



---

**OPPORTUNITIES AND CONSTRAINTS TO INCREASED FRESH PRODUCE TRADE  
IN EAST AND SOUTHERN AFRICA**

**Paper prepared for 4<sup>th</sup> Video Conference under AAACP-funded series of high value  
agriculture seminars**

**David Tschirley**

**September 14, 2010**

## TABLE OF CONTENTS

INTRODUCTION .....	1
LEVEL OF REGIONAL TRADE .....	1
KEY CHARACTERISTICS OF LOCAL/REGIONAL SYSTEMS .....	3
Trends and Dimensions.....	3
Farm Level .....	5
Supermarkets and “Traditional” Channels.....	5
Price Behavior and Associated Issues.....	8
Wholesale Markets.....	10
REGIONAL TRADE AGREEMENTS.....	12
SANITARY AND PHYTOSANITARY PROTOCOLS.....	15
The KenyaGAP Experience.....	16
SPS Protocols and Non-Tariff Barriers to Regional Trade.....	17
KEY CHALLENGES .....	19
Improving the Performance of Local/Regional Systems .....	19
Regional Trade Agreements, and Quality and SPS Protocols .....	21
Data and Improved Understanding .....	22
REFERENCES .....	24

## EXECUTIVE SUMMARY

For ten to fifteen years through the mid-2000s, the literature on “horticulture” in Africa was largely synonymous with horticultural exports to developed countries. Yet rising food safety and environmental standards in developed countries have made it more difficult for new countries to enter the market and for smallholder farmers in established countries to remain in the market. At the same time, various reports starting in the mid-2000s began to note the large size and strong growth prospects for domestic and regional horticultural trade. The importance and prospects of local and regional horticultural systems are now well established in the literature. Yet the empirical knowledge base is still thin in many respects, especially as pertains to regional trade in fresh produce. The purpose of this paper is to summarize current knowledge regarding the level and constraints to further expansion of regional trade in fresh produce in East and Southern Africa (ESA), and to suggest key investments needed to stimulate such trade.

Key findings from this report include:

- It is impossible to develop a comprehensive picture of the volume and directions of regional trade in fresh produce due to data limitations. Existing data, however, suggests that regional trade can be substantial in crops like onions, cabbage, oranges, and Irish potato, which are less perishable and transport relatively easily.
- Rapid urbanization and per capita income growth are driving strong growth in demand for marketed fresh produce in the region, with growth in demand for fruit outstripping that for vegetables (though current consumer budget shares are substantially higher for vegetables than for fruit).
- The regional system must be assessed in conjunction with local systems, since the two are so integrated.
- The local/regional system is much larger than the modern export system and will contribute far more to absolute growth in demand over the next 20 years.
- Farm level marketing is highly concentrated, with 3%-5% of farmers in most countries providing at least 80% of the marketed surplus.
- Current supermarket shares of the fresh produce market are low and growing more slowly than once anticipated. The 20/20/20 challenge obtains across nearly the entire continent: the real value of supermarket sales will have to grow 20% per year for 20 years to reach a 20% market share. Open air markets, kiosks, and other informal outlets will dominate the local/regional system for many years.
- Wholesaling is the necessary focus of improvements in this system. Approaches to improvements must lodge hard infrastructural investments within substantially revised legislative, regulatory, and attitudinal frameworks that emphasize real public-private sector collaboration, with private sector and consumer needs driving the decision making process.
- Improved data and understanding are also needed. We identify reliable data on trade volumes (by commodity), disaggregated data on costs of trade, and case study information on what does and does not work in improving wholesaling as key initial areas for improvement.

## **INTRODUCTION**

For ten to fifteen years through the mid-2000s, the literature on “horticulture” in Africa was largely synonymous with horticultural exports to developed countries. Kenya was the outstanding success, and many countries – aided by donors -- attempted to emulate it. Yet success has been more difficult to achieve in other countries of the continent, with major investments by government, donors, and private sector over periods of years often showing little result<sup>1</sup>. At the same time, rising food safety and environmental standards in developed countries have made it more difficult for new countries to enter the market and for smallholder farmers in established countries to remain in the market. Thus, while export horticulture is and should remain an important focus for investment in some countries, overall enthusiasm regarding its growth prospects and its ability to reduce poverty has fallen over the past five- to ten years.

As expectations regarding exports became more tempered, various reports starting in the mid-2000s began to note the large size and strong growth prospects for domestic and regional horticultural trade (Tschirley and Muendo, 2004; USAID, 2005; Weinberger and Lumpkin, 2005; Hichaambwa and Tschirley, 2006). Rapid urbanization, renewed per capita income growth, and the large absolute size of the domestic systems on the continent suggested that, with proper investments and policies, a local and regional focus could help spur growth and have more positive poverty reduction effects than were being seen in the export sector.

The importance and prospects of local and regional horticultural systems are now well established in the literature. Yet the empirical knowledge base is still thin in many respects, especially as pertains to regional trade in fresh produce. The purpose of this paper is to summarize current knowledge regarding the level and constraints to further expansion of regional trade in fresh produce in East and Southern Africa (ESA), and to suggest key investments needed to stimulate such trade. The paper does not touch on flowers, which are a dramatically different subsector and oriented heavily towards international export markets. We begin with available empirical estimates of regional import shares on selected fresh produce items in three countries of ESA. Then, because regional trade in fresh produce is structurally similar to local trade – both rely overwhelmingly on so-called “traditional” market channels -- we review knowledge regarding the structure and behavior of this system<sup>2</sup>. We then turn to a review of Regional Trade Agreements (RTAs) and SPS protocols before finishing with thoughts on the key challenges that need to be confronted to promote regional trade in these products.

## **LEVEL OF REGIONAL TRADE**

Official data on fresh produce trade in the region is difficult to obtain and likely suffers from a level of under-reporting that is unknown and not necessarily consistent across countries. Table 1 uses various approaches to estimate import shares of selected fresh produce items in three countries of East and Southern Africa. The items were selected based on their importance in

---

<sup>1</sup> See, for example, Diaz-Rios and Jaffee (2009) for Uganda. Zambia’s booming export sector also collapsed about five years ago in the midst of fraud by the major exporter, and has yet to approach previous export levels.

<sup>2</sup> Throughout the paper, we make reference to the “local/regional system” in recognition of this tight integration of the two. Unless stated otherwise, when we refer to “fresh produce exports”, we mean exports outside Africa, typically to developed countries, not regional trade within Africa.

consumer diets: tomato, onion, green leafy vegetables such as rape, and cabbage can be considered *staple vegetables* in that most households consume one or more of these nearly every day; together, these items in Zambia and Kenya account for about 10% of total food expenditure and about two-thirds of expenditure on all vegetables<sup>3</sup>. Fruit consumption is typically lower than vegetables consumption, less than half in Kenya and about one-quarter in Zambia. Among fruit, banana and orange are the most consumed items in both countries.

Tschirley, Muendo, and Weber (2004) gathered data at Kenyan border posts with Tanzania and Uganda in 2004, made upper- and lower-bound assumptions regarding the level of underreporting, and combined this with data on fresh produce production and marketing to generate a range of likely national import shares for selected commodities. In Zambia, the Food Security Research Project, run by Michigan State University and financed by USAID, has collected data on all quantities of tomato, onion, and rape entering Soweto market in Lusaka<sup>4</sup>, three days per week, since January 2007. Among the data collected is the size and origin of every lot of these three commodities entering the market, allowing estimates of import volumes and shares for Lusaka (not nationally as in Kenya). In Mozambique, Michigan State University has collaborated with SIMA, the national Agricultural Market Information System, since October 2009 to collect data on tomato, onion, and cabbage at wholesale. These data are based on interviews with 10 randomly selected trucks, for which volumes and origin (among other data) are collected. We consider the data for Zambia to be the most accurate of all of these, yet this does not imply that patterns seen in Zambia should be generalized to other countries.

Table 1. Estimated share of imports for selected commodities in three capitals of East and Southern Africa

Fresh produce item	Kenya (National, 2004)	Zambia (Lusaka, 2007-09)	Mozambique (Maputo, 2009/10)
Tomato	2-8%	0%	65%
Onion	19-54%	56%	99%
Rape	---	0%	---
Cabbage	---	---	57%
Orange	5-21%	---	---
Banana	2-7%	---	---

Sources: Kenya: Tschirley, Muendo and Weber (2004); Zambia: Tschirley and Hichaambwa, (2010); Mozambique: Tschirley et al (2010).

These diverse data paint a consistent picture: less perishable items such as onion and oranges (data on the latter only from Kenya) tend to have high import shares, while tomato and green leafy vegetables such as rape (data only for Zambia) have far lower import shares. Maputo, being so close to South Africa and connected by a good road, and with the least developed local agriculture of the three countries, has very high import shares for all three monitored crops. Imported onions in Kenya come entirely from Tanzania, while onions in Zambia come primarily from South Africa but also from areas of Malawi and perhaps Tanzania<sup>5</sup>. Anecdotally it is

<sup>3</sup> Based on urban consumer surveys in Nairobi and four cities of Zambia, carried out by Michigan State University in collaboration with local partners.

