



Advancing Food Security in Kenya through International Scientific Cooperation



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Introduction

According to Food and Agriculture Organization of the United Nations (FAO), Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life". It is usually framed in four dimensions; food availability, access to food, food use/ utilization and food stability (FAO, 2016a)¹. Providing sufficient, safe and nutritious food to all people is one of the major global concerns historically and in the twenty-first century.

Kenya has the largest, most diversified economy in East Africa with agriculture being the backbone of the economy and also central to the country's development strategy. More than 75% of Kenyans make some part of their living in agriculture, and the sector accounts for more than a fourth of Kenya's gross domestic product (GDP).

Given the climatic differences among Kenyan regions, while some of them have yield abundant surpluses, the whole productivity in the country is rather low. This is mainly due to semi-arid and arid land which covers most of the country where rainfall is less and less predictable. Irrigated land represents a marginal part of arable land, i.e. in 2013 irrigated agriculture accounted for only 2.4% of the cultivated area according to FAO (2016b)². In addition, innovative inputs are still lagging behind, so that most farmers cannot reap the benefit of modern seeds, adequate fertilizers and other technologies. As a result, the country is prone to frequent food shortages.

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However, agricultural productivity has gradually stagnated in recent years, despite continuous population growth. Moreover, only about 20 percent of Kenyan land is suitable for farming, and in these areas maximum yields have not been achieved, leaving considerable potential for increases in productivity.

In order to overcome these challenges facing the agricultural sector, Kenya is partnering with countries to promote cooperation in the areas of science, research and innovation. In December 13, 2018 Kenya's education ministry and China's top scientific think-tank signed a memorandum of understanding (MOU) in Nairobi. Under the MOU, Ministry of Education, Science and Technology of Kenya and Chinese Academy of Sciences will support a variety of science, technology, innovation and higher education cooperative activities between China and Africa in the areas of ecosystem and environment protection, biodiversity conservation and sustainable development, agriculture, health, the development and demonstration of adaptable technologies via the Sino-Africa Joint Research Center (SAJOREC). In line with this, SAJOREC partnered with Jomo Kenyatta University of Agriculture and Technology and the Chinese Academy of Sciences. These partnerships mainly focus on research on modern agricultural techniques (China-Kenya MOU 2018). USAID is implementing activities that are focused on increasing agricultural productivity and incomes for smallholder farmers; building more resilient communities; improving access to clean water and energy; and increasing access to affordable financing for farmers, entrepreneurs and businesses.

In 2015, USAID supported more than 1.5 million households to embrace new ideas and farming practices as part of the Feed the Future initiative. Feed the Future investments are focused in 27 target counties, and in four main value chains including dairy, livestock, horticulture, and staple foods such as maize, millet and sorghum. Feed the Future activities also link producers to markets, improve input supply, increase access to financial and business development services; promote innovative, private sector solutions;

and facilitate more efficient business practices and farmer-friendly policies that contribute to a growing national economy.

Through this scientific cooperation with countries and international organizations, the country is doing tremendous work to change the current status of food production through introduction of science and technology in the field of agriculture to boost sustainable production to end hunger for the poor and also increase the rate of food export.

Input Policy Issues

In June 2008, the government launched the Kenya Vision 2030 as the new long-term development blueprint for the state. Agriculture as one of the key sectors of Vision 2030 and is to deliver a 10% annual economic growth rate envisaged under the economic pillar. Agricultural sector benefits from a new strategy document, the Agricultural Sector Development Strategy (ASDS), which sets the vision to achieve an average growth rate of 7% per year (ACGE Analysis 2016).

This new strategy has also taken into account regional and international initiatives such as the Comprehensive African Agricultural Development Programme (CAADP) which recognizes agriculture's contribution to accelerated economic growth in African countries and the Millennium Development Goals (MDGs) in which the United Nations member countries pledged to reduce extreme hunger and poverty by 2030. The development of the sector is pursued through strategic objectives which are increasing productivity, commercialization and competitiveness of agricultural commodities and firms, developing and managing key factors of production. ASDS individuated several key constraints and challenges for the agricultural sector, the lack of public resource devoted to the sector by the government being critical. In 2003 under the Maputo Declaration, African Heads of State committed to allocate 10% of annual budgets to the agricultural sector. Kenya has not yet achieved this target. Indeed, this sector was receiving 4.5% of the budget in 2008. This insufficient allocation has reduced human

resources and delivered services by public institutions (Government of Kenya, 2010)³. The list of additional constraints remains substantial. Among them, the most important are reduced effectiveness of extension services, low absorption of modern technology and high cost of inputs, limited capital and access to affordable credit, losses due to pests and diseases, low and declining soil fertility.

