

# Socio-economic impact of organic farming in East Africa

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## 1. Introduction

Global organic markets grew strongly during 2000 - 2009, from a turnover of some 20 billion US Dollars to 54.9 billion US Dollars in 2009. Bakker and Bunte (2009) also show a 10% to 15% turnover increase in Europe between 2007 and 2008. According to them, expenditures on organic food is rising faster than expenditures on non-organic food, and current supply does not meet the demand for organic products. Despite the financial crisis, the Netherlands experienced a 13% sales increase of organic products in 2010 (Nieuwsbericht, 2011). According to Organic Monitor, consumer demand for organic products is concentrated in North America and Europe; these two regions comprise 96 percent of global revenues (Sahota, 2009; Sahota, 2011).

Many consider organic agriculture an interesting option for smallholder farmers in Africa because it offers a unique combination of low external input technology, environmental conservation and it also provides access to premium price markets through labelling. Non-Governmental Organisations (NGOs) and farmer groups are increasingly adopting organic agriculture techniques as a method of improving productivity and food security (Anonymous, 2010; Halberg et al., 2009; Halbert et al., 2009; Kugonza Bamugaya et al., 2009; Maeder et al., 2002; Naqvi, 2009; Taylor, 2006; Twarog, 2009; UNEP-UNCTAD, n.d.; UNEP-UNCTAD, 2008).

Yet, critical voices raise concern that organic agriculture is not capable of meeting the world's growing food needs due to low productivity per area (Borlaug, 2000; Sanchez, 2010; Trewavas, 2001). The global population is expected to exceed nine billion people by 2050. This will more than double the demand for food and put unprecedented pressure on our ecosystem. Sanchez (2010) considers it a myth that organic is the way to go in poor countries. Brett Stuart is also of the opinion that the organic and natural market is an almost insignificantly small piece of what's going on globally. According to Datamonitor, the organic market accounted for 1.4 per cent of global food purchases in 2009. In the United States, organics accounted for three per cent of the market, and in Europe, two per cent. Stuart therefore concludes that agricultural productivity is being impeded by the minority demand for organic or natural production systems (Cawood, 2011).

This paper explores the question what the socio-economic impact of organic farming has been in East Africa. Is it really part of the solution to increase agricultural production and food security because it leads to improvement in productivity of local food systems and access to food? Or is the analysis of the opponents correct?

In the next section we first give an overview of the importance of organic agriculture in East Africa. In the third section we present the results of a literature review, undertaken to assess the evidence regarding the socio-economic impact. In this literature study we also address questions such as: how were the indicators measured? Can the impact be attributed to the introduction of organic agriculture? Because the results of the different projects were highly variable, we continued to investigate the reasons for the differences in outcomes in the fourth

section. We do this by examining seven case studies on organic farming in Kenya. Section five concludes.

## 2. Organic agriculture in East Africa

Almost half of the world's organic producers (total 1.2 million producers) are in Africa. The countries with the highest numbers of producers are Uganda, India and Ethiopia. About one third of the world's organically managed land is located in developing countries, of which 0.9 million hectares in Africa. This constitutes about 3% of the world's organic agricultural land (Willer and Kilcher, 2009). Typically, organic agriculture in East Africa is founded on smallholder production and hence focuses on traditional commodity crops of the region such as coffee, tea, cocoa, cashew nuts and cotton. Other tropical, non-traditional crops have been added to these such as vanilla, sesame, tropical fruits, herbs and spices (Taylor, 2006).

Organic agriculture in Africa strongly relies on export markets as the domestic and regional markets for organic products is still small. Most of the population has little money to pay for extra quality, and many hold the perception that much food in the local markets is 'organic' anyway. However, the growing middle class in the cities do have an increased awareness of the benefits of producing and eating better quality food, and has a higher purchasing power than the rural population. As a result, several supermarkets, specialized shops, markets, and restaurants in the larger cities and tourist centres are now selling organic products. To further encourage the development of domestic organic markets and to stimulate market oriented organic production, the East African Organic Products Standard and mark was launched in 2007 (IFOAM, 2011).

**Table 1: Overview organic agriculture in East Africa**

	Kenya	Tanzania	Uganda	Rwanda
<b>Share organically managed land of total agr. land 2007</b>	0.02% <sup>a)</sup>	0.18% <sup>a)</sup>	2.33% <sup>a)</sup>	0.69% <sup>a)</sup>
<b>Organically managed land 2007</b>	75,760 ha (of which 2,898 ha agr land + 72,872 wild collection) <sup>b)</sup>	62,180 ha <sup>a)</sup>	405,095 ha (of which 246,767 ha agr. land + 158,328 wild collection) <sup>b)</sup>	13,356 ha <sup>a)</sup>
<b>2010</b>	4,636 ha <sup>a)</sup> ----- 133,623 ha –incl wild collection <sup>c)</sup>	85,000 ha <sup>c)</sup>	296,203 <sup>a)</sup> ----- 305,000 ha <sup>c)</sup>	?
<b>Organic Producers 2007</b>	1,811 <sup>a)</sup>	90,222 <sup>a)</sup>	206,803 <sup>a)</sup>	2,565 <sup>a)</sup>
<b>2010</b>	?	100,000 <sup>c)</sup>	215,000 <sup>c)</sup>	20,000 <sup>c)</sup>
<b>Major organic export crops</b>	Cashew nuts, tea, coconut, macadamia, avocado oil, tea tree, coffee, herbs, herbal tea	Coffee, tea, cocoa, spices, fruits, herbs, cotton and essential oils	Coffee, cotton, cocoa, sesame, chillies, fresh and dried fruits, ginger, spices, textiles, shea nuts/butter, fish	Fresh and dried fruits, coffee, tea, honey, chillies, essential oils

