



Organic supply chains for small farmer income generation in developing countries

*Case studies in India, Thailand,
Brazil, Hungary and Africa*



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Executive summary

Despite the increasing attention given to organic supply chains over the past decade, there are still significant market opportunities to pursue. The demand for organic products in developing countries continues to grow and price premiums for organic certified products are available, albeit not comparable with those of a decade or so ago. This paper focuses on case studies on organic rice in India and Thailand, horticulture products in Brazil and Hungary, and coffee and fruit in African countries. It first summarizes findings on the marketing, financing, post-harvest and value-added components of these organic ventures and then provides conclusions and recommendations for policy-makers, the private sector and support organizations for the future development of organic supply chains in developing countries.

In the cases studied, supply chains ranged from the very short where farmers market directly to local consumers, to the more elaborate chains where a number of different actors are involved in moving the organic products along from farmer to final consumer.

All those involved have distinct roles and responsibilities. *Farmers* are responsible for cultivating crops according to organic procedures certified by the appropriate authority. *Farmer organizations* facilitate groups of farmers to produce jointly the required volume of organic products to be supplied to buyers. They also facilitate implementation of internal control systems (ICS) to ensure quality management and reduction of certification costs through group certification. In some cases, farmer organizations own equipment, trucks, storage and processing facilities such as rice mills, juice processors and fruit dryers. *Buyers* include individual entrepreneurs, international trading houses, food processing companies, supermarkets, wholesalers and retailers as well as government programmes. Most buyers assist farmers with some level of extension, training and credit in terms of inputs and, in some cases, they actively promote the formation of farmer groups and associations to facilitate collection, transportation and the provision of training and farm inputs. Buyers often facilitate certification either through the formation of and participation in ICS and/or assuming the associated costs. *Support organizations* – both governmental and non-governmental – provide technical assistance and training support to farmers so that they can become certified and participate in organic food supply chains. *Financing institutions* may facilitate credit lines appropriate to organic production characteristics and quality demands along the chain.

Transportation and logistics of the harvested product and maintenance of the organic quality are important components in the supply chain. Handling and transportation, storage, packing, etc. of organic products must be carried out separately from non-organic products, and under certified conditions. Traceability is now a further requirement of export markets as a means of ensuring the quality of products all along the chain. Processing, storage and transportation are generally handled by the

private sector entrepreneur, wholesaler or exporter. Attempts to establish cold chains for fruit and vegetables have been inefficient and expensive because of low capacity of use and operational costs. In some cases, refrigerated warehouses have been funded by government programmes for the benefit of small-scale organic farmers.

The case studies show that the burden of responsibility for post-harvest operations falls on producers and their organizations. Whether in rice, coffee or fruit and vegetables, farmers' skills and facilities, together with the timeliness of their activities, affect the quality of the final product when it reaches the buyer and, ultimately, the consumer. More support in post-harvest training is required at the farmer level, as the value-added associated with organic certification is lost if the quality of the final product is not acceptable to the consumer. In several cases, efforts have been made to improve post-harvest operations and quality management through the implementation of training on the farm and at other key points in the chain. For processed products, most farmers passed their produce on to a processing specialist in the chain. Only in a few cases have farmers diversified into processing their produce in order to capture more of the value-added in the supply chain.

Private sector partnerships were the key source of financing for organic supply chains. In other cases, fairtrade partnerships between producers and buyers in developed countries were able to finance production and post-harvest operations in a reliable way through provision of advance payments. However, this was not always sufficient, so that farmer organizations needed to find additional funds locally. Overall, financing of crop production for smallholders continues to be problematic in developing countries, irrespective of whether the product is organic or not. Where private sector or fairtrade¹ partnerships are being developed or are functioning, it would be desirable for commercial banks and government-backed programmes to be encouraged to develop financing mechanisms that facilitate the smooth functioning of all essential activities along the supply chain.

