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STUDY PAPER

PAPER ON: MODELS OF PRODUCTION IN KENYA

**PRESENTED BY: EASTERN AFRICA
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Table of contents

- 1. Summary3
- 2. Overview of agricultural sector in Kenya:3
- 3. Farming in Kenya:.....5
- 4. Organization of Farmers:6
- 5. Food crop production in Kenya:6
- 6. Urban agriculture:8
- 7. Agricultural trade performances:8
- 8. Research systems that would help strengthen local food webs and hence improve food sovereignty:10
- 9. Case studies:.....11
- 10. Annex 1: Methodology:13
- 11. References:17

1. Summary

Farming in East Africa is characterized by low productivity, reliance on rain fall, traditional farming systems, Low input use, subsistence in nature, poorly organized markets, few developed value chains, poor fragmented small holders; land tenure issues; low specialization; low technology uptake and use; poor market information systems; low infrastructure development and low or no government support, however despite all this, small holders contribute to >70% local markets and 50% to export markets. The current increasing rates of urbanization are influencing the change in eating habits with indications of high meat consumption and hence unbalanced dietary consumption, less hygiene adherence in food handling as many markets target consumers earning low incomes; while the high end markets are segmented (few) with few high spenders.

The ever growing demand for agriculture-industrial production and energy demands has put pressure on most land in sub Sahara Africa as most Foreign Direct Investments are concentrating on commodities after the financial crisis of 2009. There are few semi-developed commodity markets such as domestic horticulture to local / urban markets/ contracts with supermarkets/ export. The Staple food markets segment e.g. cassava; cereals, sorghum etc has generated interest by researchers as climate change adaptation crops and promotion of the same for consumption and processing (development of commodity value chains) is on the increase. The interest in traditional vegetables due to their nutritional value and hence health drive is promoting demand for consumption; and the informal seed systems are being upgraded to improve access to seeds by farmers through increased use of regenerated seed systems such as promotion of Quality Declared Seed (QDS) systems in Uganda and Tanzania where farmers are getting involved in seed markets by partnering with government to inspect and certify their fields while the farmers bulk and sell their seed to the market at fairer prices. This paper discusses the overall food production systems in Kenya and how they impact on food security as well as food sovereignty.

2. Overview of Agricultural Sector in Kenya

The agricultural society is an important economic contributor to the GDP and employment in the country. It contributes about 24% of the GDP and provides for about 70 percent of the total employment in the country (KIPPRA, 2009). In 2006, almost 75 percent of working Kenyans made their living on the land, compared with 80 percent in 1980's. About one half of the total agricultural output is non-marketed subsistence production. Agriculture is the second largest contributor to the Kenya's Gross Domestic Product (GDP) after the service sector. In 2005, agriculture including forestry and fishing accounted for 24 per cent of GDP, as well as 18 per cent of wage employment and 50 per cent of revenue from exports. The principal cash crops are tea, horticultural produce and coffee; horticultural produce and tea are the main

growth sectors and the two most valuable of all Kenya's efforts earnings. Coffee has declined in importance with depressed world prices, accounting for just 5 percent of export receipts in 2005. The production of major food staples such as corn is subject to sharp weather related fluctuations. Production downturns periodically necessitate food aid for example in 2004 aid of 1.8 million people because of one of Kenya's intermitted droughts.

The Kenya's agricultural sector has been rebounding in 2010; favourable weather conditions and specific policy interventions under the governments economic stimulus program helped turn the sector around. Kenya has over the years formulated and implemented policies and strategies to enhance productivity and increase growth in the agriculture sector. Most recently in 2008 Kenya launched the country's development blue print; the vision 2030 which aims at transforming the country into a middle income country providing high quality of life to all citizens by the year 2030. To align its developmental goal with the vision 2030, the agricultural sector developed the Agricultural Sector Development Strategy (ASDS) whose aim is to provide a guide for public and private sectors' efforts in overcoming the outstanding challenges facing the agricultural sector. The strategy also aims at ensuring food and nutritional security for all Kenyans as well as increasing incomes and employment, in the rural areas. The Comprehensive African Agricultural Development Programme (CAADP) was endorsed by African leadership in 2003 and aims at achieving 6 percent annual growth rate for the agricultural sector by the year 2015. The aim of CAADP is to eliminate hunger and reduce poverty through agriculture through increasing investment in agriculture to at least 10 percent of the national budget. Implementation of CAADP at country level involves the alignment of national agricultural policies, strategies and investments with CAADP principles and targets. The President of the republic of Kenya, officially launched the Kenya ASDS on 24th July 2010 and witnessed the signing of the CAADP.

