

Enhancing farmers' access to markets for certified products: A comparative analysis using a business model approach



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Executive summary

Certified products are those differentiated on the basis of specific quality attributes that can be certified under various schemes. Participation in markets for certified products can represent a good income generation opportunity for small farmers in developing countries. However, to avail of this opportunity they would have to comply with voluntary quality and safety standards and procedures. Such compliance involves quality and safety assurance, brand development, product niche definition and shifts in the chain coordination. In brief, it means changing the way farmers are doing business.

The present study is directed at development practitioners working on ways to support the development of markets inclusive of small farmers. It focuses on identifying business models (BM) and innovative institutional arrangements that enhance small farmers' access and permanence in segmented markets, where they can obtain higher prices for certified products. The schemes covered in this study are organic agriculture; good agricultural practices (GAP) and geographical indications (GI).

The paper opens with the development of an analytical framework, putting forward an agreed definition and a conceptual framework for carrying out a comparative analysis of a selection of case studies on certified products conducted by FAO. This analysis is organized around the four building blocks that form the framework, namely: i) strategic choices; ii) elements creating value; iii) value capture and income generation; and iv) actors and factors forming the value network around farmers. The objective is to learn from each BM in order to identify success factors at the farmer level, as well as at the level of other value-chain actors and strategic partners. The success factors are identified and categorized into the BM's building blocks:

- **Strategic choice.** This implies:
 - i) having a clear target market to maximize the performance of market linkages will determine which types of standards and certification schemes are the most advantageous for a specific situation;
 - ii) having an efficient producer organization in terms of production and management will enable sustainability of a BM by insuring longer-term income generation and maintenance of the certification;
 - iii) that farmers should retain some ownership of the certification and control over the quality management and monitoring systems to ensure long-term market performance, even when the certification process is driven by other value-chain agents;
 - iv) the appropriation of standards by farmers is essential in order for them to understand the underlying principles behind the standards, and adapt them to their conditions; the participation of producers in promotion activities is crucial to allow producers to become aware of consumers' preferences for their products;
 - v) that producers of certified products have opportunities to diversify their income generating activities and their market segments by linking their production to other local sectors such as agro-industries or tourism.

- **Value creation.** Creating value involves:
 - i) building farmers' capacity with long-term vision and interventions based on a continuous learning process is necessary to allow farmers to obtain and maintain the certification;
 - ii) adding value to a food and agricultural product through attributes that are clear for farmers and consumers: farmers should understand the characteristics that are valued by consumers and the principles on which the certification process is based, while consumers need to have a clear idea of the attributes that add value and differentiate the product from others.

- *Value capture.* The main issues regarding value capturing are:
 - i) farmers often expect an attractive price premium when they embark upon a certification process for high-value products, but they may or may not receive this, depending on market performance and sale contract conditions;
 - ii) group certification or other cost-efficient schemes are necessary for farmers to face the various costs directly or indirectly related to the certification process and maintenance;
 - iii) the costs and benefits of joining a certification process should be clear to farmers.

- *Value network.* This implies the following:
 - i) farmers should be able to have access to information about markets in order to increase their bargaining power and implement effective marketing strategies;
 - ii) bargaining power is important to allow farmers to gain control over their business activities and improve their negotiation position in the value chain;
 - iii) participatory processes are necessary for farmers to understand impacts on their livelihoods and for intermediaries to support the product when developing market access, to differentiate the product at the point of sale and to preserve the value of the products;
 - iv) the development of a strong linkage with a strategic partner is often necessary, as most small farmers lack the capacity to participate in a certification scheme without strong and sustainable support from an external actor.

From the comparative analysis of the case studies, three main BMs for certified products emerge. They differ in the actor driving the certification process, which in turn influences market performance and the approach to capacity building. The first model involves a non-private entity as the initiator of the process, namely a governmental body, international development agency, non-governmental organization (NGO) or other institution. In the second model, the process is driven by a private sector agent, such as a processor, exporter or retailer. The third model involves producer organizations as drivers of a certification or registration process.

The main challenge for stakeholders in agrifood chains is to reach a win-win situation based on these models, by achieving the right mix of public and private sector efforts to increase market performance, and to provide long-term capacity building and adequate certification control systems that ensure the sustainability of BMs for small farmers.

Acronyms

BM	business model
BRFO	Bak Ruea Farmer Organization (Thailand)
EU	European Union
FAMA	Federal Agricultural Marketing Authority of Malaysia
FAO	Food and Agriculture Organization of the United Nations
FFV	fresh fruits and vegetables
FNC	National Federation of Colombian Coffee Producers
GAP	good agricultural practices
GI	geographical indication
GMO	genetically modified organism
HCDA	Horticulture Crop Development Authority (Kenya)
ICS	Internal Control System
IFOAM	International Federation of Organic Agriculture Movements
IICA	Inter-American Institute for Cooperation on Agriculture
INTA	Instituto Nacional de Tecnología Agropecuaria (Argentina)
NGO	non-governmental organization
PO	producer organization
QM & CS	Quality Management and Control System
SALM	Farm Accreditation Scheme of Malaysia
SME	small and medium enterprise
TOPS	Top Organic Products and Supplies Company Limited (Thailand)
TRIPS	Agreement on Trade Related Aspects of Intellectual Property Rights
UNESCO	United Nations Educational, Scientific and Cultural Organization
WTO	World Trade Organization

1. Introduction

Agriculture in developing countries has encountered challenges and deep changes in the last decades. Increasingly stringent food standards, retail consolidation, trade agreements and consumer trends have all had a strong impact on the agrifood sector. Both domestic and export chains have had to adjust to address rapidly changing production, marketing and economic conditions, particularly reflected in the new-found commitment to food quality and safety.

Small farmers in developing countries wishing to participate in markets for certified products have to comply with voluntary quality and safety standards. In fact, compliance with some of these standards has become de facto compulsory to access markets in developed economies. Such compliance involves quality and safety assurance, brand development, product niche definition and shifts in the chain coordination. In brief, it means changing the way farmers are doing business.

The present study focuses on identifying BMs and innovative institutional arrangements that enhance small farmers' access and permanence in segmented markets, where they can obtain higher prices for certified products. The concept of BM used in this paper builds on the work carried out by AGS about BM in the context of agro-industrial development, and in particular for the preparation of the Global Agro-industries Forum held in India in 2008 (Vorley, Lundy and MacGregor, 2009), but it has been adapted to the specific case of certified agricultural products.

The paper opens with the development of an analytical framework and puts forward an agreed definition and a conceptual framework for carrying out a comparative analysis of a selection of case studies on certified products. These case studies, commissioned by FAO, cover three widespread certification schemes, namely: i) organic certification; ii) private and public national Good Agriculture Practices (GAP) programmes; and iii) Geographical Indications (GI).

2. Methodology

The methodology used in this study combined the following: review of secondary information, documentation of case studies and information analysis. By gathering and analysing literature on business models, it was possible to develop a conceptual framework to analyse a selection of case studies covering three markets for certified products in Asia, Africa and Latin America:

- Organic-certified products;
- GAP-certified products;
- GI products.

2.1 SECONDARY INFORMATION

A literature review on the definition of BM was carried out in order to establish a logical framework for analysing the case studies on certified products. The objective was not to provide a universal definition, but to explain the concept of BM and how it can be relevant as a framework when analysing market access for small farmers.

The literature review entailed a selection of articles from management and development journals. Most literature references were from business articles specialized in e-business and Internet commerce. A review of FAO publications was also carried out in order to gather information on the main issues related to standards for food and agricultural products, as well as challenges facing small farmers in modern value chains.

2.2 SELECTED CASE STUDIES

The case studies were already available as part of ongoing initiatives undertaken by FAO. (See summary of the case studies in Annex 1).

Organic certification

The results of the organic case studies have been published in a synthesis report (Santacoloma, 2007a) and in a selected cases report (Santacoloma, 2007b). They were originally conducted by FAO as an economic assessment on the certification costs and managerial skills needed by farmers in developing countries. The six case studies were:

- Organic jasmine rice farmers, Northeast Thailand: Top Organic Products and Supplies Company Limited (TOPS);
- Organic jasmine rice farmers, Northeast Thailand: Bak Ruea Farmer Organization (BRFO);
- Organic basmati rice farmers, Northeast India;
- Horticulture farmers participating in the ECOVIDA Agro-ecological Network, Brazil;
- Organic horticultural farmers, Hungary;
- Organic horticultural farmers, Czech Republic.

GAP certification

The case studies related to GAP certification were commissioned by FAO to enquire about capacity building and investments needed to comply with GlobalGAP standards in various countries, as well

as support activities needed to be developed by public and private actors in order to assist farmers. GlobalGAP (formerly known as EurepGAP) are quality and safety standards set up by a private entity, the Euro-Retailer Produce Working Group.

Many countries have started to develop national GAP programmes, either initiated by the private or public sector, or a partnership of both. These all plan to benchmark or are already benchmarked to GlobalGAP standards. These case studies refer to the national programmes developed in Kenya (Mung'oma, 2006), Chile (Villalobos, 2006) and Malaysia (Robert and Menon, 2006).

Geographical indications

The GI case studies were commissioned by FAO with the collaboration of the Inter-American Institute for Cooperation on Agriculture (IICA). They are part of research on the process and impact of the registration of products with specific quality linked to origin in developing countries. The case studies reviewed the advantages and challenges of going through a process for registering a GI¹, the success factors related to economic and social aspects, as well as the conservation of resources and sustainable rural development issues.

These case studies concern the following products:

- Turrialba cheese (Queso Turrialba), Costa Rica;
- Colombian Coffee (Café de Colombia), Colombia;
- Norte Neuquino's baby goat (Chivito criollo del Norte Neuquino), Argentina;
- Pica lime (Limón de Pica), Chile;
- Cotija cheese (Queso Cotija), Mexico;
- Cocoa Arriba, Ecuador;
- Cocoa Chuao, Venezuela;
- Cuzco's giant white corn (Maíz blanco gigante de Cuzco), Peru.

1 In most GI systems, products do not undergo a certification, but a registration procedure at a relevant institution.

3. Developing an analytical framework

3.1 BACKGROUND

Over the past decade, extensive research has been carried out on BMs, allowing for a vast literature review on the subject. Academic research on the concept was mainly formulated in the context of e-business and e-commerce (Shafer, Smith and Linder, 2005). Although BMs have always existed, they started being popular only when, driven by the Internet, systems to create value changed dramatically, as we entered the new information era. Since then, the idea of BMs has been widely discredited because of the abuses in using the term (Porter, 2000). However, it remained supported by researchers, who tried to establish definitions, as it became a managerial research topic in itself.

Diffusion of the term is now widespread in e-commerce ventures as well as in development, particularly in the context of enterprise development and small farmers' access to markets. For example, see USAID, 2006. Although many make reference to the specific term, no one has provided a clear definition, thus creating more confusion and promoting a wrong use of BM in the long run. Some authors refer to organizational models, other to revenue models (see Table 1 from Linder and Cantrell, 2001), growing apart from the original idea of BM as intended by most for-profit practitioners who started using the concept. There is nothing wrong with adapting a concept to one's own context; however, the concept needs to be defined before it is used systematically.

