

A PRODUCT CHAIN ORGANISATION STUDY OF CERTIFIED COCOA SUPPLY

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ABSTRACT

Cocoa supplies may become limited in the future. Demands for sustainable cocoa sparked an exploration of the product chain organisation of conventional and certified cocoa from Ghana. The comparison shows that transparency requirements have led to a more complex product chain. Even so, certification has yielded important productivity increases resulting in environmental benefits (e.g. reduced greenhouse gas emissions) and improved livelihoods for smallholder farmers.

INTRODUCTION

Interest in organisational issues of LCM prompted the development of *product chain organisation* study (Baumann, 2012) to improve understanding of how, for example, supply chains can be organised. With increased interest in certification comes a growing need to know where and how ingredients are sourced. A case in point is the supply of certified cocoa, and a PCO study of cocoa sourcing was made, from farmers to a consumer goods company, Unilever. Whilst this study refers to a specific case, the insights gained are more general.

In 2010, as part of its wider Sustainable Living Plan, Unilever committed to source all cocoa sustainably (www.unilever.com/sustainable-living/sustainable-sourcing/cocoa-sugar/). To realise the plan to only have certified cocoa sources for Magnum ice creams by 2015, Unilever partnered with Rainforest Alliance (www.mymagnum.co.uk/article/beantobite/). Currently Unilever procures its chocolate from wholesalers and has thus little or no direct contact with farmers at the beginning of the supply chain. Certification provides a means of assurance that farmers adhere to a number of good agricultural practices, and with Rainforest Alliance they also receive education and training as part of the certification process.

The introduction of new actors to Unilever's supply chain lets us 1/ describe the structure of conventional and certified cocoa supply chains and 2/ explore whether differences in greenhouse gas impacts can be observed.

MATERIALS AND METHODS

For practical reasons, the study was geographically limited to cocoa grown in Ghana, the world's second largest producer of cocoa. Actors in the supply chains were identified through multiple sources, i.e. Unilever contacts, a Ghanaian LCA study of chocolate production (Ntiamoah & Afrane, 2008) and on-site in Ghana. Interviewing included traders,

representatives for wholesaler Barry Callebaut, Rainforest Alliance, local non-governmental organisations (NGOs), as well as the national cocoa research institute and authority, the COCOBOD. Farmers were interviewed in groups. The interviews covered the actors' roles and relationships and thus enabled the mapping out of the PCOs. Additionally, interviews explored the actors' views and perspectives on sustainability and certification in order to understand premises for communication and sustainability management along the chain. Visits to three farming regions provided a diverse sample of both certified and non-certified cocoa farms for the comparison of their greenhouse gas impacts. A free excel-based GHG calculator, the Cool Farm Tool (Hillier *et al.*, 2011), was used for this. Table 1 summarises the empirical material. A more detailed report is given by Borg & Selmer (2012).

Number of farms studied	Number of interviews	Interview topics
6 conventional, non-certified 8 with sustainability training prior to certification 4 certified without prior sustainability training	In total, more than 30 people Interviewees found in 15 types of organisations (<i>i.e.</i> local and international NGOs, producers, traders, sector organisations, research institutes, governmental bodies, multinational companies, educational institutions)	<ul style="list-style-type: none"> • role in cocoa industry • perceived sustainability challenges • reasons for sustainability management • on-going sustainability work • views on certification schemes

RESULTS

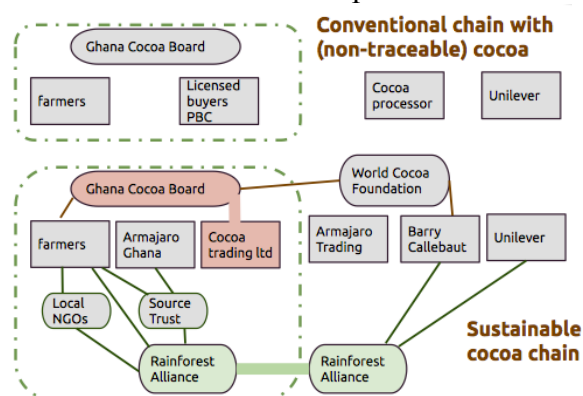
The cocoa industry involves a diverse range of actors. The described situation is specific to Ghana, where governmental bodies regulate the national cocoa market.

Conventional and certified cocoa chains

The two analysed product chains are organised with a large multi-national manufacturing company, Unilever in this case, at one end of the chain and numerous smallholder farmers at the other. These are two very different types of actors. Smallholder farmers typically operate on approximately 1 ha of land, are often very poor, most workers illiterate and production is often a family effort.

In a conventional cocoa chain, the manufacturing company and farmers generally have no contact. With certification, Rainforest Alliance becomes a link between the manufacturing company, farmers and nearly all other actors in the chain.

Figure 1. Product chains of conventional cocoa (top) and certified cocoa (bottom), based on Borg & Selmer (2012). Inside green line: in Ghana.



