

## The Dynamics of the Global Fruit and Vegetable Chains: Export-Oriented Agriculture as a Pro-Poor Strategy?

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**Abstract:** *Exports of high-value fruits and vegetables are increasingly considered a key strategy for economic development. While favorable climate conditions and low labor costs provide promising opportunities for subcontracting production to developing countries, stable access to markets also depends on options for quality upgrading that determine dynamic comparative advantage. This article addresses the question whether fruit and vegetable exports also have potential as a sustainable pro-poor development strategy. We analyze the trade and value-added structure within global fruit and vegetable chains, focusing attention on the governance regimes and the role of smallholders. After initial growth in market shares, the participation of the least-developed countries decreased in recent years. The replacement of outgrowing arrangements by supply chain coordination with integrated quality management poses major constraints to smallholder involvement, unless specific arrangements are in place. In such more integrated supply chains, cost motives are less relevant while strategic sourcing and functional upgrading become increasingly important.*

Year-round production possibilities and cost advantages give rise to subcontracting of the production and processing of fruits and vegetables to developing countries (Jaffee 1994, Friedland 1994). Governmental incentives schemes are put in place to stimulate high-value export-oriented fruit and vegetable production, receiving wide support from international donor agencies. Contrary to the neglect of agriculture during the last few decades, agriculture is now considered again as a key sector for economic development (World Bank 2007, Owens and Wood 1997). The particular advantage of high-value export-oriented agriculture is its generation of revenues and employment that is accompanied by spillovers to other sectors. Earlier experiences with staple exports proved to be rather disappointing in this respect. The question is now whether emerging exports of fruit and vegetables have a better potential for generating domestic growth and employment in developing countries. This article analyzes some recent tendencies in trade

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flows and distribution of value added within fruit and vegetables (F&V) supply chains. The main attention is given to the organization of the F&V commodity chain, the critical factors underlying competitive advantage, and the opportunities and constraints for equitable participation of poor countries and smallholder producers.

Market access and competitiveness are strongly related to the technological, organizational, and managerial options for linking producers with consumers through integrated supply chains and networks (Porter 1990). In a world of constantly changing and increasingly demanding consumer preferences, innovations are required to strengthen the firm's market position (UNCTAD 2000, Kaplinsky 2000, Gwynne 1999). Upgrading, defined as "the capacity of a firm to innovate to increase the value added of its product and processes" (Giuliani et al. 2005, p. 550), is rapidly becoming a key element in competition. Humphrey and Schmitz (2000) distinguish three alternative pathways for upgrading: (1) process upgrading—transforming inputs into outputs more efficiently by reorganizing the production system; (2) product upgrading—a movement into more sophisticated categories of products; and (3) functional upgrading—the acquisition of new functions, such as design, branding, or marketing. We analyze the existing abilities of and opportunities for smallholders in developing countries to participate in each of these competitive strategies—particularly in the latter, more rewarding pathway of functional upgrading.<sup>1</sup> Special attention is given to the role of dynamic partnerships between supply chain agents and changes in governance of supply chains that could give rise to the inclusion or exclusion of rural smallholders.

The analysis is based on the Global Commodity Chain (GCC) approach that has been introduced originally by Gereffi and Korzeniewicz (1994) and further elaborated by Gibbon (2001) as a constructive method for creating insight into the possibilities that high-value export agriculture offers to developing countries. GCC analysis is increasingly used as a general method for analyzing vertical relations within value chains, focusing on the growth potential and the distributive implications of vertically integrated F&V commodity chains. The combination of macroeconomic evidence on the evolution of F&V market shares with microeconomic data regarding value added distribution, together with more qualitative information on the changes in production systems and governance regimes, provides a comprehensive picture of the opportunities and constraints for inclusive development.

The article proceeds as follows: first, we outline the recent evolution of F&V exports and discuss the reasons behind the recently declining market share of least developed countries. Next, we analyze the supply chain structure and performance, focusing on the distribution of value added and the changing modes of innovation. Hereafter, we elaborate on the organization of value chains, indicating constraints and options for smallholder participation. We conclude with some implications for development policy programs that address the particular concerns of poor countries and smallholder producers.

