



World Food Programme Kenya [No. 6]  
**INFOBRIEF**

# Using Local Cereals and Local Mills to Supply School Meals in Kenya's Kakuma Refugee Camp

AUGUST 2016

## Key messages

- Locally grown cereals that are fortified can be a cost-effective, nutritious replacement for imported corn-soya blend in school meals in a refugee setting.
- Local processing of food for school meals is viable and offers local economic opportunities for both refugees and host communities.
- Small-scale millers can successfully fortify flour to meet national quality-assurance levels.
- School meal programmes and other institutional markets provide a structured demand that can promote diverse livelihood skills and diverse income-generation opportunities for local communities.

## The what and the why...

Kakuma refugee camp in northwest Kenya is home to 161,000 refugees. Local communities around the camp largely comprise Turkana pastoralists, and although robust informal trade takes place between the camp and outside communities, the Turkana feel that they benefit little from the presence of the camp.

In November 2013, WFP launched a two-year pilot project<sup>1</sup> to **use local smallholder farmers to supply the cereals used in school meals** within Kakuma refugee camp. Moreover, the locally purchased cereals would

<sup>1</sup> *Kakuma School Feeding: Market Access for Local Smallholders and Integrated School Health and Nutrition Programme.*



*WFP successfully supported Turkana farmers to supply cereals for the Kakuma school meals programme.*

also be **milled and fortified**<sup>2</sup> by the refugees or local community to meet high nutrition and food quality standards whilst opening up local livelihood opportunities. It was anticipated that these actions would increase demand for locally grown cereals – so expanding markets for local farmers – as well as increase demand for local mills and food-related industries, creating jobs for both Turkana and refugees. In addition, formalized business interactions could contribute to improved relations between the two communities.



> The project aimed to ensure that **at least half of the food used in the school meals** in Kakuma is:

- **purchased** from local smallholders **milled** locally by refugees and local communities
- **fortified** with micronutrients at the point of milling to meet national quality-assurance levels

## How can grains from local smallholders be used in school meals?

WFP's school feeding programme in Kakuma currently covers 72,000 pupils and, historically, has used an **imported corn-soya blend** to make a porridge snack. Switching to cereals sourced from local smallholders to make the

school meals firstly required a change in the content of the school snack – to those grains grown locally – and secondly required identification of smallholders able to supply the cereals.

### Identifying a snack made from locally grown cereals

**Maize and sorghum** are the locally grown cereals in Turkana County, so the school snack needed to incorporate either or both of these. In June 2014, WFP trialled various porridges, measuring ease of preparation, palatability and children's preferences, and developed a porridge of half maize and half sorghum. To diversify the school meals, 18 months later, an **alternative snack of bread rolls** was also trialled. Rolls made from equal quantities of wheat flour and sorghum were the winners, both in terms of palatability and ease of baking.

Forty bakers running seven bakeries baked the bread rolls for the three-week trial. Although the cost of baking and delivering rolls was significantly higher than that for making porridge from either imported or locally grown grains (see Table 1), baking the rolls had the added benefit of providing significant employment. Moreover, evidence showed that school attendance may be higher on the days when bread rolls are provided.

**Table 1** Cost of providing different school snacks, 2015

	Cost/pupil/year (US\$)
Sorghum-wheat bread roll	20.0
Corn-soya blend porridge	13.5
Maize-sorghum porridge 4 days/week and sorghum-wheat bread roll 1 day/week	13.4
Maize-sorghum porridge	11.7

### Identifying local supplies of sorghum and maize

Almost 6 mt of flour is required per day to provide a school snack for 72,000 children. It was initially planned that Turkana farmers could fill this need over the two-year period. In particular, it was hoped that farmers who have been participating in a WFP irrigation scheme would be able to supply the grains. Thirteen farmer groups within the scheme (representing 10,000 members) had been producing or had the potential to produce surpluses, and of these, three groups were identified as being able to supply the required maize and sorghum for the school feeding programme.



Students of Gilo pre-school in Kakuma drinking maize-sorghum porridge.

<sup>2</sup> Food fortification is important in addressing food and nutrition security in Kenya. Many small- and medium-scale mills have yet to fortify their flour, leaving people, especially in food-insecure areas, vulnerable to deficiencies in micronutrients.

