



Agro-processing – a Kenyan Perspective: Enhancing food security and farmers' livelihoods

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Introduction

In Kenya, 16% of the land is of high-to-medium potential (HMP), while the rest is arid and semi-arid land (ASAL) with low agricultural potential: only useful for nomadic pastoralism, commercial ranching and irrigated agriculture. About 5 million people live in and derive their livelihoods in ASAL areas, while the remainder depend on HMP areas. Although 80% of the population depends on agriculture, small-scale farms of 0.5–10 ha dominate the HMP areas, with about 81% of small-scale farmers holding less than 2 ha. Given a population growth rate of 3.2%, the pressure on land to sustain food production and cash crop farming is increasing.

Kenya is considered food-insecure, with a general deficit in production, particularly of staple foods; maize, wheat, beans, rice and sugar, and this is supplemented by imported food commodities. Postharvest losses, especially of perishable produce are high, while poor postharvest handling of cereal maize and related products compromises food safety because of aflatoxin contamination putting farm families, livestock and consumers at risk, further exacerbating the food insecurity situation.

Kenya's Agriculture Sector Development Strategy (ASDS) contributed to a restructuring of the agricultural sector and encompasses cross-cutting issues of climate change, youth and gender engagement as well as industrialisation and finance (Government of Kenya, 2009). However, the sector continues to be negatively impacted by several binding constraints.

Infrastructural and human resource capacity constraints

The infrastructural and human resource capacity constraints that hinder development of a viable agro-food industry in Kenya can be elaborated as follows:

- Localisation of technical capacity in urban areas (home to only 4.7% of the population), and low numbers of field extension officers coupled with inadequate and expensive consultancy and mentoring services from training institutions, private-sector consultants, small-enterprise advisors, research institutions and engineering workshops hinder access to knowledge and skills by rural-based agribusinesses (World Bank, 1999).

- Limited access to or unaffordability of appropriate equipment and other materials for processing, packaging, storage and distribution as well as spare parts (Adewumi, 2014).
- High cost of selected raw materials and ingredients linked to seasonal variation, frequent droughts and resultant crop failures, which limit the availability of fresh produce, e.g. cassava, mangoes, pineapples. Substituting with semi-processed imported raw materials drives the cost up. High costs of production inputs such as energy, seed, fertiliser and chemicals, further increase production costs (Gitu, 2006).
- Corrupt management and procurement practices (McSherry et al., 2007) increase cost of production, making locally manufactured products generally more expensive, sometimes leading to a market collapse, as happened in the 1990s to the dairy and meat industries.
- Lack of a strong food safety regulatory body compared to developed countries, e.g. the US Food and Drug Administration or the European Food Safety Authority.
- Poor enforcement of quality standards and processes by the regulatory bodies, which results in low-quality local products that attract insufficient demand (Oloo, 2010).
- Low numbers of field extension officers.
- Low capacity for training professionals in food science and technology coupled with low transition of such graduates into the relevant sectors. Such programmes are considered expensive compared to humanities-based programmes. Also, industrialisation is not occurring as envisioned, causing graduate unemployment (Ponge, 2013).

Science and engineering capability available to nurture food scientists and technologists

In Kenya, several public and private universities offer courses in food science and technology at different levels, as shown in Table 1.

Table 1: Courses in Food Science and Technology in Kenya

Institution	Public/private	Level of instruction	Average number of students per class
*Nairobi University	Public	Degree and Diploma	30
*Jomo Kenyatta University of Agriculture and Technology	Public	Certificate, Diploma and Degree	50
*Egerton University	Public	Certificate, Diploma and Degree	30
#Dedan Kimathi University of Science & Technology	Public	Degree	40
**Technical University of Kenya	Public	Certificate, Diploma Degree	50
**Technical University of Mombasa	Public	Degree	20
#Meru University of Science & Technology	Public	Degree	30
#Mount Kenya University	Private	Diploma	15

*The oldest and best institutions that have produced the bulk of graduates in Food Science and Technology

**Previously middle-level institutions targeting training of artisans for industry

#New universities establishing founding programmes in food science and technology