In the absence of an officially agreed definition of BM, the topic remains somewhat undefined. Therefore, it is crucial to put forward a definition in order to communicate the same message and use it in the context of an analytical framework.

Table 1. Different meanings of business model

They say "business model", but they mean:	For example:	As in:
Pricing model	<ul style="list-style-type: none"> • Cost plus • (CPM) cost per thousand) 	"Free is almost a default mode on the web". Fortune, March 1998
Revenue model	<ul style="list-style-type: none"> • Advertising or broadcast model • Subscription or cable model • Free-for-service 	"The solution for many established companies and start-ups has been to apply traditional business models, such as advertising, subscription services and retail sales to the web..." Webmaster Magazine, October 1998
Channel model	<ul style="list-style-type: none"> • Bricks'n'mortar • Chicks'n'mortar • Direct-to-customer 	"Disintermediation is already taking a hit on the business-to-consumer front, where new business models, such as cobranding and digital channel management are beginning to take hold." Computerworld, December 1999
Organizational form	<ul style="list-style-type: none"> • Stand-alone business unit • Integrated Internet capability 	"The eCommerce Steering Committee considered the following electronic commerce business models: skunkworks, standing steering committee, eCommerce executive VP, new business unit, spin-off and outsourcing." Big 5 Consultant, December 1999

Source: Linder and Cantrell, 2001.

3.2 BUSINESS MODEL AND BUSINESS STRATEGY

BMs have repeatedly been confused with various things, and in particular with strategy or organizational strategy. According to Linder and Cantrell (2001), BMs are often mistaken with some of their isolated parts, thus naming BM something that is in fact only one of its components. They found as well that 71 percent of company executives they interviewed were unable to clearly articulate their BM.

According to Shafer, Smith and Linder (2005), a BM is not a strategy, although it will reflect the strategic choices made. They argue that it can be an effective tool for the analysis, the implementation and the communication of the strategic choices.

Moreover, according to many business owners and academics, a BM is also a way to clarify strategic choices, making it easier to communicate to employees and have them adhere to these specific choices (Magretta, 2002). Indeed, refining the BM in order to share it with the stakeholders, and in particular with employees, will have a positive impact on the organization's focus and will clarify the framework to compete efficiently.

It also impacts on the motivation because when members of the organization understand their own BM, they understand how their own actions impact on the model and their importance in contributing to its success (Linder and Cantrell, 2000). It can also be useful to identify any bottlenecks within the system and the processes, the illogical elements of the model and to foresee weak areas in the long run.

Ultimately, a BM must fit with the overall strategy of the business. In a good BM, the components of the model should reinforce each other, delivering the essence of the business logic. It means that if one element is changed, the structure of the whole BM will need to be changed or it may collapse (Linder and Cantrell, 2000). Indeed, the importance of the cause-and-effect relationships within a BM is crucial as it holds the components together.

Finally, the process of making strategic choices is ongoing, and it evolves as the environment and the markets evolve.

3.3 BUSINESS MODEL AND VALUE CHAIN

Many authors focus on the relationship of the business with other entities in the value chain (Rappa, 2007). This indicates that the critical point of a BM is the interaction of the company with its market- place.

According to Rappa (2007) a BM should clarify the way a company makes money and its position in the value chain. He also suggested a generic-model classification according to the nature of their value proposition or the way they generate revenue, but he remains very specific to business models for the Internet companies.

The major concern about BM came forward during the Internet revolution and the frenzy of e-commerce. The new channel configurations emerging from these new ways of doing business altered the arrangements in the value chain, the revenue models and ways in which value could be added (Linder and Cantrell, 2000). Many people failed to distinguish the difference between new value chain organizations, new linkages within supply chain management and actual BM.

New arrangements have appeared in the agricultural sector as well, contributing to the perception that BMs are increasingly important. The forces driving changes within agrifood chains are mainly linked to the increasing retail consolidation and the influence of food retailers on value- chain governance, as well as to the tighter links between farmers, processors, retailers and other stakeholders needed to address the rapidly changing economic, production and marketing environment. Consumer demand associated with globalization and urbanization, and consumer awareness of food quality and safety issues in the sector have also led to the need for new models for high-value agricultural products.

Finally, the main issue with value network is that it is constantly evolving, thus requiring special attention in the BM. Two factors can affect this issue: First, choices are made on the existing value network. Second, the major success factor is the trust between business partners (Osterwalder, Ben Lagha and Pigneur, 2002). Taking into consideration these relationship dynamics, as well as the ever-evolving markets, all actors in the value chain have to adapt their own BM to the fast-moving environment.

3.4 RATIONALE FOR A DEFINITION OF BUSINESS MODEL

Most authors have reached the consensus that a BM refers to the way a business operates. In 2000, the Accenture Research Institute developed an interest for the topic, arriving to the conclusion that BMs could be considered as “operating business models” (Linder and Cantrell, 2000), referring to the fact that a BM is constantly developing, as a business grows and evolves.

As mentioned before, the most common difficulty with BM is that people can mistake the components of a business model with the business model itself, thus referring only to a piece of the whole model instead (Linder and Cantrell, 2000). Most definitions do not provide information on which attributes should be included in the model and many remain very abstract. For example, according to Hamel (2000), “a BM is nothing more than a business concept that has been put into practice”.

Moreover, according to Linder and Cantrell (2000), the BM of every profit-oriented enterprise will be different as the components taken into account for each case depend on its essential logic. This means that a BM has to be studied from the perspective of one entity, which could be a small farmer, a cooperative, a group of organized farmers, or a small and medium enterprise (SME). This might be one of the reasons for the many opinions around the concept.

Only recently, researchers have taken major steps towards developing accepted definitions. In 2005, Shafer, Smith and Linder (2005) looked at the range of definitions published between 1998 and 2003 and found that they varied from one sector, industry, and academic institute to another. In fact, they found no less than 43 different elements included in the 12 definitions they studied. Still, they were able to provide an updated and comprehensive overview of the different definitions and components taken into account.

Osterwalder (2007) has also tried to integrate the large array of definitions available, coming up with a framework of four pillars, similar to Shafer’s four components.

3.5 A POSSIBLE DEFINITION: PROPOSAL

The definitions provided by Shafer, Smith and Linder (2005) and Osterwalder (2007), besides being the most recent, are both based on the same principles. They are built upon previous research on the topic, and they are transferable to any situation as “they can be easily understood, communicated and remembered” (Shafer, Smith and Linder, 2005).

According to them, a BM is a tool that should describe the way a business operates, looking at it through a certain framework defined below.

As maintained by Osterwalder (2007), a BM is made up of four main pillars:

- The value proposition, i.e. the products and services offered;
- The infrastructure or network of partners and value configuration (arrangement of activities and resources);
- The customer relationship capital: customer relationship and the distribution channel;
- The financial aspects: including cost and revenue structure.

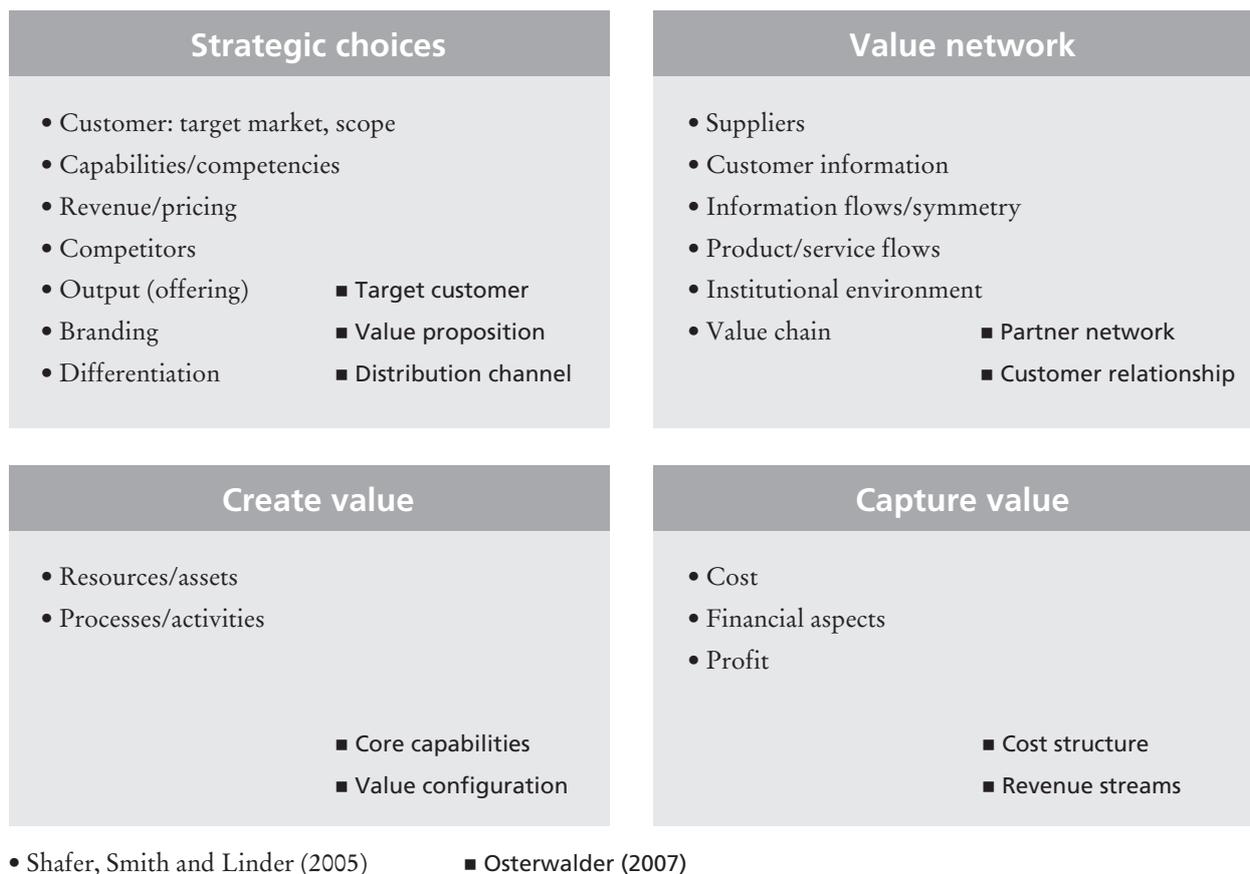
Shafer, Smith and Linder (2005) also describe a BM based on four components:

- Strategic choices;
- Value network;
- Creation of value;
- Capture of value.

