

Chapter 3

The Contribution of Organic Agriculture to Poverty Reduction

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THE CONTRIBUTION OF ORGANIC AGRICULTURE TO POVERTY REDUCTION

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Introduction

In recent decades, organic agriculture (OA) has attracted increasing attention from governments, non-governmental organisations (NGOs), and development agencies. Agricultural production has grown dramatically and today, organic products are not only traded locally but nationally and internationally as well. The number of customers has increased, particularly in Europe and North America (Willer and Lernoud, 2016). With the growing demand and expanding markets, OA is increasingly viewed as not only a more sustainable alternative to conventional agriculture in improving the environment and mitigating climate change but also as an economic opportunity for farmers and people in rural areas all over the world (Nandwani, 2016). In the development context, OA has been increasingly promoted because of its potentials to improve rural livelihoods through increased incomes via premium prices and reduced costs for inputs such as fertilisers and pesticides (UNCTAD, 2006; UNEP-UNCTAD 2008), and it may provide a route out of poverty for rural people (Forumue, 2005; SSNC, 2013; Setboonsarng and Markandya, 2015). As an agricultural approach based on traditional knowledge, local resources, and low-cost technology, the prospects of integrating less resourceful small farmers in organic production seem good. However, does OA really live up to its promise of improving the conditions of people living in poverty in marginal rural areas?

This paper addresses the effects of OA in terms of income and of poverty alleviation in rural areas in developing countries. The central questions are: What is the status of OA today? Does it provide the expected premium prices and benefits? Does it contribute in raising the standards of living of farmers living in poverty? What are the most important entry barriers and problems related to OA? What are its development prospects?

The paper is based on an extensive inventory and review of data and literature. Although this analysis focuses on two value chains – cotton and coffee – the project also includes other products such as cocoa and oilseed. The two value chains are selected because they involve smallholders in marginal rural areas in developing countries, their market in Europe is a major buyer, and they represent different patterns in terms of value chains, geographical importance, and development of different certification schemes. Several different certification schemes exist for both crops. Many of the studies evaluating the effects of certification amongst smallholders are focused on both organic and other types of certifications.

The paper first introduces OA and its relevance to sustainable rural development in developing countries, and provides a brief introduction to the analysis of global value chains. The current status and development of OA are then briefly addressed based on the recent *World of Organic Agriculture 2016* (Willer and Lernoud, 2016). This overview is followed by the analysis of organic cotton and organic coffee production, with particular focus on their effects on the livelihoods of smallholders. In the final section, the findings are discussed and conclusions are drawn.

Theoretical Background: Organic Agriculture and Sustainable Rural Development in Developing Regions

Organic Agriculture

‘Organic farming’ and ‘organic agriculture’ are terms used to describe different farming methods that avoid the use of chemical fertilisers and pesticides as well as seeds of genetically modified organisms (GMO) (SSNC, 2013). Instead of chemical inputs, OA focuses on avoiding loss of nutrients through recycling; using manure, compost, and green manure; and varied crop rotations or agroforestry systems. Based on traditional farming methods from before the introduction of chemical inputs, OA has progressive ambitions. To reach its goals, OA seeks to combine the best of traditional methods with new scientifically based knowledge.

The organic farming movement emerged in Europe and the United States (US) after World War I, but ‘organic farming’ as a concept was first coined by Lord Northbourne in 1940 (Paull, 2014). It took a long time, however, before the terms became widely used, and even longer before they received attention in academic research. This can be illustrated by the results of searches over time for the terms ‘organic agriculture’ and ‘organic farming’ in scientific literature in the database of a Swedish university library (Table 1). It was not until the 1970s that the term ‘organic farming’ became widely used and only during the

last two decades has the interest of academic research grown remarkably. As well, ‘organic agriculture’ was seldom used before the 1970s, but has since gained importance. Today, these terms are often used interchangeably and in parallel although ‘organic agriculture’ is often preferred in more formal contexts, e.g. in connection with international organisations, policy documents, and legislation.

Table 1: Number of Article Hits in Scientific Journal and Books per Decade, 1940—2016

	Organic farming	Organic agriculture
1940s	7	
1950s	27	1
1960s	10	
1970s	187	28
1980s	388	112
1990s	1,828	966
2000s	13,419	8,416
2010s	19,072	10,515

Note: 2010s end with May 2016.

Source: UniSearch/Linköping University Library, 2016.

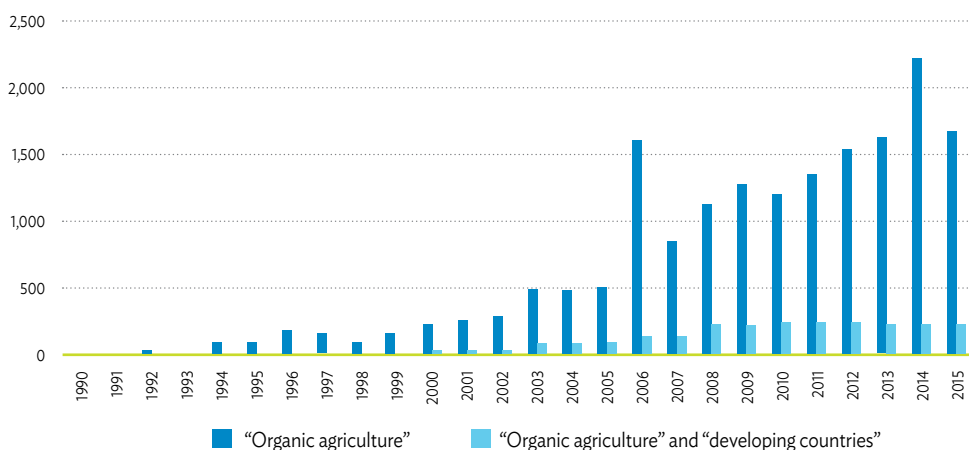
Not only has OA a longer history than other concepts and schools under the broad category of sustainable agriculture but has also a stronger base of established standards for production and processing. These standards have been integrated in legislation in many countries and form the basis for certification schemes and quality control. By 2011, 101 countries had OA regulations in place or were developing policies for it. Amongst these countries were 15 (out of the 54) African countries (SSNC, 2013). Since 1991, importing organic products has been regulated by EU legislation.