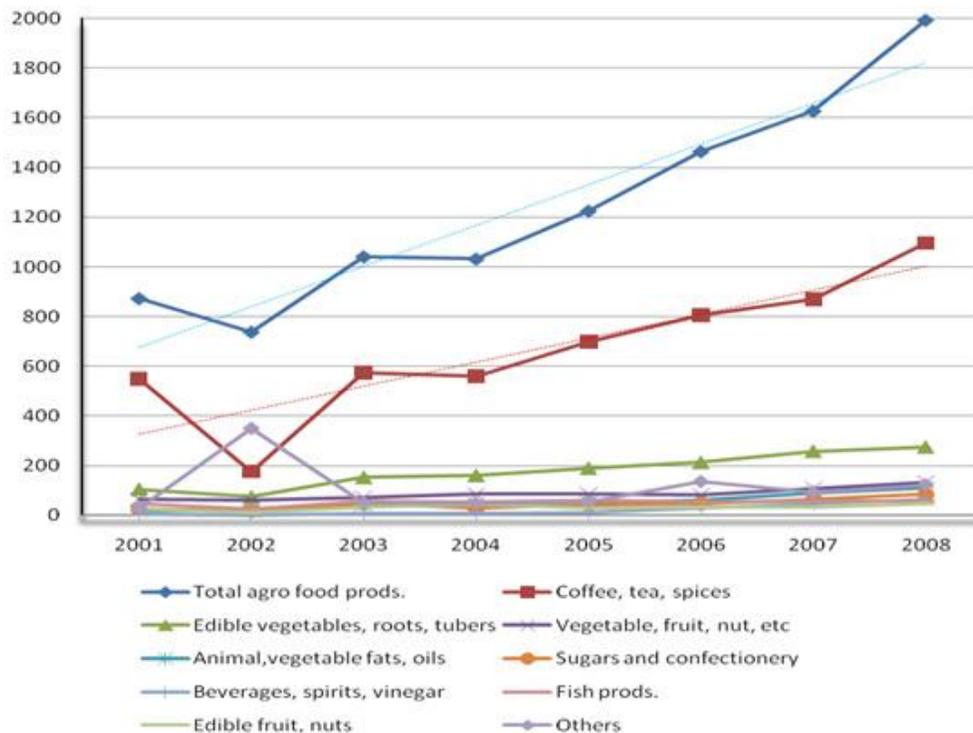
Status of the industry

The Kenyan agro-food industry is dominated by oil making, fruit processing, soft drinks and beer industry, dairy and meat processing industries, cereals and snacks. Most are foreign-owned multinational companies whose research and development is conducted in their mother countries. There is little emphasis on incorporating locally available materials that can ultimately benefit the farmer directly. Employment is restricted to graduates who will manage the production line and/or deepen the market reach.

To stimulate agribusiness and agro-industrial development, Kenya has introduced the following (<http://www.foodsecurityportal.org/kenya/food-security-report-prepared-kenya-agricultural-research-institute>):

1. Trade policies, including export promotion policies and incentives schemes for foreign direct investment (FDI), concessionary duties on import of processing machinery, raw materials, and intermediate inputs;
2. The Structural Adjustment Policies (trade liberalisation, price controls, privatisation);
3. NES to stimulate export growth;
4. Regional Economic Integration Policy (East African Community [EAC] and Common Market for Eastern and Southern Africa [COMESA]);
5. Revamped legal and regulatory framework, including improved customs procedures, food safety and standards, labelling and certification.

Figure 1. Kenya: exports of agro food products by types



However, deficiencies in infrastructure persist, governance problems remain and as a consequence, private investors, both domestic and foreign, remain reluctant to invest, especially in sectors where the risk/return ratios are less favourable than those in areas such as natural resources or services. The high cost of energy, tax, building, land and other infrastructural costs are major impediments to doing business.

The impact of research and training programmes on industry developments, technological trends and shifting consumer demands

However, all is not lost. A positive impact of research and training on growth in the agro-food industry is expected, based on recent development. This has been largely attributed to the combined engagement of academia, industry and government that form the national innovation system. Universities are conducting workshops, community trainings, radio and TV programmes which increase awareness of best practices in agro-processing. Training is geared towards the development of innovative technology and viable industrial enterprises. Most of these programmes, though in the inception stage are being embraced by the community, and funding organisations. It is encouraging that where diversification, commercialisation and value addition to agricultural products have been embraced, such as in the central province of Kenya, lives have changed through the generation of employment and enhanced income to farmers (Röttger and Da Silva, 2007).

The way forward

This includes, but is not limited to:

- Improving storage facilities (including cold chains);
- Providing tax incentives for start-ups and attracting FDI;
- Establishing land banks (databases) for better access to natural resources;
- Streamlining land access procedures and increased transparency in allocation and tenure;
- Establishing infant industry protection policies;
- Creating avenues for information dissemination and guidance in contract design, food product design, quality standards, good manufacturing practices, market development, funding options, land and building investments, legal and policy frameworks governing the agro-food processing sector, food processing and logistics, etc.;
- Conducting advocacy for and showcasing good industry practices;
- Facilitating R&D and technology transfer through capacity building and information dissemination;
- Enhancing training of and recognition of food science and technology experts;
- Initiating a country ranking system for agribusiness development;
- Sustainable establishment of agribusiness incubators for graduate start-ups, enhancement of SMEs in food industry, soft landing opportunities for FDIs and other value-chain linked businesses.

Conclusion

Food processing could be the fastest growing sector in Kenyan industry if the right incentives are made available. Three levels of operation; small-, medium- and large-scale processing, each with potential capacity for development, are distinguishable within the sector. Emphasis on indigenous foods and technologies such as has been adopted in Asia and Central America

is a strong strategy for commercialisation of food crops, but this is currently overlooked, despite revitalised interest in indigenous foods, which are perceived to be healthy.

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