Sources: a) Willer and Klicher, 2009 b) Willer et al., 2009 c) Anonymous, 2010

Table 1 shows that, while organically managed land represents only a small share of the total available agricultural lands in the four largest organic producing East African countries, many smallholders participate. Moreover, the number of farmers and area of organically managed land mentioned in the table, only concern the certified farms. In Africa, there are two different kinds of organic farms. Next to the certified organic farms there are also informal organic farms producing for their own households and for local markets (Bouagnimbeck, 2009). This implies that the total area under organic agriculture is higher than indicated in table 1.

### 3. Socio-economic impact of organic agriculture in East Africa: literature review

While table 1 clearly shows the importance of organic agricultural production in East Africa, the question is whether smallholder farmers also enjoy socio-economic benefits from participating in organic agriculture, and if there are such benefits whether they are derived from organic agriculture or from other related activities. We use secondary data to examine this impact. For this study we use a broad interpretation of impact that can include before and after comparisons of changes, as well as comparisons between organic and conventional farmers. Data does not permit us to assess the magnitude of the change that is attributable to a project or an intervention.

Two types of secondary data were used. Firstly, evaluation reports of three programmes that have contributed significantly to development of organic agriculture in East Africa. The three programmes analysed were the 'Export Promotion of Organic Products from Africa' (EPOPA) programme, the 'Lango Organic Farming Promotion' (LOFP) programme, and the 'Organic Agriculture Program' (OAP). Only one of the evaluation reports was based on a survey.

#### **Three programmes with significant contribution to organic agriculture in East Africa**

The EPOPA programme was initiated in the mid-1990s and phased out in 2008. It operated in Tanzania and Uganda, and briefly in Zambia, and was the first organisation that started working with farmers to increase production capacity and facilitate export of organic crops. It had a clear market focus. Exporters were the main project partners as the assumption was that linking smallholders to organic markets via an exporter should result in improved livelihood for rural communities. Moreover, the intention was to integrate extension work into the commercial chain so that the exporters are responsible for extension work, financed by income from the trade (Agro Eco and GroLink, 2008).

The Lango project started with the production of organic cotton in the Northern part of Uganda. It established a partnership in 1998 with Bo Weevil in order to secure a stable and reliable market for organic cotton. In 2003, Shares!, a company specialising in the cleaning and export packaging of organic sesame and chillies, joined the partnership. In 2007 LOFP membership reached 27,000 farmers. However, these members did not realise expected yield levels. Therefore, the two companies Bo Weevil and Shares! contacted the Agro Eco Louis Bolk Institute to provide technical support to these farmers (Kalema et al., 2009; Taylor and Pule, 2009).

HIVOS, a Dutch Non Governmental Organisation, chose organic agriculture as an example of its focus on quality markets. Hivos' interventions and partner support linked with this theme have assumed that quality markets have specific advantages for small-scale producers. Therefore, they promoted organic agricultural farming in East Africa (Guijt and Woodhill, 2008).

Secondly, reports or working papers published by international organisations, consultants, and research institutes were reviewed. Almost all papers were based on qualitative case study approaches. Two papers employed an econometric model.

A first step is to define what to measure. Because many studies and reports claimed a positive socio-economic impact of organic agriculture on smallholder farmers, we decided to look at how they defined and measured the broad categories of social and economic impact. Table 2 lists the broad areas as well as the indicators used in the literature we reviewed. These indicators were subsequently used to record the findings of our literature review. These are presented in table 2.

