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# Chapter 9

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## Constraints to smallholder participation in high-value agriculture in West Africa\*

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\*Correct citation: Swinnen, J., L. Colen, and M. Maertens (2013), ***Constraints to smallholder participation in high-value agriculture in West Africa***, In: *Rebuilding West Africa's Food Potential*, A. Elbehri (ed.), FAO/IFAD.

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## 1. Introduction

During the past two decades non-traditional high-value agriculture increased considerably in West Africa, while traditional tropical export crops started to lose importance. This rise of high-value agricultural markets has been accompanied by large and rapid structural changes. First, a few large food multinationals increasingly dominate international food chains. Second, high-value agriculture is increasingly characterized by highly vertically-coordinated supply chains. Third, food standards increased sharply since the mid-1990s and now impose a large number of requirements on agricultural exports. These changes have important implications for farmers around the world, who find themselves confronted with new competitive pressures as well as new opportunities from these developments, and who may or may not benefit from being integrated in these high-value supply chains.

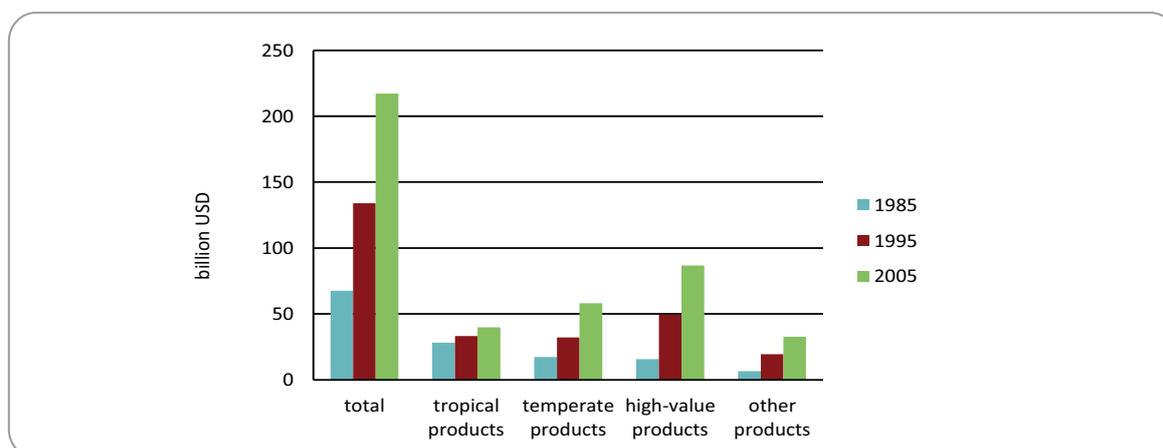
In this chapter we review these recent structural changes in high-value agricultural trade and their importance for West African agro-food markets; we also discuss their implications for West African farmers and rural households. In this chapter we draw on secondary data and on data from our own surveys in the past years in specific sectors – in particular the horticulture export sectors in Senegal.

The chapter is organized as follows: First, we document the increase of high-value agricultural production in West Africa. In the next section we discuss the organization and structure of high-value agricultural supply chains. Then we discuss the constraints to smallholder participation in high-value supply chains, the role of producer organizations and the empirical evidence about inclusion or exclusion of small farmers. In another section we focus on the indirect linkages and benefits for smallholders. A final section formulates policy recommendations to enhance the benefits for smallholders from the development of high-value agricultural markets.

## 2. Increased importance of high-value commodities

World trade in food and agricultural products is increasing and has almost doubled during the past two decades, from USD 243 billion in 1980 to USD 720 billion in 2005 (FAOstat, 2009). Thirty-six percent of world agricultural trade originates from developing countries and the structure of developing country exports has changed significantly since 1980.

**Figure1. Changing structure of developing countries' agro-food exports, 1985 - 2005**



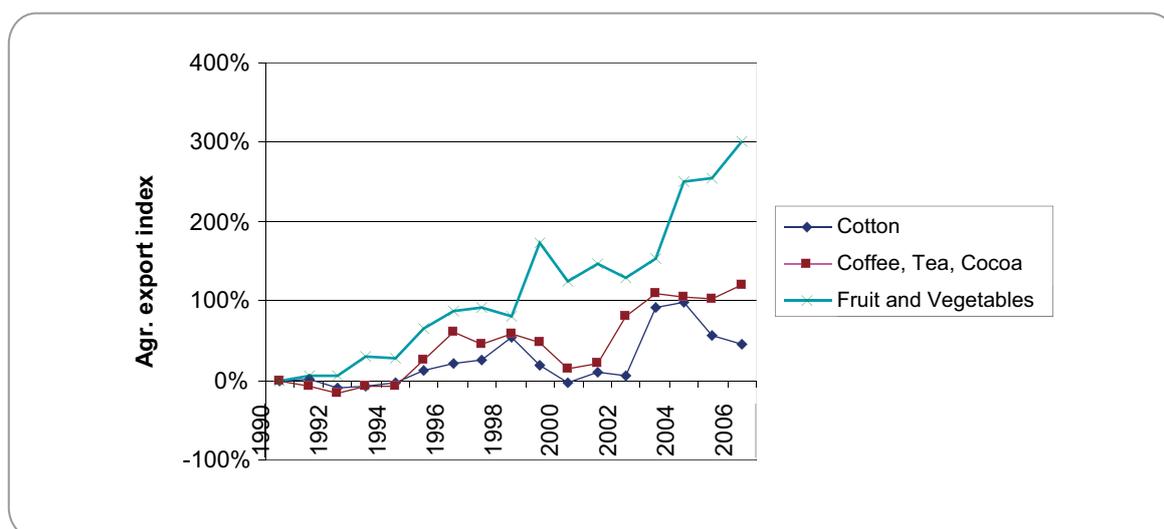
Source: Maertens, Minten and Swinnen (2012)

Tropical products include coffee, cocoa, tea, nuts and spices, textile fibres, sugar and confectionary; temperate products include cereals, animal feed and edible oils; high-value products include fruits, vegetables, fish, seafood, meat and meat products, milk and dairy products; other products include tobacco and cigarettes, beverages, rubber, and other processed food products.

<sup>1</sup> Developing countries include all low- and middle-income countries in Africa, Central America, South America and the Caribbean, East Asia, South Asia, Southeast Asia and Central Asia.

Exports from developing countries are characterized by a sharp increase in the export of non-traditional agricultural products, while the traditional tropical export commodities such as coffee, cocoa and cotton are losing importance (Figure 1). The share of traditional tropical commodities, including coffee, cocoa, tea and cotton has decreased from 24 percent of West African exports in 1986 to 7 percent in 2006. Meanwhile, the value of non-traditional exports from West Africa has tripled over this period (FAOstat, 2009) (Figures 1 and 2).

