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## **Institutional Innovations for Smallholder Compliance with International Food Safety Standards: Experiences from Kenya, Ethiopian and Zambian Green Bean Growers**

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### **Abstract**

Many African countries have moved into the production of non-traditional agricultural products to diversify their exports and increase foreign currency earnings. Accessing developed country markets requires meeting food safety standards brought about by several demand and supply side factors. Food retailers in the EU, the major destination market, have developed protocols relating to pesticide residue limits, field and packinghouse hygiene, and traceability. In this changing scenario where food safety requirements are getting increasingly stringent, there are worries that companies that establish production centers in LDCs might exclude smallholder farmers. In this paper, we study the cases of green beans production in Ethiopia, Kenya and Zambia for export to high value European markets. Though the immediate effect of the imposition of stringent food safety standards has been to screen away smallholders, there has been continued participation of smallholders in some cases. This paper finds that emergence of new institutional arrangements have enabled the smallholders to maintain their participation in high value European markets. In particular, public-private partnerships have played a key role in helping smallholder farmers acquire training on and certification against European food safety standards. Collective action in form of producer organizations has enabled smallholders to jointly invest in costly facilities and take advantage of economies of scale to remain competitive. Producer organizations also allow for cheaper means for buyers to ensure traceability and are critical in reducing transaction costs of linking up with smallholders.

Key words: international food safety standards, compliance, smallholder farmers, institutional arrangements, collective action, producer organizations, public-private partnerships.

### **Introduction**

In the past few decades there have been substantial changes in how agricultural products are produced, processed, consumed, and marketed. Many countries in Africa, like other developing countries, have gone into the production of non-traditional agriculture products to diversify their agricultural exports and increase foreign exchange earnings (Singh, 2002). South Africa, Cote d'Ivoire, Egypt, Morocco and Kenya are among the leading non-traditional crop exporters to the European Union (EU) with green bean as the leading export.

Concurrent with the increase in exports in African countries, there has been a heightened attention on food safety in the EU (as in other developed and developing countries) (Unnevehr, 2003). This has resulted from several factors viz. increase in incomes, improvements in technology in measuring contaminants and equally importantly the incidences of several international food scares, including those

related to Salmonella and Listeria in fruits and vegetables as well as BSE and avian flu.

The high labor endowments in Africa have attracted national and multinational companies to begin sourcing their supplies of fresh produce from there. These companies have developed stringent food safety protocols relating to pesticide residue limits, packer hygiene and traceability (Friedberg, 2004). To comply with these international food safety standards (IFSS) requires switching to safer but costlier pesticides, investment in costly medium and long-term assets (grading/packing and cooling facilities) and keeping technical records of pesticide usage and application. Owing to such requirements, majority of poor small farmers not necessarily aligned to these companies (Dolan and Humphrey, 2000).

With regard to meeting food safety standards, the small farmers face several difficulties viz. (In both Kenya and Ethiopia, we define smallholder farmer as one with 0-2 acres of green beans and medium scale,

between 2 acres and 10 acres and large scale, more than 10 acres under beans. ) 1) how to produce safe food, 2) how to be recognized as producing safe food, 3) how to be competitive with larger producers with economies of scale in compliance with food safety requirements and, 4) how to identify cost-effective technologies for reducing risk. While there is empirical evidence that IFSS has screened out many small farmers, cases exist where farmers have worked around them and increased participation in HVC (Okello, 2005; Minten, 2005); one such case relating to green beans in three African countries is the focus of this paper. This paper specifically examines the institutional arrangements that have emerged to keep small farmers in the fresh green bean HVC. It focuses on green bean production in Kenya, Zambia and Ethiopia for export to EU markets. Green beans are among the most important fresh vegetables exported from developing countries. Also, green bean production has been predominantly in the hands of small farmers in Africa.

Among the three countries studied there are important variations with regard to the impact of IFSS. Part of the difference is attributable to their time of entry in the export markets with Kenya having a long history in these export markets while Zambia and Ethiopia are fairly new to this market. Further, Kenya started exporting to EU and developing the infrastructure and institutions (involving smallholders) before the IFSS were in place while Zambia and Ethiopia entered with the IFSS system already set in. The rest of the paper is organized as follows. Section 2 lays out the conceptual framework. Section 3 discusses the institutional response to IFSS especially in relation to the participation of the smallholders. Section 4 concludes.