**Table 2: Socio-economic impact or organic agriculture as identified in the literature**

Economic impact of organic agriculture			Impact reported in evaluation reports East Africa <sup>1)</sup>			Impact reported in other documents on East Africa		
			+	0 or mixed	-	+	0 or mixed	-
Income	Productivity	Production/ha	LOFP <sup>2)</sup> , OAP	EPOPA			Kugonza et al. UNEP-UNCTAD <sup>8)</sup> Halberg et al. FAO	
	Improvement of organic practices	Implementation of recommended practices <sup>3)</sup>		EPOPA	LOFP			
	Total yield farming system	Area farmed * productivity						
	Premium price	Price differential organic – conventional and/or through improved quality <sup>4)</sup>	EPOPA				UNEP-UNCTAD Gibbon & Bolwig et al. Bolwig	
	Net income	Organic activity is commercially viable for all parties	OAP <sup>5)</sup>	EPOPA, LOFP			Kugonza et al. UNEP-UNCTAD Taylor, Bolwig et al. Gibbon & Bolwig	
	Other sources of income	Other sources of income per farmer Other buyers	EPOPA, LOFP					
Increased market access		Reliable <sup>6)</sup> organic market outlet		EPOPA				
<b>Social impact of organic agriculture</b>								
<b>Indicators</b>								
Food security <sup>7)</sup>		Higher income, purchase food in market		EPOPA			UNEP-UNCTAD, FAO <sup>9)</sup>	
Livelihood	Housing	Type of housing per farmer (according to housing standards)	LOFP	EPOPA (UG)			Taylor	
	Children attending school	School going children per household	LOFP				Taylor	
	Investment in farming	Number of animals per farmer	LOFP					
	sanitation	Latrine facilities, garbage pits	LOFP					
	Means of transport	Bicycles, motorcycles, cars		LOFP				
	Access to drinking water	Type of access to drinking water per farmer						

Source: Authors

<sup>1)</sup> Agro Eco BV and GroLink AB (2008) for the EPOPA programme; Kalema et al. (2009) and Taylor and Pule (2009) for the LOFP project; Guijt and Woodhill (2008) for the OAP programme.

<sup>2)</sup> Improved yields and income were mainly a result of introduction of improved varieties, not because of organic farming practices.

<sup>3)</sup> Such as manuring, crop rotation, intercropping, thinning, weeding, timely planting, use of organic pesticides, etc.

<sup>4)</sup> Normally farmers are offered an organic premium of 10 – 25%. In some cases the organic quality is also linked to higher quality requirements (e.g. better drying or selection).

<sup>5)</sup> These were not a result from sales into organic markets, but rather a result of collective marketing, production increases and improved product quality due to improved post-harvest handling and processing.

<sup>6)</sup> Every year, transparent weighing, clear price setting, prompt payment, record keeping.

<sup>7)</sup> Next to one's own production, this also includes the changes in capacity to access food through the market.

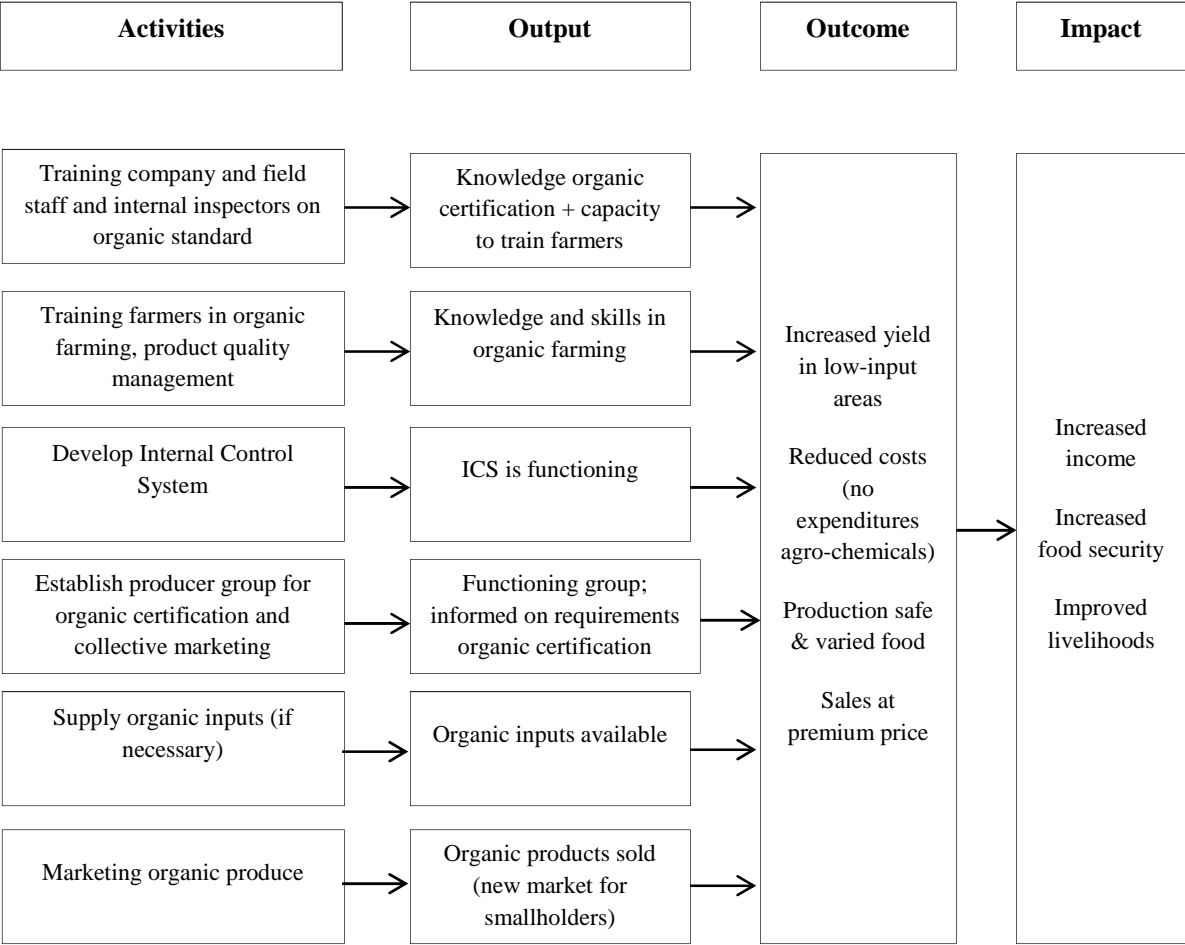
<sup>8)</sup> UNEP-UNCTAD is based on information from the following documents: Naqvi (2009), Twarog (2009), UNEP-UNCTAD CBTF (n.d.) and UNEP-UNCTAD CBTF (2008)

