

# THE CHALLENGES OF INCREASING PRODUCTIVITY IN AGRICULTURE: THE CASE OF CASSAVA IN ZAMBIA

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## 1. Introduction

Despite concerted efforts by different international and national organizations to promote food security and reduce poverty by introducing improved crop and animal breeds and stimulate trade, Africa remains food insecure and farming communities remain some of the poorest societies compared to those engaged in manufacturing and services. While this generalization is the big picture, small and successful cases have been implemented. Among them are horticulture and cotton. In these sectors, partnerships and intra-firm trade has played a central role. This note looks at increasing productivity which is one aspect in the long list of barriers to intrafirm trade.

What makes the case of Cassava production in Zambia an interesting one is not about the NGOs per se. The role of the NGOs could be substituted by other institution, but rather the type of model used, in this case the provision free of charge or subsidised agriculture inputs to farmers and its implications to market development and export opportunities of the outputs. The cassava case involved small scale food enterprises and millers, traders, the breweries industry, stock feed processors.

## 2. Effective partnerships

One of the common approaches to identifying effective and profitable partnerships is through outgrower schemes such as those in the flowers and fresh vegetables as they present new ways of bringing together producers and agribusiness, they establish and enforce grades, standards and regulations, improve the investment climate and provide essential public goods such as rural infrastructure. These have the potential to support equitable and sustainable development as they recognize the market, socioeconomic, cultural and management aspects of rural farmers and link these to public policy and good institutional settings aimed at sustainable and profitable agriculture.

As processors, millers and traders need enough quality farm produce, subcontracting arrangements in agribusiness is another model of partnerships that has been used to promote production. In this case, companies provide technical assistance, materials and/or financing to local farmers with an agreement by the company to purchase the products is being revived. An important aspect of this model is that it builds local supply chains of raw materials.

Another way to raise small-farm income is by delivering technology and market information to small farmers and incorporating them into remunerative new markets through contract farming. Critics of contract farming see it as a means by which agribusiness firms take advantage of the unequal bargaining

relationship to pass production risk to farmers (Sachiko Miyata 2007). This could also favour larger farmers. Another is stimulating demand and improving productivity through targeted support such as in the case of cotton where training, credit, market development and agriculture inputs are made available

All of these models pose Africa with a strategic dilemma when it comes to making the choice of promoting food security and market development. On the one hand, input-led efforts to deal with the food crises often hamper the prospects for local market development for inputs, while investments and policies supporting market development do not easily translate into increased input use for poor, food insecure farmers who need inputs the most (Valerie Kelly, et al 2003)

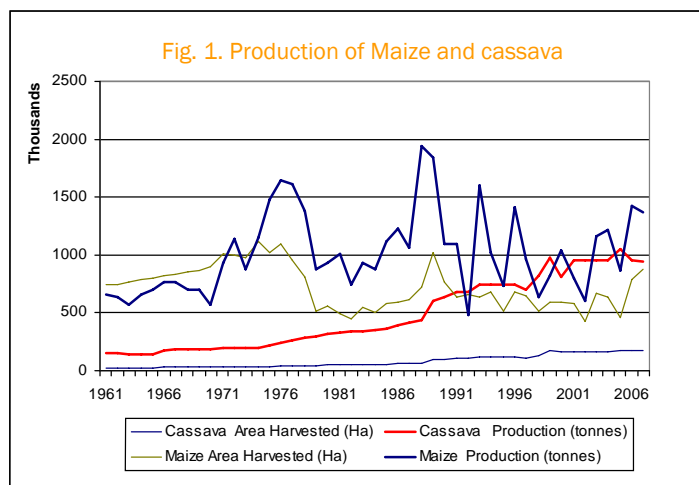
To identify the right intervention is not without costs. One has to know whether or not inputs are economically or financially profitable. Subsidized distribution programs often use inputs as a vehicle to increase food security and reduce poverty. Problematically, though, such programs increase risk and uncertainty for the emerging commercial sector.

This involves understanding of input and transaction costs. Agribusinesses constraints to increasing agricultural productivity in developing countries range from pricing policies, poor market access and marketing efficiency. Farmer's access to agricultural credit is low and is reflected by the low use of fertilizer. Land tenure insecurity, land degradation and low investment in agricultural research, coupled with the lack of good infrastructure, recognised standards to determine product value and capacities to enforce contracts with large numbers of small-scale farmers.

For example fertilizer subsidies should only be considered when fertilizer use is economically profitable (i.e., there is a strong enough crop response that fertilizer use remains profitable when price distortions from subsidies and taxes are removed). These considerations are true when identifying areas for technology research or off the shelf technologies including the choice of target group of farmers.