### **Developing Countries in Fruit and Vegetables Trade**

Global production and trade in F&V increase in response to growing demand. During the 1990s, world F&V production grew by 49 percent, while the world population only increased by 15 percent. Over the period 1990–2000, Africa and Latin America (including the Caribbean) report export growth rates in the F&V trade value of 33 percent and 48 percent respectively (see table 1), still below the growth in world trade (79 percent) during the same period. During the first three years of the new millennium, world food and vegetable trade grew faster than in the entire decade before. However, compared to agriculture as a whole, world fruit and vegetable trade has grown only slightly faster. The value of total world agricultural exports increased 26 percent while F&V exports increased 32 percent during the 1990–2000 period. A similar tendency can be observed for the 2000–03 period, when agriculture increased 27 percent and the F&V exports grew 33 percent.

Latin America, the Caribbean, and Europe appear to be the greatest winners of world F&V trade over the entire period 1980 to 2003 (see table 1). The Latin-American growth in so-called non-traditional exports started in the mid 1980s with the expansion of fresh tropical fruits (bananas, mangoes, and pineapples), vegetables (snowpeas, broccoli), and seafood for the US and European markets (Barham et al. 1992). In Asia, horticulture, dried fruit, and fish production for local and regional markets strongly expanded in the 1990s (Deshingkar et al. 2003). The growth in F&V exports from Africa is heavily concentrated in only a few countries and the African share in F&V world trade is still less than 4 percent (see table 2).

The least developed countries (LDCs) initially made major progress, but at the end of the period lost market share. The market share of F&V in total LDC agricultural exports roughly doubled from 8 percent in 1990 to 16 percent in 2000, but declined again to 11 percent in 2003 (see table 3).

**Table 1: Growth rates in fruit and vegetable export value (1980–2003)<sup>1)</sup>**

Year/ Period	1980- 1990	1990- 2000	2000- 2003	1980- 2003
Africa <sup>2)</sup>	10	33	36	98
Latin America,Caribbean	144	48	19	332
Asia	74	23	27	173
Europe <sup>3)</sup>	91	23	49	249
USA	77	48	11	189
World	89	32	33	232
LDCs	47	117	-31	120

Source: FAO Stat and WDI World Export of Goods and Services

<sup>1)</sup> FAO commodity code 1189. <sup>2)</sup> 37% of exports from South Africa (2003). <sup>3)</sup> FAO region code 361.

Large variations can be noticed in the growth rates over this 23-year period. Whereas during the 1980s, LDCs appear as slow starters, they outperformed the rest of the world during the 1990s with a surprisingly high 117 percent growth. The first years of the new millennium, however, have been dramatic for LDCs with even absolutely declining F&V trade figures. On average, 18 out of the 44 LDCs reported declining absolute F&V export values over the latter period. The initial gain in market share reached during the previous twenty years fully disappeared in only three years. In subsequent years, LDCs further lost position in F&V export trade. This situation is worrisome and requires explanation.

While food products as a whole are considered income-inelastic, fruits and vegetables are not. The continuous rise in income at the world level would normally lead to proportionally higher demand for fruit and vegetables compared to agricultural products as a whole, with consequently increasing fruit and vegetables share in agricultural exports (as reflected in table 3). Major increases in world market shares accrue to developed countries and a selective group of more developed African and Latin

**Table 2: Market shares in world fruit and vegetable exports (1980–2003; %)**

Year/ Period	1980	1990	2000	2003
Africa	6.29	3.66	3.68	3.75
Latin America, Caribbean	11.59	14.99	16.83	15.06
Asia	21.95	20.26	18.89	18.05
Europe	46.40	47.04	43.58	48.77
USA	11.28	10.55	11.79	9.81
LDCs	0.78	0.61	1.00	0.52
Developed Countries	64.84	64.05	62.93	65.48

Source: FAO Stat

American economies, whereas most poor countries still maintain a rather marginal position in international F&V trade.

Although most of the recent literature refers to an increase in subcontracting of the production of fruit and vegetables towards developing countries (Barrett et al. 1999, Dolan et al. 1999, Gwynne 1999, Jaffee 1994, Friedland 1994), the data do not fully support this as a general trend. Individual countries, like Kenya, Tanzania, South Africa, and Egypt, as well as Chile, Guatemala, Mexico, and Costa Rica, have been able to generate fast export growth in their fruit and vegetable sector, but the majority of developing countries still lag behind. Dolan and Humphrey (2000) outline the specific conditions that explain this diversity in growth paths, focusing attention on: (1) market access through preferential trade arrangements, like the Lomé Convention with ACP countries, NAFTA, and the “Puebla-Panama Plan” between the USA and Latin American countries; (2) concentrated geographic clusters favoring local information exchange and manpower training; (3) international partnerships with marketing companies providing access to technology and logistics; and (4) public support for infrastructure provision and tax facilities, with no direct interference in commercial activities.