<sup>4</sup> They estimate that Soweto carries at least 90% of all produce sold at wholesale in Lusaka, making it a good measure for overall market behavior and volumes. And because Lusaka is three times the size of the next largest city (Citypopulation.com, 2010), it dominates urban trade in the country.

<sup>5</sup> Data on origin simply indicate "Malawi/Tanzania border area".

known that a very large share of potatoes in Maputo come from South Africa, and it is to be expected that regional trade plays a large role throughout the region in that crop.

## KEY CHARACTERISTICS OF LOCAL/REGIONAL SYSTEMS

### Trends and Dimensions

*Rapid urbanization and per capita income growth are driving strong growth in demand for marketed fresh produce in Africa:* Annual growth in urban populations across sub-Saharan Africa is projected to exceed 3% for the next twenty years. During this time, total urban populations are projected to more than double<sup>6</sup>. SSA achieved GDP growth of 4.3% per year from 2000 to 2005, implying a per capita income growth rate of about 2%. Because many fresh produce commodities have high income elasticities of demand and provide broad opportunities for value added (through processing or “ready to eat” packaging), continued per capita income growth combined with rising populations could fuel increases in demand for fresh produce of more than 5% per year on the continent, implying a doubling of demand in 14 years.

*Demand growth will be more rapid for fruit than for vegetables:* In cross-country comparisons, the share of fresh produce expenditure in total food expenditure shows little relationship to income and much more relationship to national consumption preferences. For example, Gabon and Congo have the two highest budget shares of fresh produce (each near 45%) among 114 countries analyzed by the USDA’s Economic Research Service (Regmi and Seale, 2010), while Botswana, Mali, and Zimbabwe have among the lowest (6% to 10%). The United States, at nearly 15%, is similar to Nigeria, at just above 15%.

Income elasticities of demand – the way that expenditure changes as income changes within a country – show a much stronger relationship to income: countries with lower incomes tend to have substantially higher income elasticities of demand, meaning that expenditure on fresh produce rises much more rapidly with income in these countries than it does in high income countries. As a result, while income elasticities of demand for fresh produce in nearly all developed countries are below 0.4, they are above 0.6 for nearly all African countries (Regmi and Seale, 2010: for each 1% rise in income, expenditure on fresh produce in African countries rises by at least 0.6%.

Within fresh produce, fruit has a lower average budget share but a much higher income elasticity of demand than do vegetables. While the latter are classified as normal goods, with elasticities below 1.0 (but above zero), fruit as a group tends to be a “luxury good”, with income elasticities above 1.0. Another way of expressing this is that, while absolute expenditure on both vegetables and fruit rises with income, the *share* of total food expenditure spent on vegetables falls with rises in income, while the share spent on fruit rises. Table 2 captures this relationship for urban households in Lusaka, Zambia, and Nairobi, Kenya.

An implication of these robust patterns is that fresh produce in general, and fruit in particular, present strong prospects for growth as incomes rise in East and Southern Africa. It is also the

---

<sup>6</sup> United Nations World Population Prospects: The 2007 Revision

case that particular vegetables are likely to provide strong growth potential, while others (especially traditional leaves) may see their consumption levels actually decline.

Table 2. Fruit and vegetable share in total food expenditure, by income level of households, in Lusaka and Nairobi

Expenditure Group	Lusaka (2008)		Nairobi (2003)	
	Veg	Fruit	Veg	Fruit
	----- Share in total food exp -----			
1 (lowest)	17.6	2.6	17.1	6.5
2			15.8	7.3
3	13.3	3.7	17.3	6.9
4			15.2	9.1
5 (highest)	9.9	4.5	11.0	9.1
Overall	13.6	3.6	15.3	7.8

<sup>1</sup>Expenditure quintiles in Kenya, terciles in Zambia

Source: Kenya: Ayieko, Tschirley, and Mathenge (2005); Zambia:

Hichaambwa et al (2009)

*Local/regional markets are far larger than export markets and will dominate growth in marketed quantities and values over the next 20 years:* Non-traditional agricultural exports to developed countries have received great analytical attention over the past decades. Donor support to market oriented agriculture for smallholder farmers has also focused heavily on these export markets, while “domestic food markets remain undercapitalized, risky, rudimentary, and relatively thin” (World Bank, 2007).

Both traditional and non-traditional exports have and will continue to be important sources of growth for some farmers in some countries. Kenya’s exports of fresh and pre-packaged vegetables and fresh flowers to Europe may be the continent’s best example of success in a non-traditional sector, but other countries are achieving some (though lesser) success along a similar path. Yet even in Kenya, the domestic horticultural system is four- to five times larger by value than exports (Tschirley, Muendo, and Weber, 2004), and involves many times more smallholder farmers and traders; in Zambia and other countries of East and Southern Africa, the domestic fresh produce system is likely to be least 20 times larger than exports.

Under reasonable assumptions about rates of urbanization, per capita income growth, income elasticities of demand for fresh produce, and current size of local/regional systems compared to international exports, it is also the case that the local/regional system will for at least 20 years provide greater year-to-year growth in demand than will exports to developed countries.<sup>7</sup> As a

<sup>7</sup> If urban populations grow 3% per year and per capita income grows at 2%-3%, then total annual growth in marketed demand for fresh produce would be about 5% (based on income elasticities for fresh produce in low income countries of between 0.7 and 1.0 as per Regmi et al (2001)). If we assume the local/regional systems are currently 15 times larger than export systems (a conservative assumption for most countries), it would take exports 19 years – even growing at an impressive sustained rate of 15% per year -- to match the local/regional system’s annual contribution to total growth in demand.

result of these factors, USAID (2005; Table 1) specifically recommends that development of the local and regional horticulture market be prioritized over export.

Key reasons for the still small size of the export market include quality and health standards and demands for reliability of supply that are substantially higher in western markets than in local and regional markets; as a result, and despite sometimes more than a decade of donor and government support for smallholder involvement, farm production for export is dominated by large commercial farmers to a much greater extent than is production for local and regional markets, where smallholders typically predominate (Diaz Rios and Jaffee, 2009; Asfaw, Mithofer and Waibel; 2009; Graffham and MacGregor, 2009; Graffham, Karehu and MacGregor, 2009; Humphrey, 2009).

### **Farm Level**

*Marketing at the farm level is highly concentrated:* Analysis of nationally representative household survey data in Kenya, Mozambique, and Zambia shows that in each country, the top 20% of fresh produce sellers account for about 80% of all sales into local/regional markets (Tschirley et al, forthcoming). In Kenya, where about 70% of households sell fresh produce in a typical year, these large sellers represent 15% of the population of rural households. In Zambia and Mozambique, however, where only about 20% of households sell, the top sellers are only about 4% of the rural population.

The reasons for the highly concentrated structure of marketing likely relates to high input costs, difficult access to inputs and credit, high perishability, great price risk, and a resulting need for greater technical knowledge to be successful. For example, typical smallholder farmers producing vegetables for the market in Zambia may use five- to 10 different crop protection chemicals and four- to six different types of fertilizer on a field. Total costs for these chemicals and fertilizers on typical cropped areas can exceed US\$1,000. Additional costs include piecework labor, transport, fuel for running pumps, and amortization of pumps, irrigation pipes, animal traction equipment, and other needed equipment. These costs constitute a major barrier for many smallholder farmers. Notably, general input use and access to credit are higher in Kenya than in Mozambique and Zambia, potentially explaining some of the lesser concentration in that country.

The number of different chemicals and fertilizers used highlights the complexity of the production process and the need for solid technical knowledge. Meanwhile, the great majority of African governments provide almost no extension assistance for such crops, meaning that farmers have to piece together what knowledge they can from neighbors and input dealers.

### **Supermarkets and “Traditional” Channels**

*The 20/20/20 Challenge and the continued dominance of “traditional” marketing chains:* Retail modernization in developing countries and its effect on the broader food system has been an important issue since the early 1960s (Harrison et al, 1974; Goldman 1974; Riley et al 1970), and became a major new focus of research starting in the early 2000s. The most visible banner for this new work has been the “supermarket revolution”. Though distinctions are made between

countries, regions, and types of food products, recurring themes in the supermarket revolution literature have been the “rapid rise” of supermarkets, the difficulty of smaller retailers to compete with them, the difficulty of small processors to compete with large processors for the new “supermarket market”, and the urgent need to deal with the exclusion of smallholder farmers from the supermarket channel. Until recently, conditions for supermarket expansion in Africa were seen to lag but not to differ fundamentally from those in other regions of the developing world; Africa was portrayed as a later “wave” in the surge of supermarket expansion, with “take-off” having already occurred in East and Southern Africa and beginning in West Africa (Reardon et al, 2004).