**Figure 2. Index of agricultural exports from West Africa, 1991-2005**



**Source:** Calculated from FAOstat (2009).

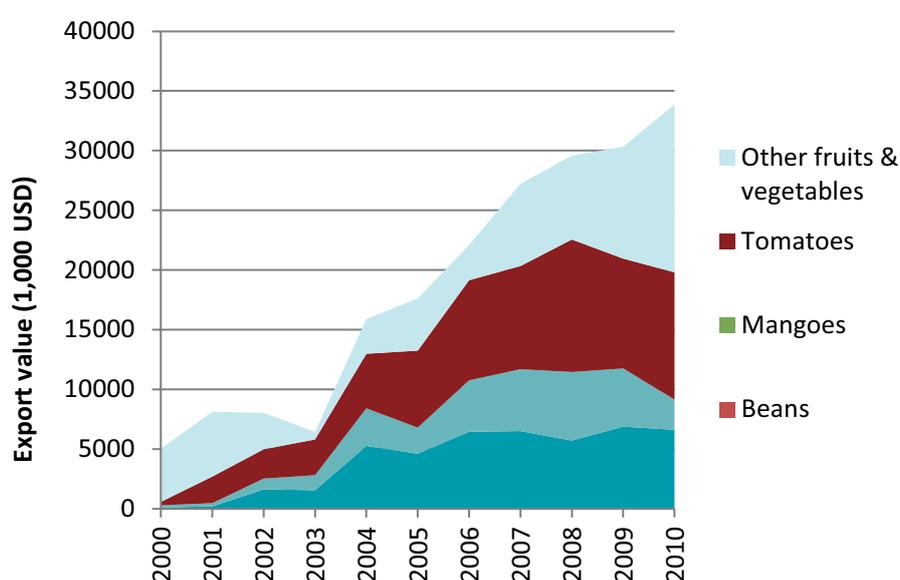
These non-traditional exports primarily include higher-value products such as fish and seafood, fruits, vegetables and flowers, products that are consumed in fresh or processed form and for which the value (per weight or per unit) is typically much higher than for more bulky primary commodities that are destined for further processing such as the typical tropical products.<sup>2</sup> Horticulture products in particular are playing an important role in the sharp growth of high-value and high-standard agricultural produce. In West Africa the export of fruits and vegetables to high-income regions has increased from USD 150 million in 1990 to USD 600 million in 2006 (FAOstat, 2009). Several West African countries, including very poor countries such as Burkina Faso, Côte d'Ivoire, Ghana, Guinea and Senegal, have become important suppliers of fresh fruits and vegetables to European Union (EU) markets (Boxes 1 and 2).

<sup>2</sup> In some West African countries, e.g. Benin and Senegal, the export of fish and seafood accounts for the largest share in high-value exports.

### Box 1. The rise of Senegal's fruits and vegetable exports

After Senegal's independence in the 1960s, groundnut was the dominant export crop. Yet since the 1970s, declining world demand and competition with other oilseed crops reduced the profitability of Senegal's traditional export sector. Although still relatively small compared to export products such as groundnuts and fish, non-traditional export products such as fresh fruits and vegetables (FFV) have become increasingly important. In the past 10 years exports of FFV have increased from 4 800 tonnes in 1998 to almost 25 000 tonnes in 2007.

Figure 3. Value of horticulture exports from Senegal, 2000 – 2010



FFV exports also became more diversified. In 1997 more than 75 percent of FFV exports consisted of one crop (French beans). Since the early 2000s the export of tomatoes and mangoes has also grown. The greater majority of exported fruits and vegetables are destined for the EU market, mainly Belgium, France, Luxembourg and the Netherlands.

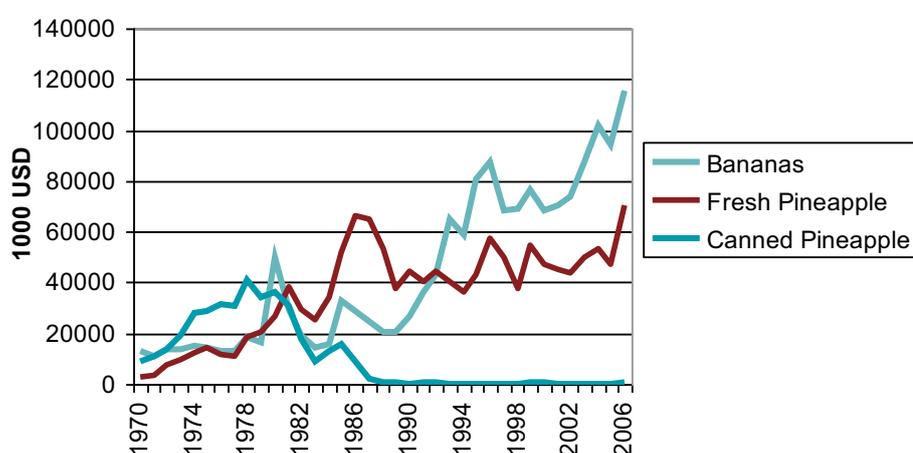
**Source:** Maertens, Colen and Swinnen (2011)

### Box 2. West Africa's largest fruit and vegetable exporter: Côte d'Ivoire

Côte d'Ivoire has always been the main horticultural exporter in West Africa. In 1999 Côte d'Ivoire exported USD 140 million worth of fruits and vegetables, thereby reaching approximately the same level as Kenya and second only to South Africa among sub-Saharan African countries.

Already in the 1960s, in the years after independence, the government successfully diversified its income earnings, reducing the contribution of cocoa and coffee to agricultural export revenue from 90 percent in 1961 to 77 percent in 1975 and largely increasing the export of bananas and pineapples. At this time, most of the pineapple exports were in the form of canned pineapple and pineapple juice. But in the 1980s world prices declined, and Côte d'Ivoire switched to fresh pineapple exports by seafreight.

Figure 4. Exports of fruits from Côte d'Ivoire

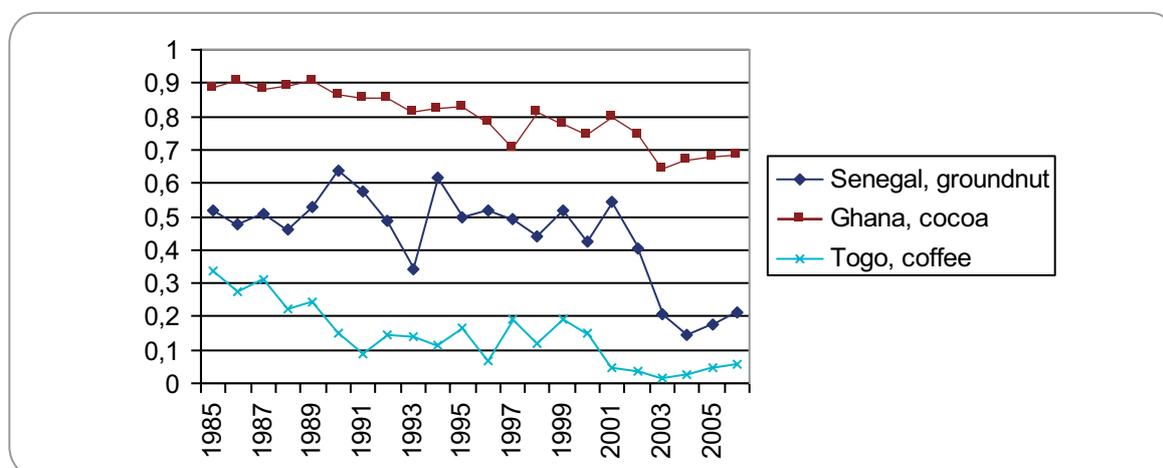


This move took advantage of Côte d'Ivoire's location in terms of proximity to Europe, a factor which is much more important in fresh pineapple trade than in the market for canned pineapple. The export of fresh fruits is much more demanding in terms of quality standards and logistics, but when these requirements can be satisfied, fresh pineapple export is much more profitable than the market for canned pineapple.

Source: Minot and Ngigi (2004); FAOstat (2009)

The importance of this shift from traditional to non-traditional export commodities is twofold. First, many African countries have for decades been highly dependent on one or just a few export commodities, which has made countries vulnerable to volatilities and shocks in world market prices. For example (Figure 5) the share of cocoa and coffee in the value of agricultural exports of Ghana decreased from 88 percent in 1985 to 68 percent in 2005. Similarly, the share of groundnut in Senegal's agricultural exports decreased from 52 percent in 1985 to 21 percent in 2005, the export value in both countries fluctuating largely over the years due to volatile prices. The shift towards non-traditional exports implies more diversified export portfolios, which reduces these vulnerabilities.

**Figure 5. Share of main traditional export crops in value of total agricultural exports for Ghana, Senegal, and Togo (1985-2006)**



Source: FAOstat, 2009

Second, non-traditional exports are high-value products for which the value per unit or per weight is much higher compared to typical traditional tropical exports, such as coffee, tea and cocoa. This creates opportunities for rural income mobility and poverty reduction among smallholder producers in these countries.