**Table 3: Share of fruit and vegetables exports in total agricultural export value (%)**

Year/ Period	1980	1990	2000	2003
Africa	12.02	15.37	18.00	19.19
Latin America, Caribbean	9.78	21.87	23.15	21.34
Asia	19.61	22.27	19.76	20.25
Europe	13.64	15.12	15.41	17.00
USA	7.1	11.9	14.08	14.14
World	11.54	15.64	16.37	17.20
LDCs	4.71	8.03	16.36	11.41
Developed Countries	10.86	13.81	14.57	15.95

Source: FAO Stat

### Global Commodity Chains

The analysis of supply chain performance and its implications for development draws on recent advances in the global commodity chain (GCC) approach and integrates insights derived from new institutional economics, value chain, and contract management theory. A crucial element of GCC analysis is the recognition that inter-firm linkages are vital for creating and maintaining comparative advantages (Gereffi and Korzeniewicz 1994).<sup>2</sup> Much of current international F&V trade cannot be thought of anymore as arm's length transactions between independent firms, but is instead governed by a nexus of interlinked contracts specifying product, price, and quality attributes and delivery rules between mutually related firms. Gereffi (1994, 1999) identified four critical dimensions that influence GCC performance: (1) territoriality, i.e., the spatial concentration of production and distribution networks, comprised of enterprises of different sizes and types; (2) the input-output structure within the sequence of value-adding activities; (3) the governance structure, particularly the authority and power relationships that determine how financial, material,

and human resources are allocated throughout the chain; and (4) the institutional framework surrounding the chain. The first two dimensions shape the external options for involvement in GCCs, whereas the latter two dimensions address the organizational implications for management of integrated supply chains and networks (see Sturgeon 2001, Fearné and Hughes 1999).

New Institutional Economics emphasizes the role of agency arrangements, like bilateral (repeated) contracts and interlinked deliveries, as suitable governance regimes for the effective exchange of goods and services within coordinated supply chains (Williamson 1975). Input provision and pre-finance credit provided by downstream partners are of crucial importance to enable upstream partners' compliance with production and delivery standards. In a similar vein, long-term delivery arrangements can be used as a collateral for borrowing to invest in better production and processing facilities. Empirical work by Fafchamps (2004) provides evidence that such contractual arrangements based on trust and loyalty are indeed highly important for producers in developing countries where market failures and pervasive risks strongly reduce the scope for spot market operations.

The seminal work by Porter (1990) placed value distribution at the centerpiece of discussion. Recognizing that competition increasingly takes place among integrated supply chains, vertical upstream and downstream relationships are nowadays considered as one of the major sources for the creation of comparative advantage. Keesing and Lall (1992) notice that:

...much of trade theory is concerned with what determines comparative advantage in the production of traded commodities. In almost all of the theory, one enterprise or industry has achieved competitiveness in the sense of being able to produce and deliver goods at or below ruling prices in world markets; the marketing of those goods is not regarded as a problem. In the real world, by contrast, profits...depend on information flows, getting orders from buyers and customers, and the design, packaging, distribution, selling and servicing of the products (p. 176).

Value chain analysis draws attention away from an exclusive focus on the physical transformation of products as the sole contributor to comparative advantage, and focuses on the processes of information exchange, logistical efficiency, and distribution networks that enable compliance with increasingly demanding market standards.

Opportunities for smallholder involvement in global commodity and value chains are subject to wide debate. Given the labor-intensive character of many tropical commodities, family farms enjoy in principle some

cost advantages. However, in buyer-driven chains where retailers have a predominant position, demands from the product design and marketing stages become increasingly important. Whereas sourcing activities can be easily subcontracted—with the chain leaders focusing on those stages where barriers to entry are high and profits are concentrated—product development and differentiation require further alignment with local producers. The latter process is frequently accompanied with adjustments in sourcing and shifts towards medium-size farmers as preferred suppliers (Reardon and Timmer 2007).