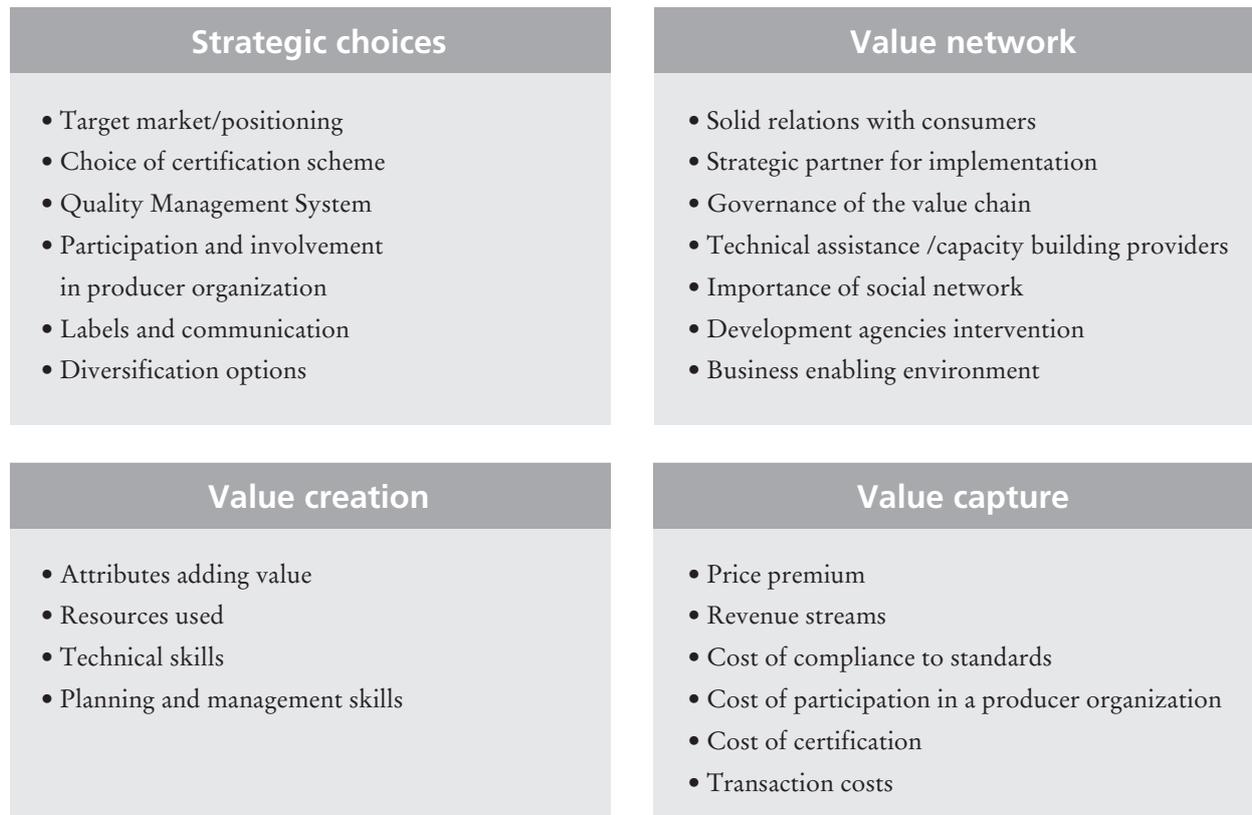
Given that both authors offer a definition based on the same components, although arranged in different manners, it is possible to come up with a combined definition based on four building blocks (Figure 1).

These components can be transferable to any commercial organization. The proposed definition allows going through case studies using a framework that can help analyse the BM from the perspective of small farmers. This tool could be adapted to the specific case of farmers entering markets for certified products. Building on these components and using them as building blocks will allow the analysis of BMs to enhance farmers' access to markets for certified products, by applying the following framework to the case studies:

Figure 1. Overlap of the components of the definitions



Source: authors of this document

Figure 2. A merged definition of BM adapted to small farmers entering markets for certified products

Source: authors of this document

4. Business model building blocks applied to certified products

Small-scale producers rarely see farming as a business, but in fact their agricultural activities can be approached through the frame of a BM. The more sophisticated the market for agricultural products is, the more complex the BM becomes. Markets for certified products (such as organic, GI and GAP-certified products), although lucrative, are certainly not simple, requiring small farmers to adopt a more evolved BM.

The present study has analysed and compared different experiences of farmers supplying certified products markets, focusing on the BM used and their building blocks, namely: i) strategic choices; ii) elements creating value; iii) value capture and income generation; and iv) actors and factors forming the value network around the farmers. The main conclusions drawn from such analysis follow.

4.1 STRATEGIC CHOICES

Target market and market opportunity

Identifying a market opportunity and choosing a target market accordingly is the first strategic element of a farmer's BM. Although this choice is very context specific, there are common patterns to the three schemes.

First of all, the choice of the target market is a decision that impacts other elements in the BM: choosing one certification scheme or another generally depends on the market that farmers wish to enter or to maintain access to. The first decision to be made is to target either the domestic or the export market. This decision will lead to a more detailed outlook on markets, such as which countries or regional markets to export to, or which areas of the domestic market to sell to. The choice also concerns the type of retailers, e.g. local wet markets or supermarket chains.

Although GAP certification schemes are voluntary, they are de-facto required to access lucrative markets in most developed countries. The EU market offers advantageous opportunities for export of horticultural products, especially for farmers in Africa given their proximity. Consequently, African farmers try to access or to maintain their presence on that market. For example, most exports of fresh fruits and vegetables (FFV) from Kenya are sold to the EU (Mung'oma, 2006). The introduction of more and more standards by the main European retailers can threaten Kenyan small farmers' participation in this market. Value chain governance for certified products has had a big role in this issue, and some authors consider that these standards might act as an entry barrier to the EU market (Dell'Aquila and Caccamisi, 2007).

Adopting national GAP standards has become a strategy relevant at national level in order for emerging economies to gain international or regional credibility as exporters of high-value products, as is the case for Chile or Malaysia. GAP programmes in some countries have gone through a benchmarking process in order to harmonize their standards with the most relevant scheme of their target market. For example, *ChileGAP*² has benchmarked with GlobalGAP.

GAP standards are becoming increasingly relevant for farmers selling in domestic markets where certification requirements are usually less stringent. In Malaysia, the national GAP programme also aims

² ChileGAP is the national programme for GAP, initiated by the private sector, but appropriated by the government, turning it into a public-private initiative, and benchmarked on GlobalGAP standards.

at improving the quality of products on the domestic market, thus contributing to the country's self-sufficiency in FFV, even if it is still a small percentage at present (Robert and Menon, 2006).

The best remunerated markets for organic products are still in developed countries, although demand in developing countries is rapidly increasing. In the two cases concerning organic producers from Hungary and the Czech Republic, strong organic legislation and the accession of their countries to the EU facilitated their exports to this market. Besides, they have succeeded to shorten the supply chain as the local demand for organic products is starting to grow. However, this is uncommon: Generally farmers producing certified products need to go through intermediaries providing collection and transport to the marketplace. This is the case of the Thai and Indian organic rice producers, who are under a close partnership with a company taking responsibility for the export and marketing of the product. Therefore, it is the company that makes the market choice and farmers have to respond to the market demand.

When selling a GI product, farmers either target local markets with a traditional product, or an export market where the product enjoys a reputation linked to the place of origin. One of the reasons to obtain a GI is to protect a product with international reputation, and limited local consumption, such as Ecuadorian cocoa or Colombian coffee. Farmers may also have to protect a traditional product from fraud and usurpation on the local market, as in the case of *Limón de Pica* (Chile).

The opportunity to link certified products with tourist destinations has also been identified as potential target markets for GI products: Tourists are willing to consume local products as part of the whole travel experience and the tourist industry is happy to buy good quality produce locally. The members of the Pica lemon cooperative have identified the opportunity of selling to hotels, restaurants and bars that appreciate the quality of their lemons and have developed a new distribution channel to directly supply these new customers. Furthermore, working with the tourism industry can allow producers to be part of broader development strategies.

Certification process

Who drives the certification or verification process?

The choice of a certification scheme is a central issue in a farmer's BM. Different stakeholders can lead the certification process: an individual farmer, a group of farmers, a company or a public institution. Whoever takes the lead has the final saying regarding the target market and the type of certification system.

Farmers rarely initiate the process for getting certification. This only happens when they have access to a large array of information on market access and certification options. This was the case of the organic producers interviewed in Hungary and the Czech Republic, who perceived the benefits of providing organic FFV to local consumers taking advantage of the growing local demand for these products. In addition to being aware of the certification options available to them, producers have to perceive certification costs as affordable or they will be unwilling to engage in the process. In reality, GAP and organic certification costs can prove prohibitive for some small farmers.

There are different ways farmers can overcome this obstacle. One is applying for certification as a group. Another option is to share the certification costs with the buyer company. This is the case, for example,

Case study box 1. Targeting the market

In the organic rice chain, producers are vertically integrated or linked in the supply chain targeting export markets. In the organic vegetable chains, producers in the ECOVIDA Network are horizontally linked in a fairly short supply chain targeting local and regional markets. In Hungary and the Czech Republic, producers participate individually in short supply chains driven by a promising domestic demand.

Source: Santacoloma, 2007

Case study box 2. Sunstar Overseas Ltd., India

This project is located in northern India, and extends over the Himalaya Tarai region. There are 190 farmers with a total acreage of 1 250 ha. The size of the rice plot is 0.25–0.50 ha. Monocropping low-input Basmati rice was the practice before this project started in 2001. Since then, the farmers have been delivering millet and cleaned rice directly to the export trade firm, Sunstar Overseas Ltd (“Sunstar”).

To facilitate certification and marketing, the trade firm that leads the project is involved as part of the Internal Control System (ICS). The trade firm provides a premium price in the conversion period, technical assistance and inputs to farmers. Farmers are under contract farming for five years. Sunstar also processes and packages the rice for export. Farmers are collectively certified but market individually with the firm. The inspection and certification is done by SGS, Switzerland, and ECOCERT, Germany, following EU standards for inspection and certification. The certification belongs to the export firm (Katyal, 2007).

Source: Santacoloma, 2007

in the organic rice case studied³. A private company that identified a business opportunity in the export of aromatic rice, set up a project, approached farmers with an already established market and offered to assume some certification costs. However, costs for complying with most private standards may be beyond the financial capacity of many small or medium exporters. In Kenya, for example, even local medium-size export companies are unable to financially support their suppliers to obtain GAP certification because of the significant investment needed.

Public institutions or NGO supported by international donors can also act as drivers of a certification process. This situation can be observed in most GI cases and some organic producer groups. In Thailand, the Green Net-Earth Net Foundation has organized farmers, helped them to obtain group organic certification, and processes and markets the products. There are many examples of a public institution, university or governmental agency driving the process for GI registration (in Peru, Mexico, Argentina, Ecuador, Costa Rica and Chile) with the aim of protecting a local product and fostering the development of a rural area in decline.

The issue of who drives the process is important as it influences the ownership of the certification. When a company leads a process, especially in GAP and organic certification, farmers merely act as suppliers under contract farming conditions. The company organizes selected producers into growers’ groups, sets up an internal control and management system, manages processing and marketing, and occasionally provides financial help to support the costs incurred. Obviously, the firm retains ownership of the certification, which means that producers cannot use the certification for products sold to other buyers.

The types of standards

There are many locally or internationally recognized public or private voluntary standard schemes. These standards, though voluntary, can be more or less regulated. For instance, organic standards can be tightly regulated in some markets.⁴ In the EU, for example, there are mandatory standards for organic agriculture, regulating issues related to production, marketing and labelling (Cuffaro and Liu, 2008).

