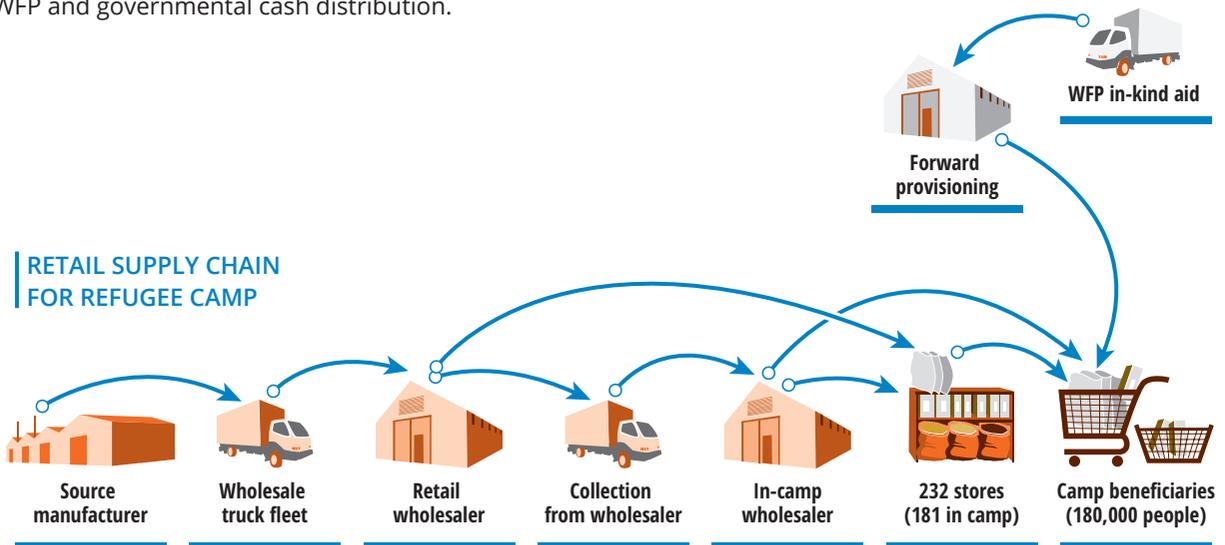
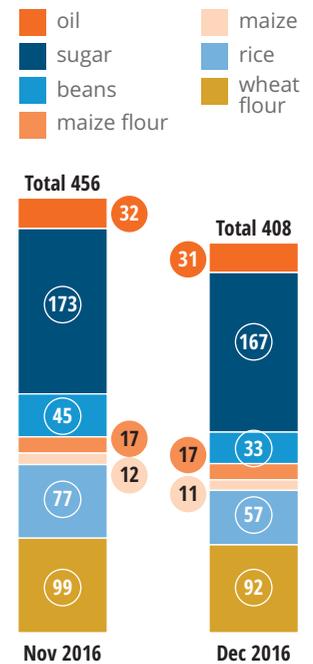
At Kakuma and Kalobeyei, WFP has helped retailers aggregate their orders to wholesalers, allowing them to benefit from lower wholesale prices and pass the discount on to retail customers. The customers themselves had more disposable income, thanks to cash transfers (see bottom of page 32). Retailers, alongside government officials, have also received training in business methods, food handling and food storage.

The result was an initial 10 percent drop in the retail price of a basket of goods at the end of 2016 – a significant purchasing power boost, both for recipients of humanitarian assistance and for local low-income families. This gave people the opportunity to purchase more nutritious food and markedly improve their quality of life. While prices subsequently rose, retail engagement reduced the scale of the increase.

A simultaneous effort to source local produce has shortened the supply chain. It has also created links between retailers in the camp and local farmers, giving the latter more opportunities to sell their crops. Sheds provided by WFP to *mama mbogas* (women vegetable sellers) have meanwhile brought new hygiene standards to the handling of fresh food, while enabling traders to buy in volume.

Retail engagement has increased the availability of nutritious food at more affordable prices; offered those with the highest nutrient requirements – young children, adolescent girls and breastfeeding women – the chance to improve their diets; opened up the prospect of self-reliance for refugee communities; and shored up the precarious livelihoods of host communities. For maximum impact, plans are underway to develop an engagement strategy for all areas covered by WFP and governmental cash distribution.

RETAIL PRICE DROP
Cost in Kenyan Shillings of a typical monthly basket of food for one person in Kakuma Refugee Camp Nov & Dec 2016



Decades of conflict have left millions of people hungry and impoverished, and the country's food supply chain fragmented by impassable roads.

South Sudan is the world's newest country and also one of its poorest, despite extensive arable lands, water and oil reserves, herds of cattle and stocks of fish. Less than three years after the nation gained independence from Sudan in July 2011, ending one of the longest civil wars on record, fighting – between South Sudanese factions this time – broke out again.

Low agricultural investment over many years means that not enough food is produced to feed South Sudan's population. What food there is cannot easily be moved around on the largely unsurfaced roads, made impassable by heavy rains and seasonal floods.

Conflict and insecurity have placed severe limitations on the movement of commercial and humanitarian goods alike. The landlocked nation has one of the most challenging supply chains in the world. Three corridors, encompassing nine countries, are used to bring goods from ports to delivery points in South Sudan. And while transporting goods around the country is difficult enough in the dry season, it becomes almost impossible once the rains come.



Improving Infrastructure

Constructing and maintaining roads and other improvements to infrastructure are seen by the government of South Sudan as the backbone of long-term growth, stability and agricultural development. Roads linking rural and urban centres enable agricultural inputs (seeds, fertilizers, pesticides) and outputs (produce) to flow between the two. They also make it possible for people to get basic education and health services, and for WFP to deliver food assistance to vulnerable populations.

