

October 2018

# POLICY BRIEF

## IN THE “BIG FOUR”, FOOD SECURITY LOOMS TALL—*BUT NOT WITHOUT IRRIGATED WHEAT*

### OPPORTUNITY TO MAKE CHANGE?

Over the years, the government has rightly focused on food security for an increasing Kenyan population. Irrigation development, including the Galana-Kulalu flagship project, will contribute to national food security and actualize this pillar in the latest government's agenda—the “Big Four”. Yet, unlike maize and a handful of other crops, no clear government strategy for research and production of irrigated wheat has been entrenched in the food security dialogue. This situation fails to recognize the increasing role of wheat in the diets of Kenyans, especially in urban areas, and is silent about the more than KES 30 billion lost in foreign exchange to import wheat. If Kenya could borrow from the example of Mexico's Yaqui Valley, the birthplace of the Green Revolution, or from similar global wheat baskets in the Indus, Ganges and Nile valleys, then it would concentrate a sizeable hectareage of the

Galana-Kulalu and similar schemes to wheat production. There is good reason to revise our food policy to focus on areas of increasing demand, particularly wheat, and deliberately use that demand to create jobs that sustain Kenya's economy and grow the national gross domestic product (GDP).

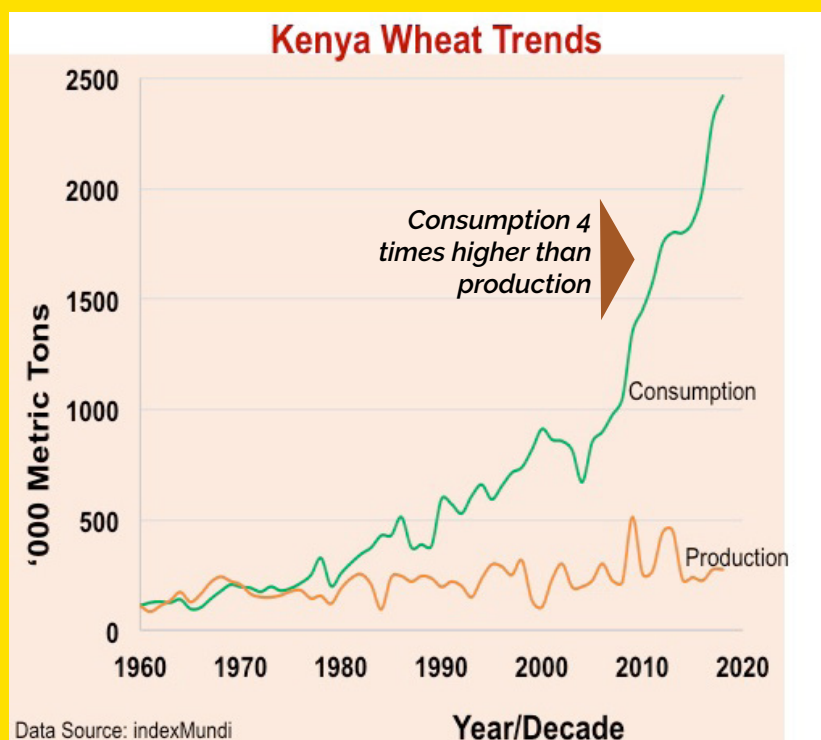


Amount Kenya is likely to spend on wheat importation in 2018

## Evidently, wheat matters

Wheat plays a major role in ensuring Kenya's food security. Among cereals, it is considered second only to maize in importance. The crop contributes over 1.4% and 30% to overall and cereal GDP respectively. Besides, it employs over half a million people through linkages with several sectors such as transport,

storage and distribution and indirectly contributes to supporting about 11.3% of the national population. This implies that, on average, 60% of demand has to be met from importing (Figure 1) the commodity at a high cost. For example, the potential import bill for wheat is projected to reach KES 44 billion in 2018.