However, excessively high levels of aflatoxin in the grains from two of the farmer groups meant that in 2014 WFP was only able to buy maize – 40 tons – from one group. A very limited quantity of locally produced sorghum was also available in 2014, but its prohibitively high price precluded its purchase. To meet the immediate needs of the school meals programme, WFP therefore also bought 56 tons of sorghum from Tharaka Nithi County in eastern Kenya. With the lack of supply of maize and sorghum from Turkana, in 2015 WFP cast its net wider and purchased 1,006 tons of grains from smallholder farmers throughout Kenya (Table 2).

**Table 2.** Quantity of grain sourced from Turkana and elsewhere in Kenya, 2014 and 2015

Origin	Quantity (mt)	Commodity	Year
Uasin Gishu, 580 km from Turkana	749	Maize	2015
Tharaka Nithi, 950 km from Turkana	161	Sorghum	2015
Turkana	40	Maize	2014
Tharaka Nithi, 950 km from Turkana	56	Sorghum	2014



Baking sorghum-wheat rolls for the Kakuma school meals programme within Kakuma camp.

In 2016, WFP's refugee programme mostly received in-kind donations and little cash, thus WFP was unable to procure locally to supply Kakuma camp. In 2017, however, WFP anticipates that smallholder farmers in Turkana will provide 100 tons of both maize and sorghum (the sorghum through forward contracts), with additional purchases being made from Uasin Gishu and Trans Nzoia counties.



**40 refugee bakers** enjoyed increased earnings of 107% over the three-week trial.



**196,000 bread rolls** using 19 tons of flour have been baked.

**65,000 pupils** have taken bread rolls as a mid-morning snack.



The bakeries have employed 40 additional refugees in the school term.

## Learning from experience

- The number of pupils in the school-feeding programme increased from 35,000 in 2014 to 72,000 by mid-2016. This necessitated much more maize and sorghum for the feeding programme than originally planned for, the demand for which could not immediately be met locally.
  - WFP will be issuing forward contracts to several farmer groups to supply an anticipated 100 tons of sorghum in 2017. The forward contracts guarantee farmers a market and minimum market price for their grain and are anticipated to encourage local supply.
- Aflatoxin contamination through poor post-harvest handling of two farmer groups in Turkana precluded the sale of their grains to WFP.
  - WFP and partners are training farmers on when and how to harvest effectively. Thirteen farmer groups have been sensitized on how aflatoxin enters the maize through the ground, and have been given materials (tarpaulins and moisture meters) to counter this.
- High price expectations of Turkana farmers and a preference for cash on delivery also prevented WFP from purchasing some local cereals.
  - WFP is running ongoing training on a seasonal basis with the 13 farmer groups on how best to price their commodities and is supporting the Turkana county government to improve farmers' access to market information, e.g. through SMS to price information centres.
  - Also in collaboration with the Turkana county government, WFP is supporting the 13 farmer groups to prepare business plans for better production and marketing of commodities, enabling them to become more competitive in the market place, including supplying WFP.

> WFP is also training and coaching **13 Turkana farmer groups** on:

- post-harvest management of grains
- financial management and access to credit
- group governance
- warehouse and commodity management
- aflatoxin mitigation
- institutional procurement procedures e.g. from Home Grown School Feeding Programme, WFP and other schools
- entrepreneurship



## How can locally milled flour be used in school meals?



### Identifying which mills to use

Four new mills were set up by WFP in and around Kakuma camp and, additionally, it was found to be worthwhile rehabilitating one of the 49 existing mills in the vicinity. The stringent quality requirements for cereals used by WFP – such as the absence of aflatoxin – created the need for some of the mills to operate solely for WFP. Consequently, in 2014/15 two mills were set up exclusively for WFP flour production – one within the refugee camp and one in the Turkana community – and three mills were set up to mill only for the public.

Around 10 people in each mill were trained on milling and business management, and by February 2015 WFP was using the flour milled by the two WFP-dedicated mills for the school-feeding programme. Almost half of all school meals were made from locally milled flour by the end of 2015. By early 2016, this had increased to **100%**, meaning 250 tonnes of flour was being dispatched to Kakuma camp per term, feeding **72,000 pupils**.

### Fortifying locally milled flour

Twenty-two people from the WFP-dedicated mills were trained in September 2015 on a wide range of issues relating to flour fortification: from the importance of micronutrients to health and the practicalities of fortifying flour – covering topics from hygiene to technical issues – to



Mixed maize and sorghum passing through a fortifier before milling, Kakuma camp.

mandatory fortification in Kenya and quality assurance mechanisms.