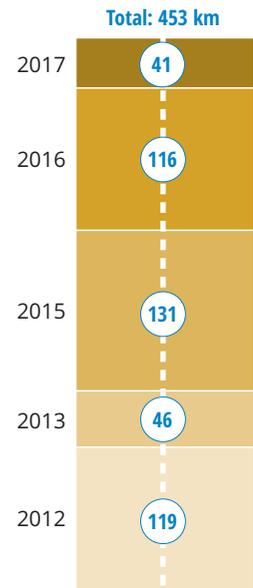
A WFP Special Operation (SO) between 2004 and 2011 rehabilitated 2,600 km of main (trunk) roads connecting key areas, but these subsequently deteriorated due to a shortage of funding during the ongoing conflict, poor maintenance and flooding. A second SO (2011–2018) was set up to construct or improve feeder roads to connect agricultural communities with main roads. Representatives of the government and donor community agreed on which routes to work on, with technical input from WFP and other partners.

By April 2017, despite considerable challenges – including conflict, insecurity, instability and difficult weather conditions – a total of 453 km of feeder roads had been constructed.

Crucially, WFP has provided on-the-job road construction and maintenance training for local communities and government staff to increase the likelihood of the roads remaining passable.

3 out of 4 communities in project areas indicated that roads reduced their travel costs

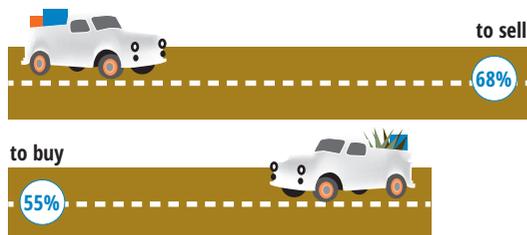
FEEDER ROADS
Kilometres constructed as part of Special Operation 2012–16



BENEFITS OF ROAD CONSTRUCTION

The 64-km Pageri–Magwi and the Ame–Juba junction roads in Eastern Equatoria link communities in Pageri and Magwi with one of the main trade routes from Uganda to South Sudan. Feedback from those living along the new roads indicates that they are delighted with the project, which has helped them to travel to markets and reach schools and clinics.

Increase in number of people accessing markets since completion of road 2016



 Ochang Walter, Mayor of Magwi town

“ We were in difficulty, but the road has saved us. People can produce a lot of food here but it would get rotten because there [was] no road to move the produce to markets where it could be sold. Now ... each day, about 10 vehicles take food to Juba [for sale]. They will be in Juba within three hours. Before the road came, it took a week. ”



4

SCHOOL MEALS: COSTS AND BENEFITS

Child malnutrition, as well as being harmful to the child, is bad for economic growth. This is because its effects translate, over time, into poor class attendance, fewer years in school, lower productivity and higher healthcare costs.

WFP-led studies have shown that child stunting – or low growth for age – is costing African countries anything between 2 percent of GDP (in Egypt) and 16.5 percent of GDP (in Ethiopia).

But providing each child with a daily plate of food is hard for parents when the cost of a simple meal takes up a large proportion of a person's daily income. This is why WFP is working with partners such as Mastercard to make nutritious food accessible to those least able to afford it.

One way to achieve this is by helping governments create sustainable school meals programmes. Providing schoolchildren with a daily meal, or giving them food to take home, not only boosts their own health, growth and intellectual development, but ultimately powers the economic output of entire nations as the children turn into working adults. Thanks to a cost-benefit analysis supported by Mastercard's data experts, we know that every US\$1 invested in school meals brings an economic return of US\$3 to US\$10.

Along the way, school meals strengthen livelihoods. At least some of the money saved by families through not having to provide that meal can be invested in ventures that might increase their income. It could also make the household more resilient to whatever downturns the future might hold.

Mastercard has been supporting WFP's school meals programmes, raising awareness and funds through consumer and customer campaigns, since 2012. Following evidence of the lasting impact of school meals, and of their effects on a child's health and future economic contribution, in 2017 Mastercard announced a commitment to provide 100 million meals through WFP.

Sri Lanka's School Meals Programme

Sri Lanka – a nation of 20 million people – achieved the status of a lower-middle-income country in 2010, but continues to struggle with the aftermath of a 27-year conflict. The provision of school meals started as early as 1931 and has been extended since the conflict ended.

WFP began its School Meals Programme (SMP) in 2006 to provide assistance to more than 161,000 children in 965 primary and secondary schools, in collaboration with the Ministry of Education.