Relative to other regions in Africa, the growth in high-value exports from West Africa is still limited and has taken off rather late. Especially in Eastern and Southern Africa, the shift towards non-traditional exports has been even more pronounced and horticultural exports started to boom earlier. In West Africa, the real boom only started after 1994, when the currency of the West African monetary union was devaluated. If West Africa is to follow the trend of East and Southern Africa, we can expect to have a continuation of the strong growth in non-traditional exports in the coming years.

The increase of high-value agricultural production in developing countries is mainly related to increased exports to the industrialized world. Yet in some developing countries high-value production for the local markets is also increasing. In some developing countries, mostly in Latin America and Asia, the role of supermarkets has increased rapidly and this has been accompanied by a rise in the local demand for high-quality food products (Gulati *et al.*, 2007; Reardon *et al.*, 2003). In most West African countries, the local consumption of these goods is low and the role of supermarkets is relatively unimportant compared to other developing regions. In West Africa, high-value agricultural production for the local market is still very limited and virtually all high-value agricultural products are directed to the European market.

### 3. Organization and structure of high-value chains

The shift towards high-value agriculture is accompanied by a shift in the organization and structure of the supply chain. High-value chains are characterized by products of high value, the use of stringent food quality and food safety standards, the importance of private standards in addition to public requirements, a high level of consolidation at some nodes in the chain (mostly at the levels of processing, distribution and/or retail) and high levels of vertical coordination at all nodes of the chain.

The characteristics of high-value chains have important consequences for the participation of small farmers and the distribution of benefits. In this section we go into more detail on the structure and organization of high-value agricultural supply chains.

### 3.1 Increasing food standards

During the past decade food standards, including public regulations as well as private corporate standards, have risen sharply. Fresh food exports to the EU, for example, have to satisfy a series of stringent public requirements, including marketing standards, labelling requirements, regulations concerning contamination in food, general hygiene rules and traceability requirements. Private standards, established by large food companies, supermarket chains and non-governmental organizations (NGOs), also play an increasingly important role in agro-food trade (Jaffee and Henson, 2005). Such standards increasingly go beyond food quality and safety specifications and include ethical and environmental standards as well. Although private standards are not legally mandatory they have become de facto mandatory as a large share of buyers in international agro-food markets now require compliance with such standards, e.g. GlobalGAP standards (Henson and Humphrey, 2008).

Food standards are particularly high for non-traditional, high-value exports (including fruits, vegetables, fish, seafood, but also meat, milk and dairy products). These standards concern perishable goods, which are consumed fresh and are much more prone to food safety risks and quality concerns by consumers. In addition, private food companies and supermarkets use these high-value commodities as strategic products and use standards as a product differentiation tool. Private standards for horticulture products have been increasing especially sharply. Some private standard-setting bodies and certification schemes have initially focussed on fruits and vegetables, e.g. the GlobalGAP (Box 3).

#### **Box 3. The stringency of private standards: EurepGAP/GlobalGAP**

In 1999 the Euro-Retailer Working Group on Fresh Produce (EUREP), consisting of 30 major food retailers in 12 European countries, established the EurepGAP standard, covering 85 percent of fresh produce retail sales in 2004 (Garcia-Martinez and Poole, 2004). The EurepGAP standard consists of a series of protocols for the application of Good Agricultural Practices, initially focused on the production of fresh fruits and vegetables. These protocols include requirements related to site management, varieties, soil management, fertilizer usage, irrigation, crop protection, and waste and pollution management, as well as some conditions on worker health, welfare and wildlife conservation (Jaffee, 2003; Henson, 2006). Independent agencies are assigned for inspection and certification. In 2007, EurepGAP expanded and was renamed GlobalGAP. Currently, GlobalGAP includes many more products, but initially the focus was on fresh fruits and vegetables, indicating that demand for increased standardization of food quality and safety was particularly high for this type of perishable, high-value product.

**Source:** Henson (2006), [www.globalgap.org](http://www.globalgap.org).

Public and private food standards have often been mentioned as barriers for food exports from developing countries but it is remarkable that many poor countries in sub-Saharan Africa (SSA) experienced accelerated growth in fresh produce exports, mostly to the EU, exactly during a period of sharply increased EU food quality and safety standards. As a response to increasing standards in world

markets, several developing countries formulated their own standards and created their own labels. For example, the label *Origine Sénégal* was recently introduced in Senegal. To be exported under this label, Senegalese fruits and vegetables must satisfy a series of quality and food safety requirements which are controlled before the products leave the country.

### 3.2 Increased consolidation in food processing and retail

In the past decades global food-supply chains have become increasingly concentrated, with large food companies and multinational firms dominating the chains. This is most apparent at the level of food retail. Food distribution worldwide is increasingly organized around large super- and hyper-market chains. This so-called “supermarket revolution” first emerged in industrial countries but is spreading rapidly through developing countries as well. The food distribution sector in high-income countries is becoming increasingly concentrated around a few large retail chains. For example, in European countries the five-firm concentration ratio (i.e., total market share of the five top companies) in food retail is particularly high, above 60 percent in many countries, reflecting the dominance of large retail chains.

Food processing and exporting has also become increasingly consolidated. In many countries, there are only one or a few exporting companies. For example, in Senegal the number of firms processing and exporting French beans was reduced from 27 in 2002 to 20 in 2005 and to 14 in 2008. The tomato export sector in Senegal is also heavily dominated by only one multinational company. This same company is also responsible for a high share of the exports of tropical fruits and vegetables from Côte d’Ivoire, Ghana and Mauritania to the European Union.

### 3.3 Vertical coordination

Global food supply chains are increasingly dominated by large multinational food companies, while trade is increasingly regulated through standards set by these private companies or by national, regional and international authorities. This has led to changes in the governance systems of global food-supply chains. Rather than being based on spot-market transactions, high-standard food-supply chains entail varying levels of vertical coordination at different nodes in the chains.

At the import-export node of the chain, this is apparent in the vertical relationships between supermarkets and food importers or specialized overseas suppliers. For example, most West African exporters have *ex ante* agreements with European importers before the start of the season. Some of these agreements are oral and do not include binding specifications in terms of prices or delivery dates. However, most large exporters increasingly engage in more binding contracts with buyers, including a (minimum) price, quantity and timing of delivery. Some exporting firms even receive pre-financing from their overseas partners (Maertens *et al.*, 2005).

Upstream, the changing governance systems in global supply chains have resulted in increased vertical coordination. Producers in developing countries have tight relationships with exporters, food processors and supermarkets in these countries. This is most apparent in the form of contract-farming between agro-industrial firms and local primary producers. In the most extreme case primary production is completely vertically integrated in upstream processing and trading activities.

### A. Contract farming

The contracts that exporting firms offer to farmers are usually specified for one season and indicate the area to be planted, the technical itinerary to be followed – including the variety, type and quantity of fertilizers and pesticides, time of planting and harvesting – and the price. Generally the firms provide the inputs, especially seeds and chemicals, on credit and give technical assistance during the growing season. In some cases this technical assistance even goes as far as the complete management of fertilizer and pesticide application and daily or weekly inspection of farmers' fields. Other firms leave management decisions to the farmers and provide technical field assistance only a couple of times during the season. Apart from credit in the form of inputs, some firms also give cash credit to their contractors. By providing these interlinked contracts, exporting and processing firms solve the credit and input market imperfections faced by producers. By engaging in these tight contracts they assure the quality and accurate timing of production and harvesting that are required for accessing the European market.

For example, the contracts in the French bean sector in Senegal are usually for one season, for 0.5 to 2 ha of land. The firm provides inputs at the beginning of the season and pays the water bill, cash credit is provided, and sometimes the harvesting is arranged by the company with workers paid by the company.