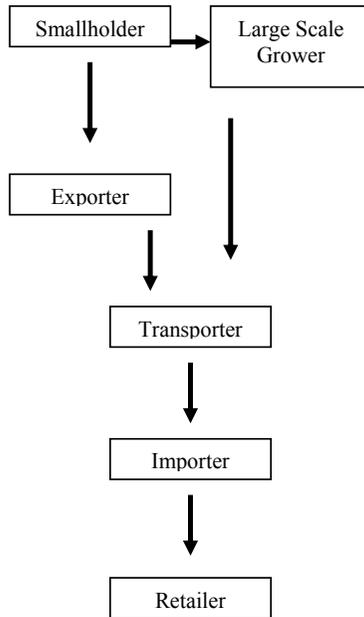
### **Structure of Fruit and Vegetables Supply Chains**

Global F&V supply chains include at least five typical agents that fulfill specific functions, namely: (large and small) growers, exporters, international traders, importers, and retailers (see figure 1). In more integrated supply chains, the role of exporters is substantially reduced. In some cases, reported by Barrett et al. (1999), African growers are working directly under contract with importers or retailers from Europe. In other situations, importers still source from exporters, but direct relationships with selected growers are increasingly favored. Supermarkets in the developed world—responding to rising demands for high quality and safe F&Vs—become directly involved in sourcing, tracking, tracing, and product upgrading activities. Traditionally, F&V were a side-activity for supermarkets, but nowadays they occupy a central position in the store. Fresh F&V have become a destination category for which customers are willing to switch stores (Fearne and Hughes 1998).

The F&V supply chain can be divided into different core functions that include a number of specific tasks (see table 4). Each of these functions requires a particular technology that changes over time. This also implies that some functions may be shifted to other agents. Depending on the level of supply chain integration, different tasks can be outsourced to upstream partners. The tighter the degree of supply chain coordination, the more advanced tasks can be undertaken upstream. This implies that increasing demands are put on developing country agents to perform food quality and safety control measures and to guarantee continuous sourcing of F&V of a stable and consistent quality.

A number of major shifts have recently occurred in the internal organization and the distribution of tasks within F&V supply chains:

- Importers and retailers make large efforts to shorten delivery times (thus extending shelf life), to enhance quality control and surveillance at reduced costs, and to improve the variety in supply of fresh F&Vs;

**Figure 1: Structure of F&V supply chains**

- Increasingly stringent food quality and safety standards required by retailers (e.g., Eurep-Gap) become trade barriers for countries and producers that lack the technical and administrative capacities to guarantee compliance (Jaffee and Henson 2004);
- Processing, packaging, and bar-coding that were originally performed by exporters (Dolan et al. 1999) are nowadays directly assumed by growers (as registered by Barrett et al. 1999 in their study of horticulture producers in Kenya);
- Some of the largest African and Latin American exporters have set up their own import companies in Europe and the US, whereas some European importers have taken equity shares in developing countries' export companies (Dolan and Humphrey 2000);
- Activities related to quality management, originally assigned to growers or exporters, are increasingly controlled directly by retailers. Dolan et al. (1999) report that UK supermarkets regularly visit their African exporters and suppliers for quality check-ups, whereas Barrett et al. (1999) find that staff of import agencies are directly in charge of supervising African growers. Some larger growers maintain own research and development laboratories where quality and freshness are monitored.