GAP standards can be developed by a large array of stakeholders in the value chain, including retailers and governmental institutions. *GlobalGAP*, one of the leading private schemes, has been developed by European retailers. National GAP programmes in developing countries have been developed by different value-chain stakeholders: The national GAP programme in Malaysia was developed by the Government; by the private sector in Kenya and through a public-private partnership in Chile.

³ Case studies in India and Thailand

⁴ FAO portal Page: Environmental and social certification for responsible agricultural production and trade - http://www.fao.org/es/esc/en/15/190/highlight_199.html

Producers and related stakeholders develop their own standards for producing and processing a GI product. In most cases, the process is led by an institution that has previously identified a product as having potential for GI registration. In the best-case scenario, the development of standards for such a product takes place in the course of a broad consultation involving producers, processors, marketing intermediaries and local institutions, among others. The main risk about GI standards development is the potential exclusion of some stakeholders. In Mexico, for example, tequila was the first product to obtain a GI, but the confusion around the concept of GI systems led to negative impacts on small farmers when the process started as the main distilleries owned by international groups dominated the process, setting standards impossible to follow by small farmers who were excluded from the GI (Poméon, 2007).

The certification process

There are various types of certification systems: third-party certification through a local or foreign certification body; and second-party certification or participatory certification schemes.

Third party certification is required for most voluntary standards. In order to export certified produce to developed countries, it is by far preferable to be certified by a body accredited in the country of export. However, this implies very high costs, as an auditor needs to go to the country and audit the farms that are sometimes situated in secluded areas. As certification bodies expand, they try to set up regional offices with trained local inspectors, thus decreasing the costs of certification.

Group certification allows a reduction of some certification costs⁵ because of the generation of economies of scale (e.g. reduced inspection and overhead costs). Most of the time, farmers will be required to manage many aspects of the certification as a group and to set up a system for internal control or auto-verification. This process is very challenging for small farmers, as they often lack management, planning, technical, marketing and record-keeping skills.

The participatory certification scheme is quite recent. The best exponent of this scheme is the case of the ECOVIDA Network in Brazil (Santacoloma, 2007b), the lead organization in participatory certification in Brazil. It represents a network integrating more than 2 300 farm families and their groups, 25 support organizations, 15 consumers' cooperatives, 8 market enterprises and 7 agro-industries in the southern states of Santa Catarina, Rio Grande do Sul and Parana.

Generating consumer trust is the main objective of participatory certification schemes. Because such trust is built through a participatory process, the definition of ecological standards and the verification of procedures are jointly established by farmers and consumers. Great emphasis is, therefore, put on training and empowering network participants to take active roles in valuing agro-ecosystems and developing suitable technologies, and to understand the certification process. The principles are aimed at promoting farmers' sustainability and enhancing group empowerment, rather than developing market rules.

In participatory certification, basic principles include the recovery and conservation of natural resources at the farm level, including minimizing the use of external resources and the reciprocal learning process between the NGO and farmers' organizations. Strengthening relationships between producers and consumers to enhance local market development is also crucial to the overall approach. These principles were endorsed by Brazil's Ministry of Agriculture in 1999.

Most organic producers are small scale and highly diversified, providing a large number of fruits and vegetables to local and regional markets. However, the largest area is farmed by large-scale producers who specialize in a few crops and are connected to export companies. Both types of producers process part of their production to provide juices, wines, brown sugar cane or coffee to the markets.

⁵ Under the GlobalGAP standards, this scheme is called "option two".

In participatory certification, the basic unit of decision-making is the nucleus, which comprises a group of farmers and consumers with support from the NGO. Within the nucleus, an ethical council provides inspection, monitoring and evaluation and advice to farmers. For a farmer to be accepted in the certification process of a nucleus, a request should be submitted to the ethical council of another nucleus. Compliance mechanisms for organic standards are delivered through training activities and group discussions. Farmers suspected of not complying with the farmers' group rules may be excluded from the network.

The process of obtaining certification can be very lengthy, especially for organic and GI certification. Organic certification, for example, includes a transition period of two or three years before receiving the official certification. Concerning GI products, the process includes a relatively longer phase⁶ prior to requesting the GI, which is required in order to develop the standards or "code of practice", on top of gathering the necessary elements to prove the specific quality of the product and its reputation. This code contains all the specifications and characteristics of the product, the area concerned, the process description, controls and traceability, the regulations for using and managing the GI, including the requisites for the producers and processors, the control mechanisms and the sanctions in case of misuse. Writing the code of practice can be an opportunity to incorporate new quality and safety systems in the production and processing phases, while preserving the traditional processes. It can also be an opportunity to discover new marketable attributes, as was the case in Argentina, where it was revealed that there was a market opportunity not only for goat meat but also for high-quality wool.

Finally, an important element of the certification process common to all three categories of certified products is the need to coordinate certification and monitoring of all the actors in the value chain so that sustainability of the value along the chain is ensured and certified products are not mixed with conventional ones during the processing or logistic stages.

Participation in a producer organization

Participation in a producer organization (PO) is a very strategic element in a farmer's BM. Different situations and levels of consolidation have been observed, but they can be summarized as follows:

- i) Farmers can enrol in an existing PO. For example, the National Federation of Colombian Coffee Producers (FNC) has been functioning for 80 years, organizing generations of small and medium coffee producers. This nationwide network of local cooperatives receives great support from the government and plays a lobbying role at the international level. Above all, this network acts as the base organization and driver of the GI registration and certification process. Smaller cooperatives have also played this role, such as the BRFO cooperative of organic rice producers in northern Thailand.
- ii) Farmers may see the advantages of organizing themselves for pursuing a specific enterprise. The producers of *Cotija* cheese in Mexico created a "regional association of producers of *Cotija* cheese" in order to support the registration process of the GI.
- iii) Producers can be organized around a private company initiative, with or without the intervention of a support institution (NGO, governmental agency, donor, etc.). Farmers may be organized in order to be involved in a project launched by a company driving the certification process, as it has been observed in the case of organic rice in India, for example. In GI cases, farmers are requested to start working as a group to develop the code of practice and later engage in a more formal organizational process in order to receive the protection of the product as a collective property and sustain the GI.

On top of the social benefits of being part of such an organization, there are many other advantages, such as:

⁶ In the case of *Cotija* cheese in Mexico, the process as a whole took more than 10 years.

- i) Reduced costs associated with certification, through group certification. In most organic and GAP schemes, group certification is well accepted and part of the requirements for the registration of a GI. Group certification tends to reduce costs mainly for the auditing of farms because the group is audited as a single entity.⁷
- ii) The PO could take responsibility for processing the product.
- iii) The PO could also organize the collection of products at farmgate and the supply to buyers.
- iv) PO members tend to have better access to capacity building for technical, management, planning and record-keeping skills, from both public and private institutions.
- v) Access to credit tends to be easier for members of POs.
- vi) As a group, farmers position themselves better for negotiations in the value chain.
- vii) Some cooperatives allow a preferred access to their network of specialized stores.

Case study box 3. Café de Colombia

Strategic choices	Value network
<ul style="list-style-type: none"> • Target market: Export market. Current markets, where image building was invested: USA, Japan and Europe • Competition: Bad quality imitations risking to damage the global reputation • Certification scheme: Denomination of Origin. FNC partnered with government to register the name and protect it internationally • Producer organization: FNC. National Federation of Producers • Branding: Juan Valdez, own brand stores, logo and affiliation with roadsters • Diversification options: Potential link with agritourism (UNESCO Cultural Landscape) and other certification schemes (Fair-trade, organic) 	<ul style="list-style-type: none"> • Customer info: Worldwide market study commissioned by FNC • Governance: The initiative can be considered as an attempt to turn around the bargaining synergies. The FNC seems to be well connected • Governance of the value chain • Technical assistance /capacity building providers • Importance of social network • Development agencies intervention • Business enabling environment
Value creation	Value capture
<ul style="list-style-type: none"> • Attributes adding value: The quality of the product and traditional expertise. A National Federation keeping up with consumer trends around the world (special quality programmes) • Resources used: Family labour, hand-picking part of the specifications. Tight control of quality by FNC 	<ul style="list-style-type: none"> • Price premium: Higher rates on world markets: bonus. Price premium in Juan Valdez shops • Costs: Certification and compliance costs are not available, but should be reasonable as standards were set by the producers themselves, taking into account traditional methods

Source: Le Courtois et al., 2008

⁷ Through systems of internal control and monitoring, certification bodies do not have to visit the totality of farms, which reduces work time of the auditors and other costs associated with certification.

- viii) Support (including financial) can be provided during the transition period for organic agriculture and during the registration phase for GI products.
- ix) Farmers in a PO acquire a sense of participation in the community and improve their self-esteem.
- x) Members can benefit from collective promotion and marketing activities for their products.
- xi) The PO facilitates the definition of a product's specifications and code of practice (for GI registration).

The good functioning and sustainability of a PO depends on the degree of involvement and organizational competences of the farmers in the organization, as well as the perceived benefits from taking part in it. In many cases in which farmers were not initially organized, developing an efficient PO took tremendous additional work for trainers and the farmers themselves. This involved costs in extra labour to work as a group and engage in the group's activities, as well as extra costs in time in order to attend meetings and so on.

There is also a cultural component in this issue; some producers consider it normal to invest in social networks of producers (*Turrialba* cheese producers in Costa Rica for example) while others are more individualistic and are not used to spending time interacting with other producers to improve the group situation (e.g. *Cotija* cheese producers in Mexico). This situation was observed in many cases related to GI, organic and GAP products and implied that organizing farmers was the starting point for initiating the certification process.

Quality assurance system

Most certification schemes require a thorough quality assurance system together with a strict procedure of record-keeping needed to audit farms.

Branding, differentiation and labels

Promoting the product on the basis of its certification and differentiation attributes is very important in order to communicate the specific value to consumers. These activities can take many forms, from labelling products to organizing events.

GAP-certified products differ from the other schemes because, being mostly a business-to-business standard, they are not labelled as such and they have no price premium. However, some national GAP programmes use a quality seal. This is the case of Malaysia, where products certified by the Farm Accreditation Scheme of Malaysia (SALM, government-led GAP programme) can use the brand name and seal "Malaysia's Best". This brand represents the seal of approval from the Ministry of Agriculture and Agro-Based-Industry for Food Safety and Quality, and it is issued by the Federal Agricultural Marketing Authority (FAMA). The branding serves as a quality assurance for final consumers shopping mainly in supermarkets and regional export markets for high-value products.

For other certification schemes, the objective of the label is to inform consumers that the product they are purchasing has followed certain standards during the production process. As production process

Case study box 4. *Limón de Pica*, Chile

In the Oasis of Pica in Atacama, the driest desert of the world, a type of lime special for its particular scent and its high juice content is produced. Such attributes have made this a prized product on the domestic market, especially for making traditional cocktails such as Pisco Sour. Because of this reputation, a group of producers, supported by several institutions, have started the process for a Denomination of Origin for the *Limón de Pica* (lime from Pica) in order to protect the quality and prestige of the product, obtain better prices and gain access to new markets.