<sup>9)</sup> Based on an analysis of the four components of food security: food availability, access, stability and utilisation.

The review of the evaluation documents revealed that, despite the intention of the evaluators, not all indicators were measured. Often, they reported on activities carried out, and on the resulting outputs and outcomes<sup>i</sup>. Moreover, in case the reports did provide information on impact, it was often based on anecdotal evidence rather than on quantitative information based on statistically valid sampling techniques. Assessing the full socio-economic impact of organic agriculture is a big undertaking. Therefore, it is not surprising that most documents focussed on a narrower subset of dimensions and measured, for example the narrow premium price of the organic export product rather than the broad concept of improved livelihood. Furthermore, the authors often did not indicate how they measured the indicators. The price that farmers obtain for an organic export product is frequently used as evidence for increased income. No reference is made to production costs, opportunity costs of the organic crop in the farming system, whether the increased income can be attributed to organic farming<sup>ii</sup>, etc.

Secondly, the table shows that, according to the documents reviewed, the impact of organic farming on smallholders varied. Especially the more detailed evaluation reports revealed mixed evidence on many indicators. To better understand the reasons for the reported inconsistent impact of organic farming, we have tried to identify the result chain of the interventions as well as the underlying assumptions. This helps to crystallize how the projects sought to effect change.

**Figure 1: Simplified result chain of organic farming in East Africa**



→ Is expected to lead to

According to the evaluation reports, the above intervention logic has been based on several assumptions. Firstly, smallholders often cannot afford to use expensive inputs. Organic production is cheaper than conventional production, since it is based on the use of locally available inputs and farmers don't have to buy agro-chemicals or take out loans. Therefore, the organic production system is well-adapted to African smallholders as it reduces production costs. However, the EPOPA project noticed that the majority of the farmers they were working with were 'organic by default', meaning that they used almost no agro-chemical inputs before participating in the EPOPA project. Hence, they concluded that the cost-reduction aspect was rather negligible (Agro Eco and Grolink, 2008). Furthermore, the LOFP project reported that, in order to improve soil fertility, farmers were advised to buy seeds for an intercrop and cover crops. One of the reasons for slow adoption of organic practices was attributed to the cost and availability of inputs recommended to farmers (Kalema et al., 2009). The EPOPA project also referred to exporters providing organic inputs to organic farmers (Agro Eco and Grolink, 2008).

The next assumption was that yields of low-input farming will increase considerably after conversion to organic farming. The key principles of organic farming have been laid down in the Codex Alimentarius (1999).

*“Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specify function within the system”.*

Thus, organic farming is a highly knowledge intensive system. Kalema et al. (2009) verified whether the farmers who participated in the LOFP project did have sufficient knowledge on organic farming practices. They concluded that, despite the evidence of good organic knowledge, the adoption of recommended organic techniques was very slow. Guijt and Woodhill (2008) also concluded that, while most farmers avoided using synthetic fertilizers and crop protection agents, the application of organic farming techniques (e.g. actively working on soil fertility, on soil and water conservation, crop rotation, development of farm diversity, etc) differed between farmers. Few farmers implemented the holistic production management system as referred to by the Codex Alimentarius.

The third assumption was that labour is easily available. Labour intensive production methods were expected to yield high incomes for farming households. Moreover, it was assumed that if a family lacks labour during certain times in the year, they can easily hire labour. This would increase employment opportunities in rural areas and thus increase incomes of those labourers. Without exception small-scale producers complained about the heavy work load resulting from the organic agriculture practices taught (Agro Eco and Grolink, 2008; Guijt and Woodhill, 2008; Kalema et al., 2009). Smallholder farmers often have multiple, including off-farm sources of income and do not always have sufficient labour for agriculture. Also, they do not necessarily have the means, or want to use their means, to recruit labour to implement organic farming activities.

Lastly they assumed that the lack of market access was a major limiting factor for agricultural development. The growing global market for organic products, which pays premium prices, would be an opportunity for smallholder farmers. Available data differ considerably as to how much organic produce was sold. This was influenced by two main factors: whether the produce met buyer quality requirements, and whether the price for the organic produce was

indeed higher than the conventional price and met farmers' expectations (Agro Eco and Grolink, 2008; Guijt and Woodhill, 2008; Kalema et al., 2009). Nevertheless, most projects did report evidence of income benefits from increased production and improved marketing strategies, albeit sometimes in conventional markets.