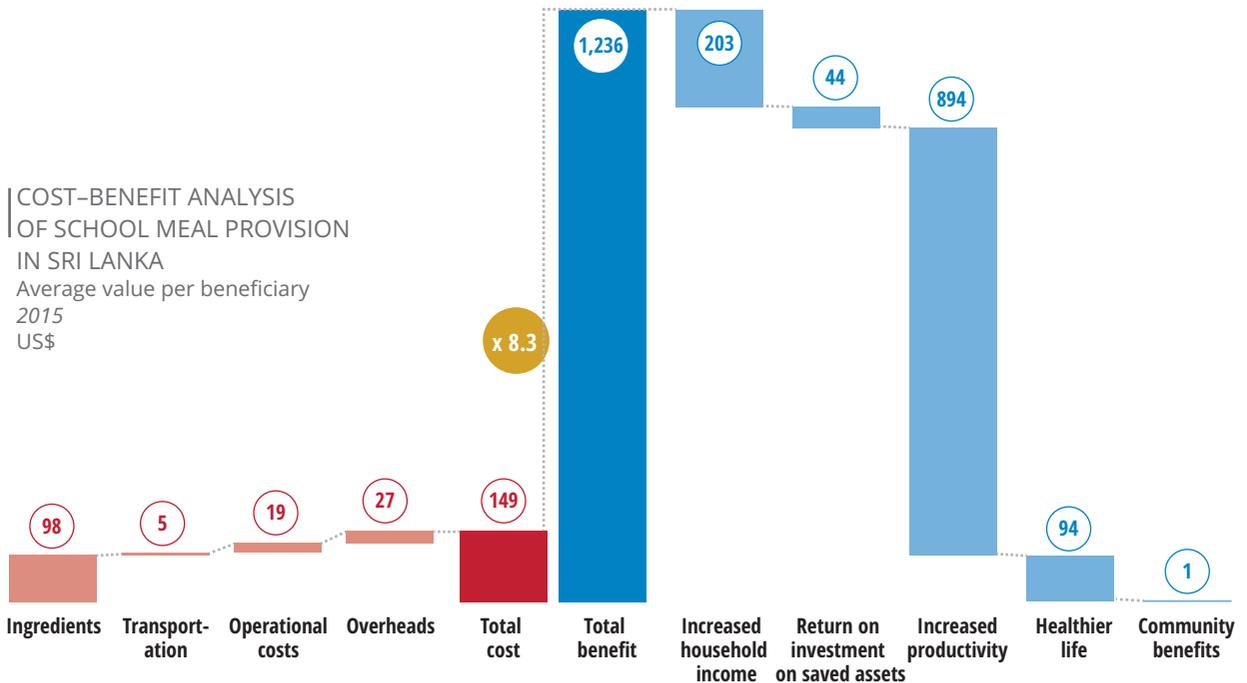
School meals improve a child's life beyond satisfying their hunger. When meals are served at school, children stay there longer and perform better when in class. By comparing the achievements of children receiving meals at school with children who don't receive meals, it is possible to estimate how much school meals will improve the children's health and productivity when they become working adults.

Based on academic evidence, which establishes the correlation between education and future income, a cost-benefit analysis calculates the benefit of a school meals programme in terms of value created in the country's GDP.

By comparing this benefit with the cost of providing meals, including overheads and logistics, it is possible to calculate a cost-benefit ratio to show how much this programme contributes to the country's overall development.

School meal ingredients

- Rice
- Dhal (pulses)
- Vegetable oil (fortified with vitamins A and D)
- Dates
- Canned fish



The Benefits of Free School Meals

Increase in household income

Providing a child with a free school meal can be seen as transferring to the child's family the value of that meal, which may represent as much as a quarter of the household daily income. The annual value of the meal was assessed at US\$40.50 per child, which equates, over a five-year period, to a value transfer of US\$203.20. Added to that is the family's saving on healthcare, due to the child being better nourished.

Return on investment

At least some of the money saved will be used to buy more, maybe more nutritious, food for the whole family. But an estimated 15 percent might be invested in an asset, such as a bicycle, a piece of agricultural equipment, or livestock. The benefits from such purchases can be long-lasting and are estimated to give a 54 percent return on investment over 10 years.

Increased productivity

The School Feeding Programme, combined with health interventions such as deworming, improves school performance, reduces absence due to illness and thus increases the amount of time a student spends in school. Studies have shown that the longer a child stays in school, and the better they perform while there, the higher their wages as an adult.

Healthier life

A better-nourished child usually grows into a healthier adult, able to remain economically productive for longer.

Uncosted additional benefits

Knowing that their children are going to be fed encourages parents to send them to school instead of out to work. Girls who would otherwise be kept at home to help with household chores might also get an opportunity to go to school. In parts of Sri Lanka and in many other countries the programmes contract local farmers to supply the food, providing them with a stable income and the children with fresh food.



CALCULATION OF LIKELY INCREASE IN FUTURE WAGES DUE TO BENEFITS OF SMP

● Average additional years spent in school due to school feeding	0.25 year	
<i>Likely increase in wages due to 1 additional year of schooling</i>	5%	
Average wage increase due to longer schooling of children on SMP	5% × 0.25 = 1.25%	↑
● Improvement in test results due to school feeding	+0.25 SD (standard deviation)	
<i>Likely increase in wages due to 1 SD higher test scores</i>	11%	
Average wage increase due to better cognition of children on SMP	11% × 0.25 = 2.75%	↑



5

THE COST OF THE RIGHT FOOD FOR ALL

Ensuring that every household member has sufficient food to match the energy they expend is hard enough, but it is an even greater challenge to make sure that their diets contain all the nutrients they need.

A diet that contains the full range of nutrients (carbohydrates, proteins, fats, vitamins and minerals) is essential for a child to grow and develop well, remain healthy, learn well at school, and to become – and remain – a productive adult. But many households cannot afford such a diet, even when it includes locally available foods.

Every member of a household has different nutritional needs. Meeting those of young children, adolescent girls and pregnant and breastfeeding women can be especially challenging. These family members require foods with a very high nutritional content compared to the amount of energy they contain, but such “nutrient dense” foods are often more expensive than rice, maize, beans and oil.

This is clearly shown by the Cost of the Diet analysis conducted as part of the WFP Fill the Nutrient Gap (FNG) research, which formulates recommendations for policies and programming in agriculture, food systems, health, social protection, education and other sectors that can contribute to improving nutrition. Information based on Fill the Nutrient Gap analyses, conducted between 2015 and 2017, is presented here for seven countries: El Salvador, Ghana, Guatemala, Indonesia, Laos, Madagascar and Pakistan.