Source: Vandecandelaere and Mery, 2007

attributes are intangible, final consumers need a visible sign informing and guaranteeing the existence of such attributes. For example, *Limón de Pica* (Chile) is a type of lime that consumers can only differentiate from other limes by its renowned taste. A label is, therefore, indispensable to inform consumers at the sales point that such limes are indeed from Pica.

Most organic and GI products are labelled using an official or private logo. In some GI cases, when there is no official label, a private collective logo has been designed as part of the activities to promote the product and the local cultural pride. Such events were organized in Argentina for example. Organic labels can include an official logo, such as in the EU where organic standards are regulated, together with a private brand name.

Organic and GI products can benefit from events promoting their specific quality, improving their reputation and acting as points of sale. Fairs, contests and other events are a good way of promoting certain certified products. In Hungary, *Biokultura*, an NGO leading the organic movement, has set up a weekly organic market in the capital to promote consumption of organic products. Producers are invited to participate as long as they are certified, and they only have to pay a small fee for their stand. In Mexico, producers of *Cotija* cheese took part in an international contest and won an award at the beginning of the process. This allowed them to gain confidence and pride and became an excellent promotion tool. GI products can be considered by local citizens as a way of promoting the local culture, in particular toward tourists visiting their region. In the case of *Cacao Arriba* in Ecuador, the government chose the GI product as a national symbol.

Market demand

Farmers might end up selling part of the certified production through conventional market channels because of insufficient market demand for differentiated products. For example, many farmers who grow their entire farm production according to GAP standards have to sell at the end part of their production to other retailers that don't request that certification. Likewise, not all products grown and certified organically will necessarily be sold as such. Therefore, getting certified is not a BM in itself, as accessing the relevant market is as much part of the BM as getting the certification. Unfortunately, it is difficult for farmers to know in advance exactly how much of their products will be sold certified, unless there is a contract where volume and prices are specified beforehand.

When enrolled in a growers' group certification scheme, producers are considered suppliers to the group, subject to contract farming conditions. When a company owns the certificate, farmers can only sell their products to the partner company, which usually holds the business relationship and has access to market information. If they sell to other buyers, they cannot use the certification. On the other hand, the company can let farmers know in advance the amount of produce that will be sold with the certification.

However, going through a certification process tends to already have positive impacts on the overall quality of the produce, as well as organizational or managerial skills of farmers. Therefore, when part of the production is not sold under the certification, farmers can still hope to obtain better prices as the basic quality will be upgraded.

Diversification options

Most small-scale producers of certified FFV have a diversified portfolio of products. This is particularly the case for GAP and organic producers of FFV, where crop rotation is a common practice. These farmers can diversify their production by using, for example, a small parcel of their land for breeding animals for household consumption, or by growing other varieties conventionally (which have to be clearly separated from the produce under certification).

Producers of conventional commodity products, such as rice or coffee, may choose to produce only one type of product. Small farmers do not often consider processing as a diversification option. For example,

organic paddy producers in India and Thailand rarely take on processing the rice. It is either the buyer company or the supporting NGO who takes charge of the processing, while farmers only thresh the rice and pack it in special bags provided to them.

With regard to GI, choices for diversification are limited in terms of products, as natural conditions have influenced specifically adapted production systems. However, there could be the option of: i) considering other schemes, such as organic certification, on top of the GI certification or instead of it in case it is impossible to register the GI (GI in Mexico); or ii) creating links with the local tourist industry, as GI products show a close link to local traditions that might appeal to the tourism sector.

4.2 CREATING VALUE

Value-adding attributes

Demand for certified products is rising, creating opportunities for small farmers from developing countries to add value to their products, ask for better prices and increase the sustainability of their farming systems.

Adopting organic, GI or GAP standards is a way to differentiate products based on the specific production process used. Process attributes are intangible for consumers, and consequently, labelling is crucial as it becomes the tangible proof showing consumers that a product has been produced following certain environmental, safety or social criteria they appreciate. For instance, consumers of organic agricultural products are prepared to pay a premium price to purchase a product that: preserves the local ecosystem and biodiversity; has not been exposed to any type of agrochemicals or other synthetic inputs, including genetically modified organisms (GMO); and is therefore free of any synthetic residues whatsoever and safe for them to consume.

GAP certification is mostly applicable to business-to-business transactions. Because of recent major food scares in developed countries, quality and safety issues are now considered the responsibility of retailers, who pass this responsibility on to their suppliers. GAP certification assures that the certified products have been produced under strict standards of quality and safety, and can be traced back to the farm of origin. Final consumers are rarely aware of this, but they benefit from the consumption of food produced following strict standards for ensuring quality and safety.

Products with a specific quality linked to their geographical origin offer very specific characteristics that are perceived by consumers as added value, including: i) unique specificity and quality features of the product; ii) traditional taste and aspect; iii) traditional methods for production and processing; iv) link to geographical place of origin contributing to the physical assets of the product (aspect, taste, smell, etc.); and v) symbolic attributes (image of the area, landscape, culture, etc.).

Value-adding through processing rarely takes place at farm level, apart from washing and storing in some cases. However, transformation activities developed by farmers and adding real value are often carried out in GI cases, for dairy, meat and coffee products for example. Indeed, the traditional methods for processing the raw material are part of the central attributes adding value to the product and conferring it its specific quality.

When the reputation of a product is based on its excellent quality, coordination and cooperation among value-chain actors to preserve quality until the product reaches the final consumer is paramount. This has been observed in the cases of the Argentinean baby goats (*chivitos*) and Colombian coffee.

Resources used

Producing a certified agricultural product does not necessarily mean using very different resources: The important element is the final outcome, i.e. high-quality products. For instance, regarding access to land,

Case study box 5. *Chivito* (baby goat) Criollo del Norte Neuquino, Argentina

Strategic choices	Value network
<ul style="list-style-type: none"> • Target market: Local market but extending to neighbouring regions with tourism potential • Certification scheme: Applying for a Denomination of Origin, following a participatory process/protocol based on current resources. ICS and eventually third party certification • Percentage of production sold certified: Only cooperative members • Producer organization: No formal organization exists • Promotion: Logo design contest in local schools, fairs and cultural events • Diversification options: Cashmere wool (unexplored potential) 	<ul style="list-style-type: none"> • Customer info: Information-sharing between producers and marketing intermediaries enhanced through participatory process • Governance: Local retailers can play a role in promoting the product as high value. Some retailers have started to differentiate the meat based on origin • Strategic partner: INTA and marketing intermediaries involved in certification process • Capacity building providers: Local institutions: further support needed • Enabling environment: Poor support for regulation, protection and implementation
Value creation	Value capture
<ul style="list-style-type: none"> • Attributes adding value: Specific breed of goat and specific breeding conditions, such as seasonal migration. Cashmere wool: Only artisanal production allowed • Resources used: Family labour, ancestral expertise • Technical skills: Traditional know-how is crucial and well managed by producers • Planning and management skills: very poor 	<ul style="list-style-type: none"> • Price premium: None achieved so far • Revenue streams: Unknown; new activities not yet in place • Costs: Certification and compliance costs not available, but should be reasonable as the standards were set by the producers themselves • Transaction costs: Investment for upgrading logistics needed

Source: Le Courtois et al., 2008

small farmers work, by definition, on small areas that can be owned or rented. Organic farming can be particularly interesting for farmers in remote areas who traditionally produce without using chemical inputs, in which case the transition period can be reduced.

Access to other natural resources, including access to clean/uncontaminated water is a very important factor contributing to the specific quality of products. The quality of natural resources is particularly relevant for GI and GAP products as they tend to be the main foundation for quality and safety. In GI products, the natural factors can come from the particularity of the production location, such as mountains, or a particular climate, such as an oasis in the desert (*Limón de Pica*, Chile). Otherwise laboratory proof of clean water and soil are part of the GAP certification procedure. On the other hand, organic agriculture can help to restore soil fertility and to improve local ecosystems in places where the soil has lost quality as a result of intensive production systems performed over the years.

Concerning labour, family labour is essential for small farmers, with extra labour hired in some cases during harvest, because of the extra amount of work. The only difference with conventional agriculture is that organic production is labour-intensive rather than external input-intensive. Most of the time production is individual, while packing, marketing and other post-harvest activities might be handled as a group.

GAP certification in general needs further investments in hard assets, such as new technology or infrastructure for hygiene or irrigation. As for organic and GI schemes, the certification or registration process is sometimes used as an opportunity to incorporate new systems of quality and safety within production, especially in GI cases when this may be carried out while developing the code of practice. These new systems require additional investments, such as the purchase of sanitary equipment among many others.

Skills and competences

The technical expertise of farmers is a resource that contributes to value creation, especially in the case of GI when the processing stage is part of the code of practice. However, farmers most often lack skills and competences to participate in the creation of value. For them, certification implies the incorporation or adoption of new standards in their production or processing processes, all of which require new skills and competences. Special skills and competences are required for two types of activities at farm level: for production and for management and planning activities.

Production capacities

Most schemes require a change in practices related to production and/or processing activities. As a general rule, GI standards require fewer changes, as the code of practice should be developed by or with the active participation of the producers themselves. Nonetheless, changes are often introduced in the production processes to incorporate safety and quality systems into traditional standards. This quality and safety upgrade is crucial for assuring a better marketability of the products. For example, in dairy or meat products (Costa Rica, Mexico and Argentina), improvements in the cold chain and hygiene measures have been introduced in the code of practice.

In most organic cases, farmers have to upgrade their skills to produce according to organic standards. However, informal organic systems are sometimes already in place in remote areas, where farmers traditionally produce without using synthetic inputs, and thus they don't need to change their practices considerably. In general, the additional technical skills needed for organic production relate to: i) soil fertility management; ii) technology development; iii) preventive pest management and pest control; iv) prevention and control of external contaminants; v) measures to avoid contamination, especially from conventional produce; and vi) adaptation of general principles of agro-ecology to their specific conditions (Santacoloma, 2007a).

Finally, GAP tends to require the most changes for small farmers. Although producers might master regular technical skills, they would need to gain knowledge of new processes, some of which might not be well adapted to their local environment.

Managerial capacity

Farmers, especially small and marginalized ones, seriously lack management and planning skills. Nonetheless, they have to comply with rigorous record-keeping systems needed to audit the farms or manage the label. These requirements apply to all certification schemes, but are more important in GAP and organic systems. Most schemes require keeping record of the following as a minimum: i) details of input used; ii) harvest details; iii) purchase receipts and delivery notes (especially if certification process is managed by a company); iv) documentation of product flow; and v) diary of daily farm activities.

These activities can pose a significant challenge for farming communities in which literacy and education levels are low. At times, special diaries have been developed by external trainers to allow farmers with limited literacy and numeracy skills to keep records of their activities.

Management and planning skills are also important for getting farmers organized, which has proven crucial for the certification process. Being a member of a PO involves participating in meetings, taking risky decisions and planning common activities, and so producers – and more so lead producers – need to develop management skills. Farmers often perceive their lack of management skills as a potential obstacle for the sustainability of the certification and their business.