In all case studies, a range of factors that influenced success were identified. Key among these were: secure access to stable markets through value chain integration; active participation by private sector partners able to take responsibility for financial and managerial resources and provide support to farmers; support services from Non-governmental Organizations (NGOs) and government agencies, and adequate investment and access to finance. In addition, the organization of farmers in efficient groups was a key factor in facilitating fairtrade certification; access to inputs and training; and price guarantees for both organic and in-conversion crops, motivating farmers to participate and stay in the supply chain.

As in conventional markets, factors limiting the success of the ventures included technical issues such as inadequate post-harvest training for farmers and the lack of appropriate drying equipment and storage facilities. Other constraints included the low volume of products for marketing to wholesalers and supermarkets; lack of differentiation between organic and non-organic products in some markets; and limited access to finance for inputs, purchase of harvested crops and post-harvest handling, processing and cold chain facilities.

¹ The term *fairtrade* is used here when referring to products certified by the Fairtrade Labelling Organization (FLO).

Based on the review, a number of recommendations are made for strengthening viable organic supply chains for the benefit of smallholders in developing countries.

Governments should consider providing an enabling environment so that organic supply chains can develop for both the export and domestic market. This will mean including organic production techniques and post-harvest operations in extension services; developing credit lines for conversion and certification costs, purchase and storage of harvested crops, post-harvest and processing equipment, cold chain facilities and transportation; and support for training in food handling, food safety and quality management, business and marketing management and associated consulting services from local private suppliers.

In association with environmental NGOs, the private sector and leading producers in the organic sector, governments should also promote organic products for domestic consumption through consumer awareness campaigns; support the development of organic marketplaces in partnership with municipalities; and promote the procurement of organic products for public sector health, food and nutrition programmes. Furthermore, development of organic standards and certification and fostering the establishment of local certification bodies – when volumes are considerable – will build confidence in organic products and reduce certification costs for producers.

Partner companies should identify feasible markets abroad as a preliminary step prior to participating in or developing export-oriented organic supply chains.

They should also have the necessary business, marketing and technical skills to back the development and operation of the organic supply chain. They should be open to forming alliances and partnerships and working with other organizations such as farmer groups, NGOs, government agencies and banks with different philosophies in order to capitalize on synergies that lead to greater supply chain efficiencies.

Private companies should take special responsibility in ensuring adequate investment and availability of funds for the effective operation of the whole supply chain.

Financing institutions are encouraged to develop appropriate financing mechanisms that take the idiosyncrasies of organic production into account, such as the conversion period and product segregation along the supply chain. They should facilitate the smooth functioning of all essential activities along the chain.

Support groups, such as NGOs that work with small-scale farmers on organic projects, should have the necessary capacity to deal with post-harvest, food safety and quality, finance, marketing and business management activities with their own staff or with alliances or subcontracts with specialist groups at universities, consultants and technical service companies.

They should also evaluate opportunities for accessing fairtrade markets, obtaining certification as a first option, given the benefits and motivation this provides for smallholder farmers and their communities. Certification schemes for farmer organizations must be kept to a minimum, since record-keeping and understanding the different certification requirements present major challenges.

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Acronyms

AOPA	Association for the Development of Agroecology (formerly Association of Organic Producers from Paraná) (Brazil)
ARDP	Agricultural and Rural Development Programme (Hungary)
BAAC	Bank for Agriculture and Agricultural Cooperatives (Thailand)
BRFO	Bak Ruea Farmer Organization (Thailand)
CATI	Coordenadoria de Assistência Técnica Integral (Brazil)
CBS-KTB	Community Bank Services of the Krung Thai Bank Public Company Limited (Thailand)
CODI	Community Organizations Development Institute (Thailand)
COOPERAFORESTA	Cooperativa dos Produtores Agroflorestais de Barra do Turvo (Barra do Turvo Agroforestry Producers Cooperative) (Brazil)
COPAÉCIA	Cooperativa Aécia de Agricultores Ecologistas (Aecia Ecological Farmer Cooperative) (Brazil)
CWA	Chai Wiwat Agro-Industry (Thailand)
ECOCITRUS	Cooperativa dos Citricultores Ecológicos do Vale do Caí (Cai River Valley Ecological Citrus Farmer Cooperative) (Brazil)
ENF	Earth Net Foundation (Thailand)
EPOPA	Export Promotion of Organic Products from Africa
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FLO	Fairtrade Labelling Organizations International
GLOBALG.A.P.	Global Partnership for Good Agricultural Practice
GNC	Green Net Cooperative (Thailand)
HACCP	Hazard Analysis and Critical Control Point (system)
ICCOA	International Competence Centre for Organic Agriculture (India)