The Fill the Nutrient Gap analysis creates a foundation for policies to expand awareness, reduce the cost, and increase the availability of nutritious foods.

A Nutritious Diet and What it Costs

The Fill the Nutrient Gap analysis looks at factors that directly or indirectly impact on people's access to and consumption of nutritious foods, and therefore their ability to meet their recommended nutrient intakes.

Information from data sets, studies and reports on the characteristics of malnutrition, the availability of nutritious food and people's ability to purchase it, their dietary preferences and practices, household food expenditure and socioeconomic conditions, is combined with analysis provided by the Cost of the Diet (CotD) software. This calculates the minimum cost of meeting the nutrient requirements of all members in a typical household, based on prices and nutrient content of locally available foods.

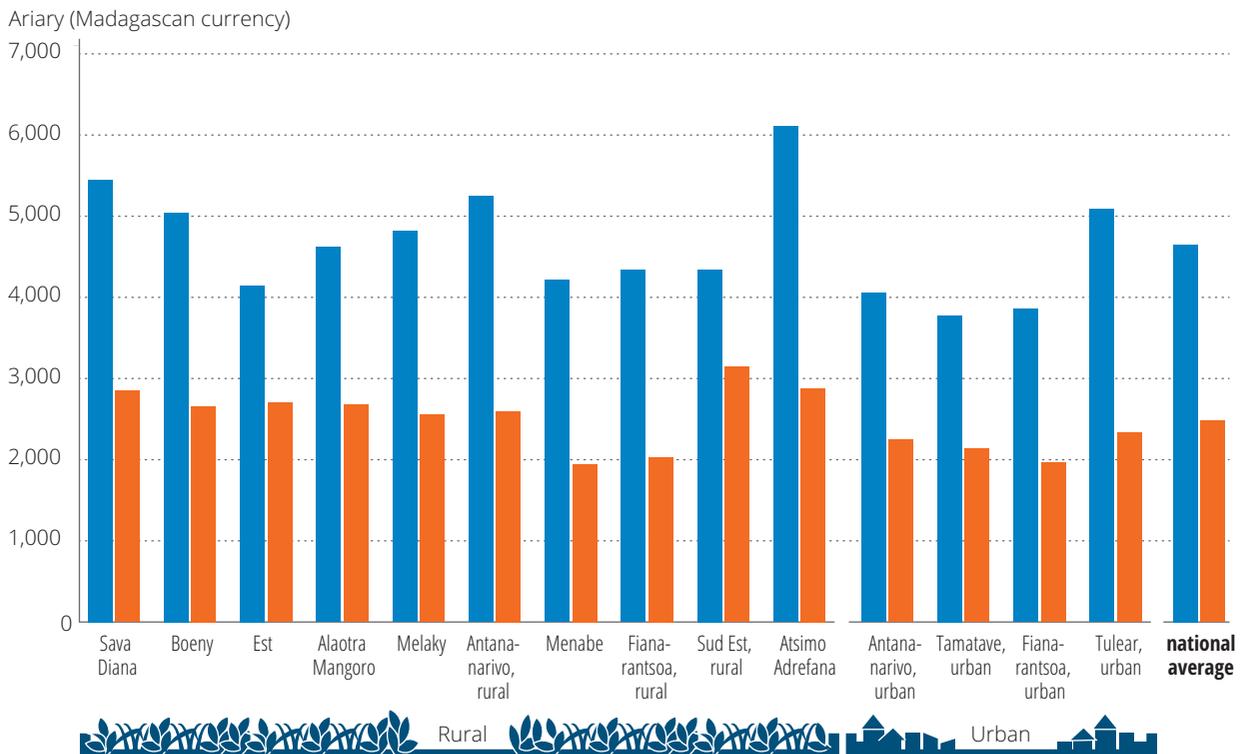
The result is the Staple Adjusted Nutritious (SNUT) diet: a diet selected by the software to provide the required energy, protein, fat, nine vitamins and four minerals at the lowest possible cost, and including the locally preferred staple(s).

Even at the lowest available cost, such a diet is considerably more expensive than one that meets only energy requirements.

COMPARATIVE COST OF A NUTRITIOUS DIET

Daily cost of a nutritious diet (SNUT) and a diet meeting only energy needs in zones of Madagascar 2015-16

- daily cost of nutritious diet
- daily cost of energy-only diet



The FNG analysis has been developed by WFP with support from University of California Davis, IFPRI, Harvard University, Epicentre, Mahidol University and UNICEF, and is conducted in collaboration with national government partners, other stakeholders, and with Save the Children, who developed the Cost of the Diet software used for the analysis.

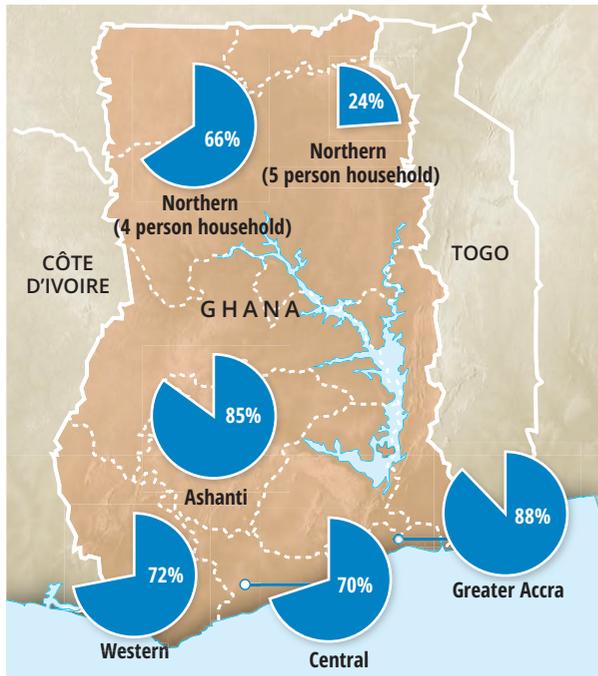
Meeting the Cost of a Nutritious Diet

The cost of a nutritious diet varies considerably among countries, from region to region within a country, and between rural and urban settings. In Madagascar, the cost of a Staple Adjusted Nutritious (SNUT) diet is 24 percent higher for an urban household than for a rural one.