**Table 4: Function and tasks in the F&V supply chains**

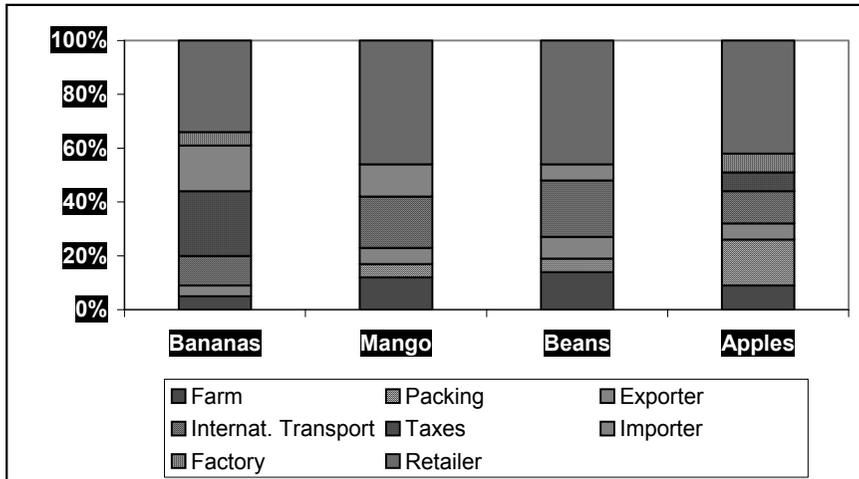
Function	Resource Intensity	Task
Growing	Land and Labor	seeding, fertilization, weed control, pest management, sorting, pruning, picking,
Packaging	(Skilled) Labor	processing, cooling, bar-coding, quality checks, information systems, packing, thinning, grading
Exporting/Warehousing	Capital	cooling, processing, bar-coding, sorting, packaging, storing, information systems
International Transport	Capital	cooling, transporting, information systems
Importing	Capital	cooling, transporting, information systems, storing, quality checks
Retailing	Capital & Information	shelf filling, checkout, counters, floor, branding, product development, cooling, information systems, quality checks

Source: Adapted from Barrientos and Barrientos (2002:13)

The growing importance of supermarkets has significantly changed the organization of the F&V supply chain. Sourcing and distribution increasingly take place within integrated chains through a series of interlinked contracts. Standards and delivery requirements by downstream agents have become major barriers that hinder smallholder participation in integrated F&V supply chains. Downstream agents require quality and consistency of production, reliability of supply, traceability, efficient processing, and adequate packaging. For many smallholders it is difficult to comply with these demands that imply considerable investment in input use, logistics, and control systems.

**Value Distribution**

Even while a significant number of tasks are undertaken at upstream stages in the supply chain, only a relatively small percentage of the retail price is captured by developing countries agents. We reviewed the input-output structure for four typical F&V supply chains in order to detect the distribution of value added among chain partners (see figure 2). On average, the stages located within developing countries capture between 9 and 32 percent of the f.o.b. (free on board) value, with notably larger shares for imports from ACP countries. The value captured by growers ranges from 4 to 14 percent of the total retail price.

**Figure 2: Value distribution in F&V supply chains (shares of retail price)\***

Source: Based on Chambrion (1999, 2000) for bananas from Ecuador, Dolan et al. 1999 (for mango and green beans from Kenya) and Oxfam (2004) for apples from Chile.

International transport accounts for 11 to 21 percent of the retail price and thus captures a significant part of the value in the chain. This share is even higher than the value captured by growers. In most cases, about half of the cost-insurance-freight (c.i.f.) value is assumed by international transport. Amjadi and Yeats (1995) notice that relatively high transport costs put African exporters in a disadvantageous position. Given the importance of international transport for the overall performance of the supply chain, obtaining tighter control over transport functions makes this segment interesting for further integration by other agents in the chain. Recent debates regarding the incorporation of food miles (i.e. external costs of emissions from sea and air transport) in prices may, however, strongly reduce the competitive advantage for sustainable production in developing countries (Pretty et al. 2005).

The tax share in the supply chain is highly variable and sometimes not fully reported. Chambrion (1999, 2000) reports high percentages of import tax on bananas from Latin America into the EU, varying between 7 and 24 percent of the retail value. The tax share is thus superior to the value captured by the growers. A further opening-up of global food markets following the WTO agreements might lead to declining tax margins and higher market demand. Otherwise, current import licenses tend to be replaced by high uniform tax rates. Morisset (1997) argues, however, that retail prices will hardly decline after liberalization. Hence, the potential

\* Figure 2, above, can be seen in its original color version at the ACE website.

advantages of further liberalization of F&V trade will not necessarily accrue to producers in developing countries.

The value captured by importers is subject to much debate. Fair Trade agencies like Max Havelaar argue that 20 percent of the retail value is captured by transnational companies in the form of profits. In addition, they receive part of the factory value. Chambron (1999, 2000), Dolan et al. (1999), and Oxfam (2004) report importers' margins from 8 to 26 percent. Particularly in this stage of the supply chain, there is wide variation. In the banana chain, importers still play a very dominant role (partly due to their control over import licenses and ripening facilities), while in supply chains of pre-cut and packed vegetables, importers perform few value-adding functions (Barrett et al. 1999).