Kenya's custom taxes have been reformed by restricting duty exemptions, encouraging free market competition and increasing levels of foreign direct investment. Trade in agricultural products is hampered by the country's high tariffs and Value Added Tax (VAT) although these are occasionally altered in the light of domestic supply and demand realities. On average the country's tariff rate is at 2.6 percent (WTO, 2008). Kenya applies the EAC customs union Common External Tariff, categorized in three tariff bands- Zero duty for raw materials and inputs; 10 percent on processed/manufactured inputs; and 25 percent for finished products. The volume of intra-regional trade among the EAC countries remains low despite elimination

of tariff barriers (Karugia et al., 2009). Government spending is one of the most direct and effective methods of enhancing agricultural development. It is however, low in the country currently. The worsening current account deficits arising from the combined effects of food, energy and financial crises continue to make it more difficult for the government to meet its expected investment target. The situation is exacerbated by the fact that farmers are unable to achieve supply responses to take advantage of the high commodity prices due to binding capital constraints, deep poverty, lack of access to new technologies and poor infrastructure. While farmers in the rich countries continue to receive more subsidies, poor farmers in Kenya lack comprehensive support packages. This goes against expectations because it is in the developing countries that agriculture plays a more critical role in development. Such conditions influence greatly the kind of production systems most farmers in Kenya engage in.

3. Farming in Kenya

In Kenya more than 50 percent of export earnings are attributed to agricultural products with cash crops of coffee, tea, tobacco, cotton, sisal, pyrethrum, and cashew nuts leading the way. Exports of fruit, flowers, and vegetables are also attracting an increasing amount of foreign attention and money. Tea continues to create the largest agricultural profit for Kenya. The primary food crops are beans, cassava, potatoes, maize, sorghum, and fruit. As in the early days of the republic, these crops are mainly harvested as subsistence farming today. Both agricultural productivity and population density are influenced by rainfall. The majority of Kenya receives less than adequate rainfall needed to support crop cultivation. Most of the agriculture being practiced is usually heavily dependant on agriculture; as a result, the coastal area and Lake Victoria boast the most intensive agriculture and greatest concentration of people. The Rift Valley is Kenya's food basket and provides more than half of the country's food supply (Action Aid; <http://www.actionaid.org>). Pastoral farming dominates the remaining drier regions of Kenya. Camels are common in the arid desert areas while cattle, sheep, and goats dominate the rest of the country.

In a pastoral society, wealth is measured by the ownership of animals, not land. These pastoral animals serve a multitude of purposes for their owner: transportation, milk, blood, meat, and wool or hair. Because these animals are dependent upon land for grazing, they must be kept on the move. This has encouraged a nomadic lifestyle among many Kenyans which greatly influences social and family customs. The provision of supportive social services such as health care and education has been negatively impacted because of the prevalence of this

nomadic way of life. In addition, there is little incentive to conserve grazing land. These traditional attitudes conflict with the more recent emphasis on conservation. This issue remains a volatile one and it is far from being resolved.

Kenya is an attractive location for investment in growing and processing of maize, wheat, rice, sorghum and millet. The grain sub-sector is strengthened by the presence of big local millers who have international access especially to the EAC and COMESA markets. These players include Unga Group Limited, which is a regional main player exporting its products to the neighbouring countries. The staple food crop in Kenya is Maize, (see map Annex 1) clearly showing the main crop zones in Kenya.