The above illustration of assumptions upon which the intervention logic was based, show that while the activities mentioned in figure 1 have been carried out and outputs may have been achieved, these did not necessarily lead to the expected outcomes and impacts. Contextual factors and drivers also influence the outcomes and ultimate impact of organic agriculture, which explains the inconsistency of the evaluation findings.

Having said this, the second category of data reviewed, namely the reports or working papers published by international organisations and consultants, was much more unanimous in their findings regarding the socio-economic impact of organic agriculture. According to them the research carried out clearly demonstrated the economic, environmental, social and cultural benefits that organic agriculture can offer as well as the impact of organic exports on the economic welfare of smallholder African farmers. The evidence upon which they base these conclusions often comes from (the same) qualitative case study material. However, the methodologies used to measure impact is not always clearly described. Did they really measure the impact of organic farming? Or are their positive conclusions based on the same assumptions as made by the evaluators?

Papers of the DIIS research institute did use survey data from pineapple, coffee and cocoa growers (Gibbon and Bolwig, 2007), and from a large organic coffee contract farming scheme (Bolwig et al., 2009) with which they carried out robust analysis. They examined the revenue effects of certified organic contract farming for smallholders in Uganda. Gibbon and Bolwig (2007) found that yields increased when converting to organic, probably as a result of better land management. The net incomes of those farmers engaged with organic markets were significantly higher than those of their conventional counterparts. This seems to be mainly due to the greater number of plants and larger cropped area of the organic farmers. The higher organic prices received did not appear to be a significant factor. The study could not yet draw definite conclusions about what really led to higher incomes: was it the added value of linking to organic markets or were other natural endowment factors more significant? Bolwig et al. (2009) found similar results with the organic coffee farmers. There were positive revenue effects both from participation in the scheme and, more modestly, from applying organic farming techniques. The superior profitability was bound up with the organisation of certified organic production in contract farming schemes: in addition to a price premium, the scheme introduced clearer quality criteria than in the non-organic market, and provide product marketing guarantees which appeared to reduce smallholders' uncertainty about the net returns to processing of the coffee crop.

Learning through the literature review is limited, because the reports did not always explain how the positive impact has been achieved. In order to improve practice and impact, we need to know what works for whom in what respect, and how? To better understand how organic agriculture can bring about change, we have carried out seven comparative case-studies in Kenya.

#### **4. Socio-economic impact of organic agriculture: seven case studies in Kenya**

To organise and analyse our case studies we use the concept of 'Context-Mechanism-Outcome Configurations'. This can provide guidance to make contextual factors, which may influence the outcome, explicit. 'Mechanism' is the black box between the intervention

(treatment) and the outcome/impact. The concept ‘configuration’ indicates that mechanisms will only produce certain outcomes in certain contexts (Ton, 2012).

Primary data was collected through participatory rural appraisal, focus group as well as individual discussions, and through participatory observation (one week stay in each village). In total 180 farmers (male and female) have been interviewed. In four of the seven villages farmers practised organic farming with the aim to export their produce, while the farmers in the three other villages cultivated organic products for own consumption and the local market.. Formal interviews were carried out with various stakeholders and key informants, such as field workers, trainers, project managers, organic inspectors, company staff, as well as staff from the Kenya Institute of Organic Farming (KIOF) and Kenya Organic Agriculture Network (KOAN).

We first briefly present the seven case studies, after which we discuss the context, mechanism and outcomes in more detail.

### **Seven case studies of organic farming in Kenya**

The Kenyan Organic Oil Farmers Association (KOOFA) produces tea tree leaves for Earthoil. This company produces organic essential oils for the Body Shop. Tea trees is a new product, for which Earthoil found favourable climate and soil conditions in the Central Province of Kenya. Thus, tea trees is a new market opportunity for the KOOFA members.

Olivado contract farmers produce organic avocados. The market in Central Province was saturated with avocados, consequently the income of avocado farmers decreased and many had started cutting their trees. Olivado, a company which processes avocado oil, created a new market outlet for the farmers.

MacadamiaFans, a German company, set up a structure to process the raw macadamia nuts. There were many macadamia trees in Central Province, yet there were no processing factories. Farmers now have a market for their macadamia nuts, and the company also encourages farmers (or their relatives) to crack their own nuts. Processing will create added value to the participating farming families.

The coffee farmers of the Mukurweini Development Initiative (Mount Kenya West Arabica Association) are, unlike all the other farmers in our case studies, medium-scale farmers. They are currently selling their (conventional) coffee through millers on the Nairobi auction. They are gradually converting to organic coffee but do not yet have a market for their organic coffee.

Nyumbani village is a project designed to help HIV/AIDS orphans. A village with twenty houses for the orphans and their grandparents was constructed with USAID funds. In addition, a school and clinic was built and investments made in water sources for farming, including drip irrigation. Nyumbani village comprises 1,000 acres, of which 50 acres of arable land and 800 acres of grassland. Every community member receives training on sustainable farming, and receives an area of 0.5 acres to produce. The whole farm is certified organic by EnCert, a Kenyan certification body.