### B. Vertical integration

High value agricultural production and rising food standards are increasingly associated with a shift toward even more extreme levels of vertical coordination. Large exporters increasingly engage in fully vertically integrated estate production in which wage laborers are hired to work at large-scale plantations. This shift is documented, for example, by Minot and Ngigi (2004) for FFV exports from Côte d'Ivoire and by Danielou and Ravry (2005) for pineapple exports from Ghana. Increasing quality and safety requirements, and the difficulty of ensuring these requirements when working with a large number of low-educated small farmers, are usually cited as major driving factors behind the observed supply chain restructuring. In the tomato sector in Senegal (Box 7) no smallholder farmers are involved and 100 percent of tomato exports are produced at a large agro-industrial plantation. Also, in the French bean sector in Senegal (Box 6), a similar case of standards-induced vertical coordination can be observed. Exporting companies have agreed to increase the share of the volume originating from their own estate production and to reduce the share produced through contract farming with smallholders. The companies cited quality rather than quantity as the reason for this change. Even firms that currently rely completely on contract farming mentioned fully integrated production as an important strategy for compliance with food standards in the future and hence for the survival and growth of the firm (Maertens and Swinnen, 2009).

As we will document in the next sections, the governance system in global food supply chains is crucial for understanding how smallholder farmers are involved in these high-value and high-standard agro-food exports.

## 4. Smallholder participation in high-value supply chains

The shift toward high-value agriculture and the characteristics of high-value food supply chains pose major challenges to the participation of smallholder farmers in these markets. In this section we focus first on the economic arguments related to the inclusion or exclusion of smallholder farms. Then we look at the empirical evidence and point out some solutions to improve the participation of smallholders in high-value agriculture.

#### 4.1 Economic arguments on the inclusion or exclusion of smallholders

Without intermediary actors providing linkages to the retail sectors, coordinating the supply chain, and providing technical and financial assistance to overcome the market imperfections faced by smallholders, it is virtually impossible for small farmers to comply with all the requirements of high-value agricultural markets. Small farmers lack access to information on the rapidly-changing food regulations and quality standards in global markets, technical knowledge to comply with complex food safety and hygiene requirements, and financial means to make the necessary investment. Moreover, labelling, certification and hazard control systems typically require large investments which are only feasible on a large scale. Exporting and processing companies have set up systems of vertical coordination, mostly interlinked contract schemes, to overcome these constraints in order to include rural producers.

However, a key concern is that exporting and processing companies, which take a leading role in increasing vertically-coordinated supply chains, will exclude a large share of farmers, in particular small farmers. There are three important reasons for this:

1. Transaction costs favor larger farms in supply chains. There is an important fixed transaction-cost component in the costs of exchanges between farms and companies, such as administrative costs, costs for time spent communicating, negotiating and monitoring contracts, costs related to the storage and transportation of goods, etc. Especially in high-value supply chains, these transaction costs can be extremely high: quality and pesticide use need to be intensively monitored, cool-storing capacity is important, and the timing of planting, pesticide use, harvesting and delivery are all crucial. All this makes it more costly for exporting companies to deal with many small farmers than with a few larger suppliers.
2. When some amount of investment is needed in order to contract with or supply to the company, small farms are often more constrained in their financial means for making necessary investments, either because they do not have sufficient resources of their own or because they have problems accessing external funds in imperfect rural financial markets.
3. When the agro-food company provides input and credit schemes and assistance to overcome financial and technical constraints, small farmers typically require more assistance from the company per unit of output. Small farms are more likely to lack essential management capacity and they are less likely to have at least some of the investments themselves.

These costs would explain why agro-food companies prefer to contract with the larger farmers and why poor smallholder farmers would be excluded. However, empirical observations show a very mixed picture of actual contracting, with many more small farms being contracted than one would predict (Swinnen, 2005). There are several reasons that might explain why companies want to contract with small farmers:

1. The most straightforward reason is that companies have no choice. In some cases, small farmers represent the vast majority of the potential supply base. For example, in the les Niayes region in Senegal (Boxes 4 and 6) where most of the exported French beans are produced, 88 percent of the households cultivate less than 10 ha, which is considered the threshold to be classified as smallholder. Exporting companies therefore necessarily contract with small farmers. The average farm size of contracted farmers is 5 ha.
2. Company preferences for contracting with large farms are not as obvious as one may think. While processors may prefer to deal with large farms because of lower transaction costs in, for example, collection and administration, contract enforcement may be more problematic – and hence costly – with larger farms. In several interviews company managers indicated that (smaller) family farms

- were less likely to breach contracts or to divert company investments than large cooperatives or farming companies (Swinnen, 2005).
3. In some cases small farms may have substantive cost advantages. This is particularly the case in labor-intensive, high-maintenance production activities with relatively small economies of scale. For example, Key and Runsten (1999) present evidence that production costs for small farmers in Mexican vegetable contract production were 45 percent lower than those of specialized farms owned by the processing companies. Costs were lower primarily because of imperfections in labor and land markets. Small farmers had significantly lower labor costs because of access to unremunerated family labor, for which markets are missing, and much lower costs of supervising, transporting and recruiting labor input; also pest control costs were lower due to better crop monitoring and thereby lower chemical use. Further, small farmers' yields in vegetable production were 20 percent higher than on the firm's own farms.
  4. Processors may prefer a mix of suppliers in order not to become too dependent on a few large suppliers.
  5. Processing companies also differ in their willingness to work with small farms. Some processing companies continue to work with small local suppliers even when others do not. These companies have been able to design and enforce contracts which both the small firms and the companies find beneficial. This suggests that small-scale farmers may have better future opportunities when effectively organized.

## 4.2 Empirical evidence

The extent of smallholder exclusion from high-value supply chains is a contentious issue and mainly an empirical question. In horticulture supply chains in countries of sub-Saharan African (SSA) there is a wide variation in the share of produce that is procured from smallholders. For example, the pineapple and banana sectors in Côte d'Ivoire and the vegetable sector in Ghana are largely based on smallholder contract farming (Minot and Ngigi, 2004) while other sectors, such as the tomato sector in Senegal, rely on procurement from large commercial farms or company own estate production (Maertens *et al.*, 2011) (Table 1). Some studies have documented that the share of smallholder contract farming in high-value horticulture supply chains in SSA is decreasing as a result of increasing standards (e.g. Dolan and Humphrey, 2000; Danielou and Ravry, 2005). Other studies have shown that among the smallholders it is mainly farmers with more land and non-land assets who are involved in high-value contract farming while the poorest are excluded (e.g. Minot and Ngigi, 2004; McCulloch and Ota, 2002; and Legge *et al.*, 2006). In contrast, some other case studies in Senegal and Madagascar have shown that small farms are included (e.g.; Maertens and Swinnen, 2009 and Minten *et al.*, 2009).

However, collaboration is costly and farmers' associations will be established only if the benefits from collaboration cover the cost. It is often difficult to establish collectively-approved rules, to secure commitment from members, and to monitor and enforce compliance. The failure of producer organizations is often explained by their attempts to undertake activities that they do not have the experience or skills to undertake (Pingali *et al.*, 2005). In some cases they only serve a few influential people and they often lack the necessary skills and resources (Poulton *et al.*, 2006). Successful association requires management and entrepreneurial skills, which are often lacking in a group of poorly educated small farmers. Especially in the case of high-standards fresh production, technical and coordination skills are extremely important. In addition, such production requires very large investments, such as cooling centres and laboratory facilities, which can be very difficult to finance even for a large and well-organized farmer organization.

**Table 1. Smallholder procurement in sub-Saharan African export supply chains**

Country	Commodity (group)	Year of survey	Share of FFV exports sourced from smallholders	Number of smallholder FFV producers
<b>Ghana</b>	Fruits & vegetables			3,600*
	Pineapples	2006	45%	300-400
	Papaya	2006	10 - 15%	
	Vegetables	2002	95%	
<b>Côte d'Ivoire</b>	Pineapple	1997	70%	
	Mango	2002	< 30%	
	Banana	2002	100%	
<b>Senegal</b>	French beans	2005	52%	600 - 900
	Cherry tomatoes	2006	0%	0
<b>Kenya</b>	Fresh fruits & vegetables	2002	47%	
	Fresh fruits	2002	85%	
	Fresh vegetables	2002	27%	7,000
<b>Madagascar</b>	Fresh vegetables	2004	90-100%	9,000
<b>Zambia</b>	Vegetables	2003		300
<b>Zimbabwe</b>	Fruits & vegetables	1998	6%	10*

Source : Maertens, Minten and Swinnen (2012)

### 4.3 The role of farmer organization in the inclusion of smallholders

The importance of large transaction costs in modern supply chains, which are more efficiently handled at a larger scale, provides an incentive for small farmers to coordinate their activities. Joint certification, quality control, improved access to information, linkages to customers, etc. would allow small farmers to operate at the same scale and cost as larger production units. By reducing the number of small-scale transactions, they can reduce the costs faced by agri-business companies dealing with a large number of small farmers. In this way they can ensure that poor smallholder farmers are also included in contract schemes. Moreover, organizations of small farmers strengthen the voices of small producers facing the highly consolidated retail industry and improve their bargaining power in the negotiation of contract schemes or employment conditions.

