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Policy Options to Strengthen the Cassava and Rice Supply Chains

Xiaobo Zhang and Edward Whitney

Nigeria is the world's largest cassava producer and Africa's largest rice importer. The government and private sector should figure out ways to enhance cassava's competitiveness in the international market and improve the efficiency of domestic rice production and processing. A range of policies and initiatives can strengthen cassava and rice supply chains, all the way from production to marketing. However, because of the country's massive size and diversity, different regions may face different constraints; following a decentralized approach to designing industrial policies and initiatives is the best course of action for Nigeria.

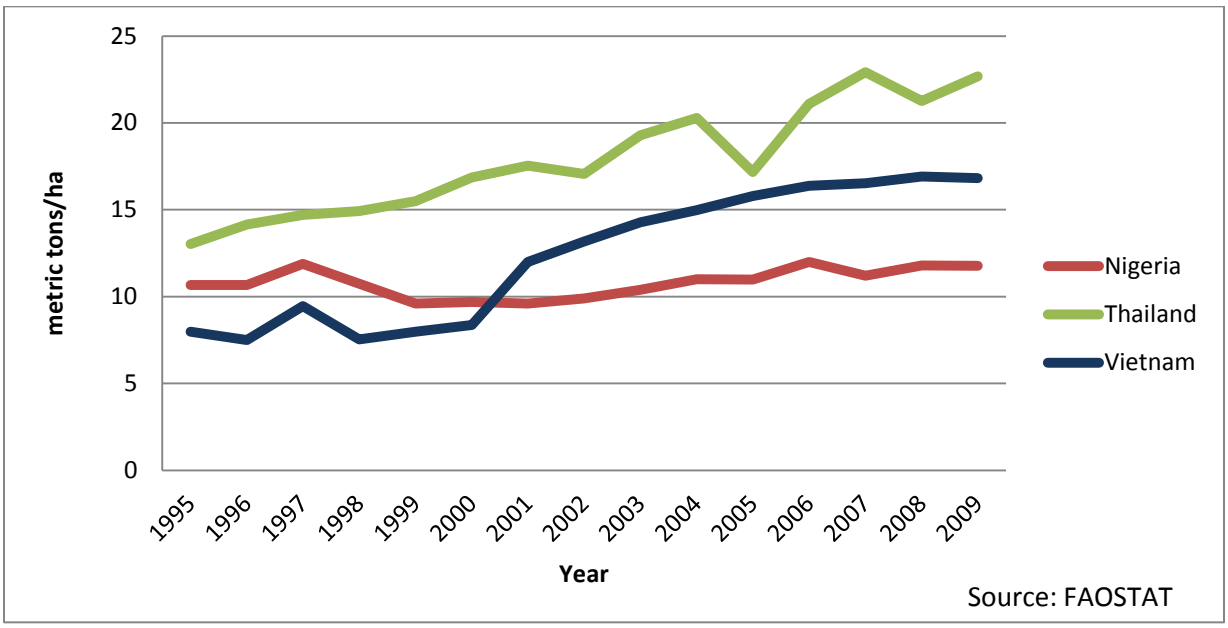
CASSAVA PRODUCTION IN NIGERIA

Nigeria has been cited as the world's largest producer of cassava (Phillips et al. 2004), although much of this production is for local consumption. In the last several years, Nigeria has increased cassava exports to China, the emerging new market, revealing a comparative advantage in cassava production. However, compared with Vietnam and Thailand, two of the world's largest exporters of cassava products, Nigeria has a very small share of exports. As a result, a huge potential exists for Nigeria to compete globally in the cassava product market, especially given China's rising demand. China consumes more than 60 percent of cassava products traded internationally, making it the largest potential market for Nigerian producers. Expansion of cassava production and processing can increase employment income and improve rural livelihoods for many Nigerians. An examination of how the Vietnamese and Thai cassava industries developed reveals a range of policies and initiatives that could promote cassava production in Nigeria. These include reduced tariff rates, better access to ports and transportation infrastructure, research and development of improved cassava varieties (in terms of both yield and uniformity of shape), creation and encouragement of producer associations, and better industrial policies to attract cassava-processing firms.

Vietnam provides an example of how a reduction in tariff rates between Nigeria and China for cassava products could markedly increase exports of cassava products to China. A free trade agreement between Vietnam and China eliminated a 6 percent tariff, significantly boosting Vietnamese cassava exports to China (Prakash n.d., 8). With a similar tariff reduction for Nigeria, its cassava exports could become much more competitive in the Chinese market.

Compared with Vietnam and Thailand, Nigeria's domestic transport costs are high. These costs put downward pressure on farm gate prices, depressing cassava production. Zhang (2011) shows how a reduction in transport costs facilitated the development of a potato cluster in China. Improved port facilities and port access, combined with improved infrastructure between cluster areas and the ports, could expand the market for producers by lowering transport costs and increasing the producer price of cassava products. (Transportation costs are a major determinant of food prices in Nigeria, and improvements in roads and other infrastructure are among the ways in which these costs can be addressed and reduced.) An increase in the producer price could lead to an increase in production and processing of cassava products, which would serve both domestic markets and export markets. Cassava cluster development should coincide with local infrastructure development.