### **Conceptual and empirical methods**

This paper uses the transaction cost theory to examine response to IFSS by African green bean exporting countries. The emergence of IFSS has resulted in development of networks of relationships aimed at coordinating procurement of beans from developing country sources. The development of close relationships can result in transaction dependency and opportunism, especially where the transaction needs specific assets or is characterized by uncertainty. The literature identifies four types of asset specificity namely; temporal, physical, human, and locational (see Okello, 2005 for details). Asset specificity can lead to market failures following ex-post opportunism from

the party not investing in such assets. Where assets are lumpy, the smallholders are going to be disadvantaged because of diseconomies of scale (Poulton et al, 2005). The disadvantage of the smallholders is aggravated because of poor public infrastructure that aggravates the need for private provision (like unreliable electricity leading to need for private generators). Geographical dispersion of farmers can further drive up costs of enforcing buyer requirements hence screen out some farmers.

Theoretically, a number of institutional mechanisms for integrating smallholder farmers into the HVC exist. First, smallholder farmers could orient their product to target markets that are less demanding by shifting from the demanding supermarket chain to the less stringent wholesale chain and domestic markets. Second, smallholders can, through collective action, invest jointly in lumpy/costly assets together hence take advantage of economies of scale and reduce per farmer costs of such investment. Third, public sector could partner with the private sector to help smallholders overcome the challenges of market requirements by investing on infrastructural requirements that are lumpy or have public good characteristics (training and extension, road, supply of safe water).

The research in this paper entailed interviews with various participants in the green bean HVC conducted between January and February 2006 in Zambia, Kenya and Ethiopia. The interviewees included smallholder farmers, farmer group leaders, horticultural industry association leaders, exporters, domestic green bean buyers, EU importers and EU supermarkets and certification companies. The interviews were supplemented with secondary information and data from household survey conducted in 2004 by the lead author (see Okello, 2005).

### **Effect of IFSS on Smallholders and Institutional Innovations for their Compliance**

IFSS lead to more tightly coordinated supply chains. A tightly coordinated HVC works against the smallholders due to i) increased information asymmetry and transaction costs, ii) organizational constraints, and iii) regulatory failure (Rich and Narrod, 2005). The impact of IFSS on smallholders is evident from the following summary statistics.

While over 60% of green beans were produced by smallholders in Kenya in 1980s, their share had

dropped to about 30% by 2003 (Jaffee, 2003, Kimenye, 1993). In Zambia, an estimated 500 smallholder outgrowers producing beans on a year round for export exited when they could not find a market following the collapse of their buyers in 2004 over financial problems unrelated to compliance with IFSS (Okello, et al, forthcoming). Other exporters refused to buy smallholders' beans for fear that they could violate pesticide residue and hygiene standards. In Ethiopia, expansion of small farmer participation is curtailed by the difficulties such farmers face in meeting the requirements.

With this screening effect, the institutional mechanisms that have helped some smallholders meet the IFSS are: re-orientation of the target market or product, contract farming by the exporters with farmer groups and formation of alliances among NGOs, donors, and the public sector. We discuss these innovations in turn below.

#### ***Switch in target market/product***

One of the strategies used by Kenya has been to switch from export to domestic canning industry. In 2000, only a few hundred farmers grew beans for the canning industry. By 2004, thousands of smallholder farmers were growing beans for one of Kenya's leading green bean canner, with 3,000 having attained EurepGAP certification (Okello, et al, forthcoming). In canning, the processing companies employ spray operators of pesticides for their outgrowers and do not allow farmers to handle the produce beyond harvesting and drop off at company designated collection points. Hence, farmers are not required to invest in the long term facilities (pesticide storage unit, shower room, toilet in the farm, grading shed) as in the beans for fresh export market. However, the price paid is up to 25% lower.

The second market orientation strategy adopted by the study countries, especially Ethiopia, has been the switch in products. Recently, in Ethiopia, there has been an expansion in flower production that has benefited smallholders exiting the green beans sector. Investment in flower production has in the last few years attracted a lot of donor and government support (Greenhalgh, 2005). The expanding flower industry has absorbed some smallholders (mainly as laborers) that could not cope with the increasingly demanding

requirements of the fresh green bean export markets

#### ***Contract production and collective action among green bean growers***

Contract farming helps poor smallholders by facilitating their access to inputs, in particular credit and technical information on pesticide usage, hygiene requirements and agronomic practices required under IFSS. For buyers, contract production enables them to monitor and enforce IFSS compliance (at lower transaction costs) under longer term relationships. Small farmers in the three countries are linked with export markets through contracts with exporters. Kenya and Ethiopia in particular have active smallholder outgrower groups/cooperatives. Smallholders in such producer organizations (POs) received technical information essential for meeting pesticide usage and hygiene requirements of IFSS from the exporter as well as seeds as loan. In Kenya, the POs are organized as self help groups while in Zambia and Ethiopia they are organized as cooperatives.