The Baraka Women Group is a group of 38 elderly women, mostly without husbands. For several years they have participated in quite a few group activities. In 2009, as part of a rural development programme implemented by World Vision International, the group received a training on organic agriculture.

The Chania Community Empowerment, is a rural community development programme implemented by the Christian Community Service of the Anglican Church of Kenya. Like the Baraka Women Group, the Chania Community Empowerment programme is not just about organic agriculture but also includes social projects.



**Table 3: Overview of the context of the seven organic agriculture projects in Kenya**

Projects	<i>Earthoil</i>	<i>Olivado</i>	<i>MacadamiaFans</i>	<i>Coffee farmers</i>	<i>Nyumbani village</i>	<i>Chania community</i>	<i>Baraka Women Group</i>
<b>Objective project</b>	Raise farmers' income through trade	Raise farmers' income through trade	Raise farmers' income through trade	Reduce production costs; enter premium market	Achieve food security through organic farming	Achieve food security through organic farming	Achieve food security through organic farming
<b>Start Project</b>	2008	2009	2009	2010	2004	2008	2009
<b>Environmental conditions</b>	Dry soils, erratic weather, shortage of rainfall	Reliable rainy seasons (less than before), humid climate, red soils rich in iron, river	Reliable rainy seasons, humid climate, red soils rich in iron, river	Reliable rainy seasons (less than before), dry soils	Extremely dry climate, long rainy season unreliable, short rainy season is reliable	Reliable rainy seasons, red soils rich in iron	Dry soils, scarcity of water
<b>Organic Products</b>	Tea tree leaves	Avocado	Macadamia	Coffee (Intercropping with banana)	Vegetables and honey	Banana, avocado, milk, meat, potatoes, eggs, coffee, macadamia	Mango, avocado, banana, milk
<b>Crop characteristics</b>	Perennial crop, easy to grow, low pest and disease risk	Perennial crop, easy to grow, low pest and disease risk	Perennial crop, easy to grow, low pest and disease risk	New variety more drought, pest & disease resistant.	Produce various crops for consumption, including milk and timber	Produce various crops for home consumption	Produce various crops for home consumption
<b>Farmers' profile</b>	Previous experience with export market (vegetable). Use hired labour during peak season.	Use hired labour during peak season	Smallholder farmers. Use hired labour during peak season	Medium scale farmers, > 5 acres. Use hired labour during peak season; high education level, often retired from public sector, invest in farming and water sources	Elderly people (grandparents). Together cultivate 850 acres. Important investments in farming and water by USAID	0.5 acres, mostly poor women. Low input farming	0.5 acres, mostly poor women. Low input farming
<b>Main sources of income</b>	Tea tree leaves, milk, meat, potatoes, off-farm labour	Avocado, milk, meat, macadamia, banana, coffee	Macadamia, meat, banana, coffee	coffee	Skuma wiki, spinach, tomatoes, eggplants, beets, coriander, passion fruit, papaya, moringa, castor, jatropha, honey	Banana, milk, meat, eggs, coffee, macadamia, potatoes	Mango, avocado, banana
<b>Group profile</b>	Collaboration in the ICS is required for certification	Collaboration in the ICS is required for certification	Collaboration in the ICS is required for certification	All member of the Association, but lot of mistrust. No collective marketing coffee	Village comprising 20 clusters with orphan children and grandparents	Long-standing group, started with table banking	38 elderly, often single, women. Strong group feeling.

Source: Fieldwork Degli Innocenti 2011

Table 3 provides more information on the context in which these interventions have been implemented. As the description of the case studies and the information in table 3 show, the objective of the interventions, hence the selection of the target group / beneficiaries, and the crops grown organically, differ considerably. One can roughly distinguish two types of interventions. The first one concerns the three interventions initiated by an export company, which mainly focus on the organic production of one specific export crop. These farmers join forces to meet the demands of the Internal Control System (ICS) for group certification, and to collectively market their produce to the export company. The second one involves the three interventions by NGOs, with the objective to create food security for a disadvantaged group of people. In order to attain this, these projects focus on the sustainability of the whole farming system and also include additional development activities.

Table 4 provides some more detail on the interventions. The information has been categorised in three main 'blocks': training in organic farming, training to meet the requirements of the organic standard, and marketing of the produce.

In order to market products as organic in the global market, organic producers have to undergo certification by a recognized certification body. The certification is based on standards. This is a rather complex and expensive process. The export companies in the case studies, assist the farmers to meet the requirements and pay for the certification. Organic farmers producing for local or regional markets often do not get this support and find the requirements and costs prohibitive. To lower the costs and reduce the burden on smallholder farmers, the East African Organic Products Standard and mark has been introduced (see also section 2). Of the case studies, only Nyumbani village is certified for the Kenyan market. The Chania community and Baraka Women Group have not undergone certification since their main aim was to achieve food security. Now that they have attained this, they start thinking about where to market their surplus produce (see table 5).