Figure 1—Cassava production yields for Nigeria, Thailand, and Vietnam, 1995-2009



Lessons from the Chinese Government

As Zhang (2011) describes the development of a potato cluster in China, the role of the Chinese government in research and development of new seed varieties of potatoes compensated for the externalities faced by individual producers, who could not afford to invest in this research on their own. In the case of cassava in Nigeria, such research should be a high priority and should be coordinated at both the national and local level, since the optimal variety for production may vary across regions and agro-ecologies. Research and development of new varieties of cassava could result in higher yields and uniformity of shape and size, the latter allowing for improved mechanization of processing. As shown in Figure 1, cassava yields, while fairly competitive in the mid-1990s, have fallen below those for Vietnam and Thailand. Increasing cassava yields could make Nigeria more competitive in the cassava export market.

In China and Vietnam, producer associations have been instrumental in raising productivity levels for crops such as potatoes and cassava. These associations can provide multiple benefits. First, they allow for increased bargaining power in purchasing inputs, including improved varieties, for individual producers. Second, they can improve access to services, including for pesticides and irrigation. Third, they enable collaboration among individual producers for machinery purchase or hire. Fourth, they offer a mechanism for quality control and standardization; for this and other reasons, in China processing plants work with producer associations rather than with individual farmers.

Long and Zhang (2011) describe how clustering and local industrial policy develop cluster areas in China. Industrial policies have the potential to incentivize the creation of cluster areas for both producing and processing cassava. As Nigeria is a large country, each state differs, particularly in the level of comparative advantage in cassava production and processing. So, it is critical to note that no “one-size-fits-all” approach to cluster development exists. Instead, local governments should play an active role in developing cluster areas for cassava production, since they are more aware of the local supply-side and demand-side constraints, which will inevitably vary from one locale to another.

Nigerian Cassava Master Plan

The 2006 Nigerian Cassava Master Plan provides a detailed value chain analysis of Nigeria’s cassava industry. A new analysis should update this master plan while identifying new supply-side and demand-side constraints specific to different states or regions. It is quite possible that constraints in the cassava value chain have changed due to expansion of the global market and changes in the domestic market. Furthermore, it is important to align local government policies with local production, and to explore whether local governments have incentives to pursue policies for cluster development. Policy recommendations include allowing first-hand experience of how other countries have overcome the binding supply-side and demand-side constraints in their cassava industries. This can be accomplished by sending a delegation to Vietnam or Thailand to learn from producers, producer associations, and government officials about policies and ideas that will transfer to Nigeria.

RICE PRODUCTION IN NIGERIA

As of 2009, Nigeria was Africa's largest importer of rice and the world's second largest importer (USAID 2009). Actions such as those of the Thai government, who recently agreed to pay above-market prices to domestic rice producers (Abiodin 2011), suggest that Nigeria should immediately look at ways to increase production of rice for domestic consumption and export. According to FAOSTAT, while rice yields in Nigeria have risen recently to 1.9 metric tons (MT)/hectare in 2009, this level is similar to yields realized in the early 1990s, and below yields realized in the late 1980s, which were as high as 2.38 MT/hectare. Compared with other countries, these yields are not competitive and need to be improved to offset rice imports and expand market access into the export sector. For instance, in 2009 China showed rice yields of 6.6 MT/ha, while top exporters Thailand and Vietnam showed yields of 2.9 MT/ha and 5.2 MT/ha, respectively. Thus, increasing rice yields would offset the need for Nigeria to import rice.

Does Nigeria have a comparative advantage in producing rice? Rice is a labor- and water-intensive crop, and may not be suitable for every region in Nigeria. The important factors in rice production are seed varieties, irrigation, mechanization, and infrastructure. Daramola (2005) reinforces this by stating that the factors that contribute to a constrained domestic supply of rice include a low degree of technology in production and processing (including seed varieties and mechanization), inadequate infrastructure, constrained access to credit, and difficulty in accessing inputs such as fertilizer.

New Technology, a Key to Success

Investment in new seed technology and reform of the fertilizer market and distribution systems, are essential to increasing yields for Nigerian rice farmers. Teaming up with Chinese and Indian rice breeders would be one way to exploit high-yield varieties developed in these countries and to adapt them to local conditions. China has established rice seed breeding institutions around Africa, including in Nigeria.

Rice is a water-intensive crop. In drier areas, irrigation is a precondition to a constant supply. Development of irrigation as infrastructure can lead to stabilizing supply, as well as offering potential for expansion of supply from individual producers. Coordinating with aid donors, as well as with emerging new infrastructure investors such as China, will facilitate the development of irrigation facilities.