However, the issue is not just cost but affordability. A typical household is not the same everywhere in the world, nor is it the same everywhere within one country. Households in one region or setting may have a higher disposable income than those in another. Information from different provinces of Pakistan shows the discrepancy in the proportion of households able to afford a nutritious diet and those able only to afford a basic diet, or not even that.

The situation is similar in Ghana, where 88 percent of people living in Greater Accra can afford a nutritious diet, while in the Northern region only 24 percent are able to do so. This raises the need for more nuanced, differentiated policy responses.

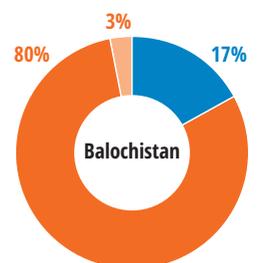
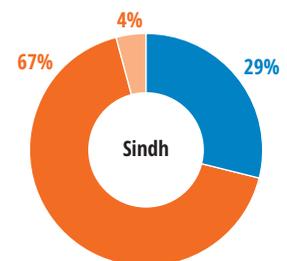
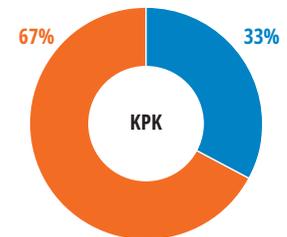
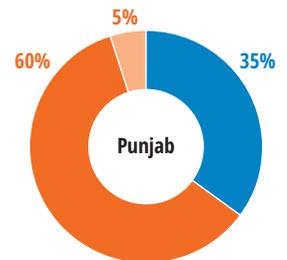
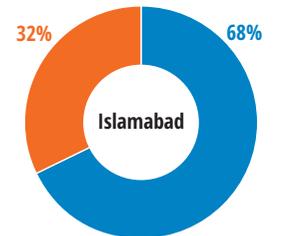
For the calculation of the cost of a nutritious diet in Ghana, a child of 12–23 months of age and a breastfeeding woman were included in a typical household, alongside a child 6–7 years of age and an adult man. The extent to which these diets were affordable was calculated for all regions based on this four-person household. In the Northern region, where average household size is known to be five people, an additional calculation was made in which a girl of 14–15 years of age was included in the family, to reflect affordability for a typical family in this region.



AFFORDABILITY OF A NUTRITIOUS DIET
Percentage of households in different regions of Ghana able to afford a nutritious (SNUT) diet 2015-16

AFFORDABILITY OF DIFFERENT DIETS
Percentage of households able to afford different diets across Pakistan 2016

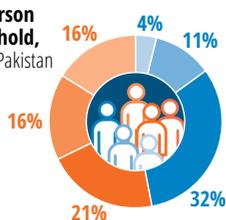
- nutritious diet (SNUT)
- energy-only diet
- unable to meet energy needs



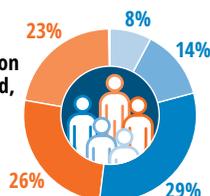
SHARE OF THE COST OF
A NUTRITIOUS DIET
Among household members
2015–16

- child, 12–23 months
(6–8 months in El Salvador)
- child, 6–7 years
(9–10 years in Pakistan)
- adolescent girl,
14–15 years
- breastfeeding woman,
30–59 years
- man, 30–59 years
- woman, older than
60 years

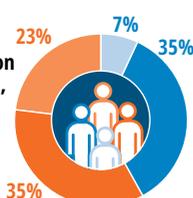
Six-person household, Sindh, Pakistan 2016



Five-person household, El Salvador 2015–16



Four-person household, Indonesia 2016



The Cost of Different Nutritional Needs

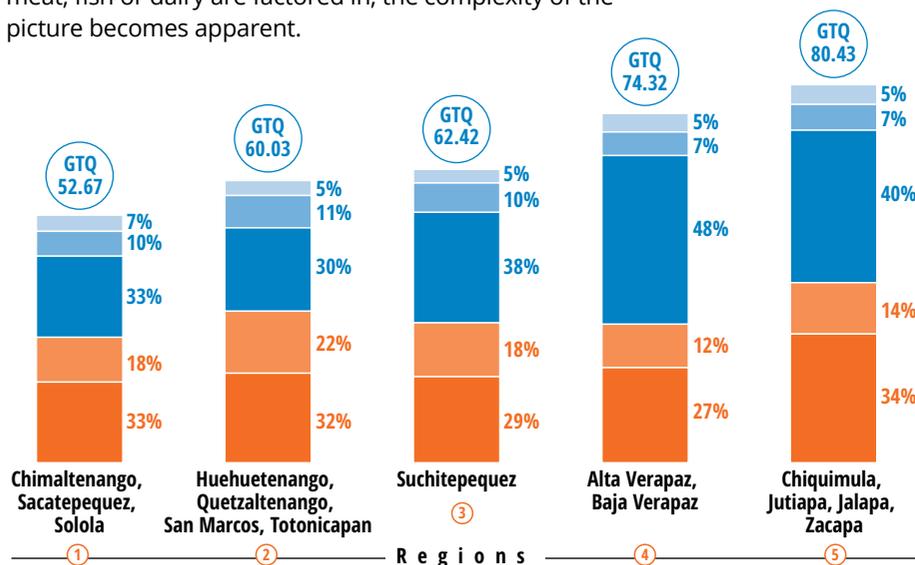
Household members are usually at different stages of life, with different nutritional needs. A man in his 30s requires, per 100 Kcal of food, a lower proportion of iron, zinc and other nutrients than his growing children or his wife – especially if she is pregnant or breastfeeding. The assessment of what to include in a Staple Adjusted Nutritious (SNUT) diet – and its cost – has to take into account these varied needs.