ICS	Internal control system(s)
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agriculture Movements
ISO	International Organization for Standardization
KCCS	Kisan Credit Card Scheme (India)
MBA Nucleus	Núcleo Maurício Burmester do Amaral (Brazil)
MoAC	Ministry of Agriculture and Cooperatives (Thailand)
NABARD	National Bank for Agriculture and Rural Development (India)
NAIS	National Agricultural Insurance Scheme (India)
NCOF	National Centre of Organic Farming (India)
NGO	Non-governmental Organization
NPOF	National Project on Organic Farming (India)
NRDP	National Rural Development Plan (Hungary)
OAFT	Organic Fair-trade Rice Committee (Thailand)
PAA	Food Acquisition Programme (Brazil)
PRONAF	Programa Nacional de Fortalecimento da Agricultura Familiar (Brazil)
SHGs	Self Help Groups
SIDA	Swedish International Development Cooperation Agency
TOPS	Top Organic Products and Supplies Company Limited (Thailand)
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UOCB	Uttarakhand Organic Commodity Board (India)

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Chapter 1

Introduction

Despite the attention given to organic supply chains over the past decade, significant market opportunities remain. Demand for organic products in developing countries continues to grow and price premiums for these products, albeit not comparable with those of a decade or more ago, continue to exist. Organic agriculture is important because it has the potential to maintain and increase yields while improving soil fertility, biodiversity and other ecosystem services. It is particularly suited to smallholder farmers, who are less dependent on external resources, since it makes use of their traditional knowledge. These farmers have found it relatively easy to adjust to the demands of organic certification. In fact, the majority do not use chemical inputs so are already producing organically. Nevertheless, their products need to be certified by specialized agencies so they can be sold under the organic label and thereby attain premium prices. Several reports have confirmed that small farmers who have shifted to organic production and marketing enjoy higher and more stable yields and incomes, thus enhancing their food security (IFAD, 2003, 2005; UNEP-UNCTAD, 2008a, 2008b).

International markets for organic products continue to grow at a rapid rate of 10–30 percent per annum in most countries and over US\$5 billion per year globally, with fresh fruit and vegetables as the leading sector. For instance, organic vegetables comprise over 5 percent of all vegetable sales in northern European countries and exceed 10 percent in some Scandinavian and Alpine countries. The organic fruit market is reporting even higher growth, as more tropical and exotic varieties come on the market (Organic Monitor, 2010b).

In 2009, the global market for organic food and drink rose to over US\$54.9 billion, with the vast majority of products being consumed in North America and Europe (Willer and Kilcher, 2011). The leading areas in organic food production are Australia (12.14 million ha), Europe (8.18 million ha) and Latin America (8.07 million ha) (Organic Monitor, 2010a), while the countries with the highest number of producers are in Latin America, Asia and Africa, reflecting the high predominance of smallholder organic agriculture farms in these regions (Willer and Yuseffi, 2007). Organic products from developing countries are increasingly in demand in export markets. Similarly, demand for fairtrade products (often certified as organic) is also increasing, with product sales in 2008 estimated at US\$3.5 billion as a result of the growing interest in social and trade issues involving developing countries. Some European supermarkets have gone so far as to convert their entire supply chains of certain products to fairtrade (Organic Monitor, 2009). Domestic markets for certified organic products in developing countries are much less developed, with the exception of China (IFAD, 2005). Nevertheless, the potential for active exchange between countries in an emerging Asia-Pacific regional organic market is consolidating an organic industry that had originally developed to supply Europe and North America (Cadilhon, 2010). While