Views on sustainability along the chain

The understanding of sustainability issues in cocoa chains is not uniform. Also agreement on the importance of sustainability issues differs. There is strong agreement amongst nearly all actors on several issues concerning the farmers, particularly the need for socio-economic development. The COCOBOD state that farmers' economic situation should be improved ahead of other issues. For most supply chain actors, environmental issues were secondary. The exception here were the farmers who realise the reality of climate change and its adverse impact on cocoa farming, and Rainforest Alliance who has strong views on deforestation and

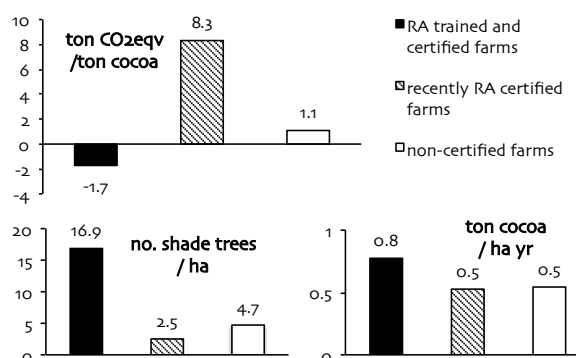
biodiversity as well as improving farmer income and strengthening community development. Table 2 gives an overview issues reported by Borg & Selmer (2012). Whilst governmental bodies maintain that socio-economic development is the key issue for the future, business-oriented actors will look to certified cocoa to address both these issues as well as other environmental concerns.

Strong agreement among chain actors	Views expressed by only certain chain actors	Conflicting views among chain actors
Deforestation Soil Depletion Farmer Income Productivity Community Development Lack of knowledge and education	Climate change. Only farmers bring this up as the major environmental problem. Landowner system and conflict of land. Only Ghanaian governmental bodies bring this up. Illegal logging, illegal mining, slash and burn. Several Ghanaian actors bring up these problems.	Food safety issues – some actors see this as an important concern while others believe it has been tackled well. Child labour concerns – some farmers and other supply chain actors believe child labour and trafficking has been addressed and is being eliminated through certification. Others believe it is still a problem for the cocoa sector in some cases.

Comparison of GHG emissions from conventional and certified cocoa farming

Rainforest Alliance certification was assessed with regard to annual farm greenhouse gas emissions using the Cool Farm Tool. Calculations include general crop data, production area, yield, climate data, soil quality information, crop residues management, use of fertilisers and pesticides, land use changes the past 20 years, biomass sequestration (e.g. in shade trees), livestock, energy use, farm-level processing and transports. Still, simplifications were made, e.g. same climate and soil composition for all farms. Results are presented per group of farms given their certification status.

Annual cocoa production in Ghana averages 0.4 ton/ha. In comparison, all surveyed farms had better than average productivity. Certified farms that also had received training clearly outperform other farms here in GHG performance. This was largely due to shade tree quantity, absence of land-use change over the past 20 years and having had time to establish sustainable agricultural practices. These farms first received training in 2008 and were certified in 2010. More, they also fulfilled national recommendations of 15-18 shade trees/ha.



Shade trees are important since they store CO₂. The relatively high CO₂eqv levels for the recently certified farms can be explained by land-use changes, i.e. deforestation, having taken place in the past 20 years. Additionally, delayed delivery of shade trees led to many not surviving plantation, thus increasing GHG levels as less CO₂ could be stored.

Attitudes to certification

RA certified farmers expressed positive attitudes towards certification. Stated benefits include: improved soil quality, reduced disease incidence, increased biodiversity and species return as well as productivity gains that result in increased profitability and livelihood gains. Other actors, however, were not always as positive towards certification and there remains confusion between several competing schemes (e.g. RA, UTZ and Fairtrade) and resistance to entailing administrative burdens. Some actors also stress that certification alone will not make

the cocoa industry sustainable. The COCOBOD suggests that it could improve sustainability without certification and instead organise sustainability efforts through broad collaborations. It therefore seems more efforts are needed if certification is to become a more universally beneficial mechanism towards sustainable supply chains.

DISCUSSION

The development of a sustainable product chain organisation described here differs from other reported cases. Sustainability goals can be sought through a 'domino effect' by placing demands on suppliers (e.g. Gullbring et al., 2010) or by building a new sustainable product chain 'from scratch' (Kogg, 2003). Here, sustainability is attempted through adding a 'sustainability brace' onto an ordinary product chain. The 'brace' provides sustainability support to virtually all actors in the chain, resulting in numerous new collaborations. Rainforest Alliance forms a link between the manufacturing company and Ghanaian farmers in collaboration with local NGOs, local traders and international wholesalers to make the sustainability efforts effective. However, further collaboration is needed. As a regulating body, the COCOBOD is key to sustainability of the Ghanaian cocoa industry since all farmer projects must go through it. Yet, it questions current certification trends, calls for harmonisation and asks what its role will be in the future.

CONCLUSIONS

Transition from conventional to traceable, certified cocoa changes the structure of the cocoa industry in Ghana. It also introduces a new set of issues concerning competing certification schemes and alternative routes to sustainability. Potentially more important than certification *per se* seems to be the education and training the local RA initiatives provide, since these increase farm productivity and thereby lower GHG levels and raise incomes and livelihoods for farmers. Aligning sustainability efforts in cocoa chains will however require further discussion and development of collaborations.

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