OA can be certified or noncertified (Setboonsarng, 2015a). Certified OA typically refers to third-party certification, where an independent certifier reviews the production process to ensure that it complies with national and international standards. Such certification plays a central role in the organic supply chain by guaranteeing that the products meet the standards (Haas et al., 2010). The standardisation of OA has contributed in creating confidence in organic food. It excludes by default, however, organic farmers (Farnam, 2001; Bennett and Franzel, 2013), who represent a large majority of smallholders in Africa that hardly or very irregularly use or have access to chemical inputs. Although the products from these non-certified producers live up to the basic organic standards since they are produced without chemical inputs, their production rarely incorporates the progressive objectives and practices of OA.

Organic Farming and Developing Countries

For so long, OA was not perceived as an option for the developing world as it did not seem desirable in regions that desperately needed increased food production. This attitude was reflected by the lack of interest from academia, which seldom mentioned organic agriculture in the developing context before the year 2000 (Figure 1). The introduction of organic farming in developing countries became an issue in the 1990s when the EU organic market was established and opened for imports of organic products. Also, some development aid organisations started to support the introduction of organic farming in Africa (e.g. Forss and Sterky, 2000).

Figure 1: Number of Article Hits in Scientific Journals and Books per Year, 1990—2015



Source: UniSearch/Linköping University Library, 2016.

The 'breakthrough' after 2000 was related to a changed view on the prospects for OA in the traditional South, and increasing critique against the long-term results of the green revolution. The modern, mechanised, and chemical agriculture, introduced in developing countries via the 'green revolution', has been successful in raising production levels and increasing the food supply for a growing population. However, it has also brought severe risks and problems such as environmental degradation via pollution of ground and surface waters, erosion problems, and loss of biodiversity in agricultural landscapes (Nandwani and Nwosisi, 2016). The use of antibiotics and pesticides has had negative consequences for animals and farmers and led to the quality of the products being questioned from health perspectives. Conventional farming is also related to high costs of investments in machinery and infrastructure, and purchase of fossil fuels, chemical fertilisers, and pesticides as inputs. Overproduction has often led to decreasing prices which, in

combination with stable or increasing input price levels, have led many deeply indebted farmers into bankruptcy (Pattanapant and Shivakoti, 2009).

OA is the most widely recognised alternative farming system that decreases its environmental effects. Reduced use of pesticides and chemical fertilisers decrease health impacts as well as ground and surface water pollution. It enhances biodiversity that helps control pests and diseases and produce healthy crops, and contributes to climate mitigation via reduction of fossil fuel use and increased build-up of soil carbon through use of animal manure, compost, and green manure (Schader et al., 2012).

Additionally, researchers, NGOs, development agencies, and UN organisations have increasingly viewed OA as a way for creating a more sustainable development in rural regions in Africa, Asia, and Latin America; reducing negative effects of agricultural modernisation; improving local food supplies; increasing employment; and reducing poverty in rural areas. It can contribute to poverty reduction and food security through market premiums, reduced costs for purchased agrichemicals and seeds, and improving the productivity and yields of the farm system. OA most often involves diversification of farm and its outputs. This may involve inter- or multi-cropping of annual crops or a shift to longer-term rotations including shrubs or trees (agroforestry), which may contribute to more stable and higher incomes. It may also make better use of the local labour force.

It was long assumed that OA had a general yield disadvantage compared with conventional agriculture. However, Badgley et al. (2007) found that, in general, organic systems in developing countries have higher yields than conventional systems. In a similar meta-study, Seufert et al. (2012) showed that conventional farming most often has higher yields, but that organic systems can match conventional farming under certain conditions, including good management practices, crop types, and growing conditions. Where little or no fertiliser has been used, the introduction of organic fertilisers often increases yields. Although yield decreases during conversion to OA, this can be quite temporary (Setboonsarng, 2015b). In practice, one of the main challenges of organic farming remains the yield and limited productivity due to lack of nutrients, ineffective weed control measures, and limited possibilities to improve the nutrient status of infertile soils (Kirchmann et al., 2008; Nandwani and Nwosisi, 2016).

Value Chain Analysis and Farmers in Developing Countries

Value chain analysis is a method to study the value created in a product from raw material to the final product. Most often, it has been used in an industrial-corporate context for analysing the system of producing a particular product. In recent decades, however, this

approach has been increasingly used by development researchers to examine the inter-relationships between the various actors involved in different stages of global supply or value chains (e.g. Mitchell and Coles, 2011). Development practitioners have also used this kind of analysis for identifying opportunities to improve the conditions of farmers (e.g. Donovan et al., 2013).

Value chain thinking has its roots in both the supply chain and business strategy analysis and the commodity chain analysis connected to world systems theory (Raikes et al., 2000). The supply chain literature in the 1980s stressed the importance of mutually beneficial business partnerships. Michael Porter (1985) introduced the concept of value chains within firms and between a firm and its suppliers. The term was introduced in the development literature in the 1990s, where it partly replaced 'commodity chain' (Donovan, 2011).

'Chain' suggests a focus on 'vertical' relationships between buyers and suppliers and the movement of a good or service from producer to consumer (Bolwig et al., 2010). The global value chain analysis has mostly centered on flows of material resources, finance, knowledge, and information in value chains, and has addressed related power relations and governance issues. Global value chain studies have analysed the structure, actors, and dynamics of value chains, including the development of functional division of labour along the chain and its changing shape, the dynamics of inclusion and exclusion, the distribution of value-added, and the roles of standards and policies in facilitating or hindering participation (Poulton et al., 2004). Currently, more local, 'horizontal' dimensions such as poverty, gender, and environmental aspects have been included in the value chain analysis (Riisgaard et al., 2010).

To smallholders in developing countries, these analyses of global value chains have shown the inequities in power relationships in connection with different supply chains and the difficulties of upstream farmers to influence and change the terms of their participation. Smallholders have often experienced worsening terms of trade and economic hardships due to low and unstable prices for their products and high costs of inputs. There are, however, also examples where integration in international value chains has brought opportunities for farmers to acquire the skills and resources needed to 'upgrade' their participation by reducing costs, increasing the level of processing, or producing new types of goods or services.

In recent decades, there has been less focus on the question whether farmers in the developing countries should participate in global trade and value chains. Instead, questions on how the terms of their participation can be improved are now being addressed by researchers, NGOs, and development agencies. In this context, value chain analysis



has proved valuable because it helps to identify problems, weaknesses, and strengths in different value chains, and to identify new opportunities. Research has, in the context of different value chains and regions, more often addressed the prospects for upgrading and how this upgrading can be supported (Kumar et al., 2011).