Consequently, most farmers undergoing a certification process need considerable capacity building in these areas. Farmers organized by an external actor may receive training, but its degree of impact is very context and case specific. However, building such skills requires a continuous learning process, only achieved through long-term and sustainable capacity building provision.

4.3 CAPTURING VALUE

Price premium

Producing certified specific quality products entails certain additional costs when compared with conventional methods. For farmers, receiving a higher price is crucial to cover the additional investments associated with producing for this type of markets.

Price premium is what speaks to farmers the best, but other ways are valid to increase their income. The starting point is to determine if the investments required to comply with a certain certification scheme are compensated by a real increase in income. Such an increase can be achieved through access to higher value markets (which usually are de facto better remunerated), a higher price because of branding recognition (reputation of high quality because of a link to a region for example) or the potential for selling more volume.

In organic schemes, producers get a price premium directly linked to the certification. In the Czech Republic for instance, it has been observed that some farmers can receive up to 200 percent of the conventional price for their organic vegetables (Václavík, 2007). In most GAP cases, it is not necessarily so, and the additional costs incurred may not be compensated by higher prices for farmers. However, it is difficult to obtain data regarding GAP standards, as information on costs is very confidential and hardly disclosed by retailers (Dankers, 2007).

Receiving a price premium is not guaranteed, as it depends on a regular access to the target market. When farmers have a formal contract with a company (for organic rice in Thailand and India for example), they have a better chance of actually receiving the premium. In cases related to GAP and organic farmers affiliated to a private-sector actor, the price premium tends to be more reliable, and some companies can even tell farmers how much the premium will be, or even pay it in advance. For GI products, the premium price depends on the recognition of their reputation in the target market. There was no available data on price premium achieved in the GI cases studied. However it seems that given the relatively low compliance investments, a slight price premium would leave producers satisfied.

Apparently, farmers applying for GAP certification face the biggest challenge because the investments and certification costs tend to be higher, and the price premium is not guaranteed (although the accessed market should imply better prices). The highest prices might compensate farmers for all the investments made but rarely for maintaining the certification costs.

For organic farmers, the main challenge concerns the transition period (more or less three years) that has to lapse before they can start selling their products as certified. The buyer company may offer a compensation for the extra investments made during the transition period: Farmers in the Indian case study receive a premium from the processing company in charge of their certification process, as well as a premium from the exporting company. In other cases it is the government that provides subsidies during the transition period, as in Hungary. As a general rule, once farmers obtain organic certification there is a significant increase in their revenue streams.

Cost of compliance with standards

The cost of compliance with certain standards depends on the farmers' starting point and the environment they are embedded in. The total cost will vary significantly, depending on the production method used prior to the certification procedure, the institutional and financial support available, the supporting services available locally (i.e. laboratories), the access to credit and information, and the infrastructure needed at farm level among others (Dankers, 2007).

A significant part of compliance costs are associated with increases in time and labour for farmers associated with the new production and marketing activities. Organic agriculture can entail an important rise of labour costs at the production stage, especially if farmers were not using agro-ecological methods prior to conversion (e.g. Hungarian and Czech farmers). Additional labour costs related to the extra marketing and transaction activities required for accessing markets for certified products can be remarkable as well, as in the case of the Argentinean *chivito*.

Farmers should also take account of the opportunity cost of the time required for organizational issues (e.g. attending PO meetings), filling in mandatory paperwork and record-keeping documents, as well as attending training for capacity building. The paperwork for obtaining and maintaining certification may be very time-consuming: A Malaysian farmer needs to maintain up to 17 documents in order to comply with SALM's record-keeping requirements.⁸

However, the financial costs associated with skills building are hardly ever borne by farmers: It is generally the entity driving the certification process, whether it is a private company or a public institution, which organizes and sometimes directly provides the capacity building.

In organic farming, the transition period also implies costs, whose level will depend on the initial conditions, but can include the implementation of soil recovery measures if needed, and a possible decrease in yield. The latter is open to debate as the loss of volume is usually compensated by a higher quality of products.

Significant investments for on-farm infrastructure to comply with certain standards can be required as well. These costs related to the implementation stage are comparatively higher for GAP standards, which require equipment such as storage units, drinking water installations and safety wear. Technology development can also be needed, and should be adapted to new production processes and local conditions.

In most cases, transaction costs are higher in certified schemes because a clear separation between certified and conventional products along the chain is required. Taking the organic rice cases as an example (Thailand and India), this issue implies the use of special bags and storage systems for every value-chain stage, which increases the logistic costs of organic rice deliveries, especially when targeting export markets. Higher costs are also incurred because of the documentation for tracing back the product at each handling stage (Santacoloma, 2007a).

Certification cost

Several certification processes studied started off with the establishment of a PO. The organizational changes tend to be considered a challenge for many farmers and entail costs in time, labour, as well as membership fees. Moreover, additional costs come when establishing an internal quality assurance or control system. In most certification schemes, these organizational structures need to be documented, and at times a formal legal entity should be constituted in order to benefit from group certification. If a group certification is obtained, the group will be responsible for managing the certification and bearing all related costs: For example, the BRFO farmer organization (Thailand) collects a small fee from its members to cover the certification costs.

⁸ SALM is the Malaysian Government led and managed GAP programme.

It is usually a private actor – whether a processor or an exporter – who bears most of the certification costs (including the legal costs for drawing the contract binding them with farmers), but, in compensation, retains ownership of the certification licence. In the Kenyan case, the average sharing of initial costs for obtaining the *KenyaGAP* certification is distributed as follows: farmers: 36 percent; exporter: 44 percent; and donors: 20 percent (Graffham, Karehu and MacGregor, 2007). Donors are less involved in the payment of recurrent costs required for maintaining the system, which in the above case are borne by the farmers (14 percent) and the exporter (86 percent).

The cost of certification fees varies depending on the certification system and the certification body. In GI systems there is a comparatively low registration fee to be paid to the relevant body (National Institute of Intellectual Property in most cases) and internal control is most common. On the contrary, in organic and GAP schemes third-party certification prevails. The fees are higher if the certification body is not local because it involves bringing an inspector to the country, which increases the cost, especially if coming from western countries.

The costs associated with a pre-audit stage are hardly ever borne by farmers, and the pre-audit activities are different from one scheme to another. Among these activities are the selection of farmers to certify in GAP or organic schemes, or the conduct of market appraisals and the selection of products with GI potential (which can be carried out by local universities and research or governmental institutions).

Given all the above, it seems unlikely that, without external interventions, a small farmer would be capable of bearing all the costs directly or indirectly associated with getting and maintaining certification.

4.4 VALUE NETWORK

Marketplace information

A basic element for the sustainability of a business is the access to information on markets and customers. Unfortunately, this kind of information is rarely accessible to small farmers in developing countries, keeping them from increasing their bargaining power and implementing more efficient marketing activities. It is frequently the buyer that manages much of the information related to the marketplace and the contacts necessary to access markets on a regular basis.

In many of the cases analysed, market studies have been carried out by different stakeholders to identify new markets or new distribution channels and to select farming communities or products with potential for certification. The actors carrying out the studies included a development agency for *Limón de Pica* (Chile), research institutions in the *Cotija* cheese (Mexico) and *Chivito* (Argentina)⁹ case studies, or a powerful network of POs for coffee producers (Colombia). These market appraisals are a great source of information to support decision-making processes. In most GI cases, the information found was shared with the farmers as part of a participatory certification process.

Selling through more direct distribution channels is a great source of market information for farmers. Many of the cases studies present approaches to reach consumers, for instance through participation in weekly organic markets in Hungary or fairs (*Turrialba* and *Cotija* cheeses from Costa Rica and Mexico respectively), or through the ownership of sale points (National Federation of Coffee Producers, Colombia). In a few GI cases, marketing intermediaries were involved in the participatory certification process along with farmers, which contributed significantly to the exchange of information.

In the case of GI products, consumers' perception of the product is particularly important. The question of whether the name of a product has become generic (which prevents the recognition of the GI) only

⁹ The *chivito* market study was carried out by INTA, Instituto Nacional de Tecnología Agropecuaria.

depends on consumers, as was observed in the *Cotija* cheese case (Mexico). In many cases, consumers at local level can differentiate between the original product produced with GI standards and imitations, so much so that certification and control are not necessarily required.

A case of exchange of information with consumers worth mentioning is the ECOVIDA Network (Brazil): trust and information flows are basic principles of the network and allow farmers to recognize changes in trends and demand and to adapt the management of their farms accordingly.

Strategic partnerships

Most small farmers lack business and institutional connections to start a certification process on their own. In the majority of cases studied, certification was driven by a public or private external actor partnering with farmers to achieve certification of their products. Private sector actors involved are processors or exporters powerful enough to invest in the whole process in financial and capacity building terms. Non-private sector actors include a wide range of public institutions (from the Ministry of Agriculture to local governments), universities and research centres, national PO, or international agencies and NGOs.

External partners intervene in many different aspects of the BM. Their actions include capacity building provision for technical and managerial skills, linkages with target markets, distribution and export, establishment and organization of the PO, certification procedures and financial support. On many occasions there is more than one support institution working with the same group of value-chain actors, in which case partnerships should be developed among them to coordinate efforts.

Value-chain governance

The changes in value chains that have taken place in the last 20 years have impacted on the balance of power between chain participants. Certainly, globalization and concentration trends in developed countries have allocated more and more bargaining power to retailers.

In the export-oriented schemes, the decision regarding the target market is taken by export companies, rather than growers. The export firm chooses a group of farmers to work with, drives the certification process and owns the licence. Farmers are contracted to this specific company to sell certified products. Experiences in Kenya regarding GAP certification show that it is difficult for farmers to find new buyers. Consequently, small farmers would need to find ways to retain some ownership of the certificates in order to gain bargaining power in the marketplace.

Exporters, retailers and other private-sector actors lead the efforts to introduce mechanisms for the agricultural sector to comply with harmonized standards of quality and safety. Consequently, national programmes led by governmental actors are greatly influenced by the private sector, such as GAP standards in Chile or Kenya.

For the environmental and social certification schemes, the actors setting the standards are more often NGO and civil society organizations that have the power to mobilize actors and set standards (e.g. IFOAM). In spite of this, the value chain is still governed by large-scale retailers or processors, who have increasingly been involved in the organic market in the last few years.

However, when farmers become aware of the value of their products (good reputation or a particularly high consumer demand), they can reach a position in which their self-esteem and confidence increases when dealing with wholesalers or other marketing intermediaries. This contributes to a relative shift in negotiation power, farmers being able to win back a position in which they can start negotiating for their benefit. In some cases, the increase in quality and the associated market recognition, have allowed a reversal of power balances in the value chain for producers: e.g. *Cotija* cheese (Mexico) or *Sunstar* organic rice (India).

In brief, when farmers are able to find ways to improve their access to market information and reduce the length of the value chain through direct sale, they can gain better control of their products and their BM.

Capacity building providers

Small farmers generally lack the set of different skills needed to initiate and drive the certification process. In many cases, the difficulty lies in the low level of education and in particular the high illiteracy rates among farming communities.