TABLE 1

Cost benefits at the farm level in certified organic products (US\$/ha/year)

	India 1 Rice	India 2 Rice	Thailand 1 Rice	Thailand 2 Rice	Brazil Fruit/ vegetables	Hungary Fruit/ vegetables
Ongoing costs	444	238	213.7	135	1 887	740
Gross income	796	678	547	562	3 863	7.48
Gross margin	1.79	2.84	2.55	4.16	2.04	1.22

Source: FAO, 2007a.

organic premiums are high in a few export and domestic markets, there are some concerns that these may not continue as more and larger commercial producers enter the market, so that premiums may fall in the future (IFAD, 2005).

Given the interest in organic supply chains and their potential and benefits for small farmers, in the mid-2000s, FAO developed a comparative cost/benefit analysis of different certification schemes aimed to understand better the alternatives in organic certification and the economic implications for farmers and their support organizations (FAO, 2007a). Findings clearly showed that these certification schemes are embedded in specific market relationships that determine business and technical services, inputs and post-harvest needs. Moreover, it was clear that establishing organic policy and institutional frameworks at national level facilitates market access to export markets in the United States of America and Europe. Additionally, establishing internal control systems (ICS) within farmer organizations and promoting local certification bodies are crucial for lowering costs and improving farmer profitability.

The present study builds upon the previous work on certification costs by investigating marketing strategies and sources of financing for small organic farmers and intermediary organizations.

Chapter 2

Case studies

INDIA

In recent years, the central and state governments have taken a number of steps to promote organic farming among farmers and consumers. These include a National Project on Organic Farming (NPOF) and a National Centre of Organic Farming (NCOF). Some state governments have also initiated programmes to encourage farmers to convert to organic farming and to facilitate the organic certification process, which is necessary to obtain a premium price in the market. As a result, the area under organic cultivation had increased to around 1.2 million ha in 2008 (ICCOA, 2009). A large proportion of certified organic production goes to export markets, mainly Europe, the United States of America, Australia, New Zealand, Israel and the Middle East. Exports consist of about 35 commodities, including cotton, spices, tea and basmati rice. The domestic market for organic produce is much smaller.

This study focuses on the supply chains for the export of organic basmati rice in the state of Uttarakhand, situated in northern India, through a review of two case studies (Alam, 2007). One project was initiated by a private company, Sunstar Overseas, which is one of the largest traders of basmati rice in India. The other was developed by a public sector agency, Uttarakhand Organic Commodity Board (UOCB), which was set up by the Uttarakhand government to promote organic farming in the state. The Sunstar production chain includes about 500 farmers while that of UOCB has more than 1 200 farmers. Most of these are small and medium landholders.

THAILAND

In 2005, organic farming in Thailand covered about 21 701 ha (up from 2 000 ha in 2000), representing 0.1 percent of the total agricultural land area, with 7 186 farmers, representing 0.14 percent of the total number (IFOAM, 2010). Thai organic agriculture is dominated by rice and field crops, with organic rice produced on 18 000 ha or 85 percent of organic farmland (Willer and Yuseffi, 2007). Organic sector growth in the last few years has been quite impressive, thanks to a combination of factors, including the rapid growth of international organic trade, the emergence of domestic markets for organic produce, favourable government policies and the establishment of organic conversion systems.

The major export markets of Thai organic farm produce are the European countries, particularly Germany, the United Kingdom and France. Export markets in the United States of America, Japan and high-income countries in Asia such as Singapore, Hong Kong and Malaysia are also expanding significantly. There are no official statistical data on Thailand's organic exports. Besides rice, the second most important export to the European Union (EU) is fresh vegetables. Other exports are sugar, palm oil and vegetable seed. The domestic market is much smaller, estimated at around US\$20 million.