#### Box 4. Coordination problems among producer organizations in Senegal

ONAPES (Organisation Nationale des Producteurs Exportateurs du Sénégal) comprises Senegal's largest agricultural exporters (80 percent of exported goods); SEPAS (Sénégalaise des exportations de produits agricoles au Sénégal) comprises approximately 15 smaller exporters/producers. They are involved in all aspects of the supply chain, including the supply of inputs, logistical services, technology services and production of FFV for export market. In response to the increasingly stringent food quality and safety standards, ONAPES exporters are increasingly shifting towards large-scale plantations rather than contract farming. On the other hand some SEPAS members are finding it difficult to guarantee the required supply and quality level asked for by overseas customers. Most of the exporting or processing companies in Senegal work with individual farmers, not with farmer organizations.

Small-scale producers in Senegal are organized in federations such as the Federation of Vegetable Growers in the Niayes region (FGMN, Fédération des Groupements Maraîchers des Niayes), which groups 18 000 small scale producers, and the National Union of Vegetable Producers (UNMS, Union Nationale des Maraîchers du Sénégal). But these producer organizations often lack organizational and managerial skills at their lower levels and face difficulties in formalizing links with private investors and in coordinating the different groups.

The Senegalese government is currently coordinating the PDMAS program (Projet de Développement des Marchés Agricoles au Sénégal) to promote the development of high-value agricultural export products. This project specifically focuses on linking small producers and private stakeholders, to ensure the inclusion of small farmers. A major challenge of this program will be to achieve sustainable cooperation between the different organizations of exporters, and between exporting and processing companies and smallholder farmer organizations.

**Source:** Authors' research.

Therefore, it is crucial to establish sustainable partnerships between producers' organizations and private sector actors. It is argued that the best strategy to support farmer organizations is to concentrate on linking farmer organizations with existing private sector channels (Stockbridge *et al.*, 2003). Cooperation between farmer organizations and the private sector reduces transaction costs for both parties. The private sector may have interest in supporting farmer organizations in order to access sustainable quantities or acceptable quality of products. Hellin *et al.* (2009) argue that at the initial stage there is an important role for public policy and development agencies to establish producer groups and to build managerial and technical capacity. As farmer organizations evolve, it is critical to link them with private sector actors. In the sector of cotton exports, there are now models of farmer organizations capable of engaging both with commercial and public service organizations, following moderate inputs of outside training and facilitation (Bingen *et al.*, 2003). In Ghana, a private processing company promotes the establishment of farmer organizations to reduce transaction costs related to quality standards (Box 5).

The exclusion of small farmers from contract schemes with exporting agro-food companies remains a debated issue. The decision of an agro-food company to contract individual farms or to set up its own large-scale production site is likely to depend on a number of different factors. The more delicate the product and the stricter the quality and safety standards, the more costs are involved in working with a large number of small and often very poorly educated farmers. Also, the availability of cheap labor, land and water in the region can be determining factors. When land and water are easily accessible, it might be more profitable for the firm to set up its own large production site as is the case in the tomato

**Box 5. Private support for farmer organizations in Ghana**

An example of successful cooperation between private investors and a local producer organization is the Blue Skies Company Ltd. in Ghana. The company was established in the Eastern Region of Ghana in 1998 by a private investor to process fresh chilled pineapple, mangoes, watermelon, passion fruit and papaya for export, mainly targeting European supermarkets. Its products had to be certified as meeting the EurepGAP protocol for quality practices. To ensure this, the company established linkages with farmers and undertook the technical and financial responsibility for certification for all its suppliers. The company sources from some 135 suppliers, including 77 small-scale producers of pineapple. Blue Skies does not work with formal cooperatives, which in Ghana were active mainly in the traditional export and staple crops, but with smallholders in groups which the company itself has promoted.

**Source:** Gorman and Webber (2010).

export sector in the Senegal River Delta (Maertens, Colen and Swinnen, 2011). On the other hand, when the distribution of land is such that there are only small farms, the company has no choice but to work with these farmers, for example in the French bean sector in Madagascar (Minten *et al.*, 2009) and the French bean sector in les Niayes, Senegal (Maertens and Swinnen, 2009).

## 5. Direct and indirect benefits for smallholders

Horticulture exports clearly offer important potential for raising rural incomes and reducing poverty because of their high intrinsic value and labor intensity (see e.g. Aksoy and Beghin, 2005; Anderson and Martin, 2005; World Bank, 2008). Many African countries pursue the development of horticulture export supply chains as a specific poverty-reduction strategy. The main focus of policy-makers and donors for achieving pro-poor growth through high-value agricultural production has been on finding ways to assure the inclusion of smallholder producers in profitable high-value chains and contract-farming schemes.

However, smallholder producers might also benefit from the development of high-value agricultural exports through labor market effects. The growth in high-value supply chains has been associated with increased employment in agro-industrial firms. Where high-value export supply chains have moved from being based on smallholder contract farming toward agro-industrial estate production, additional employment has been created on the fields belonging to these companies. Moreover, employment has been created in post-harvest processing and handling of high-value produce as more stringent requirements for sorting, grading, washing and labelling, etc. incorporated in public regulations and private standards have increased the need for labor-intensive post-harvesting activity.

We document the importance of these labor markets effects in the case of SSA horticulture exports in Table 2, showing figures on the number of employees in horticulture agro-industries in several subsectors and countries. The figures show that in many poor African countries, thousands of people are employed in the horticulture agro-industry. Part of this employment might consist of urban jobs in processing units and pack houses but the lion's share is rural employment. Moreover, a major share of the thousands of employees in the SSA horticulture agro-industry is female.

**Table 2. Employment in Sub-Saharan African export horticulture supply chains**

Country	Commodity	Year of survey	Number of employees in the FFV agro-industry	Share of female employees
<b>Cameroon</b>	Banana	2003	10,000	
<b>Côte d'Ivoire</b>	Banana and pineapple	2002	35,000	
<b>Kenya</b>	Flowers	2002	40,000 - 70,000	75%
	Fruits and vegetables		2,000,000	
<b>Senegal</b>	French beans	2005	12,000	90%
	Cherry tomatoes	2006	3,000	60%
<b>Uganda</b>	Flowers	1998	3,300	75%
<b>Zambia</b>	Vegetables	2002/03	7,500	65%
	Flowers	2002/03	2,500	35%
<b>South Africa</b>	Deciduous fruit	1994	283,000	53%

**Source:** Maertens, Minten and Swinnen (2012)

These employment and labor market effects have received only limited attention by researchers and policymakers. Yet the studies that have taken labor market effects into account in their analysis of the welfare implications of high-value export expansion in developing countries all point to the importance of these effects. For example, McCulloch and Ota (2002) show that employment in the Kenyan horticulture export industry is especially important for the poor. Barron and Rello (2000) find that the tomato agro-industry in Mexico provides jobs for the rural poor, thereby contributing to raising rural incomes in poverty-stricken regions of the country.

For West Africa, our own case studies from Senegal – which are discussed in detail in Boxes 6 and 7 below – show how employment in high-value agro-food exports contributes largely to the income of the poorest households. These case studies document diversity in supply chain responses to increasing standards and the channel through which households benefit in a direct way.