**Figure 1.** Significant gap between production and consumption

Kenyans are spending nearly as large a share of their food budget on wheat and wheat products (Figures 2 and 3) as they do on

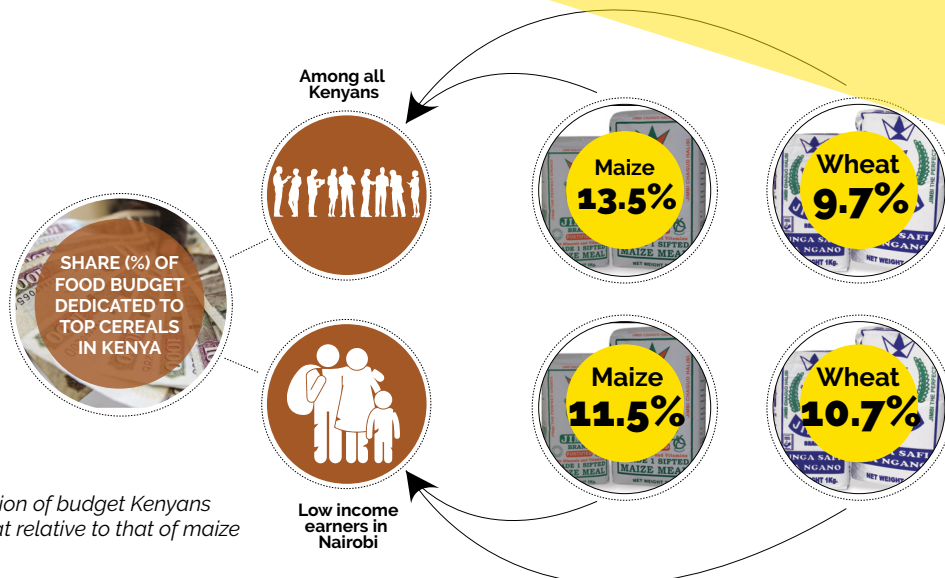
maize—the main staple food in the country. The shift to wheat as the favorite food rather than maize is partly driven by youth, who constitute over 75% of Kenya's population. Generally, the youth have different tastes than the older population and are interested in trying the different recipes and products that wheat provides. The change in wheat consumption patterns by the youth, translates to a great opportunity, since it provides a niche market for local wheat farmers. However, this might pose a challenge to the country's quest for food security, if farmers are unable to produce enough wheat due to technical and/or economic inefficiencies. Accordingly, the integral position of wheat as a food security crop needs to be reinforced in the implementation of the "food security agenda of the big four".

## Why wheat production does not meet demand

Wheat productivity in the country over the years has been low, because of a whole spectrum of biophysical and socio-economic challenges. For example, highly devastating epidemics of stem rust disease have been afflicting wheat crops since 1906 when the first commercial wheat crop was grown. Recently, the country has been considered a hotspot and source of the deadliest strains of this disease which continuously threatens the crop at continental and global scales. This is because stem rust knows no boundary and is readily transported at intercontinental scale through

wind. A familiar example is that of strain "Ug99", first reported in Uganda in 1998, in Kenya in 2003, and in succession over several countries in East and South Africa, North Africa and the Middle East, with marked devastation to wheat crops in the last two decades. Over this period, research at the national wheat breeding station in Njoro, Kenya, to identify and release resistant wheat varieties and unveil the factors that trigger the spread of new hostile stem rust races has been successful with funding from international donors under the auspices of the Borlaug Global Rust Initiative.





**Figure 2.** Proportion of budget Kenyans dedicate to wheat relative to that of maize

Yet, unlike its “bigger brother” maize—in which the government has dedicated substantial funding to research on impending pests including maize lethal necrosis (MLN) and fall army worm (FAW)—funding on wheat rust disease research has been minimal. Considering that rust diseases have often wiped out wheat crops in Narok, Uasin Gishu and other wheat growing counties, the current situation needs review. Another example is that of the government priority list of irrigated crops towards supporting national food security. Again, wheat is not explicitly prioritized whereas maize and rice are. Under the national economic food security project (Galana-Kulalu), the government has set aside up to 90,000 acres for maize, and zero for wheat. The Galana-Kulalu irrigation basin can also be availed for wheat production akin to the Yaqui, Indus, Ganges, and Nile valleys that are the key wheat baskets of Mexico, Pakistan, India, and Egypt respectively.