4. Organization of farmers

Farmers in Kenya are organized into groups mostly referred to as commodity associations. These commodity associations are further broken down into common interest groups where they deal with one farm produce e.g. cotton and hence have Kenya Cotton Growers Association. These commodity associations are linked to an umbrella association called Kenya National Federation of Agricultural Producers who represent these farmers at the national level KENFAP is a member of Eastern Africa Farmers Federation which represents farmers at the regional level. Farmers, particularly small scale producers who dominate the sector, suffer wild price fluctuations, high input prices, limited access to proper storage facilities leading to stupendous post-harvest losses, limited access to affordable credit, and lack of timely and appropriate information. These small organizations that exist are too weak to effectively engage the government and non-governmental institutions thus the apex National and Regional bodies.

5. Food Crop production in Kenya

Trends indicate that food production rose steadily from 2005 to 2006. Thereafter, a declining trend set in due to post-election crisis of 2008 and the drought of 2009. Overall, maize dominates this category of crop production. Other important food crops include sweet potatoes, cassava, beans and wheat, respectively. Irish potatoes are equally important although they are normally recorded under the broad name of vegetables and may not be possible to disaggregate. Interestingly, when the production of all the other food crops declined in 2008, output of cassava and sweet potatoes increased remarkably. This underscores the significance

of the two crops for food security. Wheat production has been marginally declining over the years and could require policy intervention before things move to worse.

Kenya's current food supply situation and outlook give cause for serious concern. The long rains (March-May), which normally accounts for 80 percent of total annual production has failed due to a severe drought. With the exception of parts of Western Province and Nyanza province which receive significant amounts of rainfall, the rest of the country, including the bread basket Rift Valley province and Central Province which is normally close to self-sufficiency in food, have received very little rainfall in the past year causing a real cause of concern on the food situation in the country. Maize is the main staple food in Kenya, averaging over 80 percent of total cereals (rice, wheat, millet and sorghum). Current maize crop at only 1.4 million tonnes, 36 percent lower than the long rains average of 2.21 million tonnes and 22 percent less than the drought-reduced 1999 long rains crop of 1.8 million tonnes. Assuming the 2000 short rains (October-December) harvest at the same level as in 1999, estimated at 450,000 tonnes, total domestic production available for consumption in 2000/2001 amounts to 1.85 million. In recent years the production has declined within the food baskets due to climate changes which catapult to erratic rainfall and long drought spells. This has put the food situation in the country in jeopardy and rural people are migrating to the urban centres in search for alternative ways to earn income. The urbanites are practicing urban agriculture where they plant crops inside gunney bags made of either PVC or sisal. Some are even growing vegetables in containers filled with soil and a little bit of watering is done every now and then.

The degree to which the soil is disturbed by tillage prior to seed planting provides a means of categorizing crop production within a range of tillage systems. These systems range from no-tillage in which there is no soil disturbance in a field except during the process of planting a crop to conventional tillage in which multiple tillage operations can extend over many months and take place before, during and after planting. Crop production systems that involve pre-plant tillage maintain residues from a previous crop on the soil surface are referred to as conservation tillage practices. Kenya being a tropical country has high incidences of pests and diseases and decreased soil nutrients, farmers are therefore rotating crops as much as possible. No-till cultivation is practiced in large scale farms while most small scale farmers practice conventional cultivation which involve a lot of turning of soil.

6. Urban agriculture

Urban farming is often considered as part of the informal economy, although some critics maintain that it does not belong to the informal sector either because of its mainly subsistence nature (at least in Sub-Saharan Africa). What is relevant, however, is that for some urban groups, agricultural activities are extremely important, in the sense that it is part of a strategy of income diversification necessary to maintain a certain level of living or even to survive. From this point of view, farming by urban dwellers is related to declining purchasing power and to urban poverty, which in its turn is partly the result of the economic crisis prevalent in most African countries. Because of their combined productive and reproductive responsibilities, the role of urban women is crucial in this respect. Although UA is nearly ubiquitous, it has remained almost “invisible.” Until recently, it has been generally ignored by academics and planners. This reflects the fact that subsistence production, undertaken in the domestic economy, has not been considered to be of great significance.

It is estimated that about 25 million kg of crops were produced in Kenya's urban areas in one season and some 1.4 million animals were kept. Most of the agricultural produce - both crops and animals - was meant for subsistence purposes, which is related to the fact that most urban farmers appeared to be women and that most households carrying out urban farming belonged to the lower income categories.