When farmers are partnered with an external stakeholder (e.g. buyer company), the latter tends to provide capacity building through technical assistance or managerial skills training. In fact, firms dealing with small-scale suppliers tend to have their own extension agents dedicated to build their suppliers' capacity. The approach used often involves the identification of lead farmers who are trained by project staff in the techniques required, which they should then pass on to the other group members. Lead farmers can also be responsible for organizing other support services, such as study trips and produce collection. For example, TOPS (the company involved in the Thai organic rice case study) operates this way. Retailers, supermarkets in particular, might also provide technical assistance to farmers when they centre their strategy on supplier development in order to increase their supply chain competitiveness (Vorley, Lundy and MacGregor, 2009).

NGOs supporting the organic movement are major providers of technical assistance to farmers on organic farming techniques and management skills for the internal control system. For example in the ECOVIDA Network (Brazil), NGOs are very much involved in capacity building and are often members of the basic decision-making units (nucleus).

Governmental institutions might provide capacity building on the requirements for certain certification schemes, especially as part of a more global strategy from the Ministry of Trade or Agriculture. For example, the Horticulture Crop Development Authority (HCDA) in Kenya provides training to farmers on *KenyaGAP* requirements. Nonetheless, there is little information available on these nation-wide programmes so that it is difficult to know how well they reach small farmers.

International development agencies are often involved in providing such services. In Kenya, for example, four major agencies participate in the provision of capacity building for FFV farmers.¹⁰ Sometimes, multi-lateral agreements and linkages are established to coordinate capacity building provision at farm level. TOPS, for example, is linked to research institutions providing organic technology development. In other cases, farmers paid for most services, including technical assistance, research and extension, as in the Czech and Hungarian cases. However, these farmers do receive EU subsidies.

Finally, in many GI case studies there weren't enough qualified capacity building providers, especially for skills required for organizing producers, managing the GI, or accessing markets that appreciate the distinctive quality of the products.

Institutional environment and support

The studied standards affect areas of concern to the public sector, such as food safety, environment, labour conditions, foreign trade and agricultural development. Among the concerned public institutions are the Ministry of Agriculture and related bodies, the Ministry of Trade and Export, institutions responsible for accreditation and protection of intellectual property, research institutions and other government-supported associations.

¹⁰ Namely, the Japan International Cooperation Agency (JICA), the United States Agency for International Development (USAID), the International Fund for Agricultural Development (IFAD) and the Pesticide Initiative Programme EU-COLEACP.

Case study box 6. National Federation of Coffee, Colombia

Coffee traditionally holds a special link with Colombia, and has been identified for its quality and smoothness. This correspondence is not accidental but truly the result of decades of work carried out by the National Federation of Coffee, based on a strong organization, an excellent advertising campaign and the effort of each coffee grower to give a product of highest quality. It has obtained the Denomination of Origin granted by the Supervision of Industry and Commerce and the protection of GI from the EU.

Source: Gallego Gómez, 2007

Governments should provide an enabling regulatory framework to facilitate the adoption of standards. Organic certification and GI registration in the EU have mandatory standards and regulations governing the production, marketing and labelling of organic products, which member countries have adopted (Cuffaro and Liu, 2008). The legal framework for GI includes some degree of protection, with a national institute for the protection of intellectual property being the main institution in charge. Overall, as most countries are WTO members, they have to apply the measures under the TRIPS Agreements related to GI and Denominations of Origin. The different levels of protection among countries will affect the effectiveness of the protection. However, the debate is still on the table at the international level, as the legal framework is fairly new and most of the case studies assessed are the first attempts to register a GI.

NGOs, as well as international development agencies, can also help farmers to access markets. For instance, in many cases studied they helped develop the market for organic agricultural products and build awareness among farmers and consumers. However, in certain cases such as *Cacao Arriba* (Ecuador), it was noted that the involvement of too many different development agencies and NGOs resulted in inefficiencies because of lack of coordination.

Access to credit

On the supply side, the conditions for accessing credit are more or less the same for farmers working under the studied schemes as those engaged in conventional farming activities. However, on the demand side farmers involved in certified products need to perform significant investments to comply with standards.

Sometimes, it is the whole value chain that needs upgrading, such as the Argentinean baby goat chain, where the intermediary actors (mainly SME) had to struggle to access credit for improving the cold chain (e.g. buying cold trucks) to guarantee the quality of the product reaching final consumers.

At times, farmers producing certified products gain credibility by receiving a certification for their products, which translates into better access to credit. Some government and private banks are more willing to provide credit to organic farmers for example. Likewise, the formation of a PO linked to the management of a certification system improves farmers' credit worthiness.

5. Conclusions and the way forward

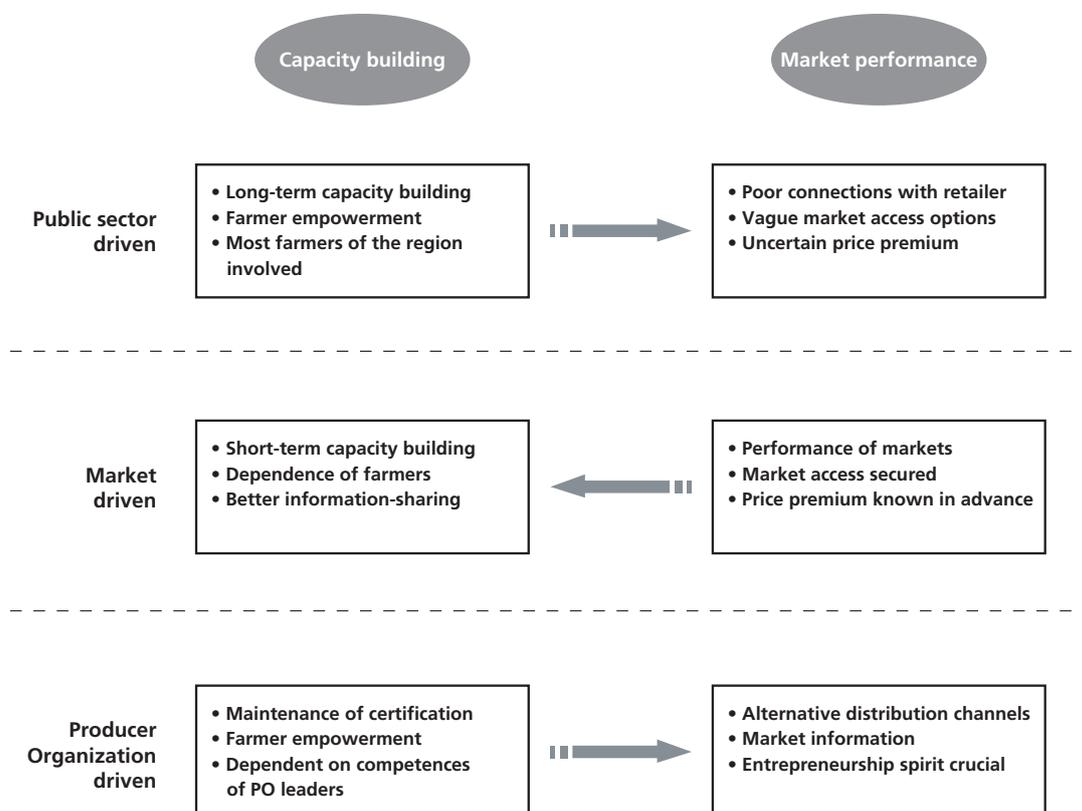
5.1 MAIN BUSINESS MODELS FOR ENHANCING MARKET ACCESS

Following the comparative analysis of the 17 case studies selected, 3 main models for enhancing small farmers' access to market for certified products emerge (see Figure 3). The analysis allowed identifying models based on the type of actors driving the certification procedure and facilitating market access.

The first model involves non-private entities as the initiators of the certification process, namely governmental bodies, international development agencies, NGO and other institutions. In the second model, the process is driven by the private sector (processors, exporters and retailers), whereas in the third model the driver is a PO. These three models differ in two elements: the perspective and sustainability of capacity building and market performance.

The public-sector driven BM tends to provide long-term capacity building to farmers, encourages farmer empowerment and is as inclusive as possible. However, this model is relatively weak with regards to performance on markets as linkages with retailers and other buyers are insufficiently developed, market potential is often unrealistically assessed and receiving a price premium is rarely assured. The case of *Turrialba* cheese from Costa Rica exemplifies this model: The registration of the product was initiated in

Figure 3. The driver models

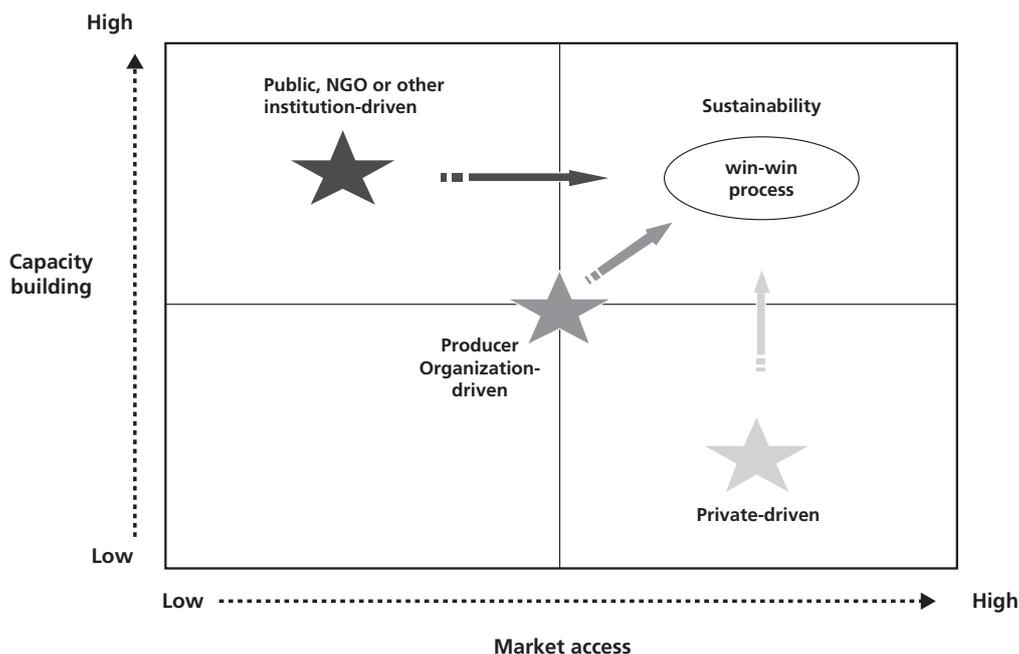


the framework of a public-sector initiative, which involved the commission of studies to identify potential candidates for GI registration. Although local researchers proved the existence of attributes linked to origin and traditional processing methods, and explored market opportunities, market conditions are still very uncertain for this product.