OA offers a package that potentially can bring to farmers all four types of upgrading typically mentioned in the literature (e.g. Gereffi, 1999; Donovan, 2011):

- Product upgrading through the production of higher priced organic products;
- Process upgrading by developing higher resource efficiency and lower input costs;
- Functional upgrading by developing varied skills for OA and innovative use of resources; and
- Intersectoral upgrading where successful organic transformation will make it possible to enter the organic value chain for both traditional cash crops and potentially new products.

However, realising such potentials and the connected benefits is difficult particularly in the context of smallholder communities in developing countries. In contrast to large commercial farmers who have access to capital, information, finance, and technology and can supply larger quantities of products and guarantee product quality, smallholders are generally disadvantaged (Kumar et al., 2011). They are often illiterate, lack management and technical skills, and have poor access to information (e.g. quality assessment, buyer demand, and standards). Their organisation and access to markets are often poor due to poor infrastructure and communications.

Methods and initiatives to facilitate value chain integration and upgrading of smallholders include efforts of increasing smallholders' capabilities by education and creation of farmer organisations and restructuring value chains by, for example, reduction of the number of intermediaries, and direct company contracts shortening of the value chains (NRC, 2010). Smallholders' capabilities can increase through training, information, and financial services. (Fayet and Vermeulen, 2014). Contractual arrangements can help reduce risk and farmers' vulnerabilities (Proctor and Digal, 2008). Contracts allow farmers to foresee volumes and quality requirements, predict prices, and determine what kind of support would be valuable. Branding allows product differentiation and increased profit and negotiation power along the value chain. Even if branding is rarely associated with small farmers, it can help to better position products of developing regions in both local and international markets by adding value and positive image building (Boomsma and Arnoldus, 2008).

Organic Production and Consumption in the World

The Research Institute for Organic Agriculture and the International Federation of Organic Agriculture Movements – Organics International regularly publish *World of Organic Agriculture*, an overview of the status and development of OA in the world. In the spring of 2016 appeared its 17th edition (Willer and Lernoud, 2016), with data for 2014. The data presented in the following sections are from this overview.

The 2016 report illustrates the dynamic development of organic production and consumption, and the generally expected fast growth of organic market. So far, the traditional North dominates the world of OA in terms of both consumption and production.

Organic Agricultural Land

The total organic agricultural land area was, in 2014, 43.7 million ha (including land in conversion). It has grown by 300% since 1999 and corresponds now to 1.0% of the global agricultural land. Additionally, there are also non-agricultural areas, mainly for wild collection, beekeeping, aquaculture, and occasional grazing. Approximately 40% of the organic agricultural land is in Oceania (Australia) and 30% in Europe. Oceania (4%) and Europe (2.4%) have substantially higher than the world average share of agricultural land, while the two largest continents – Africa and Asia – together have only 11% of the total organic agricultural area in the world. More than half the area is in Australia, Argentina, the US, and China. The growth of the organic area has been quite steady in Europe and Africa, while development has been much more irregular in other continents.

Consumption of Organic Products

In 2014, the global market for organic food and beverages was estimated to be US\$80 million (Sahota, 2016). The turnover has had a five-fold increase since 1999. The US (43%) and the EU (38%) have together more than 80% of the total purchases of organic products, while China is the only traditional developing country with a significant share of the global organic market. The countries with the highest per capita consumption of organic food and beverages are Switzerland and Luxembourg, while the organic market share is highest in Denmark (7.6%), Switzerland (7.3%), Austria (6.5%), Sweden (6%), and the US (5%).

Organic Producers

In 2014, a total of 2.3 million organic producers were reported. While the market since 1999 has grown five times, the number of people involved in organic production has grown more than 10 times according to workforce estimations. Despite some double counting in the FiBL survey, this number is probably an underestimation due to incomplete reporting by certifiers (Willer and Lernoud, 2016). While consumers of organic products and organic agricultural land are predominantly located in the traditional North, more than four-fifth of organic producers are located in Asia, Africa, and Latin America. Forty percent of producers are in Asia and 26% in Africa, despite the fact that only 3% of the global organic agricultural land is located there.

The Value Chains of Organic Cotton and Coffee

The labour-intensive cultivation of cotton and coffee is widespread and their value chains involve smallholders in developing regions and growing organic markets. They differ in terms of structures and geographical patterns. The value chains of cotton are complex and include uncountable final products while coffee beans are only produced to make coffee as beverage. There are several different certification schemes for both crops, and the total certified area is considerably larger than the organic area. Europe is not an important producer and relies on imports, and its expanding organic market is already an important, if not dominant, buyer of these organic products from the traditional South.

Cotton

Cotton, cultivated in more than 75 countries (FAO/ICAC, 2015), is mainly used for textile production and is amongst the most important non-food crops in the world. In 2013, the total cotton area was 32 million ha, which corresponds to 0.7% of the global agricultural land (ITC, 2015). According to Better Cotton Initiative, 90% of cotton is produced by small farmers with less than 2 ha of land (Forum for the Future, 2013). It provides livelihoods for 100 million farmers and 250 million people working in various cotton-based industries (FAO/ICAC, 2015). In 2013, the largest cotton-producing lands were in India with almost 12 million ha, China with 4 million ha, and the US and Pakistan, each with 3 million ha (ITC, 2015). Globally, 73 million tonnes of seed cotton and 25 million tonnes of cotton lint were produced. The two largest producers are China and India, each with about a quarter of the world production. Most of their production is used by their textile industries that export to the whole world, but China is also the leading importer with about one-third of the global imports. Other large producers are

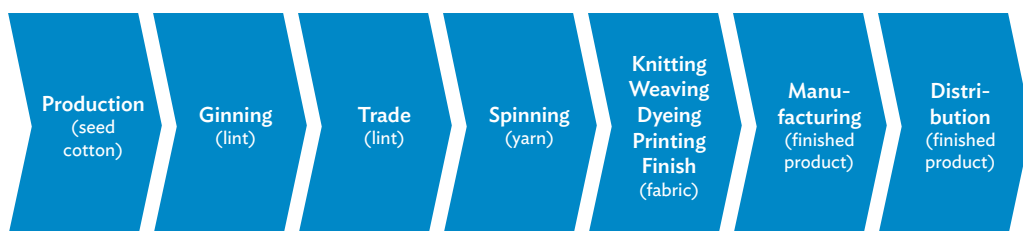
the US, Pakistan, Brazil, Uzbekistan, and Turkey. The US, with approximately one-third of the global exports, India, Australia, and Brazil are the most important cotton exporters (ICTSD, 2013).