7. Agricultural trade performances

Trade in Kenya is characterized by faster growth of imports than exports lately although the overall performance of the country in international trade cannot be described as stable. According to the Kenya trade map (2007), the most important agricultural exports included tea 21%, horticulture 21%, coffee 4% and tobacco 3%. Agricultural imports include maize, wheat, rice and sugar. In 2008, tea exports recorded a steep rise in value, a phenomenon which resulted in tea farmers getting huge payout. The horticultural industry (flowers, fruits, vegetables and nuts) remained vibrant and resilient to the global financial crunch. Under agreement with the European Union, export of raw sugar increased remarkably in 2008.

The country's agricultural imports constitute 10 percent of the total imports. Wheat, rice, maize and sugar products are the country's main imports. The decline in domestic maize and wheat production in 2008 occasioned by unfavourable weather and aftershock effects of the post-election violence led to significant rise in the import of the two products in the same

year. Largely, agricultural imports have been on the increase. This is mainly due to declining productivity of the country's agriculture, especially among the small holders. Declining productivity can be attributed to over-reliance on weather, low levels of technology adoption and population pressure which has led to sub-division to economically unviable sizes.

While the average price of all primary commodities increased steeply between 2003 and 2006, the price of agricultural raw materials did not change significantly (see Table1 Annex2). The policy implication of this to Kenya is that the country should

1. Consider value addition to her agricultural products as a priority initiative in increasing gains from international trade
2. Venture heavily into markets where it enjoys competitiveness and comparative advantage such as COMESA and EAC
3. Tackle the constraints that limit agricultural value addition

During the period of reference, among the food crops, only price of beans rose consistently and significantly. Maize, wheat, and rice had their prices fluctuating depending on domestic production. For instance, in 2008, and 2009, when production was adversely affected by post-election violence and dry weather, maize prices more than doubled. Wheat prices also increased substantially in 2009. For the industrial crops, prices are largely dependent on the global production, hence the frequent fluctuations; 2008 and 2009, witnesses remarkable gains in tea prices. Available statistics indicate that coffee prices remained sticky during the period of reference.

Food trade balance is the difference between a country's exports and imports of food. Positive sign indicates that the country is a net exporter of food while a negative sign implies that the country is a net importer of food. Statistics indicate that Kenya has remained a net exporter of food over the years. Food trade balance has, on average, been increasing although marginal downward swings have been recorded (e.g. between 2002 and 2005 and between 2006 and 2007). The most impressive increase was realized between 2004 and 2005. This is good for food security. Value and volumes of agricultural exports and imports by sub-sector and major commodities; export market shares by major commodities; agricultural trade balance; food trade balance; value/volume and share of intra-regional trade by major commodities; commodity price trends by major commodities.

8. Research systems that would help strengthen local food webs and hence improve food sovereignty

1. Encourage the practice integrated farming e.g. like food crop farming and fish farming should be done together so as to utilize resources effectively.
2. Improving water harvesting systems to increase irrigation potential in most farming communities to enable effective use of resources.
3. Research on consolidation of land pieces that have been totally fragmented to effectively use arable lands for higher food production and equally food security in households.
4. City council should encourage use of sewage water for irrigation or flushing so as to reduce use of clean water for agriculture. Solid wastes can be separated from the liquid materials to encourage fertilization of farms. This will help to improve urban agriculture and hence food security and sovereignty to urbanites.



Trenches integrated in rice field crops and growth



sampling to monitor fish condition

Case studies

A case study on a production system in Embu, Kenya

Agriculture is the mainstay of the the economy of Kenya. Farming is mostly practiced in the rural parts of Kenya. In Embu, agriculture is practiced by over 100 farmers who grow various food and cash crops. Food crops grown in this region include maize, beans, bananas, sweetpotatoes etc. Cash crops in this area mainly include coffee and tea. Mixing within crop and/or within animal systems refers to conditions where multiple cropping is practised, often over time, or where different types of animals are kept together, mostly on-farm. Both these systems occur frequently though they are not always apparent. The farmer from this case study is called Mr. Ambrose Nyaga who does not really specialize in any crop. His farm consists of maize, beans, cabbages, tea and coffee. He also keeps livestock to complement the protein supplements required by the household.