An adolescent girl, growing rapidly, requires the most expensive diet to meet her needs for nutrients – around a third of the cost of the family meal (based on Cost of the Diet analysis). But in most households worldwide food is shared according to energy needs, or according to perceived priorities based on cultural norms, and those of adolescent girls are rarely prioritized. These girls are therefore unlikely to be receiving a greater share of the more nutritious foods and to be consuming the vitamins and minerals they need in order to grow into healthy women. The share of the cost is even greater if the adolescent girl is also pregnant or breastfeeding, as her nutrient needs are even higher. In many of the countries where Fill the Nutrient Gap analyses have been conducted, the prevalence of pregnancy among teenagers is very high (37 percent of 15–19 year olds in Madagascar, 1 in 10 girls in Pakistan).

Breastfeeding women also require a diet with a relatively high content of essential nutrients (such as iron, zinc, calcium, vitamin B12, folic acid and vitamin A) compared to the foods' energy content. This makes them the second most expensive family member in many Cost of the Diet analyses, although some of the nutrients the woman consumes are passed on to her breastfed child.

Varying income levels and demographic profiles within countries add an extra layer to the analysis. Take Guatemala. When the needs of each household member and the variation between regions in the cost of nutritious foods, such as vegetables, meat, fish or dairy are factored in, the complexity of the picture becomes apparent.

SHARE OF THE DAILY COST OF
A NUTRITIOUS DIET
Among household members
in different zones of Guatemala
2016
quetzales



The Health Implications of a Poor Diet

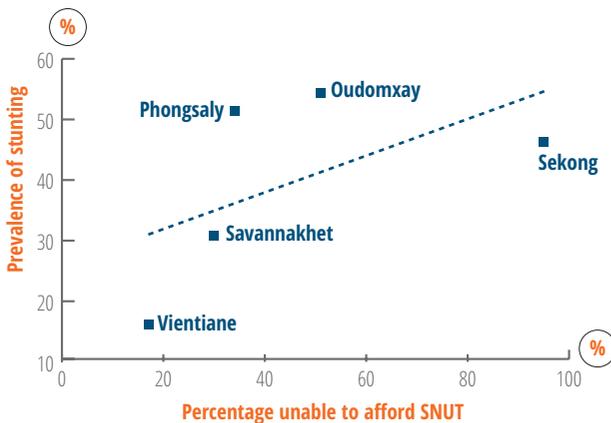
Children of 6–23 months old need a relatively small amount of food, and breastmilk already meets a big share of their energy needs. However, in that small amount of food, a young child needs nine times more iron and four times more zinc than an adult man does.

The cost of meeting the nutrient needs of a young child is relatively low, but the practicalities are challenging. Foods such as liver and fish with small bones provide the requisite iron, zinc and calcium, but are difficult to source regularly and in the small amounts required. (Larger amounts would need to be stored in a fridge and may end up being eaten by other household members.)

Good, cost-efficient, solutions for this target group include specific fortified foods (such as infant cereals) and products (such as micronutrient powder or small-quantity lipid-based nutrient supplements) that can be added to a diet of breastmilk and local foods. Continuing to breastfeed a child of 12 to 24 months reduces the cost of a nutritious diet for him or her by about 35 percent.

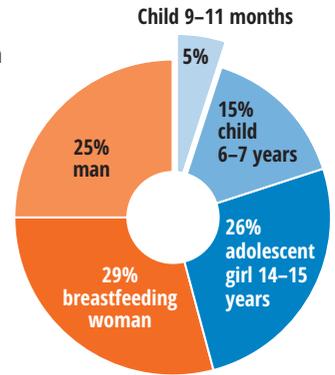
Feeding a child on snack foods such as wafers, crisps and crackers (high in calories but low in micronutrients) raises the cost of a nutritious diet. To meet children’s nutritional needs when these foods are consumed, the rest of their diet has to be even more nutritionally rich, which increases its cost on average by more than a third.

The financial costs of meeting a child’s nutrient requirements are not great, but the life cost of not doing so is massive. It puts a child at risk of stunting and suboptimal brain development, decreasing their chance of a healthy and productive life. There is a strong correlation in several of the countries studied between the inability to afford a nutritious diet and the prevalence of stunting. In Laos, there was a striking difference between the capital, Vientiane, where only 17 percent of households were unable to afford a nutritious diet and the prevalence of stunting was 16 percent, and Sekong, where as many as 95 percent of households could not afford such a diet and stunting was a much higher 46 percent.