More cautious views regarding the likely rate of supermarket expansion were expressed early in Asia, and more frequently over the past three years in Asia, Africa, and even Latin America. Goldman et al (1999) identified the “persistent continued strength of ‘wet markets’ in Hong Kong”<sup>8</sup> despite that city’s developed economy; they attribute this strength to these traditional markets’ adaptation to consumer shopping habits. Goldman (2000) was one of the first to identify consumers’ “selective adoption” of supermarkets, whereby “consumers who regularly shop in supermarkets continue to purchase fresh food in traditional outlets”; these findings echo those of others showing continued retail diversity even where supermarkets have expanded most. In Vietnam, Cadilhon et al (2006) anticipate strong growth of supermarkets (from a base of only 2%) but suggest that “policy makers should not promote the ‘modernization’ of food systems at the expense of traditional channels, which meet important consumer needs”. Maruyama et al (2007) also see strong growth, but cite serious challenges for supermarkets in lowering their prices and enhancing their locational convenience, both of which are key factors for the great mass of consumers in Africa and Asia.

Patterns in Latin America are relevant as a potential indicator of future patterns elsewhere. Booz-Allen Hamilton (2003) noted that “emerging consumers infrequently shop – if at all – at large supermarkets” in Brazil, despite the heavy market penetration of such outlets in that country. They refer to “the myth (that) it’s just a matter of money & time until emerging consumers flock to large supermarkets” (p. 12), and conclude in general for Latin America that “small retailers have a sustainable business model”. Farina and Nunez (2005) echo this conclusion in Brazil, noting the persistent diversity of retail outlets, and that “the number of independent supermarkets (as opposed to large chains) and traditional retailers has grown, and their share in food sales has increased (in recent years)”.

Reviewing literature on supermarkets in Africa, Humphrey (2006) concludes that “the extent of transformation of retailing ... as a consequence of (supermarket expansion) is overestimated”. In a cross-country econometric analysis, Traill (2006) estimates that Kenyan supermarkets will hold at most a 16% share of total food sales by 2013; this would correspond to a 4%-5% share of fresh produce. By 2007, Reardon and Timmer (2007) had noted the very small market shares of supermarkets in nearly all of SSA. They suggested “considerable uncertainty about the rate at which the supermarket sector will grow” even in Kenya and Zambia; in most of the rest of SSA, they deemed it “unlikely that ... we will see supermarket growth for several decades.” In Madagascar, Minten (2008) shows the very small market shares of supermarkets, notes that none of the global retailers have expansion plans, and suggests that “agriculture for local consumption

---

<sup>8</sup> “Wet markets” refer to traditional open air markets.

in poor countries will be largely bypassed by the global food retail revolution.” In the most recent studies, Tschirley et al (forthcoming) show that supermarket chains held only about 4% of Nairobi’s fresh produce market in late 2003, and that this share had changed little by 2009. Tschirley et al (2009) showed similar shares in urban Zambia and also quantified the importance of locational convenience in urban consumer shopping choices – a key competitive disadvantage for large supermarket outlets. Consistent with other findings, these studies also showed that nearly all fresh produce purchases in these supermarkets were made by consumers in the top 20% of the income distribution.

Continued urbanization and (if it continues) growing per capita incomes mean that supermarket shares will grow across the continent over time, as more households gain access to refrigerators and motorized vehicles, and become more concerned about food safety<sup>9</sup>. While this growth may at some point be rapid in selected countries, the overall rate of growth is likely to be much slower than was once expected in some circles; this is especially so for fresh produce, the food category where supermarkets’ transformational potential was most highly anticipated. This means that the so-called “traditional” marketing system is likely to remain the dominant center of fresh produce marketing across the continent for several decades. Indeed, a useful and broadly accurate rule of thumb is the “20/20/20 challenge”: the real value of fresh produce sales across the great majority of the continent will have to grow 20% per year, every year for 20 years, to reach a 20% market share.<sup>10</sup> While achieving 20% growth is feasible for some dynamic sectors in the early stages of expansion, maintaining such growth for 20 years would be nearly unprecedented.

Two implications follow for regional trade. First, supermarkets will be less of a driver of regional trade for the foreseeable future in Africa than they appear to have been in Central America. In that region, regional procurement of fresh produce by trans-national supermarket chains, who gained larger overall market shares than are seen in Africa, helped drive regional trade in fresh produce. Second, regional trade will be helped and hindered by many of the same factors that help or hinder local trade; these are related fundamentally to the severe problems afflicting traditional marketing sectors. We address these issues in the section on wholesale markets and return to them in the final section of this paper.

*Smallholder exclusion from supermarket chains is real, but is of limited importance at the present time:* Concern about exclusion of smallholder farmers from supermarket supply channels is most acute in fresh produce, since it can be direct marketed to supermarkets by farmers. Concerns are based on the efforts of fresh produce procurement managers to provide consumers with a stable, year-round supply of safe, high quality produce at competitive prices. Farmers that cannot meet these criteria, especially the need for fixed quantities every week of the year, fall off the supermarkets’ “preferred supplier” lists. Smallholder farmers are especially challenged in this regard, and evidence is mounting that all but a tiny minority, whether independent or in farmer groups, are unable to remain on preferred supplier lists on a sustained

---

<sup>9</sup> Tschirley et al (2009) quantify the importance of all these factors, including (lack of) locational convenience, in determining supermarket fresh produce market shares in four cities of Lusaka.

<sup>10</sup> Based on anticipated growth in demand of 5% per year and a starting market share for supermarkets of between 1% and 2%. In Kenya and Zambia, where shares are 3%-4%, real growth will have to be 14% per year for 20 years to reach a 20% market share.

basis<sup>11</sup>. As a result, medium- and large-scale farmers supply the overwhelming majority of produce moving through preferred supplier programs in Africa.

Several points should be kept in mind when evaluating the importance of this pattern. First, difficulties on the ground mean that procurement managers must frequently go outside of their preferred supplier arrangements to ensure their retail customers a regular supply of produce. Second, preferred suppliers may themselves make supplemental purchases in open markets or from their neighbors to meet the quantity requirements of the chain and maintain their place on the preferred supplier list. A common attitude is that, as long as the suppliers deliver the quantity and quality the chain requires, procurement managers do not complain. Third, these procurement systems apply primarily to large corporate supermarket chains. Independent supermarkets and small locally owned chains are much less likely to sell fresh produce;<sup>12</sup> when they do, they typically rely on brokers or direct purchases in local markets.

Putting all these factors together highlights the fact that a tiny fraction of the fresh produce marketed in Africa passes through preferred supplier channels. In Kenya, for example, where supermarket development has far outpaced that in any other African country, Tschirley, Muendo and Weber (2004) estimate that the supermarket chains running preferred supplier programs (Uchumi and Nakumatt) had at most a 2% share of the national urban fresh produce market at the end of 2003. Neven and Reardon (2004) show that these chains in 2003 purchased no more than 40% of their fresh produce from preferred suppliers, though they were trying to increase this share<sup>13</sup>. This means that less than one percent of all fresh produce sold within Kenya passed through preferred supplier programs in 2004. With supermarket market share in Nairobi growing only slightly between 2003 and 2009 (see above), this picture is unlikely to have changed in any significant degree. Thus, while there are legitimate reasons to pay attention to the supermarket phenomenon even in Africa (see the final section of this paper), these figures suggest that at this point in time, smallholder exclusion is not one of them.

### **Price Behavior and Associated Issues**

*Poor vertical information flows drive high variability in prices and quantities:* Perishable commodities depend on some combination of cold storage, strong information flows between buyers and sellers, and effective control of production environments (through irrigation and pest management) to regulate flow of product to the market and avoid dramatic price swings. South Africa has all three: large producer-shippers that dominate that market have cold transport and access to the inputs and knowledge they need to avoid most dramatic fluctuations in output, and brokers operating in the country's wholesale markets communicate constantly with producers and buyers to match supply to demand. Throughout sub-Saharan Africa north of the Limpopo, traditional fresh produce supply chains handle over 90% of all marketed fresh produce. Production in these chains is dominated by small- and medium-scale farmers, many of whom

---

<sup>11</sup> Regoverning Markets, 2004; personal interview with Mr. Willie Minnie, Procurement Manager for Freshmark Zambia (September 2005); Reardon and Berdegue, 2002; Reardon and Timmer 2006.

<sup>12</sup> Neven and Reardon (2004) report that, of the nearly 190 "second tier" and "third tier" supermarkets throughout Kenya, only about 50 sell fresh produce, and these do so in very small quantities.