Access to fertilizer complements adequate irrigation. Without irrigation, fertilizer may have neutral or even negative effects. However, recent analysis of the fertilizer distribution system in Nigeria reveals corruption and inefficiency. These must be addressed to improve rice farmers' access to fertilizer.

Challenges and Possible Solutions

Investment in rural infrastructure will have a positive impact on rice production in Nigeria. Fafchamps (1992) highlights the impact of transaction costs on farmer's willingness to produce crops for the market rather than for personal consumption. Transportation represents a significant portion of transaction costs in Nigeria. The impact that investment in rural infrastructure could have on the cassava industry extends equally to the rice industry. Reduced transaction costs will lead to a stabilization of prices. As Fafchamps notes, stable prices in food crops are just as important as stable prices in cash crops, if not more so. As food prices stabilize, farmer's uncertainty about the price of the food they grow decreases, allowing them to increasingly rely on a certain price level for their food crops. They become willing to direct more resources to crops that maximize income potential, since they are more certain that they will be able to buy food for themselves at a certain price. While successful programs have targeted stabilization of food prices, policies and investment geared toward developing infrastructure, leading to "thicker" national markets, are also key to reducing the gap between the price that producers receive and the consumer price.

If labor shortage is an issue at harvest time, policies should support mechanization of rice production and processing. Mechanization, including plowing and transplanting, can help offset the constraint presented by labor shortages and improve productivity. Domestic manufacturers of such machines, if they exist, could supply this need for farmers and processors. If there is no such domestic manufacturing, a key question is whether there are Nigerian tariffs on machinery and fertilizer imports. If tariffs do exist, they should be removed to mechanize rice production and processing more cheaply.

The expansion of rice mills is also important in relieving these supply-side constraints. For the domestic market, smaller mills could serve demand without having to meet the standardization pressures that come from exporting to the international market. For instance, one step to improving the competitiveness of Nigerian rice is to increase the number of de-stoning machines (EDO

2003). Stones in rice, which typically accumulate during the drying process, increase the cost of processing. De-stoners or alternative strategies represent technological improvements that can make local rice more appealing than imported rice. A focus on smaller mills may be more feasible in the short term and could benefit existing producers sooner. Tax breaks are one incentive that could help develop rice mills. In addition, rural electrification will also facilitate the spread of rice mills, as it is too costly for a mill to operate using generators.

As with the cassava industry, access to information is critical to rice market actors, especially farmers who want to receive the best possible price for their product. If farmers know what the prices are in neighboring villages, they can negotiate better with traders.

Power in Numbers

Producer associations have served industries through promotion, price negotiation, and access to credit. However, given the low value-added nature of rice production, in Nigeria's case the benefits from producer associations may be limited to access to credit and possibly access to fertilizer. Still, producer associations can help rice farmers and millers in a number of ways. First, through price negotiation; these associations can negotiate with buyers over the price that individual farmers receive for their rice. Second, producer associations are able to buy seeds and other inputs in quantity at wholesale prices, leading to lower input prices for farmers and millers. Third, producer associations are able to facilitate or extend credit and other financial assistance to farmers and millers, giving them better access to improved technology.

The importance of producer associations is informed by the extent of the value added to rice throughout the value chain. For farmers to obtain the best seeds and fertilizer, producers' associations can play a critical role in negotiating prices for these inputs. The association can also act as intermediary between the processors and the farmers, helping to establish contracts for supply.

The formation of the Rice Farmers Coalition (RFC) in Ghana illustrates the role of producer associations in rice production (Loosvelt and Defoer 2010). The RFC was created to ensure a consistent supply of rice paddies for an association of female laborers to work in. It enabled secure revenue through contracts between the women, who worked in the rice paddies, and the rice farmers. Additionally, several practices, including improved fertilizer use and the use of nurseries and improved seeds, led to significant yield increases for coalition members. The RFC also negotiated credit access and input prices, including prices for fertilizer and seeds from seed producer associations. In China, while producer associations play less of a role because the farmers can afford inputs and rice is less valuable, the ability of producer associations to provide credit access and fertilizer access might help offset any credit constraints faced by Nigerian rice farmers.

Local control over the promotion of Nigeria's rice industry will enable those who are most attuned to the market's supply-side and demand-side binding constraints to respond appropriately. As these constraints inevitably vary by locale, a nationally orchestrated approach is inferior to a local approach. It is just as important that local authorities maintain a national perspective while promoting the rice and cassava industries. Emphasis on the comparative advantages held by each region, combined with a view toward national market integration, is critical to balanced development and sustainable growth of Nigeria's rice and cassava industries.

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For more information:

IFPRI-Abuja
International Food Policy Research Institute
c/o International Fertilizer Development Center
No.6 Ogbagi Street
Off Oro-Ago Crescent
Garki II, Abuja
Nigeria
E-mail: ifpri-nigeria@cgiar.org
www.ifpri.org