Most food that is produced from the farm is used for domestic consumption but otherwise the surplus is taken to the nearby market. Some of the constraints faced by the farmer is poor road networks to access the market, lack of certified seeds for planting, poor extension services, change in dietary preferences. Most of the people in the nearby towns now prefer to eat more meat than vegetables this has therefore caused a constraint in marketing of produce. The farm is dotted with a bit of cabbages, bananas, some bit of sugarcane, maize, beans, and goats, cows and sheep. Within-crop mixing takes place where crop rotations are practised over and within years. Mr. Nyaga often has a grain-legume rotation to provide the grain with nitrogen to provide supplement nitrogen to his farm which is otherwise expensive; he also does this to avoid disease in the farm. The dung from his farm is mixed in the soil with the soil during planting to improve his soil. Please see below a picture from a part of his farm.



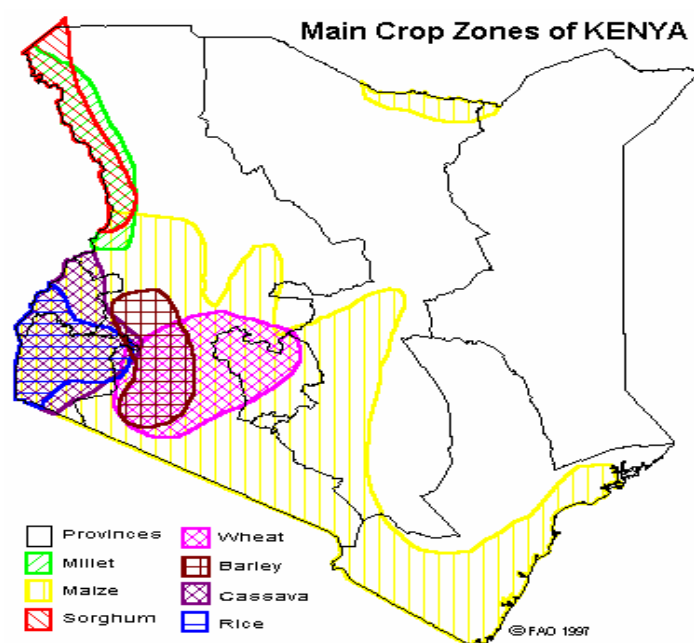
His cabbage farm on the slopes of mount Kenya

Case study of a market place in Nairobi where produce is sold- Gikomba market

Once food is transported from the farms in the rural areas, food is brought mostly by trucks to the market place. Food here is sold in wholesale to small retailers who sell to the consumers within the residential areas. Food from the rural areas is sold to the wholesalers at a lower price than food sold to retailers is at a higher price than from the farm gate prices and with less proportions. The consumers gets the pressure of the market prices at even much higher prices than any other. The rich people can buy goods worth alot of money at discounted rates since they can afford to buy in bulk and keep them in various forms of preservation. The poor people especially from the slum areas cant afford to buy food in large quantities therefore they pay a much higher price for food stuffs from the market place. On a typical market day food arrives at the market place from the rural areas in the morning at around 5:00am. Wholesalers usually are on time to sell their wares to the retailers who usually commute from their various "villages/estates". Food is bought in large quantities comprises of tomatoes, fruits, vegetables, chicken, meat, fish, etc. Here are some of the pictures from the market.



Annex 1



Annex 2

Table 1: Trends in agricultural commodity prices (ksh)

Crop	2005	2006	2007	2008	2009
Maize (90kg Bag)	1363	1300	1200	2500	2614
Wheat (90 kg bag)	1639	1714	3000	2600	3571
Beans (90 kg Bag)	2500	2540	4400	4500	5134
Rice (90 Kg Bag)	3400	3500	2650	2745	
Coffee (100 Kg)	11824	10952	10952		
Tea (100 Kg)	12560	16240	14080	18640	21760

Source: Gok, Economic Review of Agriculture, 2010-12-24

Annex 3

Methodology of study

Kenya is located in East Africa near the Equator (the imaginary line that divides the Earth into the Northern and Southern Hemispheres). The country is approximately twice the size of Nevada. The southeast part of Kenya borders the Indian Ocean. The land regions are varied and range from year-round snow in the Kenya and Kilimanjaro Mountains to warm, tropical

beaches. Some of the regions are desert, but most land is rolling grasslands and forests. Kenya's climate is as varied as the land areas. Typically, there are two rainy seasons. The highest amount of rainfall occurs in April and the least rainfall occurs in January. The evenings in the Central Highlands can be quite chilly and the coastal areas are usually hot and humid.