<sup>13</sup> Specifically, they show that Uchumi purchased 55% of its vegetables and 50% of its fruit in this way, while Nakumatt used these channels for 84% of its vegetables and 80% of its fruit.

have poor access to inputs and extension advice and face very high variability in yields. Most sales go into an atomistic retail sector that makes it difficult for brokers to anticipate demand, even if farmers were able to respond to attempts at active coordination by the brokers. Finally, these chains have no cold storage, meaning that wholesale prices for products like tomato and (especially) green leafy vegetables must adjust daily to clear the market. Under these conditions, price variability can be extreme, with negative implications for farmers and consumers.<sup>14</sup>

Table 3 quantifies variability in daily prices at wholesale in Lusaka and Maputo, and variability in quantities in Zambia. The coefficient of variation (CV) is computed as the standard deviation of prices divided by the mean. The CV is affected by day-to-day fluctuations and by longer seasonal variation; the other two measures eliminate seasonal variation by focusing on day-to-day variability. Five points stand out. First, quantities arriving in Soweto fluctuate dramatically for each crop: mean day-to-day changes<sup>15</sup> (absolute value) in quantities arriving on the market are 29% for tomato, 32% for rape, and 56% for onion. For all three crops, these changes exceed 20% in absolute value more than half the time. Second, this variability in quantities drives great variability in prices for rape and tomato, which see mean day-to-day absolute price changes of 30% and 20%, respectively. Third, in all cases, prices vary less day-to-day than do quantities. This differential is dramatic for onion (which has the highest variability in quantities) but is explained by the storability of this crop, which allows quantities offered on the market to differ from quantities arriving at the market. For rape and tomato, neither of which can be stored to any significant degree, the pattern suggests a perhaps surprising willingness of consumers to alter their consumption in response to price changes. Finally, patterns of price variability across commodities are similar in the two countries: tomato shows remarkably similar variability across the countries, and in both countries onion prices are much less variable than prices of tomato.

Table 3. Fresh produce price variability in Mozambique and Zambia

Variability Measure	Tomato	Cabbage	Rape	Onion
<b>Mozambique (Prices)</b>				
Coefficient of variation (std. dev/mean)	0.46	0.27	NA	0.23
Mean absolute day-to-day price change	19%	7%	NA	7%
% of day-to-day changes > 20%	37%	25%	NA	16%
<b>Zambia (Prices)</b>				
Coefficient of variation (std. dev/mean)	0.51	NA	0.48	0.41
Mean absolute day-to-day price change	20%	NA	30%	7%
% of day-to-day changes > 20%	39%	NA	52%	5%
<b>Zambia (Quantities)</b>				
Coefficient of variation (std. dev/mean)	0.31	NA	0.41	0.47
Mean absolute day-to-day price change	29%	NA	32%	56%
% of day-to-day changes > 20%	51%	NA	56%	64%

Source: Mozambique: SIMA; Zambia: FSRP market information

<sup>14</sup> See Mwiinga 2009 for a detailed assessment of production and price risk for tomato in Zambia.

<sup>15</sup> Note that all these calculations are based on Monday-Wednesday-Friday data collection, meaning that two thirds of the computed “day-to-day” changes occur over two days, and one third over three days.

*Lack of formal marketing information systems:* The high price variability documented in the previous section means that mean market prices reported two days or even one day after the fact are of little use to farmers and traders seeking to market their product. To be useful, information must be available in near-real time. Technologically, this is possible through the use of electronic data collection, remote uploading to servers, and sms messaging and remote posting to electronic bulletin boards. Yet this author knows of no system in East and Southern Africa – except for selected wholesale markets within South Africa’s national system of 18 wholesale markets - that yet provides intra-day or even daily prices in this way for horticultural products. As a result, sellers in wholesale markets are reliant on brokers for most of their information – and the lack of regulation of the brokering system, discussed below, makes this a far from ideal situation for most sellers.

*Lack of formal grades and standards:* Traders constantly sort their product by quality in pursuit of better prices for the best product. In Zambia, Malawi, Mozambique, and Kenya, however, this grading is entirely informal; this is almost certainly the case in nearly all countries north of the Limpopo. In Lusaka’s Soweto market, for example, tomato is grouped either as “standard quality” (perhaps 90% of all volume) and substandard. Within standard quality, however, brokers clearly distinguish (informally) between better and worse quality, and set prices on this basis. A similar process takes place in Maputo’s Zimpeto market, with opening prices of tomato per crate often varying by a factor of more than two on the same day, based on quality. The lack of formally declared and widely known criteria for differentiated grades, however, leaves room for opportunistic behavior by sellers and makes personal inspection of purchases absolutely necessary. Costs rise as a result. Regional trade would especially be facilitated by a reliable set of formal quality standards.

## **Wholesale Markets**

*“All our major markets are characterized by chaos, cheating, thuggery, and dirt”*

Simon Ethangatta, former head of Fresh Produce Exporters’ Association of Kenya. Quoted in The Nation Newspaper, Kenya, March 2004

*Physical deterioration of wholesale market places:* The poor physical condition of many wholesale markets in major African cities can hardly be overstated. In Nairobi, the only market place that ever had adequate capacity for fresh produce wholesaling is Wakulima. It was built in the 1960s and has not been expanded nor improved since that time. As a result, wholesaling has spontaneously decentralized into at least four other retail markets with literally no investment of any kind for dedicated wholesaling infrastructure. In Lusaka, over US\$13 million per year in tomato, rape and onion (along with other crops whose value has not been estimated) is traded in an open area of Soweto market with no roof, no paving, and only one point for vehicle access; of course this serves also as the exit. The result is endless days of trading in rancid mud during the rainy season, followed by choking dust throughout the dry season. Extreme congestion of vehicles prevails regardless of season. Most notably, this situation persists one year after the end of the Urban Markets Development Program, which focused nearly all its energy on building more modern retail market space.

Maputo has performed far better but faces serious challenges. Up to the mid-2000s, fresh produce wholesaling took place in Fajardo market in the middle of the city. Fajardo was a retail

market with no dedicated wholesaling infrastructure, so trucks stopped and unloaded on streets surrounding the market – a common site in market areas of African cities. Around 2005, the City Council, with help from donor funding, was able to build a basic but well designed market place outside of the city (Zimpeto). More impressive, through close consultation with traders (including South Africans selling in Maputo), the city was able actually to move all wholesaling to Zimpeto, solving the congestion problem in the city. Though it has no roof, Zimpeto does have working gates, dedicated entry and exit designed to facilitate flow through the market, and paved trading areas; it is a far more efficient trading location than in any of the other two countries. Yet even here, the physical condition of the market has notably declined over the past two years, and congestion mounts with increasing numbers of very small (and poor) retailers buying from trucks and re-selling within the market, despite this being illegal and periodically punished by expulsion and seizing of product.

*Dysfunctional ownership and management structures:* Though exceptions exist, formal wholesale and retail markets in Africa are most often owned and managed by municipal authorities, with oversight from ministries of local government. Too often, relationships between traders and these public sector authorities are confrontational. Fee structures are often not well defined, fee collection is a source of conflict, use of the funds is not transparent, and there is often little if any evidence of meaningful investment in market improvements or even basic upkeep such as regular trash collection. As a result, many markets have become physically overwhelmed and sources of major concern about urban congestion and public health. Innovative efforts led by private investors to build new, formally recognized wholesale markets, such as the Kasarani effort outside Nairobi in which the City Council granted 100 acres of land to potential investors, may begin to offer solutions, but have evolved very slowly, with no ground yet broken.

Yet the unplanned decentralization of markets noted in the previous section, driven by the dysfunction too often seen in formal market places, has led to a greater variety of ownership and management structures, typically with much more private sector control. Documenting what these structures are, how they emerged, and linking measurable performance indicators to them could begin to provide insights as to how this often chaotic decentralization of trade can be turned to advantage in institutionalizing more effective ownership and management structures.

*Prevalence of brokers in wholesale markets and lack of regulatory and enforcement structures to ensure transparency in their behavior:* Brokers are a common, frequently controversial, and little studied presence in wholesale fresh produce markets in East and Southern Africa. Frequently heard accusations by farmers and city officials are that brokers control entry into the market through threats of force (mostly theft of material), and charge hidden “fees” beyond the overt commissions they charge for their brokering service.

Brokering services can improve market efficiency by economizing on search effort (Gabre-Madhin, 2001). Because brokers do not have to put time and effort into managing the substantial price risk present in fresh produce markets, they can develop great expertise in gathering information on buyers and sellers and bringing them together to effect transactions. In this way, an efficient and competitive set of brokers can match supply with demand at a lower cost than if all sellers and buyers conducted their own search. Largely for this reason, all produce moving

through South Africa's system of modern wholesale must legally be sold through brokers. Performance of a brokering system can be reduced if brokers do not behave competitively or if they are able to strategically withhold information from sellers and buyers on supply and demand or on the commissions they are charging. Performance can also be reduced if search costs are low but buyers and sellers are prevented, either by law or by collusive behavior among brokers, from conducting their own search and negotiating their own transactions.