Finally, retailers clearly capture most value in the F&V chain, ranging from 34 to 46 percent of the consumer price. This implies that from every dollar of banana or mango imports, about 40 cents accrues to the retailer. Since retailers also assume significant costs in terms of shelf space, wastage and loss, and non-sales, their net profit margin is about 20 percent (Fisher et al. 2000). Considering the value captured by growers and developing countries as a whole, retailers undoubtedly receive the highest value share in the supply chain.

In summary, we note that export-oriented F&V producers in developing countries receive on average about 10 percent of the total value generated throughout the supply chain. This is quite similar to what European F&V producers tend to receive, but is below the share that can be captured from local sales (albeit at a substantially lower market price). This can be partly attributed to the high investment costs for qualifying for deliveries towards international outlets. Direct costs of compliance with Eurep-Gap standards range from 4-10 percent of export value, but intangible costs for accessing information are high. Given the already small margins and high risks involved in the export production, it is rather unlikely that only cost motives could trigger downstream agents to further vertical coordination. Other factors influencing dynamic competitive advantage are therefore far more important to enhance their interest in overall supply chain control.

### **Governance Regimes**

The allocation of tasks and the distribution of value added within the F&V chain reflect power relations throughout the chain. Governance regimes shape the abilities of certain agents to control and direct the behavior of other chain partners. We already noticed that F&V supply chains became shorter and increasingly vertically integrated. This integration has

developed gradually. During the 1970s and 1980s, the public sector was still considered as the key agent guiding agricultural development in most developing countries. Gradually, however, traders and exporters, followed by processors and retailers, began to integrate the F&V export chain.

For tropical commodities such as fruit and vegetables, entire-channel control is required to guarantee efficiency and competitiveness. The perishable character of the commodities, the handling technologies and associated knowledge levels largely invalidate reliance on spot markets. Due to the complexity of securing access to consumer markets in developed countries, importers and retailers exercise control over the whole supply chain (van der Laan 1993). The same holds for the growing internal market for fresh F&V, where national retailers prefer engagements with selective suppliers to guarantee frequency of deliveries and stable quality performance (Ruben et al. 2007, Berdegue et al. 2005). Dolan et al. (1999) notice a similar shift in the governance structure and control relations in F&V chains from importers towards retailers, resulting from the increasing integration of F&V markets. F&V markets used to be fairly fragmented, which gave most power to the importers. With the centralization of the fruit and vegetables trade in the retailing stage, bargaining power has shifted in favor of the supermarkets. European supermarkets, for example, account nowadays for 80 percent of the fresh F&V sales and source about a quarter from African countries (Dolan et al. 1999).

Transnational corporations (mainly importers, but some also owning plantations and shipping facilities) still maintain a dominant position in the F&V supply chain, particularly in the fruit trade. In a study of the German banana market, Deodhar and Sheldon (1995) found evidence that leading importers such as United Brands and Del Monte fully control the German banana chain. Their ability to mark up prices above marginal costs sustains this argument. Morisset (1997) estimates that international trading companies have significantly increased their margins during the last twenty-five years, occasioning more than \$100 billion a year in losses for exporting countries. Agents that exercise larger governance control thus capture a growing share of the value added created in the supply chain.

A major implication of this tendency towards greater vertical coordination is the possible exclusion of smallholders. Even while smallholders still play a dominant role in the production of fruit and vegetables, they find it increasingly difficult to export their produce. In the case of Kenya, Harris (1992) reports that in the early 1990s almost 75 percent of the fruit and vegetables were grown by smallholders. A few years later, Dolan et

al. (1999) find that only 18 percent of the exported fruit and vegetables from Kenya to the UK were delivered by smallholders. Dolan and Sutherland (2002) reported an even lower figure of 11 percent in 2001. The marginalization of smallholders is well documented in the literature (Takane 2004, Gwynne and Ortiz 1997, Barrett et al. 1999, Dolan et al. 1999, Dolan and Sutherland 2002), even while some producers remain integrated in the supply chain as subcontractors of large-scale growers or exporters. The tendency towards shorter and more integrated chains may seriously hinder smallholder participation in F&V exports and could eventually lead to the reduction of the supply chain to only two or three main agents.