This study focuses on two organic jasmine rice producers – Top Organic Products and Supplies Company Limited (TOPS) and the Bak Ruea Farmer Organization (BRFO) (Panyakul, 2006). TOPS' supply chain begins with 133 individual contract farmers, who cultivate 240 *rai* (38 ha). These farmers are organized in three local groups, according to location. The supply chain of BRFO organic rice comprises 218 individual organic farmers, and the area covered is 961 ha.

BRAZIL

Organic production has been increasing significantly in recent years in Brazil, from 100 000 ha in 2000 to almost 900 000 ha in 2007 (De Abreu *et al.*, 2008). Pineapples, bananas, coffee, honey, milk, meat, soybeans, palm hearts, sugar, chicken and green vegetables are the main products. About 90 percent of this production is now exported to the United States of America, the EU and Japan (especially bananas, soybeans and coffee). Brazil is also a significant exporter of organic orange juice and organic sugar. Supermarkets account for 45 percent of domestic organic sales and marketplaces and specialized stores represent 26 and 16 percent, respectively. The principal products sold in these outlets are fresh fruit and vegetables, although there is an increasing trend towards processed organic products (teas, vegetable oils, cereals and milk). This growth is not only associated with consumers' needs, but is also part of the competitive strategy of the country's retailers to offer organic products to their customers. The growth of organic production in Brazil may also be explained in terms of the development of several different institutional relationships as well as an implementation of governmental policies specifically designed to support and promote the sector.

This study presents the results of a survey of five farmer groups belonging to Rede Ecovida de Agroecologia (Ecovida Agro-ecology Network) in the Brazilian states of Paraná and Rio Grande do Sul (Schultz, 2007) (see Box 1).

HUNGARY

In 2004, there were 1 842 organic farms in Hungary, cultivating more than 130 000 ha, about 2 percent of the total agricultural area of the country. The area was estimated to have increased to 140 000 ha in 2005. The organic crops produced include cereals (wheat, maize, barley, oats, rye); feed crops (alfalfa, peas); industrial crops (sunflower, soybeans); vegetables (carrots, green peas, onions, cabbages, potatoes, tomatoes, green and red peppers, pumpkins); and fruit (berries, sour cherries, apples, peaches, nuts, grapes, melons). The fruit and vegetable sector is not particularly large: the area for organic vegetable production is only 0.9 percent and organic orchards and vineyards are but 1.9 percent of the total organic area. Most of the land is used for cereals, industrial crops, forage and pasture. Hungary's organic products are mainly exported (90–95 percent) to neighbouring EU markets. Conversion to organic farming and continued production is stimulated by government area payment subsidies, training and other programmes supported partially by the EU.

This study incorporates two surveys of organic farmers, one carried out in 2001 and the other in 2005 (Kürthy, 2006). Elements of a third project carried out in 2005 by the Research Institute for Agricultural Economics in Budapest on the effects of Hungary's accession to the EU are also included. There were two main groups of organic farmers in the sample of 20 surveyed in detail: fruit and vegetable producers

BOX 1

The five farmer groups surveyed in the Brazilian study

MBA Nucleus (Núcleo Maurício Burmester do Amaral) is composed of 18 active groups of five to 12 agriculturists with a total of 180 families. Their main products are green vegetables, fruit and processed products, which are marketed mainly through organic marketplaces or fairs. The strategy adopted by MBA Nucleus is a search for flexibility, respect for diversity and for the autonomy of families to create their individual plans and choose appropriate marketing channels. Direct marketing is part of a strategy of consolidating ecological agriculture in the region where MBA Nucleus is active. Conventional markets, such as supermarkets, are perceived as risky for production activities, especially if this commercial activity is concentrated in the hands of only a small number of people.

ECOCITRUS (Cooperativa dos Citricultores Ecológicos do Vale do Caí [Ecological Citrus Farmer Cooperative of the Caí River Valley]) was founded in 1994, near the capital of the state of Rio Grande do Sul. It has 43 affiliates as well as 30 farms in the Caí River Valley region. Annual production is about 5 000 tonnes of fruit (tangerines and oranges) with profits of approximately US\$1.2 million). Of the total amount of fruit, approximately 10 percent is processed as juice. ECOCITRUS is well known for supplying fresh tangerines to retail networks. The cooperative has an infrastructure for processing and storing products, in which natural, pasteurized and reconstituted juice is produced. Grape juice will soon be added.