Tschirley, Hichaambwa, and Mwiinga (2010) and Tschirley and Hichaambwa (2010a, 2010b) report a mixed picture of brokering in Soweto market of Lusaka. Of greatest concern is the chaotic nature of the market and the lack of any formal regulatory and enforcement structure for brokering activity. As a result, the main advantage that sellers see in using brokers – security for their produce – is something that sellers should not have to worry about and brokers should not be responsible for. Though some sellers see additional positive aspects of working with brokers, mistrust between the groups is high and brokers routinely charge hidden commissions, averaging 10% in addition to the 10% commission they typically declare to the seller. The bottom line is that brokers do more to hinder the flow of information than to enhance it; this is a key failing. The authors emphasize that, as government and city officials grapple with how to improve fresh produce wholesaling, it is imperative that they focus not just on physical infrastructure but also on the governance, regulatory, and enforcement structures without which new market places will be of little use.

A key finding in Zambia for regional trade is that traders selling in wholesale markets are much less likely to (be obliged to) sell through a broker than are farmers. Because essentially all regionally traded fresh produce arrives at wholesale markets with traders, the dysfunctional brokering seen in many markets may, if results in Zambia obtain elsewhere, be less of an issue for regional trade.

Yet much more needs to be known about brokers in other markets. It is commonly believed in Kenya that the Mungiki, an emerging organized crime group, controls brokering in Nairobi and adds substantial costs to transactions, but we know of no formal studies that show this. Observation in Maputo's Zimpeto market suggests that brokering is a more open process and that sellers are more able to choose whether or not they wish to sell through brokers. Perhaps not coincidentally, most sellers in Zimpeto are traders, not farmers.

## **REGIONAL TRADE AGREEMENTS**

ESA has four regional trade agreements exclusive to the region, plus one that includes selected countries from the region (Table 4). Exclusively ESA RTAs are:

- SADC, the Southern African Development Community, which includes Mozambique, Swaziland, the SACU countries (Botswana, Lesotho, Namibia, and South Africa), Malawi, Zambia, Zimbabwe, Tanzania, Angola, DRC, Mauritius, and Madagascar.
- SACU, which is also a customs union, includes Botswana, Lesotho, Namibia, South Africa, and Swaziland.
- COMESA, the Common Market of East and Southern Africa, includes 17 countries from Djibouti south to Swaziland.

- EAC, the East African Community, includes Uganda, Tanzania, Kenya, Rwanda and Burundi.

ECCAS, the Economic Community of Central African States, includes Burundi, Rwanda, DRC, and Angola along with seven countries from outside ESA. Beyond these RTAs, two Economic Partnership Agreements (EPAs) with the European Union are being developed, one for East African countries, and one for SADC countries.

Table 4. RTAs with members from East and Southern Africa

Country	COMESA	SADC	EAC	SACU	ECCAS
Djibouti	X				
Egypt	X				
Ethiopia	X				
Eritrea	X				
Libya	X				
Sudan	X				
<b>Burundi</b>	X		X		X
<b>Rwanda</b>	X		X		
<b>DRC</b>	X	X			X
<b>Kenya</b>	X		X		
<b>Uganda</b>	X		X		
<b>Angola</b>		X			X
<b>Tanzania</b>		X	X		
<b>Malawi</b>	X	X			
<b>Zambia</b>	X	X			
<b>Zimbabwe</b>	X	X			
<b>Mauritius</b>	X	X			
<b>Madagascar</b>	X	X			
<b>Swaziland</b>	X	X		X	
<b>Botswana</b>		X		X	
<b>Lesotho</b>		X		X	
<b>Namibia</b>		X		X	
<b>South Africa</b>		X		X	
Mozambique		X			

Note: bold indicates the country is a member of more than one RTA

An immediate observation is that, with the exception of Mozambique and countries in the northern part of the region, all countries of ESA are members of more than one RTA; DRC, Swaziland, and Burundi are members of three. African RTAs are also considered to be ambitious, with goals of eventually forming customs unions, common markets, and economic and monetary unions.<sup>16</sup> This welter of ambitious, overlapping agreements (including the EPAs)

<sup>16</sup> EAC and SACU already are Customs Unions, while COMESA and SADC have stated aims of becoming CUs. COMESA, EAC, and SADC are also moving towards a “tri-partite free trade area”, first announced in October 2008 at the Tripartite Summit in Kampala. A meeting was expected during first half of 2010 to announce next steps, but as of July 2010 this meeting had not occurred. The current date for final agreement on the FTA is June 2011, followed by six months for members to ratify the agreement, establish required support institutions and adopt needed customs

creates scope for conflict, and some authors suggest that this problem is most pronounced in ESA. For example, Fiorentino, Verdeja, and Toqueboeuf (2007) note that Tanzania, already in the EAC customs union with Kenya and Uganda, is negotiating to be a member of the SADC EPA, while SADC members Malawi, Mauritius, Zambia, and Zimbabwe are negotiating with the ESA EPA. Exactly what the implications of these real and potential conflicts are for regional trade is not entirely clear, except that they are likely to create contradictory rules that take time to harmonize and impede trade to some extent until that happens.

*Empirical evidence on trade impact of RTAs:* The most recent academic studies of the impact of African RTAs on trade suggest that they have increased intra-regional trade, but in large measure at the expense of trade with the rest of the world. Impacts on overall trade have been modest (Carrere 2007; Yang and Gupta 2007; Khandelwal 2004). A key point from the perspective of this paper, however, is that none of these studies have focused on fresh produce or even agriculture, looking instead at overall trade volumes and general issues in the RTAs. Here we list the major trade impediments identified in the recent literature and suggest to what extent they may be relevant for regional trade in fresh produce:

- Poor infrastructure, including road systems, ports, and communications. These problems hinder all trade, not just intra-regional trade. Infrastructure is a key focus of the Tripartite Task Force working to form an FTA across COMESA, EAC, and SADC (see footnote 15). However, initial pledges for prioritized investments were obtained only in April 2009, and it is not clear how much progress has been made on the ground. Priority investments include a North-South Corridor to facilitate trade, and Upper Flight Information Region to harmonize use of the upper air space, and construction of interconnectors between distinct power grids in the region;
- Unstable policy in the form of periodic export or import bans and changes in tariff rates. This behavior primarily afflicts cereals trade, not fresh produce, for political reasons as discussed below;
- Underdeveloped customs procedures. Regardless of the specific content of trade rules, poorly trained personnel and weak management of customs offices often result in long delays at borders. This is probably a more severe problem for regional- than international trade, and is likely to affect all such trade, including for fresh produce. Given its perishability and the lack of cold chains, fresh produce may be most negatively affected by such delays, but we know of no studies that have quantified these problems specifically for fresh produce;
- Non-tariff barriers (NTBs) such as informal checkpoints along roads and corruption at border posts (SPS protocols are discussed below). Like poor customs procedures, these problems may mostly affect regional trade, with fresh produce suffering the most negative effects due to its perishability;
- Lack of complementarity in production patterns limits the scope for trade based on comparative advantage. Within horticulture, however, it is clear that differences in agro-ecology, seasonality, and production and post-harvest practices create scope for some trade in items such as onions, tomato, and Irish potato. Tschirley, Muendo, and Weber

---

procedures. Launching would be in January 2012. Delays to date suggest that this target is not likely to be met (East African Community, 2010).

(2004) note Tanzania's success in generating productive onion varieties that, in combination with seasonal differences, allow that country to cover much of the supply of onion to Nairobi during certain periods of the year; South Africa, due to superior production and post-harvest practices, dominates provision of onion to Maputo year-round, and is a key source of supply to Zambia during that country's off-season.

- Uneven implementation and slow progress on RTA protocols: Slow progress has at least three causes, listed here in no particular order of importance. First, national trade regimes show great disparities in restrictiveness across countries, making movement to fully harmonized regimes more difficult. Second, governments in the region have a deep discomfort wedding themselves to a transparent set of "rules of engagement", preferring to maintain flexibility to respond to changing events (especially food crises) in what they consider the politically most advantageous fashion. This problem is especially severe with respect to cereals trade (Tschirley and Jayne, 2010). Finally, trade taxes are a key source of revenue for governments in ESA, accounting for almost one-third of all such revenue across all of Africa (Yang and Gupta 2007). This has important implications for the feasibility of following one common recommendation regarding RTAs: "open regionalism" and "deep integration". We return to this issue below.
- Complicated rules of origin (ROOs) in existing RTAs. Yang and Gupta (2007) indicate that ROOs in ESA have become more complex since initial formation of the RTAs. They note that experience elsewhere suggests such complex ROOs can be expensive to implement and can become important barriers to trade. They acknowledge, however, that (a) no studies have examined the costs of ROOs within the RTAs of the region, and (b) costs are likely to be higher in manufacturing industries, which require many different parts, potentially sourced all over the world, to manufacture a final good. To our knowledge, ROOs are not a serious problem for fresh produce trade

Most studies call for an emphasis on "open regionalism" in ESA RTAs. Among other things, open regionalism calls for pursuing "nondiscriminatory liberalization concomitantly with preferential liberalization". In practice, this amounts to establishing "low and uniform common external tariffs, with a continuing commitment to further tariff reductions", at the same time that internal free trade areas are pursued (Khandelwal, 2004). A fundamental stumbling block to this approach is the dominance of external trade (across all categories) in the region. For example, though intra-COMESA trade increased dramatically from about \$3 billion per year from 1997 to 2000 to over \$14 billion in 2008, it still represented only 5% of total COMESA trade in that final year. Moving to a low common external tariff will have major implications for state revenues.