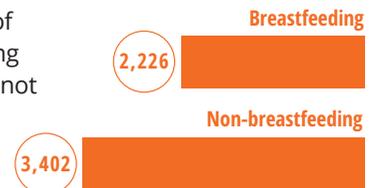


STUNTING AND INABILITY TO AFFORD A NUTRITIOUS DIET
Relationship between non-affordability of a nutritious diet (SNUT) and prevalence of stunting in provinces in Laos 2016

SHARE OF THE COST OF A NUTRITIOUS DIET AMONG HOUSEHOLD MEMBERS
In rural Madagascar 2015–16



COMPARATIVE COST OF A NUTRITIOUS DIET WITH AND WITHOUT BREASTFEEDING
21–23 month old child
Laos 2016 LAK



COMPARATIVE COST OF NUTRITIOUS DIET WITH AND WITHOUT SNACK FOODS
Child under 2 years
Laos 2016 LAK



Recommendations for Action

FOOD SYSTEMS

Almost by definition, food assistance confronts systemic problems in food systems. And it must do so innovatively and pragmatically. There is an acute need for far-sighted, concentrated efforts to create beneficial ripple effects that address the root causes of hunger. Only thus can we reduce the overall number of hungry people and ultimately reach Zero Hunger inside a generation. Partnerships must be formed to:

- Invest in market-friendly food assistance that delivers safe and nutritious food to targeted groups, is accountable to beneficiary populations and enjoys strong government leadership.
- Confront the political causes of vulnerability and hunger. This should include engaging in dialogue and negotiation to encourage respect for international humanitarian law and access to hungry people.
- Enhance national capacities and South–South cooperation, with strong engagement by the private sector.
- Fill vast data gaps by creating a comprehensive and verifiable global database of food assistance resources and activities.
- Promote a sharper research agenda to strengthen food assistance; develop food assistance solutions that address systemic problems while also responding to emergency needs.

SUPPLY CHAIN

Strong yet flexible supply chains that can respond to shocks, whether human-induced or natural, are crucial for reducing food insecurity. The case studies presented in Section 3 demonstrate how certain actions can lead to more robust chains:

- Improve infrastructure connections between markets and smallholders, enabling a smoother flow of goods along the supply chain.
- Improve access to physical markets and to credit facilities and insurance for smallholder farmers, thereby allowing them to increase their output, earning and investment opportunities, resilience and knowledge base.
- Introduce technology to reduce post-harvest losses, improve food security and increase farm incomes.
- Encourage the retail sector to become more efficient and competitive through aggregation of ordering from wholesalers.
- Make use of local knowledge to enhance local capacity.
- Reduce emergency response times and costs by instigating effective disaster preparedness.
- Communicate, cooperate and partner with governing bodies in tackling large-scale crises.

NUTRITION

The key findings of the Fill the Nutrient Gap analysis, including the Cost of the Diet, have been widely reviewed to identify ways to improve access to nutritious

foods. While country contexts vary greatly, examples of sector-specific priorities for governments, UN agencies, development partners, civil society, the private sector and academia include:

Social protection

- Assess the possibility of increasing the cash amount provided through national social safety net (SSN) programmes.
- Explore the possibility of including fortified infant cereal (20 g/d) to complement the diet of children aged 6–23 months.
- Ensure that nutrition education is integrated with the safety net package.
- Explore adding to a cash-transfer programme to increase demand for/use of health services, such as ante-natal care, post-natal care, health check-ups for young children, or participation in training sessions to improve knowledge and practices related to nutrition.

Health

- Explore introducing multi-micronutrient tablets in place of iron & folic acid tablets, as they are more effective at filling the nutrient gap among pregnant and breastfeeding women.
- Shift from treating moderate-acute malnutrition to prevention of undernutrition (1,000 days focus), using a “reach out to all” approach in highly food-insecure areas, and targeted distribution to children in vulnerable households in less food-insecure areas.
- Ante-natal care should be sensitive to the needs of adolescent girls.

Agriculture

- Ensure that agriculture extension workers talk about the importance of good nutrition, diverse diets, the importance of horticulture and (small) livestock.
- Explore introducing bio-fortified crops.

Food value chain

- Expand and strengthen existing private (or public-private) sector initiatives to increase availability and affordability of fortified complementary foods in markets.
- Develop and implement standards and regulations for manufacturing and marketing of fortified complementary foods and snacks.
- Harmonize the regulatory framework related to staple-food fortification between national and provincial levels.

Education

- Expand school meals and education about healthy, nutritious diet in secondary schools, with a specific focus on reaching adolescent girls.
- Explore ways to increase school enrolment among adolescents to delay age at marriage and child bearing.
- Include nutrition and balanced-diet lessons in schools, colleges and universities.

Sources

1 THE COST OF A PLATE OF FOOD

Food prices: WFP VAM Food and Commodity Price Data Store http://dataviz.vam.wfp.org/economic_explorer/prices updated as of Oct 2016 for Algeria, Philippines and Syria, and Dec 2016 for the other countries.

Exchange rates: Trading Economics and International Monetary Fund (IMF).

Daily budgets: estimated based on the IMF's annual per capita Gross Domestic Product in national currency units.

Current prices: IMF, World Economic Outlook. Oct 2016.

Daily per capita income for New York State: estimated using the per capita GDP and per capita personal income from the Bureau of Economic Analysis (BEA).

2 FOOD SYSTEMS: IMPROVING PERFORMANCE

Timmer, C. P. 2014. Managing Structural Transformation: A political economy approach. WIDER Annual Lecture 18. Helsinki: UNU World Institute for Development Economics Research.

3 THE SUPPLY CHAIN: RE-FORGING BROKEN LINKS

SYRIA

WFP. The World Food Programme in Syria. Year in Review. 2016.