Cotton needs a lot of water and is sensitive to drought and insect infestation. Inefficient irrigation combined with inappropriate use of fertilisers and pesticides can lead to water shortages, reduced soil fertility, water contamination, and increased human health risks (Fayet and Vermeulen, 2014). Low market prices, high input costs, and delays on high interest rates have often led small cotton farmers into vicious cycles of debt (Makita, 2012).

The Cotton Value Chain

Since cotton is a raw material with widespread use, it is part of uncountable value chains, which most often consist of numerous steps. Figure 2 is a crude illustration of the typical cotton value chain of farmers in India. Studies of organic cotton cultivation and the organic and certified cotton value chains have mainly focused on India. It is most common to include at least seven steps in the cotton value chain: farming, ginning, spinning, weaving, dyeing, manufacturing, retailing. But the different steps can be combined or further divided. The ambitions of different cotton certification schemes or company initiatives are most often to reduce the number of intermediaries along these value chains.

Figure 2: Basic Structure of Cotton Value Chains



Source: After Nelson and Smith, 2011.

There are many varieties and types of cotton that are adapted for different uses and have different price implications (Nelson and Smith, 2011). Longer, finer, and more resistant cotton lint most often commands a higher price. Contamination with organic matter or other foreign materials such as plastics can be a serious problem to smallholders in both India and Africa since it negatively affects the price. Improving the quality by eliminating contamination can be a way to receive a higher price for the produce.

Organic Cotton Production

The social and environmental conditions of cotton cultivation and related environmental problems got attention early. Since the 1980s, actors in the cotton and clothes value chains have experienced increasing pressure to introduce more sustainable practices. The first certification schemes were launched in the US and Europe in the early 1990s (Hortmeyer, 2010). Although the market for organic clothes and organic cotton remained very limited and unstable in the 1990s, organic cotton production was introduced in India and some other Asian and African countries with support from NGOs and development agencies. Since the early 2000s, there has been a renewed and rising interest in sustainable methods, and a rapid increase in the number of voluntary certification and labelling initiatives addressing environmental and social supply chain issues (Gruère and Plastina, 2010). Companies, pushed by media and increasing consumer expectations, have increasingly joined these certification schemes to improve their market positions and increase control over their supply chains to make it possible to reduce costs and enhance quality control. The nine-fold growth of organic cotton production in 2005-2010 (Truscott et al., 2016) can, to a large extent, be attributed to this trend as supported by NGO and government programmes.

According to the Organic Cotton Market Report 2014 (Truscott et al., 2016), 117,000 tonnes of organic cotton were produced in 2014 by 148,000 farmers on 221,000 ha. India, with 115,000 ha, dominated organic cotton cultivation with 74% of the production and 78% of the producers. Other important cotton-producing countries are China, Turkey, Tanzania, and the US. There are large differences between these major countries in land productivity (Table 2) as indicated by the relationship between production and land area. The most notable differences, however, are the scales of production (production per farm).

Table 2: Organic Cotton Production in the Five Largest Producing Countries, 2013-14

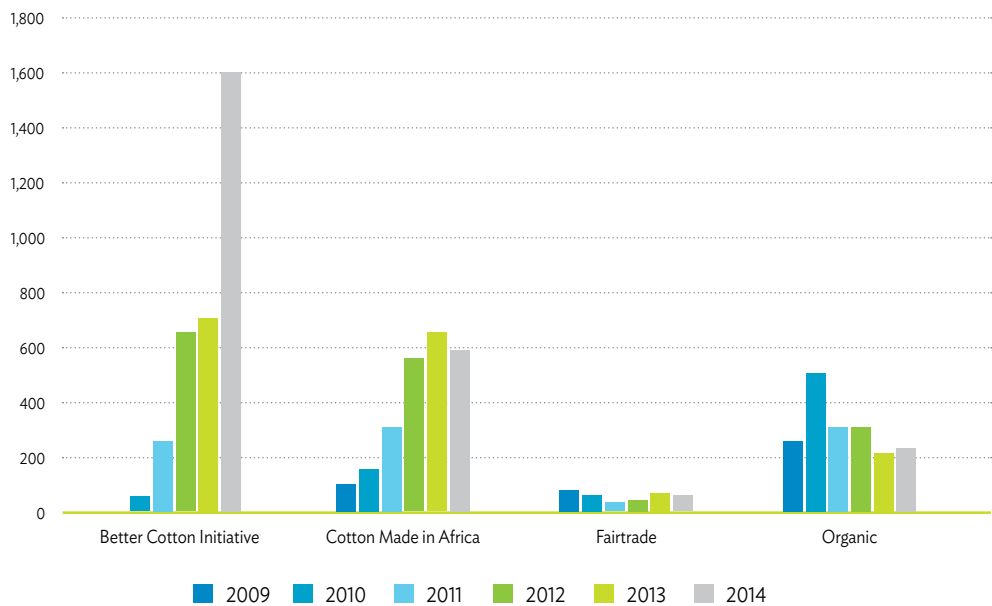
	Farms	Area (ha)	Cotton lint production (tonnes)	Production/farm (tonnes/farm)	Production/area (tonnes/ha)
India	114,863	172,295	86,583	0.8	0.5
China	34,02	5,957	12,231	3.6	2.1
Turkey	258	4,240	7,958	30.8	1.9
Tanzania	4,179	17,218	3,752	0.9	0.2
US	38	4,189	2,315	60.9	0.6

US = United States

Source: Truscott et al., 2016.

Organic cotton production grew rapidly until 2009, when it was the dominant certification scheme for cotton (Figure 3). However, the cultivated area has since then decreased by half. Truscott et al. (2016) explain that this fall was due to very low price levels after the financial crisis, difficulties related to chain management, and limited supplies of high-quality non-GMO seeds. A shift towards less demanding and less costly sustainable certification schemes can be observed. Particularly, the Better Cotton Initiative has grown fast amongst farmers in India as well as in Latin America and Africa (ITC, 2015). This certification is a general sustainability benchmarking scheme without most of the organic requirements, and it accepts the use of GMO seeds. In 2014, the Better Cotton Initiative was the dominant cotton certification with 1.6 million ha (Figure 3).