## **SANITARY AND PHYTOSANITARY PROTOCOLS**

Sanitary and Phytosanitary (SPS) protocols tend to be important in fresh produce systems for three reasons. First, as unprocessed food, fresh fruits and vegetables can pose risks to human health through pesticide residues or by serving as hosts to bacteria harmful to human health. Second, trade in fresh produce can spread plant diseases that cause major economic damage. These are the two factors that motivate the creation of SPS standards applied to horticultural systems. The third reason for these standards' importance is that, if inappropriately developed or applied, SPS standards can become important NTBs by arbitrarily or unjustifiably discriminating against trade.

The SPS agenda in African horticulture is driven almost entirely by concerns about export markets to developed countries. Because these countries have higher income consumers concerned about food safety, and regulatory agencies capable of establishing and enforcing SPS standards, African countries wishing to export fresh produce must establish their own capacity to meet internationally accepted SPS standards. As a result, organizations such as Kenya's KEPHIS (Kenya Plant Health Inspectorate Services), and national plant protection organizations (NPPOs) in some other countries of the region have received substantial assistance from donors and national governments as part of support to export horticulture. Most recently, the Centre of Phytosanitary Excellence in Eastern Africa (COPE) has been created in Nairobi as a collaborative effort between KEPHIS and University of Nairobi, to build SPS capacity throughout the region.

From a technical perspective, SPS standards are as relevant for regional trade as they are for international exports: human and plant health are at risk regardless of location. For a number of reasons, however, SPS standards have almost no visibility in local and regional fresh produce systems. First and foremost, the vast majority of consumers in the region have income levels that lead them to prioritize price and visible quality aspects over any abstract certification of quality or safety. Second, and functionally related to the decision making processes of the large mass of low income consumers, NPPOs (typically public) have little capacity to make the necessary adaptations of international standards to local realities, and would have limited practical ability to enforce such standards if they did develop them. Finally, and again related to local consumer behavior, private companies operating only in local and regional markets have little incentive to invest in their own standards beyond guaranteeing basic cleanliness and other visual indicators of quality.

### **The KenyaGAP Experience**

KenyaGAP started as Kenya's adaptation of EurepGAP standards for Kenya's export growers. Led by the Fresh Produce Exporters' Association of Kenya (FPEAK), KenyaGAP achieved approval from EurepGAP in October 2007. Shortly thereafter, FPEAK began to work with local supermarket retailers and with the USAID-funded Kenya Horticulture Development Program (KHDP) to gain understanding and acceptance of KenyaGAP for the local market. In 2009, the Kenya National Bureau of Standards (KEBS) "accepted KenyaGAP certification as equivalent to its own approval for the local market" (KHDP, 2009), and FPEAK officially launched its "KenyaGAP Domestic Scope" in May 2010 (KHDP, 2010).

KenyaGAP has been an outstanding success for Kenya's horticultural export sector and is a serious effort in the local market. Standards are well thought out and the production protocols needed to meet them (for a farmer to be KenyaGAP certified) are presented extremely well in training materials. Training sessions have been organized for Kenyan farmers, and FPEAK indicates that 200 have been certified to supply the Nakumatt chain under the KenyaGAP label. FPEAK also suggests that the KenyaGAP mark is present as a "consumer facing label" in Nakumatt stores; informal visits to several outlets in July 2010, however, failed to identify any such labels in fresh produce sections of the stores.

The importance of this type of effort is likely to grow over time, as urbanization proceeds, as per capita incomes grow, and as regional integration advances. As FPEAK states, “Kenya-GAP® Domestic/ regional scope is intended for use by farmers across the region. As the countries in the region come ever closer to trade integration, standardization of practice and quality is quickly becoming an important strategy for maintaining the momentum of growth in the horticultural industry” (quoted in Homer, 2010). Yet structural characteristics of the Kenyan market – still very low incomes for the large mass of consumers, resulting market shares for supermarket chains of around 4%, and continued dominance of open air markets and kiosks in which quality standards are informal -- mean that the share of produce sold locally under KenyaGAP certification is likely to remain small for many years. If this is true, then most regional trade involving Kenya (e.g., tomatoes and onion moving from Tanzania to Kenya, bananas moving from Uganda to Kenya) will remain outside of this certification regime for a similar period of time; in other countries of the region that have nothing comparable to KenyaGAP, time frames will almost certainly be longer.

A key decision will be how aggressively to use KenyaGAP to pull the local (and associated regional) system towards a more formalized set of quality and Phytosanitary standards, especially outside the supermarket sector. Clearly, KenyaGAP could be an important tool for modernizing the country’s horticultural sector. Yet the risk of moving faster than the system is able to adapt is that these standards may become important NTBs. We turn to this issue in the next section.

### **SPS Protocols and Non-Tariff Barriers to Regional Trade**

The major impediment to trade of cereal staples in East and Southern Africa is unpredictable policy: *ad hoc* and unexpected trade restrictions and changes in import or export duties that afflict markets for maize, wheat, and even rice, creating uncertainty and risk, and reducing trade. The reason for this heavy policy influence in these crops is political: as the main food staples for rural and urban consumers, these crops influence farmer and consumer welfare in highly visible ways, eliciting persistent involvement by government in these markets.<sup>17</sup>

Fresh produce has a much lower political profile in the region, for several reasons. First, though as a group they have a substantial budget share, no single item approaches the importance of maize or wheat in consumer expenditure. Second, because these items are perishable, government is simply not capable of intervening in the way it often does in cereals markets. Whatever the causes, the lower political profile of fresh produce means that imports and exports are not subjected to the kinds of *ad hoc* policy interventions that so affect cereals markets in the region. This eliminates, for the whole class of fresh produce, the major impediment to regional trade. What is left is Non-Tariff Barriers (NTBs) - bureaucratic procedures and corruption, and the delays and costs that these involve. As stated above, SPS protocols can, if badly designed or applied become important NTBs.

The most recent and comprehensive empirical study of NTBs in regional trade (Steadman Group, 2008) identified weighbridges, roadblocks, and customs procedures – and corruption at all three – as major NTBs. The report does not mention SPS protocols, though it is possible that these

---

<sup>17</sup> Much has been written about the underlying reasons for this policy behavior, which will not be dealt with here.

contribute to delays in customs and could be used at any of these points to solicit bribes. Yet if SPS protocols were seen by business leaders and truckers as major problems, it is likely that this report would have mentioned them.

First hand interviews with traders in Lusaka importing onion paint a mixed picture. On the one hand, traders indicate that the bureaucratic procedures are clear, not unduly long, and that border crossings are generally quick, in their assessment. On the other hand, they need an import permit for every trip they make and that permit can take as long as one week to obtain. Sanitary or Phytosanitary certifications are needed to obtain this permit, but none of the traders singled these out as a problem. Once the product is purchased, if traders “arrive in good time” at the border, they are typically able to get through that day; but this implies not infrequent overnights at the border, which carry heavy costs.

From this limited evidence, we conclude that NTBs are important hindrances to trade in the region but that SPS protocols at the present time are not major contributors to NTBs. While far from definitive, this conclusion appears reasonable in light of the very low profile of SPS protocols in traditional fresh produce systems and the fact that most NPPOs in the region are relatively weak.

As urbanization and per capita income growth drive greater trade in fresh produce and growing awareness among consumers of food safety issues, the importance of SPS protocols in helping or hindering regional trade is likely to grow. COMESA’s Green Pass is an attempt to get ahead of the game and establish streamlined and regionally harmonized procedures to certify SPS compliance and facilitate trade while protecting human, plant, and animal health. The elements of Green Pass are clearly set out online under FAMIS, COMESA’s Food and Agricultural Market Information System (<http://famis.comesa.int/content/page/78/78/sps/lang.en/Green-Pass-%28CGP%29.html>). Green Pass does not specify what regional SPS standards shall be. Rather, it establishes standards for accrediting National Green Pass Authorities, based on the technical, financial, and administrative capacity of those organizations. National authorities apply for accreditation of whatever national organization they consider best to be their National Green Pass Authority. Once accredited, anyone receiving a Green Pass from that authority is free to transport their goods anywhere in the region without further SPS hurdles. Green Pass regulations give states flexibility to establish their standards while setting out general conditions those standards must meet: “Member States shall have the right to take SPS measures necessary for the protection of human, animal or plant life or health, provided that such measures are ... applied only to the extent necessary to protect human, animal or plant life or health; and (are) based on scientific principles and (are) not maintained without sufficient scientific evidence” (COMESA, 2009, section 4).