Training was designed to educate and provide a basis for changing behaviours towards milling practices, in particular with respect to hygiene practices. Fortification was then incorporated as standard into the milling process in the two WFP-dedicated mills, using solar-powered dispensers to add premixed micronutrients to the milled flour. To date, almost 200 kg of micronutrient premix has been added to the milled flour, and over 2 million fortified school meals have been made.

Of key importance is ensuring that all milled flour has at least the same micronutrient value as the imported corn-soya blend previously used in the school feeding programme. WFP is currently working with the Kenyan Bureau of Standards both to ensure that fortified flour produced by the mills will bear the Kenyan standardization mark and fortification logo and to increase the ease with which small-scale millers can engage with authorities. Plans are underway to extend the range of the fortification programme to cover an additional 50 millers within Turkana and the surrounding arid counties, anticipating that they may impact 50,000 micronutrient-vulnerable households.

By 2016, all school meals were being produced with locally milled flour and all flour was fortified at the point of milling with the addition of iron and micronutrients.

**1,432 farmers** benefited from WFP support for locally procured cereals in 2014/15.

Procurement costs of cereals purchased in Kenya were **30% to 50% less than** those of imported corn-soya blend.



WFP successfully supported Turkana community members and refugees in Kakuma camp to set up **small-scale milling and flour fortification operations** to supply Kakuma school meals.



Barnabas Ekalale packaging milled flour in a Loyal host-community mill.

## Looking forward

This project has contributed to formative research in Kenya on the development of a robust local cereal procurement and fortification model for small-scale farmers and millers. WFP has established that it is feasible to provide food assistance in a refugee setting while contributing to the development of livelihood skills and the generation of income for both refugees and the host community.

Locally milled and fortified flour is being used in all school snacks within Kakuma refugee camp, creating job opportunities for refugees and Turkana people in milling and baking, and creating demand for locally grown cereals. WFP will continue to source cereals locally in 2017, with plans to purchase both sorghum and maize. Additional commodities will be purchased from smallholder farmers in other parts of the country.

WFP intends that continued local milling and baking will provide all of the school snacks in 2017 in Kakuma refugee camp, comprising four days of maize-sorghum porridge and one day of wheat-sorghum bread rolls.



*Milling for school meals has supported **over 20 people** in the two WFP-dedicated mills, who have earned an average of **US\$99** per month each since milling started. This is an average monthly increase in income of **410%** per person.*

## Learning from experience

1. Accessing micronutrients is still a major impediment for many people in food insecure areas who have difficulty in meeting their complete nutritional needs. Little or no knowledge of the benefits of micronutrients and how to obtain them, especially in the context of low dietary variety, compounds the problem. Flour fortification benefits both the producers – small-scale millers – and consumers of the fortified flour, so education about the process of fortification and its benefits necessarily needs to involve the participation of all of these groups.

- *To further increase awareness of the benefits of micronutrient consumption, WFP is training 280 public millers in and around Kakuma in October 2016 on all process involved in fortification – from good hygiene practices in milling to the nutritional benefits of fortified flour – with the expectation that this will continue to build a stronger demand for fortified foods in the region.*



Alice Namoya, married with four children (left), Namase Ipus, widow with six children (centre), Elizabeth Alim, widow with seven children (right) sorting maize at Loyal host community mill.



**650 tons of flour** worth **US\$440,000** has been milled locally and made into **8 million school meals**.



**2.2 million school meals** have been made from fortified flour.



Bread rolls ready for packing and distribution, Turkana.

WFP will also be supporting two community groups (evenly mixed between Turkana and refugees) to start milling and baking businesses in

Kalobeyei, anticipating that they may be able to produce flour and bread rolls for the 1,000 pupils enrolled in the Kalobeyei school as well as for Kalobeyei residents. In addition, WFP is recruiting a 20-strong baking group from Kakuma town, which will work alongside the two existing baking groups in Kakuma camp to provide bread rolls for the school snack.

WFP is advocating that the Turkana county government adopt a similar model of using locally procured and fortified cereals in its feeding programme for the county's early childhood education centres. The county government is already engaged in the idea of using locally processed food for its feeding programme, and WFP is working with the agricultural sector to discuss means of involvement.

Currently, 141,000 pre-primary children are enrolled in education in Turkana, providing demand to create a potential market in the region of US\$3.3 million in fortified cereals.



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**If you would like more information, please contact**

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