The topics covered during training courses, as well as the manner in which the farmers have been trained, differs substantially between the seven groups. First of all, the farmers producing for the export market often received training on 'good agricultural practices for the export crop'. While farmers whose main objective was to achieve food security, usually received training on organic agriculture as a 'holistic system'. As a consequence, they had to adapt their whole farming system. The export farmers, however, often only applied organic farming techniques on their export crop. Especially if the export crop was considered to have low risks of pests and diseases they were, for example, not taught how to prepare bio-pesticides. Most of these farmers did not change the 'way they are farming', like the group of farmers producing for the local market. For farmers producing for the export market, organic farming was sometimes reduced to a set of recommendations to follow in order to obtain the certification. Secondly, organic farming is very knowledge intensive. It cannot be assumed that farmers are able to apply all the techniques after a short training course. Follow-up is very important. NGOs often provide this follow-up and continue to advise on how to improve the organic farming system, as long as they have the funds to do so. The follow-up of the export companies was at times limited to internal inspections of the export crop.

Our findings suggest that, for those farmers who converted to organic agriculture because they saw this as a market opportunity, there is a link between the attractiveness of the organic market price and the intensity with which they implement organic practices. For example, the tea tree leave producers were discouraged by the low prices offered by Earthoil. Hence, they took less care of their fields, which led to yield reductions. They preferred to devote more time to their cattle as the milk prices were high. These same farmers also compared their (potential) revenue from the organic crop with their food expenditures. According to them, the additional income from the tea tree leaves did not automatically lead to better food security.

**Table 4: Overview of the mechanisms applied in the seven organic agriculture projects in Kenya**

Projects	<i>Earthoil</i>	<i>Olivado</i>	<i>MacadamiaFans</i>	<i>Coffee farmers</i>	<i>Nyumbani village</i>	<i>Chania community</i>	<i>Baraka W G</i>
<b>Market</b>	Export (new)	Export (new)	Export (new)	Export (new coffee variety)	Nairobi (restaurants, market). Informal local market	Informal sales to brokers; local market	Informal sales to brokers; local market
<b>Stage of Certification</b>	Certified	Certified	First Inspection	In conversion	Certified for local market	None	None
<b>Training purposes</b>	Organic certification requirements for export market	Organic certification requirements for export market	Organic certification requirements for export market + value addition	Organic certification requirements for export market + reduction (savings) agro-chemical inputs	Sustainability of the village through organic permaculture	Diversification food supply, maximum production on 0.5 acres	Achieve food security and improve livelihoods
<b>Areas covered by the training</b>	Composting, mulching, pruning, prevent soil and water erosion, napier grass barrier, phytosanitary application equipment and storage, antidiscrimination in hiring labour	Composting, mulching, pruning, prevent soil and water erosion, intercropping, antidiscrimination in hiring labour	Composting, mulching, pruning, prevent soil and water erosion, phytosanitary application equipment and storage, antidiscrimination in hiring labour	Composting, mulching, pruning, prevent soil and water erosion, intercropping of coffee with bananas, bio-pesticides, bio-medicine, livestock techniques	Different composting techniques, liquid manure, plant tea, mulching, pruning, prevent soil and water erosion, kitchen garden, raised beds, tree nursery and seeds collection, biofuel, bio-pesticides, bio-medicine, Livestock techniques	Different composting techniques, liquid manure, plant tea, mulching, pruning, prevent soil and water erosion, kitchen garden, raised beds, tree nursery and seeds collection, bio-pesticides, bio-medicine, livestock techniques, value addition & agribusiness training. Training on HIV/AIDS	Different composting techniques, liquid manure, plant tea, mulching, pruning, prevent soil and water erosion, kitchen garden, raised beds, tree nursery and seeds collection, bio-pesticides, bio-medicine, livestock techniques, food storage. Training on HIV/AIDS, malaria
<b>Training staff</b>	Initial training by KOAN. Trainers currently hired by the company (ex-students of KIOF).	Local trainers hired by the company	Local trainers hired by the company (Field officer = ex-student from KIOF)	1 week training from KOAN	Trainers are part of Nyumbani staff and ex-students of KIOF	Trainers are ex-students of KIOF	Training by KIOF
<b>Follow-up</b>	Internal inspection	Internal inspection	Internal inspection	No specific follow-up	Daily work control, through own staff	Periodic follow-up by NGO staff. High level self-group monitoring	No specific follow-up by NGO staff. High level self-group monitoring
<b>Other interventions linked to org. farming</b>	Provision of interest free loans by company	Provision of interest free loans by company	Provision organic fertilizers and pesticides by company	None	None	None	None