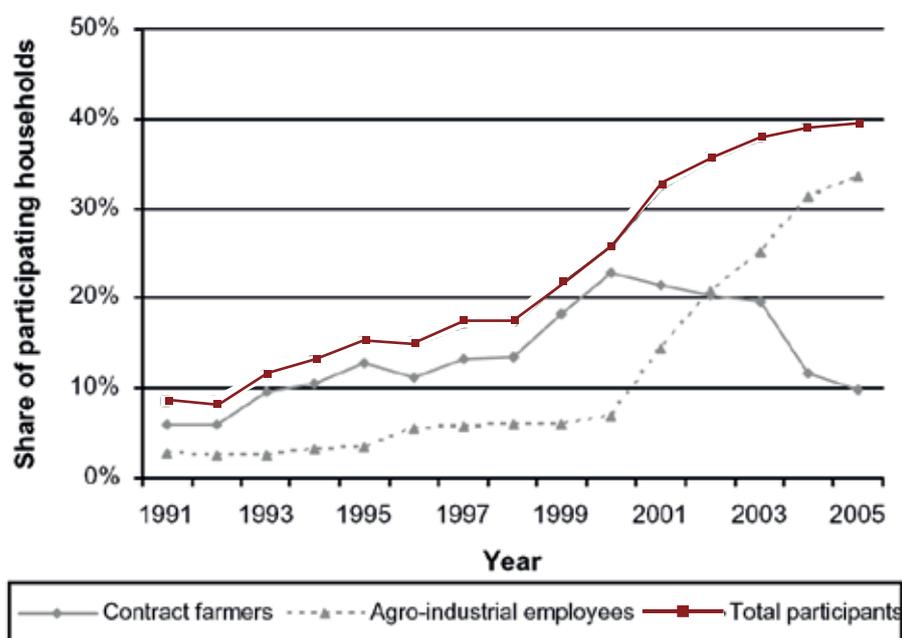
Besides the direct income effects resulting from agro-industrial wage employment, several indirect beneficial impacts are likely to be associated with this type of employment. For example, Maertens (2009) shows how access to unskilled employment in the export agro-industry has contributed to alleviating farmers' liquidity constraints, resulting in increased smallholder agricultural production. Households with agro-industrial employees cultivate between 17 and 37 percent more land and spend between 23 and 75 percent more on agricultural inputs than households without such employment. These significant effects imply that off-farm income is partially invested in the family farm and point to the existence of farm/non-farm investment linkages at the household level. In addition, there might be management and technology spillover effects related to employment on large agro-industrial estate farms.

Another important indirect effect relates to the large share of female workers in employment in high-value agricultural supply chains; gender implications can therefore not be neglected. Based on the case studies in Senegal and wider evidence for other developing countries, Maertens and Swinnen (2012) conclude that the growth of modern supply chains leads to increased feminization of rural labor markets, reduced gender inequalities in rural labor markets, increased female empowerment and economic independence.

### Box 6. Income and poverty effects of French beans exports in Senegal

In the French bean export sector in Senegal increasing standards have induced a shift from smallholder contract farming toward vertically-integrated estate production by the exporting companies. It is estimated that smallholder procurement decreased from 95 percent in 1999 to 52 percent in 2005. The largest companies especially changed their procurement system and started their own integrated estate farms as part of a strategy to become GlobalGAP-certified. The shift from smallholder contract farming toward integrated estate farming observed in the bean export sector in Senegal has also shifted the way local households benefit: increasingly through agro-industrial employment and labor market effects rather than through contract farming and product market effects.

Figure 6. Trends in contract farming and employment impact in export-led agro-processing



Although both effects result in significantly higher incomes, the shift in supply chain governance has resulted in a stronger poverty-alleviating effect of high-value horticulture exports.

Figure 7. Revenue and employment effects from contract farming in export agro-industry

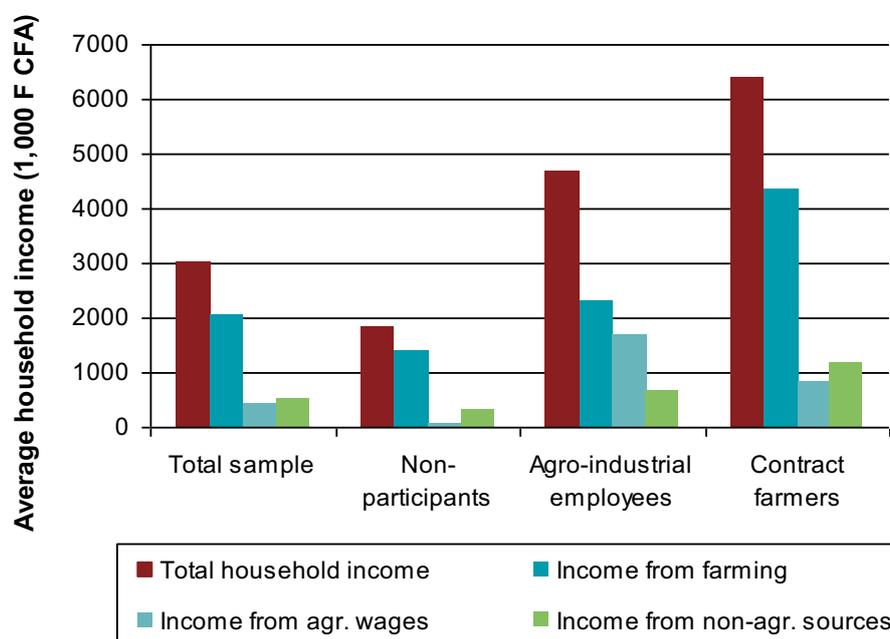
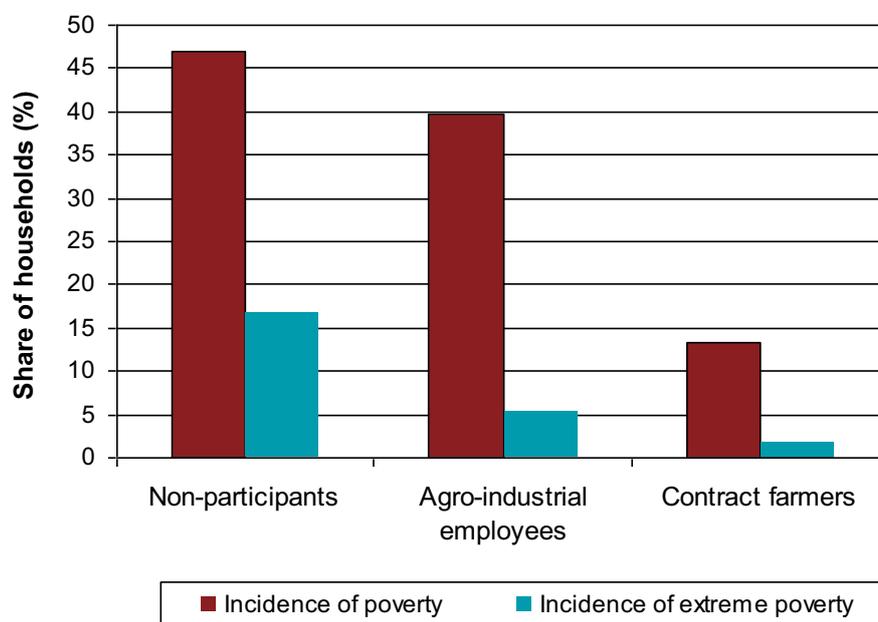


Figure 8. Poverty impact from contract farming, employment and non-participation in export agro-industry



The case study results show that the poorest households mainly benefit through agro-industrial employment while contract farming is biased toward relatively better-off households with more land and non-land assets.

**Source:** Maertens and Swinnen (2009)

### Box 7. Complete vertical integration in the tomato export sector in Senegal

The Senegalese tomato export sector is dominated by one multinational company which was established and started exporting tomatoes from Senegal to the EU in 2003. The export supply chain is completely vertically integrated. Smallholder procurement is 0 percent and production, processing, trade and distribution is completely integrated within the subsidiaries of the multinational companies. In the tomato export sector in Senegal rural households therefore only benefited through labor market effects.