In order to transform agricultural system into a dynamic, innovative, responsive and well-coordinated system driven by a common vision and goal, the government of Kenya embarked on developing the National Agricultural Research System Policy (NARS policy) in 2012 to inform the process of establishing an effective and efficient national agricultural research system in crops, livestock, genetic resources and biotechnology. The overall objective of the NARS Policy was to create an enabling environment for a vibrant agricultural research system that contributes effectively to national development. It also aimed at streamlining and enhancing coordination of agricultural research so that the sector can effectively contribute to the goal of attaining 10% annual economic growth envisaged under the economic pillar of Vision 2030 (KALRO Strategic Plan 2017-2021). This led to the formation of Kenya Agricultural and Research Organization (KALRO) with the aim of promoting, streamlining, coordinating research in crops, livestock, genetic resources and biotechnology in Kenya through international collaborations. It was also mandated to expedite equitable access to research information, resources and technology and promote the application of research findings and technology in the field of agriculture.

Science and Technology in Food Production

A multitude of approaches and technologies have the potential to contribute to achieving the long-term goal of sustainable food security. In this respect, the government of Kenya has revolutionised agricultural sector through KALRO with a central mandate of generating

technologies, knowledge, information and innovations in crops, livestock and natural resources that are required to enhance productivity and competitiveness of the agricultural sector to meet the local demand for quality food and agro-products for industries and also to take advantage of opportunities in the regional and international markets (KALRO Strategic Plan 2017-2021). Recently, experts from the organization have come up with an integrated soil management technology meant to improve soil productivity in the Mt. Kenya region.

Kenya also has comparatively large number of higher education agencies involved in agricultural research. For example, The University of Nairobi's Faculty of Agriculture and Faculty of Veterinary Medicine, Egerton University's Faculty of Agriculture and the Jomo Kenyatta University of Agriculture and Technology (JKUAT) all are undertaking numerous agricultural research projects. Private sectors like Oserian Development Company, Kenya Seeds Company and Del Monte are also undertaking local research programmes to improve productivity. For example Del Monte is undertaking a local project to enhance quality of pineapples.

Numerous success stories have also been drawn from work done under the East African Agricultural Productivity Program (EAAPP) financed by the World Bank and partners. The overarching goal of the EAAPP is to increase agricultural productivity and growth in eastern Africa, focusing on priority commodities such as cassava, rice, wheat and smallholder dairy production. The project is implemented by ASARECA, the Association for Strengthening Agricultural Research in Eastern and Central Africa and supports the objectives set by African countries through the Comprehensive Africa Agriculture Development Programme (CAADP) (The World Bank, IRBD-IDA 2014).

For example, in meeting surging demand for milk, Kenyan government through initiative of the Ministry of Agriculture, Livestock and Fisheries has come up with an advanced new insemination techniques and improved fodder quality that combines protein-rich crop residues

and this technique have tended to increase the quality and productivity of livestock (The World Bank, 2014).

International Scientific Cooperation on Food Security

Acquiring and adapting new technologies to the local agro ecological system, either from abroad or from local sources like universities is a key part of any serious strategy for achieving food security. Selection of technologies appropriate to the conditions within the host food system is crucial in producing high yields.

Therefore, through international cooperation countries have made excellent changes throughout their economies through partnership. Successful adoption and mastery of new technologies by smallholders requires adequate absorptive capacity on their part. Successful technology transfer is not necessarily easy to achieve and entails some cost on the part of the farmer to learn the technology. Still, the returns from successful technology transfer can be very large. For example the crucial goal for AGRF (African Green Revolution Forum) 2018 that was held in Kigali, Rwanda was to secure greater investments for African farmers and agriculture businesses.