Traditional Kenyan foods reflect the many different lifestyles of the various groups in the country. Most Kenyan dishes are filling and inexpensive to make. Staple foods consist mainly of corn, maize, potatoes, and beans. *Ugali* (a porridge made of maize) and meat are typically eaten inland, while the coastal peoples eat a more varied diet. The Maasai, cattle-herding peoples who live in Kenya and Tanzania, eat simple foods, relying on cow and goat by-products (such as the animal's meat and milk). The Maasai do not eat any wild game or fish, depending only on the livestock they raise for food. The Kikuyu and Gikuyu grow corn, beans, potatoes, and greens. They mash all of these vegetables together to make *irio*. They roll *irio* into balls and dip them into meat or vegetable stews. In western Kenya, the people living near Lake Victoria (the second-largest freshwater lake in the world) mainly prepare fish stews, vegetable dishes, and rice.

EAFF conducted a study on the production systems in Kenya through development of a questionnaire to be administered to various organizations inclusive of the ministry of Agriculture and local agricultural NGOs to get the various socio-political, environmental and legal problems associated in production of food in Kenya. EAFF developed a questionnaire that was administered face to face to at four organizations dealing with agricultural issues. This included, KENFAP, Ministry of Agriculture, SACDEP and YARD Kenya. A comprehensive desk review was conducted on trying to articulate issues on food production systems in Kenya this included both internet and library research. Two case studies were identified one from Mt. Kenya region showing the production system in a farm there and another case study on marketing of farm produce a case study of Gikomba market in Kenya. Looking at the dynamics presented under the local and urban food webs, as well as the influence of abiotic factors, it is imperative to say that the approach to achieving food sovereignty should be multi-pronged- i.e multi disciplinary, multi sectoral, multi-institutional, have multi-marketing systems and multi-financing mechanisms. It shall have to combine traditional as well as modern technology however it must be anchored on sustainability, resilience and diversity. Declarations, summits and policies shall only give visibility and guidance to problems facing farmers, the real work lies with each individual and institution.

Systems of rewarding should be revised and based on practical and usable outputs as compared to number of publications or on abstract theories.

We need to sustain the local food webs as they have historically provided for many rural households over long periods of time. The upsurge of new technologies in Agriculture though positive and interesting should be taken up within the tenets of sustainable development. Science should be used to document traditional agriculture practices and to improve on the good practices. Already there is alot of evidence on the benefits especially of traditional foods and such evidence should be given visibility as a credible alternative to proccessed foods

Annex 4

Questionnaire on food production systems in Kenya

EAFF is conducting a study on food production systems in kenya to look into the dynamics presented under the local and urban food webs, as well abiotic factors influencing the multifacated approach on achieving food security- i.e multi disciplinary, multi sectoral, multi-instituional, have multi-marketing systems and multi-financing mechanisms.

Questions

1. What crops are mainly grown in Kenya?

1.1 Food crops

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.....

1.2 Cash crops

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.....

2. How is the food mentioned above produced (please answer according to food type)

Mixed farming:

.....
.....

Mono-cropping

.....
.....

3. What methods of tillage are mostly used?

.....
.....

4. What type of crops would you consider food security crops?

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.....
.....

5. How has Kenya previously dealt with food shortage?

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.....

6. How are farmers affected when there is a food shortages

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.....

7. How do world prices affect local prices

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.....
.....

8. What foods are exported or imported to Kenya

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9. What are the implications of export or import foods to Kenya food situation

.....
.....

10. What are the various policies that help the kenyan citizen access food?

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11. Any other comments?

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