## 3. The Zambia Cassava Task Force Approach

Cassava, the staple food crop in northern Zambia saw rapid production growth over the past decade and a half (Figure 1) overtaking maize, Zambia's other staple food. Source: FAOSTAT



Source: FAOSTAT

Besides the increased growth of cassava, groundnuts, cotton, tobacco and horticultural products also increased.

In Zambia, the two-pronged approach to commercial promotion of agricultural supply chains was undertaken to accelerate the production of cassava. This is because understanding the key opportunities and constraints up through the value chain is imperative to sustain smallholder growth. The analysis revealed five distinct supply channels linking cassava producers with various final markets (Table 1).

Table 1. supply channels linking cassava producers

Channel	Description
Supply channel 1	Channel one is composed of self-sufficient cassava-producing households who consume the bulk of their own production and accounts for about 85% of all cassava production in Zambia (van Otterdijk 1996).
Supply channel 2	This involves farm households selling surplus production in fresh form to nearby markets for human consumption. The fresh sales account for no more than 5% of total production (van Otterdijk 1996; Tembo and Chitundu 2000; Langmead and Baker 2003).
Supply channels 3, 4, & 5	These channels link rural cassava producers to potentially vast urban markets by supplying a cheap carbohydrate to substitute for the wheat- and maize-based products that currently predominate among Zambia's food, feed and industrial processors. These three channels account for 5% to 10% of total cassava production.

Source: Chitundu, Droppelmann and Haggblade 2006

The stakeholder taskforce deal with bottlenecks that constrain growth in the supply channels such as the absence of trading standards, poorly coordinated market information, long distances, small volumes and consequently high marketing margins. At the top of each channel are innovators or “channel captains”. These are “innovative players who develop markets

for products that incorporate cassava-based carbohydrates into their products, expand demand for cassava roots and chips, generating demand to which the rural producers have shown they are likely to respond” Chitundu, Droppelmann and Haggblade 2006.

The initial focus on Channel 1 which represents a supply-led strategy of promoting food production by focusing on subsistence households and providing inputs to the farmers (in this particular case by NGOs) was a complete failure. Some donors are now known to discourage the use of free or subsidized input distribution. The argument however is not the distortions that it creates, but rather that it is a financially unsustainable approach. Likewise some African governments and donors still underscore the importance of input subsidies as a tool to address food security issues.

The Zambian approach or demand-led strategy which focused on market development in both trade and upstream processing industries instead yielded the desired results. This experience revealed that successful value chain interventions require identification of sizeable and broad-based commercial opportunities. This is important to mobilize broad interest and support from all stakeholders. In the Zambian cassava case, it was found that the commercial potential could easily sustain a 50% increase in national cassava production. The multiplier effects of such an increase included on farm income gains, opportunities for increased value added upstream including significant spin-offs in terms of improved household food security, reduced costs of feed and livestock products, and potentially lower protein costs for consumers.

The cassava case presented significant spin-offs for many firms, households and institutions suggesting that the most significant opportunities for growth lie in commercializing cassava for use as a low-cost carbohydrate in processed foods, livestock feed and industrial cassava derivatives.

#### 4. Conclusion

In general the constraints of the traditional supply-driven model are bourn out of funding requirements or approaches that do not take advantage of indigenous knowledge of farmers. Access by women and coverage in remote areas by the supply driven model is more limited than is the case under demand-driven approaches

The Zambian experience advocates an approach which marries together value chain analysis with a stakeholder taskforce that ensure that analysis of opportunities and constraints gets translated into actions that will facilitate commercial growth. The increase in Cassava production is also attributed to the introduction of new cassava varieties by research stations in northern Zambia. These improved cassava varieties are tolerant to disease and pests, early maturity and yields up to triple those of most local varieties. The other important factor is the removal of maize subsidies and the implementation of an innovative approach.