Relating this to KenyaGAP, note that this private standard has been accepted by KEBS (a public body) “as equivalent to its own approval for the local market”. Thus, under Green Pass, Kenya could, if it chose, put KEBS forward as its national Green Pass authority. KEBS would have the full right to accept KenyaGAP protocols as its own (i.e., as the regionally accepted *national* standard), as long as they meet and are applied in accordance with the conditions mentioned above. This active public-private collaboration on standards, with multi-stakeholder private bodies taking a major role in defining the details of workable and appropriate standards (and

updating these over time as conditions change), must be a fundamental characteristic of all standards setting in future if such standard setting is to promote rather than hinder trade.

At the moment, Green Pass exists only as a provision in a regional agreement, and its implementation has not started. Informally, officials indicate that it may take several years before Green Pass becomes operational, and it is likely to start with a food grain such as maize, not fresh produce.

## **KEY CHALLENGES**

We first discuss challenges to improve the performance of local systems. Not explicitly related to regional trade, improvements in these areas will nevertheless improve regional trade by generally reducing transactions costs and improving quality. We then briefly discuss key issues in RTAs and SPS protocols before closing with a delineation of improved data and understanding needed for proper design of programs and policies.

### **Improving the Performance of Local/Regional Systems**

This review has argued that production and marketing systems for fresh produce in Africa are unlikely to be transformed within an acceptable time frame by private investment in modern, integrated supply chains. Public engagement is crucial to prevent the severe problems in these systems from becoming much worse in the face of rapidly growing urban populations. Experience in the rest of the world suggests that the right public policies, by catalyzing collaborative investment by government, donors, and private sector, could turn fresh produce systems into major sources of rural growth through direct production and downstream linkages in value added. Here we outline two broad areas that present major opportunities, and highlight the constraints that will need to be overcome and the research that needs to be done in each area.

*Improved Information throughout the Supply Chain:* The first opportunity stems from identifying ways to use the expanding ownership and falling costs of communication through mobile phones to bring a wide array of timely information to farmers and traders to improve supply chain performance. Regional calling plans in East Africa now mean that these systems can operate regionally as cheaply as they do nationally. Recent research has demonstrated large improvements in market efficiency after the introduction of cell phones through their effect on reducing the cost of information needed for spatial arbitrage (Jensen, 2007; Aker, 2008). These improvements did not require public or donor investment: private cell phone providers invested in the systems and traders (few farmers in these cases) used the phones to search more widely and quickly for price information through their own private contacts. The challenge now, especially in light of the vast expansion of cell phone ownership among smallholder farmers over the past five years, is to find ways, when possible through public-private collaboration, to broaden the scope of information provided in this way. Examples abound:

- An SMS based system in Zambia automatically provides callers with bid price and contact information for a range of food staples in markets across the country; the system is low cost because buyers see it in their own interest to provide this information free of charge;

- An SMS system in Sri Lanka provides gherkin farmers with daily information on amount and reasons for rejection of produce in the market so that they can take immediate action on their own farms to avoid the problem (typically related to insect infestation; de Silva and Ratnadiwakara, 2005);
- Another project in Sri Lanka aims to reduce information search costs throughout fresh produce supply chains through use of SMS, e-bulletin boards, price reporting screens in markets, and links with banks and extension services (de Silva and Ratnadiwakara, 2005).

Examples of additional information that could be provided include input prices and availability (including seed, fertilizer, chemicals, credit, and irrigation and other equipment), early warning on pest outbreaks including best response options, technical information on recommended seeds and inputs, with the latter being conditional on specific types of production problems (this would apply especially to pest control chemicals) and including health and environmental warnings on plant protection chemicals. The key constraints to exploiting this opportunity lie in conceiving the most useful information, generating it in a sustainable fashion, and packaging it in the most effective combination of SMS, bulletin board, radio, worldwide web, and other dissemination channels. Literacy will also be a constraint in rural Africa. Work is underway by some NGOs to use SMS itself to promote functional literacy for these purposes (Jenny Aker, personal communication); learning from this and other initiatives for best approaches to scaling-up needs to be a top priority.

Two points should be kept in mind as efforts move ahead to capitalize on opportunities opened up by ICT. First, the spectrum of information available through SMS systems is likely to be substantially narrower than that on local and provincial radio. Second, despite their growing adoption, issues of literacy and cost mean that cell phones are not likely for some time to be able to reach as many farmers as local and provincial radio broadcast in the local language. For these reasons, Weber et al (2006) stress that modern ICT tools should be used, but that radio is likely to remain for some time the most effective means of “providing broad-based unbiased information to help improve the bargaining power of farmers ... and in informing public decision makers about how markets function ...”.

*Improved Hard Infrastructure Linked to Better Management Models and Improved Coordination:* Rising incomes and rapidly growing urban populations in Africa mean that the already deplorable state of many market places on the continent will become even worse if the accumulated deficit in hard marketing infrastructure – primarily wholesale and some retail markets with associated improvements in roads -- is not confronted with urgency. This is the second broad area that requires urgent attention. Yet the planning and construction of new markets, if not informed by solid supply chain research and carried out in a framework that ensures input from a broad range of farmers, traders, and end-users, can result in expensive new facilities that are little used and so do little to improve system performance.

Several points therefore need to be kept in mind as attempts are made to address the hard infrastructure deficit. First, the private sector needs to be actively engaged in the process. In some cases, private investors may be able to take the lead, with only ancillary contributions by government, e.g., making publically owned land available in a suitable location and undertaking

related improvements in road access. Most often, efforts will need to proceed on the basis of public-private partnerships. Second, making a public-private partnership live up to its name will often require modifications to existing legal frameworks and accompanying attitudes.

Legislation in Africa frequently gives primacy to municipal authorities in the ownership and management of market places; over time, the revenues from market fees have become important for city budgets and also the focus of rent seeking by some city officials. Conflict and lack of trust have become endemic, funds have not been reinvested in the market places, and the cleanliness and efficiency of market places has suffered. Finding ways to break out of this dysfunctional managerial relationship is imperative. Learning from successful examples (e.g., South Africa's national system of fresh produce wholesale markets; potentially the planned new wholesale market in Kasarani outside Nairobi) should be one important element in this effort.

Third, improvements in services – primarily in the amount, quality, and flow of information throughout the system – need to be conceived jointly with the hard infrastructure. This issue was discussed in the immediately preceding sub-section. Fourth, the public-private stakeholder groups that hopefully form the core of planning efforts in this area need to prioritize investment at the wholesale level. Typically retail markets receive most attention, due to their often chaotic expansion and replication in residential areas combined with the explosion in many cities of street vendors. These are legitimate and important issues, but cannot be resolved without improvements in the wholesale markets that all these traders depend on.

Finally, frameworks must be established for appropriate regulation of brokering in wholesale markets. Research evidence from Zambia and widespread informal observation and commentary in Nairobi suggest that, at best, brokers are not efficiently performing the main task for which they are suited from a market performance perspective: improving the vertical flow of information to efficiently match supply with demand, sellers with buyers. What's more, sellers commonly sense that they are obligated by the brokers to sell through them. In no case that we know of outside of South Africa is brokering activity regulated.

South Africa's national system of 18 fresh produce wholesale markets are all based on a legally mandated brokering model: no seller can sell their product in these markets without doing so through a registered broker. These brokers pay fees that are used to regulate their activities. Regulators have the right, frequently exercised, to show-up unannounced and examine any broker's records to ensure compliance with regulations. As new physical market places are designed and constructed, and improved soft infrastructure is developed to govern them, legal frameworks and personnel capacity for regulating brokering need to feature prominently.

### **Regional Trade Agreements, and Quality and SPS Protocols**

Without a detailed study that documents how current trade regimes are applied to horticultural trade, the prevalence and types of NTBs that affect this trade, and the costs of both in terms of foregone trade, it is not possible to say with confidence what the impacts of improved regional integration will be for such trade. Reasoning from the discussion above, however, regional trade in fresh produce could stand to gain substantially from improvements in the regulatory and procedural infrastructure of trade: harmonized SPS standards, streamlining of import permits (including permits based on volume and/or periods of time, rather than individual permits for

each individual import), more efficient procedures at borders, and reduced tariffs within the region. Because these crops are not politically sensitive, they are unlikely to be subject to *ad hoc* border closings and changes in tariffs, so improvements in the “nuts and bolts” of trade procedures would go a long way towards facilitating trade. Beyond this, and probably more important in terms of its impact on trade, the poor road and transport infrastructure that currently constrains all trade must be persistently improved.