WFP. Emergency Dashboard, Syria. May 2017. www.wfp.org

FAO. GIEWS Global Information and Early Warning System. Country briefs. Syria. 15 Nov 2016. www.fao.org

UNHCR. Internally Displaced People. www.unhcr.org

YEMEN

WFP. Yemen. www1.wfp.org

FAO. GIEWS Global Information and Early Warning System. Country briefs. Yemen. 12 Apr 2017. www.fao.org

WFP. World Food Programme in Yemen. Emergency Food Assistance to the Food Insecure and Conflict-Affected People in Yemen. Standard Project Report, 2016.

MALAWI

WFP. Malawi. www1.wfp.org

WFP. Operation Evaluation. Malawi Protracted Relief and Recovery Operation (2014-2017), 200692, Responding to Humanitarian Needs and Strengthening Resilience. Mid-term evaluation. May 2016.

FAO. GIEWS Global Information and Early Warning System. Country briefs. Malawi. 21 Mar 2017. www.fao.org

WFP. Purchase for Progress – P4P. Malawi. Sept 2016.

NEPAL

WFP Nepal. Emergency Preparedness and Response. 2017.

WFP Nepal. Build Back Better Trails. 2017.

WFP Nepal Country Office.

Annual Disaster Statistical Review 2014: The numbers and trends. www.preventionweb.net

UGANDA

WFP. Uganda www1.wfp.org

WFP. Logistics Capacity Development: Post-harvest food loss reduction in Uganda through improved storage and handling at the start of the supply chain. Operation 200836. www.wfp.org/operations

Costa, S. J. 2014. Reducing Food Losses in Sub-Saharan Africa. WFP.

Costa, S. J. Dec 2015. Taking it to Scale. Post-harvest loss-eradication in Uganda 2014–2015. Project implementation report. WFP.

TANZANIA

WFP Tanzania. Country brief. May 2017.

WFP Boosts Food Security by Connecting Smallholder Farmers to Global Markets. 20 Jan 2016. www.wfp.org/news
Farm to Market Alliance. Project objective. www.growafrica.com/groups/farm-market-alliance

KENYA

WFP. Kenya. www1.wfp.org

WFP. Emergency Dashboard, Horn of Africa. Apr 2017. www.wfp.org

FAO. GIEWS Global Information and Early Warning System. Country briefs. Kenya. 24 Apr 2017. www.fao.org

Karimi, M. Refugees in Kenya's Kalobeyei Settlement Enjoy Food Freedom. 30 Sept 2016. www.wfp.org/stories

WFP Kenya Country Office. Kenya Retail Engagement Strategy presentation.

SOUTH SUDAN

WFP. South Sudan. Country Brief. May 2017.

Fominyen, G. WFP Building Roads to Feed South Sudan. www.wfp.org/stories

WFP. WFP in South Sudan, Republic of. Feeder Road Construction in Support of WFP Operations in South Sudan. Standard Project Report 2015.

WFP South Sudan Country Office.

4 SCHOOL MEALS: COSTS AND BENEFITS

The Cost of Hunger in Africa. www.costofhungerafrica.com

WFP. Cost-Benefit Analysis. School Feeding Investment Case. Jan 2016.

WFP. Sri Lanka's School Feeding. Investment Case. Cost-Benefit Analysis Report. Dec 2015.

5 THE COST OF THE RIGHT FOOD FOR ALL

WFP. Fill the Nutrient Gap reports and presentations on El Salvador, Madagascar, Ghana, Laos, Cambodia, Guatemala, Pakistan, 2015-17. www.heawebsite.org

Indonesian Ministry of National Development Planning (BAPPENAS), WFP. The Cost of the Diet Study in Indonesia, Mar 2017.

Baldi, G. et al. 2013. Cost of the Diet (CoD) Tool: First results from Indonesia and applications for policy discussion on food and nutrition security. *Food and Nutrition Bulletin*, 34(2) (supplement).

Frega, R. et al. 2012. What Linear Programming Contributes: World Food Programme experience with the "Cost of the Diet" tool. *Food and Nutrition Bulletin*, 33(3) (supplement).

Geniez, P. et al. 2014. Integrating Food Poverty and Minimum Cost Diet Methods into a Single Framework: A case study using a Nepalese household expenditure survey. *Food and Nutrition Bulletin*, 35(2).

De Pee, S. et al. 2016. Providing Access to Nutrient-rich Diets for Vulnerable Groups in Low and Middle-income Settings, Chap. 5.2. In Eggersdorfer, M. et al. *Good Nutrition: Perspectives for the 21st Century*. Basel, Karger, 249–263.

Dewey, K. 2013. The Challenge of Meeting Nutrient Needs of Infants and Young Children during the Period of Complementary Feeding: An evolutionary perspective. *The Journal of Nutrition*.

To each and every one of us, food comes at a cost. One that isn't optional: we eat or we die. But while in the developed world the cost of staying fed is negligible to moderate, in the poorest countries it is often exorbitant. Much hunger and food insecurity is down to food being simply unaffordable.

Counting the Beans is an attempt to pin down the cost of a basic plate of food in selected countries and report it back in western terms. Would you expect to hand over half of your daily wage – however much that might be – for a can of baked beans? You might view that as insane. And it is. But in parts of the world, food as a share of personal income is insanely expensive.

Why? Because of conflict. Or disasters, human-induced or not. Bad roads. Wrecked ports. Waste. Ruined markets. The reasons stack up like those cans of beans.

This publication is both an illustration of wild disparities in the affordability of food and an attempt to disentangle the factors behind them. Not least, it is a selective look at the steps that we at the World Food Programme, together with our partners around the world, are taking to mitigate these disparities. If we are serious about ending hunger by 2030, this is one place to start.



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