Food production as part of Millennium Development Goals (SDG's) key agenda, Kenya and other African countries have signed series of partnership agreements with India to enhance the supply of agricultural machinery, credit advancement to farmers and scientific cooperation.

On building institutional and human resource capacity USAID partnered with the Indian Ministry of Agriculture's premier National Institute of Agricultural Extension Management (MANAGE) to train 1,500 agricultural practitioners (farmers, processors, extension workers, and policymakers) from 11 African and six Asian countries in specialized farming practices to improve food productivity and income. The trained professionals are now applying their new knowledge and techniques in their respective organizations to contribute in their existing agricultural development and food and nutrition security programmes.

In order to achieve and even gain more in the field of agriculture, India and Kenya have signed a Memorandum of Understanding on Cooperation in the agriculture sector and allied sector and Line of Credit for USD100 million for agricultural mechanization. The Prime minister of India, Modi emphasised on the importance of broad-based and noted that, wide-ranging cooperation in agriculture and food security as a shared priority. He also added that, the two sides were collaborating to raise agricultural productivity in Kenya (The Indian Express 2018).

During his recent visit to Kenya in July 2016, the Prime Minister Narendra Modi and Kenyan President Uhuru Kenyatta held delegation level talks and praised the strength of the re-invigorated partnership between the two countries on issues of agricultural mechanization. This cooperation will help Kenya to gain significantly from India's agricultural scientific innovations that have not only made India self-sufficient but also the exporting food country.

Irish Potato Group Limited (IPM) and Kenya Plant Health Inspectorate service (KEPHIS) are working together to share seed technology and develop higher-yield Kenyan potato seed. The Irish Embassy in Kenya have developed an Ireland-Kenya Agri-Food Strategy which was launched on November 8, 2017 brings together development cooperation with trade promotion and the development of institutional linkages for the mutual benefit of our two countries. Ireland is keen to develop partnerships between the Irish agri-food sector and Kenya to support sustainable growth of the local food industry, build markets for local produce and support mutual trade between Ireland and Kenya and the broader East African region and continent (Standard Digital 2017).

On August 29, 2016, the Kenya Agricultural and Livestock Research Organization (KALRO) and the International Livestock Research Institute signed a memorandum of agreement that will pave way for deepening their collaboration in agricultural research for development in particular livestock research, capacity development initiatives and staff exchange programmes. ILRI and KALRO

have previously worked in smallholder dairy development and East Coast fever vaccines development among other projects (KALRO-ILRI Agreement 2016).

The Chinese government has affirmed its commitment to help Kenya to develop an efficient irrigation system as well as to improve its grain storage facilities in an effort to tackle the country's increasing food insecurity. According to Chinese Ambassador to Kenya Liu Xianfa, Kenya can significantly realize food security if it modernizes its agricultural system. He says China has made great progress in agricultural modernization and is ready to share its know-how with Kenya by helping them develop modern agriculture, upgrade their anti-disaster facilities and build their capacity.

Food security being one of the four (4) pillars of President Uhuru Kenyatta, the government is doing everything possible to achieve the dream of reducing poverty rate and increase food production before 2022. To realize this, the government has set on a program to import subsidized fertilizers for the small-scale farmers, buy agricultural produce like maize at a better price, abolished duties on all imported agricultural machineries, increase infrastructural development in the rural areas and invested in Agricultural institutions.

Conclusion

In order to advance food security in Kenya, the government needs to invest and support farmers to increase agricultural and livestock productivity through development and application of new technologies gained through international scientific cooperation, educate farmers on the uses of such technologies and production methods and Invest adequately in agricultural institutions for scientific innovation, put into use productive idle lands, help farmers to mitigate the high cost of production that often leads to high food prices, provide subsidized fertilizers to small scale farmers, support policies on sustainable agro-ecological organic farming. Put a system that would replace unnatural chemical application with better, less expensive practices that nourish

the soil, raise healthier animals and facilitate use of readily available compost and livestock manure and most importantly fight corruption in the agricultural sector.

Endnotes

- 1 FAO, 2016a, Food security indicators, available at <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>.
- 2 FAO, 2016b, Food security indicators, available at <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>.
- 3 Government of Kenya, 2010. Agricultural Sector Development Strategy 2010-2020, Ministry of Agriculture

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