The main competitive advantage of farmers is their ample availability of labor resources. Primary production requires mainly unskilled labor. Due to the outsourcing of more advanced tasks related to quality control and research and development, however, the F&V sector increasingly needs skilled labor. Vertical integration is thus usually accompanied by higher human and financial capital demands and requires competent management skills (van der Meer 2007). Most value is nowadays added beyond the growers' stage. Customer demands and legal requirements create new and more complex tasks that need to be carried out along the chain. Product differentiation, labeling, as well as tracking and tracing regimes, require large investments in upstream stages of the supply chain. These resources become key in shaping dynamic competitive advantages through long-term relationships between producers and retailers.

### **Export Agriculture as a Pro-Poor Strategy?**

What are the prospects for smallholder producers to engage in these rapidly evolving and dynamic F&V supply chains? The trends discussed in this article show a picture of gradual substitution from subcontracting arrangements (initially with low-cost countries and producers) toward strategic sourcing contracts that tend to be far more exclusive and biased in favor of selected countries and types of producers. Given the higher demands for human capital and management skills, many smallholders located in less-developed economies will be unable to comply with the requirements involved in strategic cooperation. Owens and Wood (1997) therefore conclude that industrialization through upgrading of primary products is only possible for countries with a reasonably skilled labor force (mostly in Latin America and Southeast Asia), but is fairly complicated for most African economies. Once F&V chains become more integrated and critical tasks of food quality and safety surveillance are strategically

sourced upstream, new barriers for poor countries and resource-poor smallholders located in somewhat better developed countries are imposed. These barriers limit their integration in export-oriented F&V supply chains.

Some typical examples of new exclusionary mechanisms within such integrated F&V chain include the following.

- The shortening of supply chains is accompanied by outsourcing of more demanding tasks to upstream agents, such as packaging, bar-coding, processing, and sometimes even research and development for quality control. This form of outsourcing is compulsory for producers that are linked to Western retailers. Growers and processors have to comply with stringent handling requirements set by importers and supermarkets to remain eligible for exports. These requirements of functional upgrading imply that downstream agents put new tasks on the shoulders of their upstream suppliers, and tend to exclude the least qualified agents from access to higher value market segments;
- International demands for more consistent F&V deliveries and reduced post-harvest losses may induce a shift in seed material. This is, for example, the case with pineapple, where many export producers had to replant with MD22 varieties that can be better transported (even while the taste is inferior to the traditional varieties);
- Local changes in procurement systems, toward supply to large regional distribution centers, give priority to producers that are able to maintain pre-scheduled deliveries and sometimes have to organize their own transport facilities;
- Strict compliance (with frequent supervision) of agreed production practices, usually at high costs to guarantee adequate nutrient applications (especially for organic produce that requires much compost and manure) and to avoid excessive pesticide use (to fulfill the norms on maximum residue levels);
- Imposition of stringent quality and safety standards according to uniform rules (Eurep-Gap for retail, FLO for Fair Trade, EKO for ecological agriculture) with direct supervision by private inspection agencies.

All together, these changes tend to increase the requirement for capital- and knowledge-intensity of upstream producers and result in the progressive exclusion of smallholder farms as regular suppliers in high-value F&V chains.

## Strategic Options

Policymakers, business agents, and practitioners involved in market development and smallholder engagement have to face many dilemmas and challenges to overcome the exclusionary mechanisms that seem to be inherent to F&V supply chain integration. We outline some typical roles and functions that can be successfully performed by state, market, and civil society agents to enhance pro-poor supply chain integration.

Current state involvement in F&V trade is limited to legal measures for assuring minimum labor standards and food safety grades and standards, as well as fiscal regimes and regulatory measures for opening-up the market to domestic and international actors. In countries such as Ecuador, Panama, and Costa Rica, the government sets minimum producer prices for bananas in order to “protect” domestic producers (UNCTAD 2000). There are, however, significant risks that such interventions introduce unequal competition and cause resistance. A similar attempt by the Panama government in 1992 to increase the minimum wage of plantation workers resulted in a political crisis: the government had to step down after Chiquita threatened to terminate their contact with domestic producers (Chambron 2000). Because of charges of reducing the “freedom of enterprise,” there is a general trend to reduce state interventions. In 1990, the Costa Rican government launched the “Banana Promotion Plan” to attract foreign direct investment by providing international companies ownership rights over land. The seventy percent increase in the value of total exports of bananas during the ten years that followed can be considered an indicator of the success of the Plan.<sup>3</sup> In Chile, the “laissez faire” approach of the government with respect to land ownership is said to have contributed positively to economic growth in the agricultural export sector (Gwynne and Ortiz 1997). Whereas governments in some developing countries still tend to protect their smallholders, the before-mentioned countries relied on market liberalization as a driving force towards growth. Although results in terms of growth rates tend to be favorable, the growing exclusion of rural smallholders inevitably leads to larger income inequality. Most governments have found it difficult thus far to develop policies that constructively strengthen the position of domestic agents. The dualistic position of the state, on the one hand trying to protect the weaker parties in the supply chain by imposing minimum wages and codes of conduct (Barrientos and Barrientos 2002), while on the other hand opening-up the market for domestic and international investors, cannot be easily reconciled.