Figure 3: Development of the Certified Cotton Area in the World According to Different Voluntary Sustainability Schemes, 2009-2014, in Thousands of Hectares



Source: Adapted from ITC, 2015.

Coffee

Coffee is grown in more than 10 million ha of land (ITC, 2015), which corresponds to 0.2% of the agricultural land in the world. The largest coffee cultivation areas are located in Brazil (2.1 million ha), Indonesia (1.2 million ha), Colombia (0.8 million ha), Mexico (0.7 million ha) and Viet Nam (0.6 million ha). Together, these countries have 53% of the total coffee area. In 2013, almost 9 million tonnes of coffee were produced in the world (ITC, 2015). The world's leading producers are Brazil with more than one-third of



the production, Viet Nam (1.5 million tonnes), Indonesia (0.7 million tonnes), Colombia (0.7 million tonnes), and India (0.3 million tonnes).

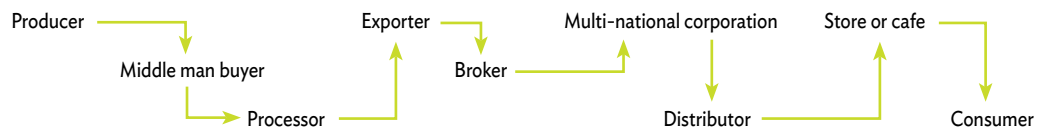
More than 6 million tonnes or two-thirds of the global coffee production were exported in 2013 (Kaffeemarkt, 2013). The largest exporters were Brazil (27% of world exports) and Viet Nam (20%). The EU stood for 42% of the world imports, while the leading import countries were the US (23%), Germany (9%), Japan (8%), Italy (6%), and France (6%). Finland has the highest coffee consumption with 12 kg of raw coffee per person and year, followed by Austria, Norway, and Denmark.

The Coffee Value Chain

Compared with cotton, the value chain of coffee is rather homogenous, consisting of several value-adding steps, which may be organised in different ways, and include different numbers of actors. The chain can be divided into two major steps: farming stage consisting of production and processing in developing countries, and industrial stage consisting of roasting, milling, solubilising, lyophilization, packing, and distribution, normally in high-income countries, where most consumption takes place (Caffagi et al., 2012). The ambitions of fair trade and other sustainable coffee initiatives emphasise radical shortening of the value chain through reduction of the number of middlemen and creation of more direct links from farmers to consumers, bypassing large corporations (Figure 4).

Figure 4: Conventional Coffee Supply Chain vs Fair Trade Supply Chain

CONVENTIONAL TRADE SUPPLY CHAIN



FAIR TRADE SUPPLY CHAIN



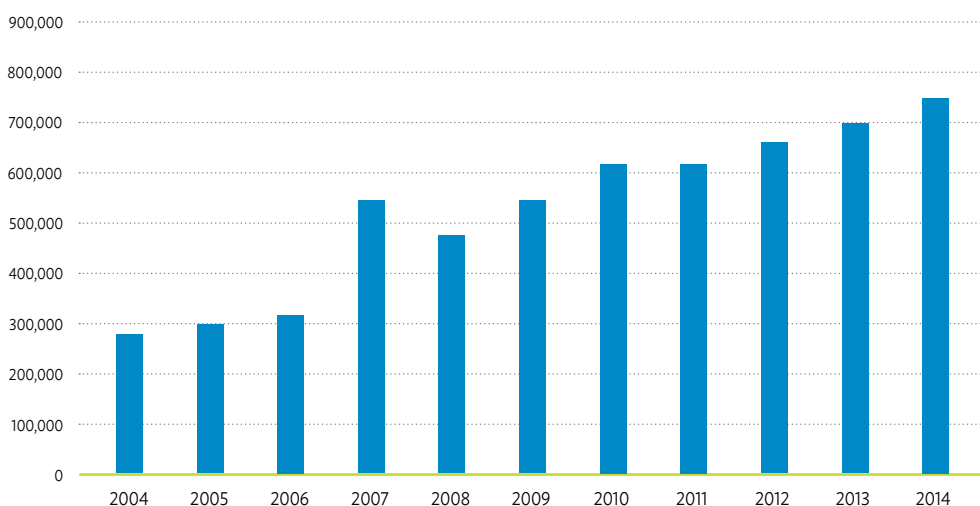
Source: Adapted from Urban Conserve.

Organic Coffee Production

In 2014, the organic coffee cultivation areas consisted of 763,000 ha, which corresponded to 7.7% of the world's harvested coffee. The largest areas were found in Mexico (243,000 ha), Ethiopia (154,000 ha), and Peru (89,000 ha), while Nepal had the largest share of organic cultivation area (46%), followed by Timor-Leste (45%), Bolivia (37%), and Mexico (35%). More than half of the world's organic coffee areas are in Latin America, 27% in Africa, and 15% in Asia. Since 2004, the organic coffee areas have shown a steady growth and more than quadrupled in size (Figure 5).