COPAÉCIA (Cooperativa Aécia de Agricultores Ecológicos [Ecological Farmer Cooperative of Aécia]) was the first group of farmers to be involved in organic production in the Serra region of the state of Rio Grande do Sul. It was founded in 1991, comprising 23 farmers. Fruit production is the main activity, especially grapes. Most of the production (90 percent) is destined for juice processing. Peaches, figs, persimmons and apples are also harvested. Currently, the cooperative specializes in ecological agro-industries, especially for grape juice and tomato processing. It is well known for its grape juice and its wide range of processed products, such as nectars, jellies and sweets made from apples, tomatoes, peaches and blackberries. These products are manufactured in three small agro-industries belonging to the cooperative, where manual processing is carried out by family members. Yearly sales reach US\$500 000.

CAPANEMA (Grupo de Agricultores Ecológicos de Capanema [Ecological Farmer Group of Capanema]). This group of 30 families is in the process of formally organizing a cooperative. It was the first group to affiliate with the Núcleos da Rede Ecodida de Agroecologia Sudoeste do Paraná, currently consisting of more than ten groups in various municipalities. The agriculturists are organized in five small community groups of six to eight families. They each have the freedom to plan their production and choose their marketing channels, so there is no group marketing. Currently, production is widely diversified in fruit and vegetables, milk, grains, sugar cane, sugar-cane

BOX 1 (*continued*)

derivatives and home-made preserves. A farmers' market has been established in the municipality, which operates as a permanent fair for family farmers. Social concern is a priority of the group. It has, for instance, a project for distributing its products by bus to low-income consumers. CAPANEMA's municipality received support for building warehouses for commercializing ecological products and classifying seeds, as well as for holding production training courses.

COOPERAFORESTA (Cooperativa dos Produtores Agroflorestais de Barra do Turvo [Barra do Turvo Agroforestry Producers Cooperative]) comprises 65 families involved in agroforestry in the Ribeira Valley region of the states of São Paulo and Paraná. Its products are sold mainly in marketplaces in Curitiba. One affiliate has a structure for post-harvest activities, which has two climate-controlled chambers, scales and space for packing products. Marketing is mainly through participation in four ecological fairs in Curitiba. In 2002, with already 100 affiliated agriculturists, AOPA (Association for the Development of Agroecology) provided an agronomist to work within COOPERAFORESTA, consolidating work with farmers and integrating the group in 2002 with the Rede Ecovida de Agroecologia, thus making possible its participation and expansion in group marketing. Products are transported to Curitiba by an AOPA truck.

Source: adapted from Schultz, 2007.

(ten farms) and producers of other major crops such as cereals and industrial crops, and animals. These also had a significant production of fruit and/or vegetables (ten farms). Seventy percent of the farms in the sample had no employees since only family labour was used, while 10 percent of the farms had only one contracted worker.

AFRICA

It is estimated that the African continent accounts for about 3 percent of global land under certified organic management. However, the number of farmers cultivating this small proportion of land is nearly 23 percent of African producers (UNEP-UNCTAD, 2008b). This reflects the predominance of small-scale farmers (with 1–3 ha) in organic production rather than commercial or plantation-type farms, although in some countries there is a clear presence of plantation-estate organic production because of the type of commodity (palm oil, bananas, mangoes).

Organic agriculture, whether for the export market or as a strategy to improve food security, is developing without the support of government policies or the participation of government services. It is the private sector, both NGOs and entrepreneurs, which is driving this development.

In both East and West African countries, the organic sector is still very small, with the West even smaller than the East, but it is growing. In the four countries studied, organic agriculture is predominantly export driven but in Uganda, for example, there is also a local emerging market, for the moment only in the capital, Kampala. The major export destination for organic products is the EU, although