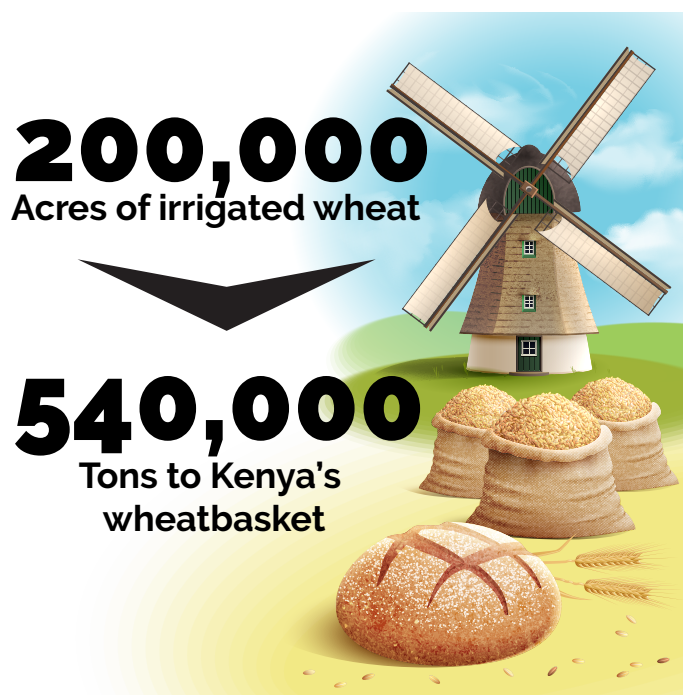


**Figure 3.** Wheat products increasingly becoming popular

## Irrigated wheat is a “low-hanging fruit”

Kenya is over-reliant on rainfed wheat production. Since the rains are unpredictable and amounts vary in key wheat counties in the country, production under irrigation is a low-hanging fruit—a likely game changer. Various studies (e.g. Jesse et al. 2017) have shown that irrigation greatly increases the yields of wheat under water stressed conditions.

In irrigated cropping systems, the full genetic potential of a wheat variety, which is often limited by drought at critical crop growth stages, is likely to be achieved and thus increase competitiveness of locally produced wheat. Dryland wheat yields are estimated to decrease about 8% for every 1°C increase in temperature, yet irrigation completely offsets this negative impact of heat stress. Wheat yields are invariably 50–60% lower in dryland environments than in those under irrigated regimes. Varieties released in Kenya yield, on average, 7.0 tons/ha under irrigated conditions relative to





an average of 3.0 tons/ha in rainfed conditions (Macharia and Ngina, 2017). Accordingly, if the government opened 200,000 acres to irrigated wheat, the following is likely:

- 540,000 tons more added to Kenya's wheat grain basket
- Wheat importation reduced by half
- Approximately KES 12 billion in foreign exchange saved
- New direct and indirect jobs opportunities for Kenyans created
- Adverse effect of tariffs on imports (that often affect urban consumers most) reduced.

If the strategy of irrigated wheat is complemented with that of systematic research and implementation of suitable technologies for traditional rainfed systems, including conservation tillage and integrated pest management, the country will gradually curtail wheat importation and position itself towards food security for its citizens.

## Urgent Actions for Government

1. Declare irrigated wheat a flagship project in the Big Four, and position the country as a regional leader in irrigated wheat technologies and grain.
2. Apportion at least 20% of the land in national crop irrigation schemes to wheat to increase local supply and address the food needs of the largest proportion of Kenyan population—the youth.
3. Incentivize and support private farmers to invest in irrigated wheat.

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