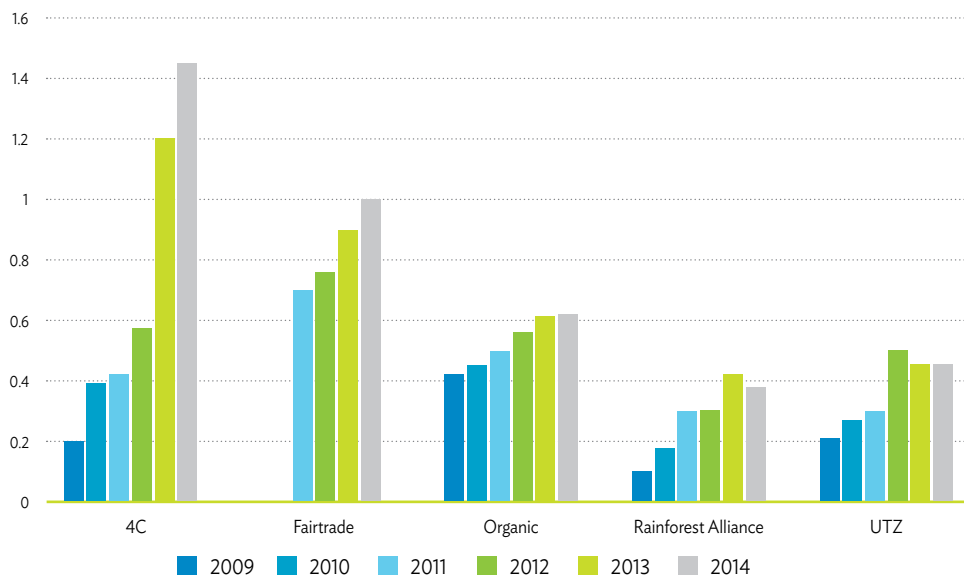
Coffee has a long history of standardisation, and organic coffee is just one out of several certification schemes. Besides organic coffee, also sold as 'certified coffee' are Fairtrade, Bird Friendly, Rainforest Alliance, and Utz Kapeh, all generally accepted as ecological or sustainable coffee even if standards and control may differ. 4C is a relatively new certification scheme, which demands gradual compliance of the production to certain standards. There are also other sustainability labels developed by the industry. As shown in Figure 6, all the major voluntary certification schemes have grown in the past few years, including, most importantly, 4C. In 2014, the different schemes together covered 4 million ha or 40% of coffee areas. The geographical patterns of the different certification schemes differ. While Fairtrade coffee certification is widespread in African countries, 4C has mostly attracted coffee farmers in the most important production countries such as Brazil and Viet Nam.

Figure 5: Development of the Global Organic Coffee Areas, 2004-2014, in Hectares



Source: Adapted from FiBL Survey, Willer and Lernoud, 2016.

Figure 6: Development of the Certified Areas of the Most Common Coffee Certification Schemes, in Million Hectares



Source: Adapted from ITC, 2015.

Effects of Organic Conversion on Smallholders' Livelihoods

Many studies have focused on organic cotton farming amongst smallholders particularly in India, although there are also some studies from Africa and Latin America, with most of them often focused on Latin America. Increasingly, organic cotton and organic coffee are addressed together with other certification schemes, particularly Fairtrade which, to some extent, also encourages organic production. Only few studies systematically assess the full range of effects of organic conversion from yields, incomes, and costs to the economic situation and food security of households. Many studies focus on very particular projects, but there are also some overviews and efforts of a more general evaluation of impacts. A general problem of these efforts to evaluate the impact of organic production is that they often rely on rather crude methods that may result in biases (Blackman and Rivera, 2010) and it often remains uncertain if observed differences between certified and non-certified farmers can really be attributed to certification (Chiputwa et al., 2015)

Cotton

Most studies addressing the effects of organic cotton production amongst smallholders are focused on India. But there are also some examples of studies from other parts of the world, e.g. Tanzania (Altenbuchner et al., 2014), Mali (Nelson and Smith, 2011), Burkina

Faso (Bassett, 2010), Senegal (Nelson and Smith, 2011), Cameroon (Nelson and Smith, 2011), Kyrgyzstan (Bachmann, 2011), Turkey (Adanacioglu and Olgun, 2010, 2012), Uzbekistan (Franz et al., 2010), and Paraguay (Martin et al., 2010). Studies from Africa more often focus on organic cotton together with Fairtrade cotton that is often combined with organic production.

Most assessments of Indian organic cotton production show positive effects and potentials. The implementation of organic cotton farming has generally brought reduced production costs and positive health effects. In a review of nine case studies, Fayet and Vermeulen (2014) conclude that implementation of organic farming and other certification schemes has generally improved the situation of smallholders growing cotton. The yields have usually been maintained and, in some cases, increased. The most widespread and strongest positive effects are reduced production costs and improved health, but in most cases, market access has significantly improved and better payments have been achieved. Riepke and Singh (2010) analysed the value chain from organic cotton in India to retailers in the UK, and found that the use of organic cotton can add value at all stages of the production process, both to farmers and intermediaries. Although farmers' shares of the value additions are small, these price increases are still important. Price premiums of 10% seem to be common, but organisations can also offer increases of 20% or more (Panneerselvam et al., 2010).

Food insecurity amongst smallholders in India is often a result of indebted farmers not having enough money to buy food. The combination of lower input costs and higher incomes have great potentials to increase food security amongst Indian small farmers by reducing indebtedness without affecting farm production (Panneerselvam et al., 2010). Panneerselvam et al. (2014) suggest that even with a 3%-5% reduction of food production, organic conversion of cotton production would improve the economic situation of smallholders. However, the prospects of organic conversion may be dependent on regional conditions. Patil et al. (2014) show that profits of organic production (including cotton rotations) are higher in a dry area of Karnataka and risks are lower due to lower input costs than in a wet area, where profits and risks are more similar to conventional farming since inputs such as organic fertiliser have to be purchased.

In Africa, almost all studies point at positive environmental and health impacts of introduction of organic cultivation. Improved yields are most common in low-intensity agricultural areas. There are also cases where it is very difficult to observe any development due to very low and highly variable production, e.g. amongst smallholders in Mali (Bassett, 2010). Some studies have documented other positive social impacts such as improved education, organisation, and position of women. According to some studies (e.g. Bassett, 2010; Nelson and Smith, 2011), participation in Fairtrade programmes has



made it possible for women to increase their household status, be active in organisations, and directly benefit from their cultivation of cotton plots and other work incomes. Other studies perceive greater difficulties in achieving changes in gender relations (e.g. Altenbuchner et al., 2014).

Outside India and Africa, evaluations of economic outcomes are mixed. Organic cotton production is less often connected with yield increases but more with decreases. Turkey has been a leading producer of organic cotton, but premiums and profits have not been upheld, hurting many small farmers who had converted to organic production. Adanacioglu and Olgun (2012) reported that in Turkey, the profits per hectare of organic cotton production were less than half of the conventionally produced cotton due to higher production costs. The low premium prices, lack of conversion support, and dim possibility of achieving long-term contracts do not compensate for the high production costs and risks related to organic cotton cultivation in terms of, for example, production variability. Bachmann (2011) found a completely different situation in Kyrgyzstan, where despite 10% lower yields, much lower input costs in combination with organic and Fairtrade premiums led to 27% higher average gross margin from organic cotton cultivation. In Paraguay, organic cotton production is well established and yields seem comparable, although Martin et al. (2010) found that continued reliance on conventional industry for seeds; difficult certification processes; and problems with logistics, marketing, and payment make it difficult for farmers to obtain premium prices. They often sell large parts of their organic cotton to traditional buyers.