This case study also shows that it is mainly the poorest households who benefit from the labor market effects of increased high-value horticulture exports.

Figure 9. Revenue impacts for farmers working or not in the tomato industry

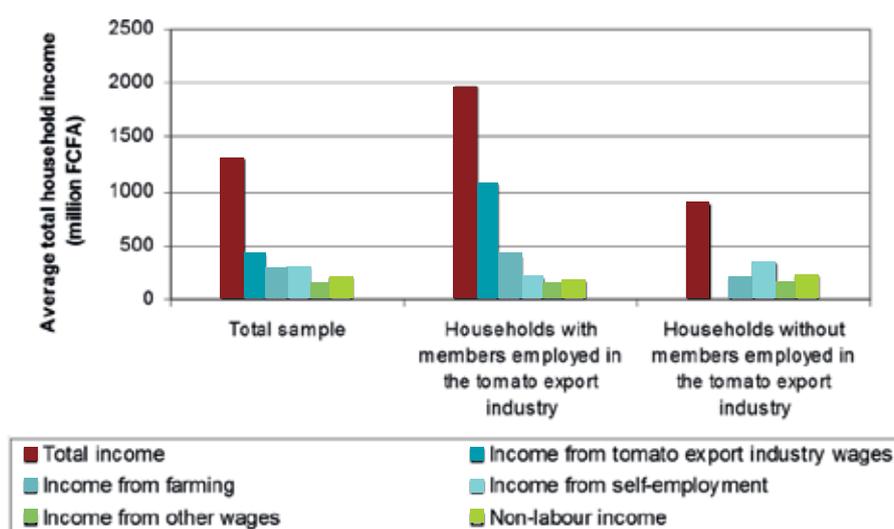
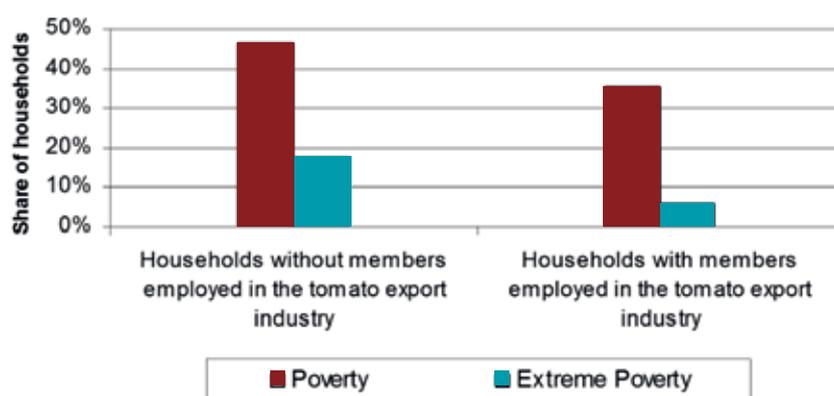


Figure 10. Poverty impact from participation in tomato processing



Households employed in the tomato export industry, either in the fields or in the processing units of the company, have incomes that are more than double the incomes of other households in the region although they initially, before the multinational company started investing in tomato exports in 2003, had lower land and non-land asset holdings. Increased tomato exports have resulted in increased employment, increased incomes and ultimately reduced rates of poverty and extreme poverty.

Source: Maertens, Colen and Swinnen (2011).

## 6. Policy implications

The importance of high-value agricultural markets in developing regions, including West Africa, has increased greatly over the past decades and is mainly directed towards export markets in the European Union. The shift away from traditional export crops, toward non-traditional high-value agricultural products is accompanied by structural changes. High-value agricultural supply chains are characterized by stringent food standards and high levels of consolidation and vertical coordination. These changes create important opportunities for enhancing agricultural productivity and for increasing rural incomes and reducing poverty but they also impose major challenges for West African countries and for the most resource constrained households. These challenges and opportunities create an important role for policy initiatives which can address the main constraints related to the development of high-value agricultural supply chains and to the participation of the poor in these chains.

In this final section we present policy recommendations to enhance welfare benefits for the rural poor in West Africa. We start with general recommendations, followed by discussion of more detailed policy issues.

The first general recommendation is recognition of the importance of high-value chain development and the vertical coordination phenomena in global and domestic agro-food chains and therefore the need to integrate these developments explicitly: into policy and programme strategies. Structural changes and vertical coordination in high-value agro-food chains are also important developments in low-income countries, in the light of economic growth as well as poverty reduction and rural development. Most West African policy-makers have not integrated these structural developments so far.

The second general issue is that there is significant policy variation across countries and sectors. The implication is that there is no one-size-fits-all strategy but instead several models of supply chain coordination, reflecting commodity characteristics, the distribution of land and labor in the region, and different stages of development. Optimal policies and policy components will also need to differ and change to reflect these differences.

The third general concern is that most policy attention by far has gone to the effect on smallholders. However, it is crucial to recognize and support the beneficial effects of employment in the high-value agricultural sector. The potential beneficial welfare effects from wage employment in high-value agricultural supply chains are usually overlooked by policy makers. As the shift to more integrated employment in agro-industrial firms becomes more pronounced, the direct and indirect effects of this employment should be appreciated and considered in the overall strategy of rural development.

In the rest of this section, we discuss in detail some key policy issues that are relevant for reaping the potential benefits created by high-value supply chains. First, we propose some policies that enable and stimulate the development of these chains, then focus on policies that enhance the participation of smallholders in high-value supply chains.

### 6.1 Enabling and stimulating the development of high-value supply chains

When policy-makers want to increase the benefits for small farmers through their participation in high-value agriculture, an initial series of policy issues consists of enabling and stimulating the development of these high-value supply chains. There is a need to increase the capacity for producing high-quality and safe food. Some low income countries have been able to establish the regulatory, technical and

administrative arrangements to meet tightening standards in high-value agricultural markets. In addition to increasing the capacity to supply high-quality and safe food, there is a need to create the capacity to respond quickly to emerging food safety issues, changing legislation and a variety of private standards. We indicate some key elements for improving the capacity for compliance to food standards:

### **A. Improving administrative, infrastructure, technical, scientific and judicial capacity**

The public sector can play a role in improving the administrative, infrastructure, technical and scientific capacities for the production and marketing of high-standard food products. The development of food safety management and control systems is essential for participation in the growing high-value agricultural markets and involves attention to the legal system, institutional transformation, human capital formation, and physical infrastructure. Government investment in projects, institutions, and technical assistance to stimulate higher quality and to strengthen public sector quality testing are necessary for building food quality and safety capacity. This could include the development of systems for accreditation, conformity assessment, labelling and certification (e.g. Origine Sénégal), establishment and maintenance of monitoring and control systems, investment in laboratory units and scientific human resources, as well as laying down directives for good agricultural practice, promoting better post-harvest practices, developing better traceability systems, etc. However, certain investments, such as in cold storage capacity and transport facilities are more efficiently dealt with by the private sector. High-value chains are typically characterized by vertical coordination to guarantee quality and food safety throughout the supply chain. To stimulate the development of high-value chains, it is therefore crucial to enable and stimulate vertical coordination. This may entail institutional changes, such as specifying property rights, creating the right judicial system and supporting contract-enforcement mechanisms.

### **B. Farmer and business assistance programmes**

Preparing suppliers for quality- and standards-driven markets will make it easier for them to be integrated in high-value agricultural markets. Farmers and smaller agro-food businesses, in particular, face substantial constraints on gaining access to information about changing food safety legislation and quality standards in global markets, as well as translating that information into specific investment needs to realize those investments and manage high-quality production. Farmer and business assistance programs can play a crucial role in providing technical and market information, appropriate credit schemes, and technical assistance for high-value production. In addition, there is a potential role for the government and international organizations in establishing and developing sustainable trading relationships through specific marketing assistance programs.