Moreover, organization of smallholders is frequently forwarded as a strategy for improving economies of scale and scope in market competition. Takane (2004) reports an attempt made by the Ghanaian government in cooperation with the World Bank to strengthen the position of smallholders for inclusion into pineapple export chains. The creation of Farmapine Ghana Limited, an export cooperative, seemed at first quite effective. The arrangement was able to overcome the usual problems of lack of information and limited uniformity in farming practices. Since costs for input distribution and extension cost were high, farmers associated with Farmapine received 10–20 percent lower prices compared to those paid by commercial exporters, but higher than those paid by local processors and itinerant traders (Takane 2004). Kaplinsky (2000) concludes, therefore, that direct support in terms of human capital training and institutional development (e.g., establishment of farmers' associations and cooperatives) is required to overcome such initial constraints.

International competition also requires that local producers be able to assure quality through tracking and tracing systems. These systems, and other upgrading of production and management, will increase outlays for capital and make that the scarce factor—and the distribution of rents in the supply chain flow toward the scarce factor. Downstream agents could consider providing pre-finance credit or co-investment funds to enable upstream partners to comply with increasingly strict quality and delivery standards. This may have profound implications for the governance structure within the F&V supply chain. In some alternative trade plantations in Ghana (VREL) and South Africa (Zebediela Estates), private capital providers participate as (temporary) shareholders in order to facilitate the farmers learning advanced management processes. Even in such estate-type production systems, major benefits may accrue to poor landless households through increasing local employment and higher wages (Maertens and Swinnen 2006).

In some occasions, smallholder producers may have better options when producing for local market outlets. Given the strong growth of internal market outlets for fresh F&V that are increasingly demanded by local supermarket chains (Reardon and Timmer 2007), local sourcing is the best path to procuring fresher produce. The challenging experience of the South African Freshmark company—in charge of sourcing for Shoprite with activities in eleven countries—shows that joint production planning and coordinated deliveries can be maintained with selected smallholders (van Deventer 2006). Key for their success is the availability of pre-investment facilities necessary to enhance the competitiveness of smallholders in F&V supply chains (Page and Slater 2003).

Even while recent growth in global F&V trade is impressive, overall growth rates are only slightly higher than those of agriculture as a whole and still lag behind growth rates of world trade in general. It is therefore rather exaggerated to refer to “a booming sector,” even while some countries experienced exceptionally high growth rates. The increased concentration of F&V exports at the global level is paralleled by the growing exclusion of smallholder producers. While delivery contracts provided occasionally a good starting point for entering export markets, maintaining their market share in an era of functional upgrading requires closer alliances and resource-cum-risk sharing partnerships. Where private agents are not capable of bridging these interests, public agencies or voluntary organizations (NGOs) can provide useful support for overcoming the transaction costs involved in the process of functional upgrading.

### **Endnotes**

- 1 Hvolby et al. (2000) introduce the difference between outsourcing and strategic sourcing, where the former is driven by cost-reduction motives and focused on core competencies, whereas the latter is motivated by the search for optimization of the value chain through innovation transfers and complementarities of functions. Subcontracting is thus mainly based on relational competition and compliance with demands, while under strategic sourcing inter-company interdependencies become stronger and a much greater emphasis is placed on human capital transfers.
- 2 This marks a clear shift away from neo-classical economic theory where trade between independent countries is considered as source for welfare, independently from social relations between the trading parties.
- 3 The export value increased from 316.9 million in 1990 to 546.4 million \$US in 2000 (FAO Statistics 2005).

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