Various studies in India have shown that the initial introduction of organic farming programmes to small farmers presented an important challenge (Fayet and Vermeulen, 2014). Pilot projects with pioneer farmers can be an efficient means to overcome the general skepticism amongst farmers. In a study based on interviews with farmers in three Indian states, Panneerselvam et al. (2012) found that conventional farmers perceived the lack of technical knowledge, organic inputs, institutional support, and access to organic markets as land fragmentation as the major barriers to organic conversion, while price premium, health benefits, and reduced costs are factors that could motivate them. Organic farmers associated the conversion with reduced input costs, higher incomes, and sometimes, higher yields after the conversion period. However, for both conventional and organic farmers, yield levels and insect control remained a challenge.

The outcome of organic conversion may depend on the implemented standards and who is implementing them (Fayet and Vermeulen, 2014). Company-based projects have often better and more direct access to markets while NGO projects supported by development agencies often are better at adapting to local needs but may experience challenges in assuring market access. Market price fluctuations create difficulties, particularly

for NGOs who may not be able to make long-term commitments. The most positive multi-sided effects of conversion to organic agriculture are reported from a company project in the Meatu district in the north of Tanzania (Altenbuchner et al., 2014). The smallholders in this district have benefitted from higher yields and increased incomes due to lower costs, more stable markets through long-term contracts, and access to loans, which made it possible to invest in farming and buildings, and diversify incomes with new crops and off-farm activities. Increased productivity has also brought increased food security. However, many of the positive developments concerning education, extension services, and other infrastructures are dependent on the company bioRe Tanzania and its resourceful organisation. bioRe Tanzania has been initiated by the Swiss company Remei AG, which provides the link to the market together with the Swiss retail company Coop. bioRe purchases organic cotton in the region with a 15% price premium on actual local market prices.

Despite the rather positive evaluations of organic cotton cultivation in India, the reduction in number of organic cotton farmers and organic cotton areas during the few last years points towards important barriers for the further development of organic cotton farming amongst smallholders. Lack of supplies of non-GMO seeds and lack of technical skills together with unstable prices for farmers without company contracts seem to have contributed to the rather dramatic shift towards less costly and demanding certification schemes (Truscott et al., 2016). In 2010-2011, there was a substantial fall in cotton prices and premiums of organic cotton, and a majority of producers only received about 3%-5% premium for organic fibre (Chandak et al., 2014). Furthermore, organic cotton cultivation is quite demanding compared with other certification schemes.

Coffee

Similar to the studies on the organic cotton chain, assessments point towards gains all along the value chains of organic coffee and other ethical/ecological certified coffee. Studies from many countries and regions – Mexico, Nicaragua, Guatemala, Colombia, Ethiopia, Uganda, Kenya, and India - have evaluated the effects of organic and Fairtrade coffee certification amongst smallholders.

Most studies have found positive environmental and health effects, and have evaluated yield as higher or unchanged after organic conversion, and that premium prices for organic or other certified coffees have been realised. However, only few studies have been able to find important income increases or prove tangible effects in terms of reduced poverty and increased food security (Bennett and Franzel, 2013).

Most early studies (before 2009) claimed that yields had increased and that organic coffee had great potentials to bring economic benefits to and reduce poverty amongst smallholders if premium prices were realised, chemical input costs reduced, and incomes from farming became more stable. Recent studies have increasingly questioned the economic benefits of certified coffee production or viewed them as highly context dependent.

Case studies and literature related to projects and programmes in Africa have more often claimed positive economic effects in connection with organic certification and other certification schemes. Bolwig et al. (2009) found that organic certification contributed to higher farm revenues in Uganda. Chiputwa et al. (2015) concluded that coffee farming households in Uganda connected to Organic, Fairtrade, and UTZ certification schemes had substantially higher incomes and living standard than those that sell via uncertified market channels, and that Fairtrade certification, in particular, had significant effects on poverty. However, Jena et al. (2012) and van Rijsbergen et al. (2016) only found rather insignificant economic effects in Ethiopia and Kenya, respectively, and that positive effects sometimes remained as potentials due to poor organisation.

In Latin America, studies have generally found that although certified farmers receive higher prices, this does not necessarily result in higher incomes nor reduced poverty. Arnould et al. (2009) looked at impacts of Fairtrade certification in Peru, Guatemala, and Nicaragua and found limited effects on household welfare despite higher prices. In Mexico, Barham et al. (2010) found in a large survey that Fairtrade/organic producers received higher prices than conventional producers, but that the differences were relatively small and that the yield mattered more than the price difference for the income. Yields are often maintained or even increased after organic conversion, but the decline during the transition period and related losses of incomes are major barriers for farmers converting to organic coffee (Bravo-Monroy et al., 2016). Weber (2011) found a 5%-income gain amongst Mexican Fairtrade/organic farmers. Such difference, however, is hardly sufficient to cover all expenses related to organic conversion, extra labour, and higher standards of living. Valkila (2009) did not find any benefits from organic and Fairtrade production in Nicaragua, and argued that these certification schemes contribute to poverty traps through their prolonging of obsolete low-input agricultural systems. Bacon (2005) and his collaborators (2014) have, in a series of studies, addressed food security amongst Fairtrade and organic-certified small farmers in Nicaragua and found that households suffered from seasonal hunger due to weather conditions and hazards, rising maize prices during lean periods, and coffee harvests and prices that do not provide sufficient income. In Colombia, Ibanez and Blackman (2016) observed many positive outcomes of certification and organic production from an environmental point of view, but were unable to identify any economic benefits.

A major difference between smallholders in Latin America and Africa is that farming only makes up a minor part of the Latin American smallholders' incomes, which dominantly come from work outside the farm, and remittances. Higher crop prices do not automatically make much difference for the standards of living nor make farmers put in extra work and resources into developing their farming. Vellema et al. (2015) found in Colombia that increasing incomes from coffee did not make households increase their income because the time and efforts spent on coffee cultivation made farmer give up other income-generating activities. Donovan and Poole (2014) concluded that few of the poorest households in Nicaragua invested in coffee farming and are still depended heavily on seasonal off-farm incomes and subsistence farming. Their results indicate that improved market access with higher prices have uncertain impacts on rural poverty. Several of these studies recommend a broader focus that addresses the underlying constraints on household assets and investments.