Quality standards and SPS protocols need to be driven by consumer demand. Currently, demand for formalized and abstract (as opposed to visual) quality and safety standards is low among the great majority of consumers. Governments need to keep up with consumer willingness to pay, and can take actions to increase awareness of food safety concerns and thus increase willingness to pay. Yet if these efforts get too far ahead of consumer demand, much effort could go to waste in designing and launching protocols that do not gain acceptance in the market place. To strike this balance, government needs to cooperate with private standard setting, as KEBS in Kenya has done with KenyaGAP, rather than promoting fully public standards. If the local private sector is not promoting such standards, as in Zambia and Malawi and Mozambique, government may be able to play a role in doing so, but only if it adopts an approach that works with the private sector and focuses on real consumer willingness to pay for improved quality and safety. For quality standards, an effective way to do this may be through market information systems, whereby government works with traders to formalize currently informal standards in markets, and begins reporting price and quantity information on this basis.

### **Data and Improved Understanding**

Modern economies require continually updated data and analysis to ensure that programs and policies enhance rather than reduce economic growth, human and environmental health, and overall social welfare. Even in developed countries, such data and analysis tend to be under-provisioned; this problem of under-provision is even more extreme in most African countries. Here we mention the most basic data and understanding that is either missing or requires more reliable systems for regular provision include:

- Trade volumes: No one in ESA can state with confidence how much regional trade in fresh produce takes place. A basic feature of any functioning RTA will be reliable systems for tracking and reporting such data. This is a key area requiring attention.
- Costs of trade: Studies to date have been useful but general. Stakeholders in fresh produce systems need to come together to develop “cost buildups” for fresh produce trade, delineating the contributions to total cost of infrastructural factors (especially road transport), market performance factors (especially competitiveness and scale of operation, thus unit costs), and specific NTBs
- What works in improving wholesale trade: Wholesale marketing is the linchpin in fresh produce production and marketing systems. At present, most of these systems are woefully inadequate and rapidly getting worse in the face of expanding populations and growing incomes. Those interested in improving the systems need a detailed understanding of successful and unsuccessful initiatives to improve wholesale trade, with

a focus on the roles of public and private sectors and main drivers of success or failure. A “learning by doing” approach is needed, in which a range of individuals and institutions, each with a true stake in the outcome, learn together by seeing what has been done in other countries and areas of the world, adapt best ideas to local realities, and mobilize the political and financial support needed to make rational improvements in their own systems.

## REFERENCES

- Asfaw, Solomon, Dagmar Mithofer and Hermann Waibel (2009). "Food safety standards: a catalyst for the winners – a barrier for the losers? The case of GLOBALGAP in horticultural exports from Kenya. In *Standard Bearers: Horticultural exports and private standards in Africa*, Battisti, MacGregor and Graffham, eds. Institute for Environment and Development. Earthprint, Stevenage, UK.
- Carrere, Celine (2004). "African regional agreements: Impact on trade with or without currency unions". *Journal of African Economies*, 13(2), pp. 199-239.
- COMESA (2009). "Regulations on the application of sanitary and phytosanitary measures". [http://famis.comesa.int/pdf/COMESA\\_SPS\\_Regulations\\_16\\_12\\_2009.pdf](http://famis.comesa.int/pdf/COMESA_SPS_Regulations_16_12_2009.pdf)
- Diaz Rios, Luz B. and S. Jaffee (2009). "A Glass One-Quarter Full: The Legacy of Two Decades of Private, Governmental, and Donor Efforts to Promote Ugandan Horticultural Exports". Case study under Research Program "African Smallholder Farmers and Participation in Higher-Value Supply Chains: Lessons Learned and the Efficacy of Interventions to Achieve Assured Compliance". World Bank.
- East African Community (2010). "Report by the chair of the Tripartite Task Force, July 2010". <http://www.eac.int/tripartite-summit.html>.
- Fiorentino, Roberto V., Luis Verdeja and Christelle Toqueboeuf (2007). "The Changing Landscape of Regional Trade Agreements: 2006 Update". Discussion Paper No. 12. World Trade Organization, Regional Trade Agreements Section, Trade Policies Review Division. Geneva.
- Gabre-Madhin, Eleni Z. (2001). "The role of intermediaries in enhancing market efficiency in the Ethiopian grain market". *Agricultural Economics* 25 (2001), 311-320.
- Graffham, Andrew, E. Karehu and J. MacGregor (2009). "Impact of GLOBALGAP on small-scale vegetable growers in Kenya". In *Standard Bearers: Horticultural exports and private standards in Africa*, Battisti, MacGregor and Graffham, eds. Institute for Environment and Development. Earthprint, Stevenage, UK.
- Hichaambwa, Munguzwe and David Tschirley (2006). "Zambia Horticultural Rapid Appraisal: Understanding the Domestic Value Chains of Fresh Fruits and Vegetables". Working Paper No. 17. Food Security Research Project. Lusaka, Zambia
- Homer, Steve (2010). "Standards and market preferences: Opportunities and constraints 3rd installment under the AAACP-funded series of high value agriculture seminars.
- Humphrey, John (2006). "The supermarket revolution in developing countries: tidal wave or tough competitive struggle?" *Journal of Economic Geography*. Vol 0, No 2007.

Khandelwal, Padamja (2004). “COMESA and SADC: Prospects and challenges for regional trade integration”. Working Paper WP/04/227. IMF.

KHDP (2009). “Update on Kenyan Horticulture — July 2009”. Kenya Horticultural Development Program. Nairobi.

KHDP (2010). “Update on Kenyan Horticulture — May 2010”. Kenya Horticultural Development Program. Nairobi.

Regmi, Anita, M.S. Deepak, James L. Seale Jr., Jason Bernstein (2001). “Cross-Country Analysis of Food Consumption Patterns”. In Anita Regmi, Ed, *Changing Structure of Global Food Consumption and Trade*.

Regmi, Anita, and James L. Seale, Jr. *Cross-Price Elasticities of Demand Across 114 Countries*. TB-1925. U.S. Department of Agriculture, Economic Research Service, March 2010.

Steadman Group (2008). “The Business Climate Index Survey 2008. Report prepared for prepared for East African Business Council. Downloadable at [http://www.eac.int/trade/index.php?option=com\\_content&view=article&id=101&Itemid=122](http://www.eac.int/trade/index.php?option=com_content&view=article&id=101&Itemid=122).

Tschirley, David, Kavoi Mutuku Muendo and Michael T. Weber (2004). “Improving Kenya's Domestic Horticultural Production and Marketing System: Current Competitiveness, Forces of Change, and Challenges for the Future (Volume II: Horticultural Marketing)”. Working Paper 8b. Tegemeo Institute, Egerton University. Nairobi.

Tschirley, David, Munguzwe Hichaambwa, Milton Ayieko, and Wayne Loescher (2009). “Modernizing Africa’s Fresh Produce Production and Marketing Systems in the Absence of a Supermarket Revolution: Towards a Definition of Research and Investment Priorities”. Paper prepared for conference “Towards priority actions for market development for African farmers”, sponsored by International Livestock Research Institute, Nairobi. May 15-17, 2009.

Tschirley, David, Munguzwe Hichaambwa, and Mukwiti Mwiinga (2010). “Comparative Assessment of the Marketing Structure and Price Behaviour of Three Staple Vegetables in Lusaka, Zambia” in Waibel and Mithoefer, Eds., In *Understanding the Silent Revolution: New Socio-Economic Research on Horticultural Production and Marketing in Africa* 25 pp.

Tschirley, David and Munguzwe Hichaambwa (2010a). “The structure and behavior of vegetable markets serving Lusaka: main report”. Research Report #46, Food Security Research Project. Lusaka.

Tschirley, David and Munguzwe Hichaambwa (2010b). “Do Brokers Help or Hinder the Marketing of Fresh Produce in Lusaka? Preliminary Insights from Research”. Policy Synthesis 39, Food Security Research Project. Lusaka.

Tschirley, David, Cynthia Donovan, Jenny Cairns, and Fazila Gomes (2010). “Characteristics of the Domestic and Regional Horticultural Sector and Priorities for its Modernization”. Presented at 1<sup>st</sup> Forum for Agri-Business in Mozambique. 2-3 September, 2010. Pemba.

Tschirley, David and T.S. Jayne (2010). “Food Crises and Food Markets: Implications for Emergency Response in Southern Africa”. *World Development*, 38(1), 76-87.

USAID (2005). “Global Horticulture Assessment”.

Weber, Michael T., Cynthia Donovan, John M. Staatz and Niama Nango Dembélé (2006). “Guidelines for Building Sustainable Market Information Systems in Africa With Strong Public-Private Partnerships”. Policy Synthesis No. 78. Michigan State University Department of Agricultural Economics

Weinberger, K. and T. Lumpkin. 2005. “Horticulture for Poverty Alleviation: The Unfunded Revolution.” AVRDC-The World Vegetable Center, Working Paper No. 15. Shanhua, Taiwan.

World Bank (2007). “Agricultural Investment Sourcebook: Module 7, Getting Markets Right in the Post-Reform Era in Africa”.

Yang, Yongzheng and Sanjeev Gupta (2007). “Regional Trade Arrangements in Africa: Past Performance and the Way Forward”. *African Development Review*, 19 (3). Pp. 399–431.