The private firm-led model is the exact opposite. The capacity building activities are centred on a particular set of skills relevant for the current project, information sharing is limited, and farmers easily become dependent on the company and are more vulnerable if the company withdraws from the project. On the other hand, the market access issues are well dealt with, as products reach their target market and maintain access to it (at least for the duration of the contract), and the price premium conditions are advantageous. The case study from India concerning fragrant organic rice for export illustrates this model well. The trading company Sunstar Overseas Ltd leads the certification process involving about 200 small farmers: It organizes the internal control system, processing, packaging and marketing activities, as well as providing extension services and support for infrastructure. Its suppliers, enrolled under a five-year contract, cannot sell to other buyers as Sunstar retains ownership of the certification.

The third model, with a PO as main driver, can have mixed results depending on the types and level of strength of the organization. The efficiency and performance of the PO is decisive for the BM, the degree of involvement of the PO members and their organizational competences being essential. The main advantage of this model is its sustainability, as POs may have the responsibility for maintaining the certificate with a long-term perspective. Examples of such models are the ECOVIDA organic Network in Brazil and the Colombian Coffee GI driven by the National Federation of Colombian Coffee Producers (FNC). These networks of producers allow maintaining the specific quality attributes adding value through vertical integration. In such cases, the PO covers various segments of the value chain and secures information flows and market access. This model is more efficient in cascading down market information to small farmers and creating alternative distribution channels adapted to the particular product and situation. However, these systems rely mainly on a widespread network of producers already in place and an efficient management based on the leadership and initiative of a few, without which the model would not work.

Figure 4. Matrix of the driver models



The three models are illustrated in Figure 4, through a bi-dimensional matrix analysing capacity building and access to markets.

The **capacity-building dimension** will depend on:

- i) Providing good quality and adapted capacity building that revolves around a continuous learning process guided by a long-term vision will have more chances to succeed.
- ii) Fostering farmers' empowerment that diminishes dependence on external interventions.
- iii) Developing positive externalities for rural development.

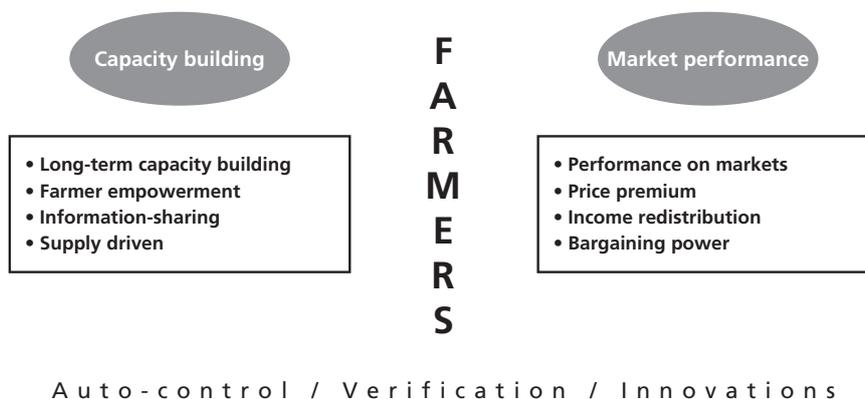
The **viability of farmers' access to markets** depends on:

- i) The type, strength and quality of connections and linkages with local and export buyers, and the market in general.
- ii) The assurance of having guaranteed access to the relevant certified products market after receiving the certification, knowing in advance the proportion of production that will be sold under certification, etc.
- iii) The assurance to receive a price premium, in other words, a return on their investments to comply with the standards and certification costs.

A word of caution regarding the nature of this matrix: It is a simplification of the multiple possibilities that might exist in real life, as it is based on a set of selected case studies that showed a common pattern. There are many shades of grey in between: For instance, another set of case studies on certified products commissioned by the FAO Regional Office in Asia revealed a higher level of investments by private buyers to build the capacities of their farmer-suppliers.

Furthermore, when developing strategies for enhancing farmers' access to markets for certified products the objective would be to reach a **win-win situation** with the right mix of public and private efforts (Figure 5) to increase market performance and provide long-term capacity building and adequate certification control systems that ensure the sustainability of BM for small farmers.

Figure 5. The right mix for sustainable business models



Source: authors of this document

5.2 KEY SUCCESS FACTORS

The analysis of the case studies selected through the BM approach confirms that participation in markets for certified products is indeed a suitable opportunity for farmers in developing countries. It also demonstrates that there are many common features across the three certification schemes, and that certain common success factors can be distinguished from the conceptual framework elaborated. Key strategic elements to formulate supportive policy to enhance producers' participation in BM for markets for certified products through the business models previously identified are highlighted below.

Strategic choice

- **Identifying a clear target market.** As the target market determines the type of standards and certification scheme to comply with, a market study is the entry point for the BM.
- **Performing producer organization.** In order to ensure sustainability of the BM in terms of income generation and lasting certification, enhancing organizational and managerial skills of the PO becomes relevant.
- **Certification ownership.** Although private-sector driven BM have proved to be successful, increased ownership of the certification schemes by the PO will allow diversifying of market opportunities and reducing market risk. Also, organizational, financial and business skills need to be in place.
- **Implementing sustainable quality management and control system (QM&CS).** Related to the above, a well-established QM&CS remains the basic requirement to get certification ownership and reduce marketing risk.
- **Better understanding and appropriation of standards.** Another key element in appropriating certification is the understanding of the underlying principles behind the standards that need to be in place to avoid inefficiencies and non-conformity. Establishing and updating capacity building activities in this matter becomes fundamental.
- **Direct market promotion.** The participation in fairs, markets and contests provides producers opportunities to better understand consumers' preferences and market trends. To reach such participation, marketing skills of POs need to be enhanced.
- **Market diversification.** Producers may be linked to other market segments such as agro-industry or tourism in order to diversify their income-generating activities. To reach such broader market opportunities, greater organizational structures and managerial skills are required.

Value creation

- **Sustainable capacity building.** Achieving and maintaining certification could be problematic for producers. Therefore, capacity needs to be built to sustain the certification system in the long-run. This capacity building should be designed as a continuous learning process either by the public or private sector or a partnership between them.
- **Clear understanding of adding-value attributes.** When targeting high-value product markets, producers must be aware of the specific attributes that add value and differentiate their products. Awareness-raising campaigns for producers and consumers would help to build this understanding.

Value capture encouragement

- **Capturing added value.** If producers are prompted to embark upon a certification process in order to get a price premium, a clear market linkage with buyers needs to be set up in advance.
- **Cost-reduction through group certification options.** Group certification has proved to be a suitable option to reduce certification costs when producers are well organized. Therefore, an efficient organization will be better equipped to reduce its own certification costs.
- **Understanding of cost-benefit.** If producers are aware of the real certification costs, they would be better able to take informed decisions in managing their BM. Therefore, better understanding of cost-benefit ratio is required in building producers' capabilities.

Value network

- **Accessing market information.** Market information, including information on certification requirements, is crucial for improving farmers' negotiation skills. More accessible and reliable public or private market information systems would empower producers in the marketplace.
- **Encouraging participatory certification processes.** Involving producers and other value-chain stakeholders in the definition of certification procedures seems to increase producers' confidence, skills and bargaining capabilities in general. GI, organic and GAP national schemes allowed this possibility, however the initiative is more likely to work if generated by producers' organization.
- **Linking with strategic partners.** Implementing win-win schemes with socially responsible business partners has shown to be advantageous for producers in many circumstances. An enabling environment that supports this type of BM is required to increase partners' confidence in terms of regulations, contract farming systems, and market information flows, among other factors.
- **Positive externalities.** Obtaining a certification for their products can have several indirect positive effects on farmers, impacting not only on improving incomes, but also on the community and local economy.

5.3 WAY FORWARD

Building on this study, the consecutive stage for research would require the validation of the business model framework identified here through new case studies. Designing case studies that would be better identified or expand on other types of business linkages for small farmers' access to markets could also be an opportunity to confirm the lessons learned and develop good practices.

Annexes

ANNEX 1 SUMMARY OF THE CASE STUDIES SELECTED

Certification scheme	Title	Product	Region
Organic	The case of Top Organic Products and Supplies Company Limited (TOPS)	Organic jasmine rice	Northeast Thailand
	The case of Bak Rueva Farmer Organization (BRFO).	Organic jasmine rice	Northeast Thailand
	Organic basmati rice farmers in North East of India	Organic basmati rice	India
	Horticulture farmers participating in the ECOVIDA Agro-ecological Network in Brazil	Organic fresh fruits and vegetables	Brazil
	Organic horticultural farmers in the Czech Republic	Organic fresh fruits and vegetables	Czech Republic
	Organic horticultural farmers in Hungary	Organic fresh fruits and vegetables	Hungary
GAP	Study on capacity building and investments needed to comply with EurepGAP standards in Kenya	Fresh fruits and vegetables	Kenya
	Institutional strengthening and investments needed to meet EurepGAP requirements for fresh fruits and vegetables: case studies from Chile	Fresh fruits and vegetables	Chile
	Study on capacity building and investments needed to comply with EurepGAP standards in the fresh fruit and vegetable sector in West Malaysia	Fresh fruits and vegetables	Malaysia
Geographical indications	Queso Turrialba	<i>Turrialba</i> cheese	Costa Rica
	<i>Proceso de calificación y sello de calidad en relación con el origen, caso: Café de Colombia</i>	Coffee of Colombia	Colombia
	<i>Chivito criollo del Norte Neuquino</i>	Norte Neuquino's baby goat	Argentina
	<i>Limón de Pica</i>	Lime from Pica	Chile
	<i>El Queso Cotija</i>	Cotija cheese	Mexico
	<i>Estudio de caso: denominación de origen "Cacao Arriba"</i>	Cocoa	Ecuador
	<i>Denominación de origen "Cacao Chuao"</i>	Cocoa	Venezuela
	<i>Estudio de caso sobre el proceso de obtención de la Denominación de Origen del "Maíz Blanco Gigante Cuzco"</i>	Cuzco's giant white corn	Peru

ANNEX 2 FRAMEWORK FOR ANALYSING THE CASE STUDIES

Strategic choices

- Target market
- Competitors, positioning: local and global
- Choice of certification scheme, certification system, “cahier des charges”, standards compliance
- Who drives the certification aspiration? Who does the thinking and writing of the “cahier des charges”?
- Percentage of production sold certified
- Price premium
- Participation in a producer organization, cooperative
- Involvement in cooperative: input from producer, what they receive for taking part
- Branding, participation in fairs, product quality contests
- Diversification options

Value creation

- Core capabilities
- Hard assets
- Technical skills
- Planning, management and business skills
- Quality features of the product
- Product and productivity innovation

Value capture

- Price premium
- Revenue streams
- Cost structure
- Cost of compliance to standards
- Cost of membership in organization, cooperative
- Transaction costs
- Certification costs: who bears the cost? Shared?

Value network

- Customer information, customer relationship
- Governance of the value chain: type of governance, extent and legitimacy of leading actor, power relationship, bargaining power, supply or demand driven, place and role of retailers
- Prevalence of social networks, size of unions and associations
- Strategic partners/dedicated champion
- Capacity building providers
- Business enabling environment, policy, institutional environment
- Access to credit
- Supporting services: labs to analyse tests required for inspections
- Development agency intervention

ANNEX 3 REFERENCES OF CASE STUDIES

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