### **C. Demonstrating capacity for producing high-standard food**

In order to participate in high-value global supply chains, developing countries need to demonstrate their capacity for high-standard food production. It is not enough to comply with stringent food standards; this compliance also needs to be demonstrated, such that specific food products from specific countries are perceived as safe and high-quality products by domestic and foreign consumers. Therefore, conformity in quality and compliance to food safety standards are crucial. Even if individual private firms are able to comply with strict requirements, a country as a whole will not be able to gain market access and significant market share if there is no conformity. This requires specific measures, such as labelling, certification and promotion of high-value products, which involve public as well as private investments.

#### **D. Stimulating investment in the agro-food industry**

Probably one of the most essential elements for integration in and development of high-value food supply chains is to encourage private investment – domestic as well as foreign – in the agro-food industry. A good investment climate is the driving force behind economic growth and poverty reduction, and policy uncertainty is the primary concern of firms in developing countries. There is ample evidence that a poor policy environment has a negative effect on investment in the agro-food industry and on vertical coordination programs. As such it constrains integration in high-value supply chains and the beneficial effects of vertical coordination. Macro-economic stability is also a key condition for stimulating domestic investment and attracting foreign investors but this is even more the case for supplier assistance programs or other forms of chain-based finance in vertically integrated supply chains. Because vertical coordination is a financial activity, significant economic instability may cause coordination and enforcement failures, leading to a collapse of contract schemes and obstructing the development of high-value supply chains.

Foreign investment in the agro-food industry can play an important role in increasing the supply capacity for high-standard agricultural production in developing countries and facilitating their integration in global supply chains. Because of their links with their home economies and with subsidiaries in other countries, foreign investors and multinational companies have better access to high-value agricultural markets, better knowledge about food safety and quality issues, and enhanced financial and technical capacities to meet compliance with food standards. This might develop the supply and marketing capacity of the host economy as a whole and through spillover effects improve the capacity of domestic firms.

#### **E. Rethinking the role of government**

The development of high-value supply chains and vertical coordination requires a fundamental reconsideration of the role of the government in policy-making. Large companies develop their own standards, their own extension services, supply channels and wholesale exchange institutions, quality testing, etc. Some of these activities are in areas where governments were traditionally considered to play an important role. Hence there are fundamental and difficult questions about the role of the government in such a changed environment.

A central focus needs to be on collaboration between private companies – which play a crucial role in the supply chain process – and public authorities and international organizations. Successful public-private partnerships require a well-organized private sector, with representative and effective farmer business associations that are supported by the government, and a forum for communication. For example, because private companies are often better informed about technical possibilities, private sector involvement is important in public standard setting, development of certification procedures, and the establishment of control systems for food safety. Also, several innovative chain-based financing instruments in high-value supply chains have arisen as private initiatives, which have a (limited) role for government. Government intervention could include provision of the regulatory and legal system which is required for these instruments to function, or government may play a role in co-financing seed money to start up some of these innovations. Governments should be open to innovations which explicitly take into account the supply chain as a structural aspect of the financing problem, while being clear eyed on the role international organizations and the government should play.

A successful example of a partnership between the private and public sector contributing to positive development is a recent collaborative project between the Michigan State University-based Partnership for Food Industry Development (PFID), South African retail chains and local NGOs. This collaboration,

financed by the United States Agency for International Development (USAID), has led to the creation of a framework approach in which small farmers' access to seeds, services, finance and output markets are integrated – much like vertical coordination in private sector driven models. This has led to upgrading of small farmers' supplies and integration of small farmer groups in South African supply chains. Retail chains are interested in working with USAID in Africa to replicate this system.

## 6.2 Enhancing the participation of small farmers

For policy-makers concerned with pro-poor economic growth, enhancing efficiency and equity in high-value agricultural supply chains is a key goal. Therefore, it is crucial to ensure the participation of the rural farm population in these supply chains as well as equitable distribution of rents in the chain.

### A. Reduce transaction costs

The disadvantage for small farmers in high-value supply chains is partially due to transaction costs. Therefore, government policy needs to focus on reducing transaction costs. This can be done in several ways.

First of all, vertically-coordinated systems are a private sector response intended to overcome transaction costs faced by small, individual farmers (access to information, costs related to quality control, etc.) and should therefore be promoted.

Second, the transaction costs faced by private actors interacting with a large number of farmers could be reduced by investing in intermediary institutions. Intermediary institutions reduce the number of transactions and the cost of exchange between farmers and processors or input suppliers. Specific investments could include the creation of farm associations and collection points where processors and retailers can source from many small suppliers at low transaction costs.

### B. Investment in infrastructure

Improvements of rural infrastructure can reduce transport costs and, more generally, the cost of including supplies from remote areas. Rural infrastructure is a serious constraint on the development of high-value agricultural activities, and particularly on integrating smaller producers and those in more remote areas. For example, bad roads, regular electricity interruptions, and lagging communication impede the coordination between producers, traders and processors, and constrain investments. Public investments in such infrastructure would stimulate agribusiness investment, vertical coordination with suppliers and inclusion of small farmers in remote areas.

### C. Investment in farmers associations

Producer organizations can play an important role by enlarging the scale of the units that traders have to deal with and by improving small farmers' bargaining power. By combining a large number of small farmers, producer organizations reduce the number of transactions for the agro-food processor or exporter. Stimulating farmer associations is an often-mentioned policy – in fact, it is hard to find a policy document which does not describe it as important. However, creation of farmer associations that are integrated in the coordination system of high-value agricultural supply chains might require

innovative approaches. Producer organizations often lack technical background and coordination skills to manage the quality requirements. Governments and development agencies play an important role in supporting the capacity building of producer organizations, especially in establishing and promoting linkages between farmer organizations and the private sector.

#### **D. Enforce competition**

Competition in high-value supply chains is of great importance, both for efficiency and equity. Competition induces processors, retailers, and input suppliers to provide more supplier-assistance programs and it constrains rent extraction from suppliers by up- or downstream companies. Given these strong benefits of competition for farmers in the chain, ensuring competition is an important role for the government. Competition should be enforced through both domestic policies (e.g. competition policies, lower barriers of entry) as well as external policies (e.g. liberal trade policies). The importance of competition does not apply only to private companies, but also holds when the government directly or indirectly imposes a monopoly system, thereby extracting rents from farms. Moreover, competition is also important on the input side. The existence of alternative channels of credit or inputs will constrain rent extraction in the supply chains. Therefore investments in alternative sources of farm finance, such as cooperative credit associations and microcredit institutions, should be supported and continued.

#### **E. Enhance the bargaining power of farmers**

Empowering farmers is necessary to strengthen their position in the chain and vis-à-vis governments, enabling them to bargain for better contract deals, better policies, etc. Several of the policies mentioned earlier will contribute to this objective, such as stimulating farmers' associations, investing in quality control institutions, and establishing competition policies. There are a number of additional policy measures which can enhance the bargaining position of farmers.

1. Empowering farmers involves investment in institutions to assist farms with contract negotiations and dispute settlements. Measures to increase the transparency of the contract system, provide for dispute-settling arrangements, provide market benchmarks for price negotiations and train farmers in their rights/obligations as contractors are all important to increase competition among contracts, and thereby the bargaining position of farmers. As it is generally either not possible or too costly to resolve disputes in court, alternative dispute-settlement institutions can play an important role.
2. Empowering farmers also requires investment in (independent) institutions for quality and safety control and certification. Investing in quality control centers has the additional advantage of enhancing the bargaining power of suppliers and ensuring appropriate payments for quality in the chain. This will lead to better investment incentives and more equal distribution of rents. Improving quality controls, e.g., by introducing an independent control institution or by letting farm representatives participate in the evaluation, has both efficiency and equity benefits.
3. Empowerment of farmers will also come from having alternative options in accessing inputs and selling their products. Hence, it is important to encourage alternatives in input and output markets. Competition and liberalization of export regimes will also enhance the position of farmers. Investments in projects and institutions supporting higher quality will contribute to this goal.

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