Source: Fieldwork Degli Innocenti

**Table 5: Overview of the outcome of the seven organic agriculture projects in Kenya**

Projects	<i>Earthoil</i>	<i>Olivado</i>	<i>MacadamiaFans</i>	<i>Coffee farmers</i>	<i>Nyumbani village</i>	<i>Chania community</i>	<i>Baraka Women Group</i>
<b>Outputs</b>	Additional cash crop; access to interest free loans. No implementation organic practices on other crops	Access to new market; access to interest free loans; reduction production costs. Implementation organic practices on other crops	Access to new market; access to interest free loans; reduction production costs. Implementation organic practices on other crops	Reduction production costs, higher quality coffee	Holistic organic farming system in extremely dry climate; local marketing of surplus	Holistic organic farming system; reduction production costs; local marketing of surplus	Holistic organic farming system; reduction production costs; local marketing of surplus
<b>Outcome</b>	Income increase, yet strong debate on attractiveness of prices for organic produce	Increased yields, increased income, increased food security	Increased income and income diversification through processing	Increased income through savings on production costs	Food security (sufficient and large variety of food) and sources of income	Increased yields, from food insecure to food secure (sufficient and large variety of food) in 1 year, higher income	Increased yields, from food insecure to food secure (sufficient and large variety of food) in 1 year, higher income

Source: Fieldwork Degli Innocenti

Therefore, they preferred to use the little water they had on their food crops, rather than on the tea trees.

The farmers who adopted organic agriculture as a strategy to attain food security, did apply most of what they learned as they were encouraged by the outcome. Within one year their situation had changed from food insecure to producing a surplus for the local market (see table 5). Their yields were higher than those of their conventional neighbours, and they had sufficient organic fertilisers for all their crops because of the range of techniques they applied. Also, because the aim of supporting NGOs was to ‘develop the community’s standard of living’, they also looked at how to overcome some of the bottlenecks such as the high labour demand, especially for women. Through the cultivation of trees, and provision of simple watering techniques the time needed to fetch firewood and water the crops was reduced, which meant that women had more time to devote to agriculture.

Despite the increase in income, these farmers still did not have sufficient money to cover all their expenditures such as school fees. In order to increase their income, they would like to market their produce as organic. However, in order to do so they will have to meet the quality and quantity requirements of the supermarkets or restaurants in Nairobi. It remains to be seen whether the NGOs have the necessary knowledge and expertise to take the farmers to this new level.

Coffee is produced for export but the coffee farmers in our case study did not yet have a market outlet for their organically produced coffee. As a result, the implementation of organic practices varied significantly. Some farmers take a long time to fully convert to organic practices. Others did apply organic agriculture, they were encouraged by the reduction in production costs and the increase in yields they experienced as a result of the conversion. Many coffee farmers had more resources than the other farmers we met (see table 3, farmers’ profile) and were able to invest more in farming (such as, additional water sources and livestock for manure). Our findings suggest that this investment capacity increased the likelihood of higher organic yields.

## **5. Conclusions**

What is the socio-economic impact of organic agriculture in East Africa? The literature reviewed points to organic agriculture having the potential to contribute positively to the economic and social well-being of producers in East Africa. Yet, the literature also shows that this contribution varies considerably. Moreover, many studies claim a positive impact while it is not clear how the authors measured the results and arrived at this conclusion. It is therefore difficult to learn from this literature which factors determine whether organic agriculture can live up to its expectation and create positive impact.

The seven case studies carried out in Kenya suggest that, besides contextual factors, several mechanisms influence the impact of organic farming. The objective with which organic farming was introduced, influences the selection of the target group. Do the promoters want to encourage food security or production for the export market? This appears to affect the way the training is organised, how farmers implement organic practices and ultimately the outcome.

In interventions focusing on informal (non-certified) organic production, there often seem to be positive developments in terms of food security, but not necessarily in terms of higher incomes from the marketing of products.

Working with the commercial sector appears to be successful in the sense that farmers can benefit from a premium price. Results indicate that the benefits from their collective

marketing efforts and the higher product quality are equally important. In spite of these benefits, the case studies suggest that if a project focuses solely on developing an organic cash crop, the training often seems to limit itself to good agricultural practices for that specific crop and to ensure that farmers meet the certification requirements. Hence, the farmers frequently do not implement the holistic management approach, which is the essence of organic farming. Therefore, the impact on their food security varies. Since they do not necessarily produce a higher variety and quantity of food crops, their food security depends on the additional income earned through organic farming and whether this can cover their food expenditures. The paper shows that the revenues of these farmers are impacted by fluctuating market conditions. Moreover, it suggests that there is a link between the level of income and the intensity with which they apply organic farming practices, and the resulting yield levels.

To a large extent, organic agriculture in East Africa is a market-oriented endeavour that is usually driven by the private sector. The question that arises from our research is whether this market-based approach can increase productivity levels from organic farming to such an extent that it will help smallholder farmers out of poverty. Which organic farming techniques will generate the highest returns, and why? What will the organic farmer's cost structure be? Will the income be sustainable? Will the impacts outweigh the costs to introduce organic farming in an area (often borne by donors in the start-up phase)? And do these impacts go beyond what would have been otherwise achievable with alternative farming methods? Currently, the data collected and their analysis methods do not allow us to draw clear-cut conclusions. Further research, which follows methodological thoroughness, will be needed.

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<sup>i</sup> For example, the number of farmers and area certified, the price premium and the export value.

<sup>ii</sup> See also the footnotes under table 2. Evaluators sometimes concluded that the higher price obtained for the crop was not linked to organic agriculture per se but was rather a result of other activities implemented by the project.