Leading exporters prefer working with POs because it is cheaper to train and monitor farmers as a group. POs also hire their own technical assistants who respond to members' hygiene, pest and disease problems readily and enforce IFSS compliance. They also construct grading sheds charcoal coolers; and facilities for washing hands for members and in Kenya have established traceability systems. While most exporters monitor PO leaders, the POs also have a system of monitoring members (Okello, et al, forthcoming)

Table 1 compares the typical costs of compliance with IFSS for a farmer group in Kenya, individual smallholder farmer and a large scale farmer producing beans under contract for exports to UK. The cases were carefully selected to represent each category and data obtained from the records and supplemented by discussions with farmers, group leaders and one of the certification companies in Kenya. In all the cases, only one pre-audit is undertaken prior to certification. The smallholder farmer group has 15 members. The computation assumes that the small farmer's plot is close to the homestead hence there is no need for a separate toilet and pesticide disposal pit/incinerator. Many exporters allow use of family toilet for disposing leftover pesticide and use by farm workers.

**Table 1:** Costs and incomes (in Kenya Shillings) associated with IFSS compliance and certification by grower type, 2006

Cost item	Farmer group	Small farmer	Large farmer
Grading shed	59,800	20,000	34,000
Charcoal cooler	41,000	5,400	32,000
Toilet	5,000	-	7,000
Pesticide storage unit	24,450	8,000	37,000
Disposal pit	1,000	-	1,000
Needs assessment & QA manuals	24,750	21,500	31,000
Analyses (soil, water, MRL)	45,064	40,000	41,800
Pre-audits 1	132,000	56,750	32,000
Certification	105,890	94,540	94,540
Total IFSS investment costs	438,954	228,190	311,340
Cost per farmer	29,264	228,190	311,340
Year 1 income	3,600,000	96,000	384,000
Year 2 income	7,520,000	240,000	864,000
Total income over investment period	11,120,000	336,000	1,248,000
"Cost of compliance" as % of total income	4	68	24

The Exchange rate during time of survey was 1US\$ = 74 Kenya Shillings

Source: Authors' compilation.

The key message from table 1 is that when the smallholders work together as a group the cost per unit of income is significantly lower. Hence, smallholders who belong to a farmer group face lower threat of being marginalized by the IFSS. The substantial increase in incomes earned in year two is potentially because the farmers i) increased their production and volume of sales once they got EurepGAP certification (which allowed them more reliable access to export market), and ii) learned how to cope with standards (Henson, et al, 2005).

#### **Public-Private partnerships (PPP)**

The first role of partnerships with public sector emanates in the formation of producer organization itself. In the three countries, groups are formed by farmers (with common interest, need and/or goals) mobilizing themselves, electing temporary officials and then registering with relevant authority. Formation of producer organization, however, entails *ex ante* transaction costs related to search and screening of members. Negotiations/haggling over the size, membership fee, leadership, mode of punishment and sharing of benefits entail further costs. Therefore, formation of some smallholder organizations, especially in Ethiopia and Zambia, has been facilitated

by the governments, exporters, non governmental organizations and donors.

PPPs have mainly focused on provision of information, financial support, and capacity building (through financing audits and certification for EurepGAP compliance all the case countries and construction of grading facilities in Zambia and Ethiopia) to smallholders. Donors and NGO have also jointly established Africa's only indigenous certification company aimed at making EurepGAP certification cheaper and hence accessible to smallholders. PPPs have also been instrumental in lobbying for the recognition of the ability of smallholders to meet EurepGAP standards and the adaptation of EurepGAP to local circumstances.

#### **Conclusions and policy recommendations**

The rising demand for green beans and the resulting better prices has lured more developing countries to enter the green bean production for high value markets. However, these high value markets are characterized by stringent food safety standards which have been tightened over time. The impact of the imposition of IFSS on small farmers has tended to be towards marginalization of the smallholders.

However, through target market orientation, contracting and collective action (CA) in the form of POs, and PPPs, smallholders in some cases have been able to resolve some of the constraints such as access to technical advice, insurance and credit and attain EurepGAP certification. They have achieved this by focusing on less demanding markets, jointly investing in the facilities needed to meet the IFSS, and through support from private and public sectors. To what extent these initiatives are sustainable or can be scaled up remains to be researched. Given the scale economies and the requirements of traceability, CA among small farmers has been necessary. However, it truly has not been sufficient without supplementation with several PPPs. Though we study the case of green beans, the analysis general and can be applied to a number of HVA export commodities being produced by the smallholders. Government and donor initiatives to enable smallholders access such markets raises important policy questions due the subsidies they involve. These subsidies apart from the fiscal cost also distort private incentives to invest in meeting the standards. Assessing the full costs and benefits of such institutions is an important area for further research. One generalizable feature of the interventions here is that at least in the short run, the role of government or the PPPs is crucial in helping the small farmers graduate to the stringent requirements of high value export markets.

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