Discussion

OA has expanded dramatically in recent decades in the global South and in smallholder communities. Studies generally point out that OA can have certain potentials for rural smallholder communities in the global South. It is, however, difficult to overview and generalise as conditions may differ dramatically between regions and local contexts. There have been numerous programmes, initiatives, and projects to introduce organic, Fairtrade, and other certified cultivation schemes in rural smallholder contexts in Latin America, Africa, and Asia. 'Success stories' are very common, particularly in connection with various NGO-supported programmes and UN reports (e.g. UNEP-UNCTAD, 2008). The emphasis in various evaluation efforts, however, is most often on rather immediate effects, while more long-term evaluations and overviews are rare. Evaluating the development of the emerging organic sector is also hampered by difficulties on data and related uncertainties. These difficulties do not only concern organic production in the Third World context but also the consumption data in Europe, where different 'ecological' and certified coffees, for example, are often clumped. There exist for both coffee and cotton a wide flora of certification schemes and sustainability initiatives that confuse and bring difficulties to consistent evaluation. Few studies make systematic efforts to assess the broader effects of organic certification of cotton and coffee, and these assessments most often rely on rather crude methods that may have brought biases in the results.

The existing evidence point to organic conversion very often bringing farmers the promised price premiums, reduced input costs, and improved health. The effects on yields are more context dependent. They may depend on how much fertilisers were used previously, and available labour. But often, the long-term effect of organic conversion can be higher yields

in Asia, Africa, and Latin America. Recent reviews of organic conversion in Sri Lanka and Thailand point towards important yield increases in rainfed and marginal lands, where smallholder communities reside (Setboonsarng, 2015b).

In terms of value chain upgrading, the studies on organic coffee and organic cotton show in general that farmers who converted to organic production achieve product upgrading. The certified organic production receives premium prices over conventional production and value chains are shortened via more direct and stable market linkages provided by NGOs or companies. There are also indications of process upgrading in numerous cases through reduced needs of external inputs and lower costs of production. The need to purchase manure and to increase labour, and to reduce non-farm incomes may, however, counterweigh these gains. Functional upgrading can often be perceived as a challenge; the necessary skills for organic farming, and pest and weed control, for instance, are not easily achieved. A limitation of this study and several studies that focus on single product is that it becomes difficult to approach inter-sectoral upgrading. Some of the positive economic effects in terms of income, employment, and decreasing vulnerability may lie in new combinations of products introduced by organic conversion. There are, however, indications in some studies that a more diversified production may reduce vulnerability (e.g. Bacon et al., 2014).

To what extent the positive effects of organic conversion contribute to an improved economic situation amongst smallholders is very context dependent. It can be related to the role and importance of farming incomes for the rural households and to the local organisation. The effects may also depend on the implemented standards and who is implementing them. It seems as if company-based initiatives often are able to provide more stable and more long-term markets, while NGO projects supported by development agencies are often better at adapting to local needs but may experience challenges in assuring market access. However, the development of new and better market conditions is seldom adequate to combat poverty amongst the least resourceful smallholders who do not have resources nor incentives to develop their farming. It has to be supplemented by other policies/initiatives.

Both coffee and cotton exemplify that other less demanding certification schemes have gained even importance. In the case of cotton, this expansion has been at the expense of organic production as the number of organic producers has decreased in recent years. These alternative ecological and ethical certification schemes often reward farmers more directly and more significantly in terms of premium prices and better access to market (Setboonsarng, 2015a), and do not require a transition period with yield decreases and other uncertainties. On the other hand, these alternative certifications are less connected to all the potential benefits of OA such as reduced input costs, improved health, and in



improving local land and resource productivity. There is a need to further investigate and address the entry barriers to OA in different regions.

Reaching the full potentials of OA is quite challenging and probably very seldom realised. It is dependent on assistance not only in terms of market connections, non-GMO seeds, basic methods, and temporary financial support, but also on development of advanced capacity for managing, experimenting, and learning how to improve the farming system and making better use of local resources. There is a risk that organic conversion and developments would become very dependent on external support from government agencies, aid organisations, NGOs, and businesses from the global North. To develop and improve education, local organisations and national infrastructures are central challenges for the further development of OA in Asia, Africa, and Latin America.

Organic production is a development path that is dependent on external know-how and support as well as foreign markets. The products are sold in niche markets in Europe and North America where consumers are willing to pay extra for products with certified qualities. Organic and other certifications may provide opportunities for quite a few small farmers but the expansion potentials still seem limited. There are certainly important growth opportunities in some market segments, but can premium prices and current arrangements be upheld when markets expand? It is also hard to imagine that cash-crop-oriented organic production will be an option for the majority, if not for the domestic markets, for these products develop, and if not, a much more autonomous and independent development of OA emerges.

Conclusions

Organic agriculture has in recent decades spread to the developing world and grown rapidly. Even if most organic producers are located in developing countries, organic production in Africa, Asia, and Latin America is still a marginal phenomenon in relation to the total agricultural land and the total number of farmers. However, in relation to some value chains with important markets in Europe and North America such as coffee and cotton, organic production has, together with other certification schemes, gained some importance.

Introduction of OA amongst cotton and coffee-producing smallholders in developing countries has often had positive effects in terms of realised price premiums, reduced input costs, maintained yields, decreased environmental impacts, and improved health. The effects on yields are more dependent on context, but organic conversion seldom results

in higher yields. Better market conditions are, however, not adequate to reduce poverty and to decrease food insecurity amongst the least resourceful.

Introduction of organic production relies heavily on assistance in terms of knowledge, market connections, and financial support, and on bringing new external dependencies. The development of organic production in developing countries has so far been heavily dependent on foreign markets in Europe and North America where consumers are willing to pay extra for organic products. Certainly, although there are still market growth opportunities, the expansion potentials still seem limited, and further expansion of OA will be increasingly dependent on the development of local markets.

The entry barriers to organic markets and the need to develop and improve education, local organisation, and national infrastructures should be further addressed. Assessment of the effects of OA on rural poverty and vulnerability should focus more on local settings since important potentials of OA lie in the development of the local farming systems and new combinations of income sources.

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