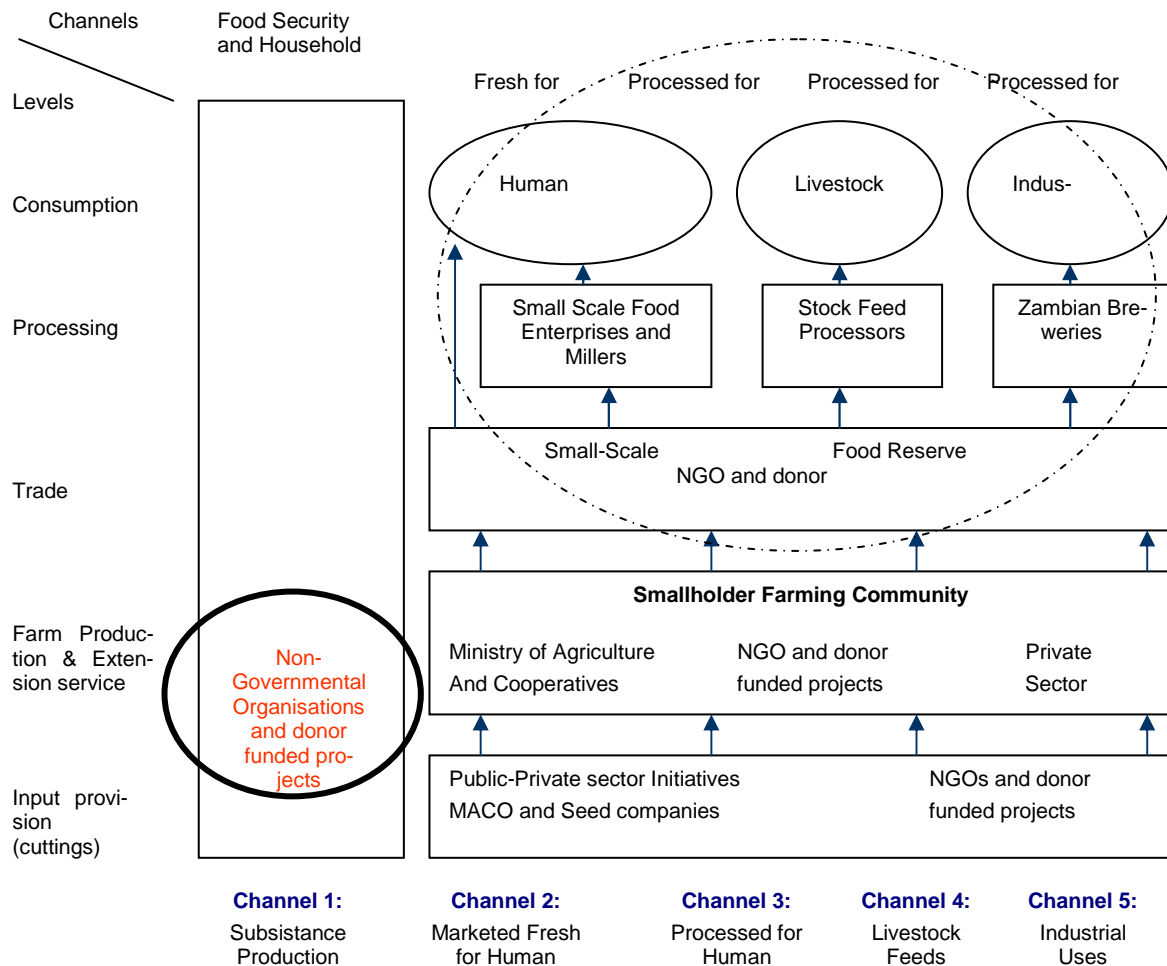
**Box 1. Intra-firm trade in agriculture**

There has been very little intra-industry or intra-firm trade in food and agricultural products compared to intra-firm trade in manufactures, especially in semi-processed products which has benefited from the division of labour within companies that are operating in different continents. The fact that Agriculture is lagging behind reflects the nature of agricultural trade, which is often largely determined by different agro-ecological conditions and at the same time has put up with traditional trade and investment barriers. According to the FAO, where these barriers have declined, the exchange of processed and semi-processed agricultural products has increased considerably and brought about levels of intra-industry/intrafirm trade close to levels observed for non-agricultural products. Much of this trade has been stimulated by the activities of global food companies and traders, but has also involved retailers and small food exporters exploiting niche markets.

**References**

1. World Agriculture: Towards 2015/2030. An FAO perspective...
2. Because cassava roots contain about 70% water, and because root quality deteriorates within 48 hours after harvesting, most fresh sales travel no more than about 50 kilometres from field to final market. For this reason, Channels 1 and 2 are well established in northern Zambia but offer limited expansion potential elsewhere, until consumption patterns change appreciably.
3. Chitundu M, Droppelmann K, Haggblade S, A Value Chain Task Force Approach For Managing Private-Public Partnerships: Zamiba's Task Force On Acceleration Of Cassava Utilization Working Paper No. 21 Food Security Research Project Lusaka, Zambia December 2006
4. Dr Benjamin Chege the National Horticultural Centre based at the Kenya Agricultural Research Institute (KARI) Thika
5. Stakeholders include Agricultural Research Institutes, Plant Health Inspectorate Services (i.e. regulating TC banana seedling production), farmer associations, traders, nursery owners and Horticultural Development Authority should collaborate to set up standards for the industry
6. Ashok Menon: Private Investment in the Agriculture Sector in Mozambique; Mozambique Trade and Investment Project, Associates Inc. November 2008

**Figure 2. Cassava Value Chain and Stakeholders**



○ = Concentration of early promotional efforts from 1990 – 2005; ◌ = New focus of promotional efforts by the task Force from 2005