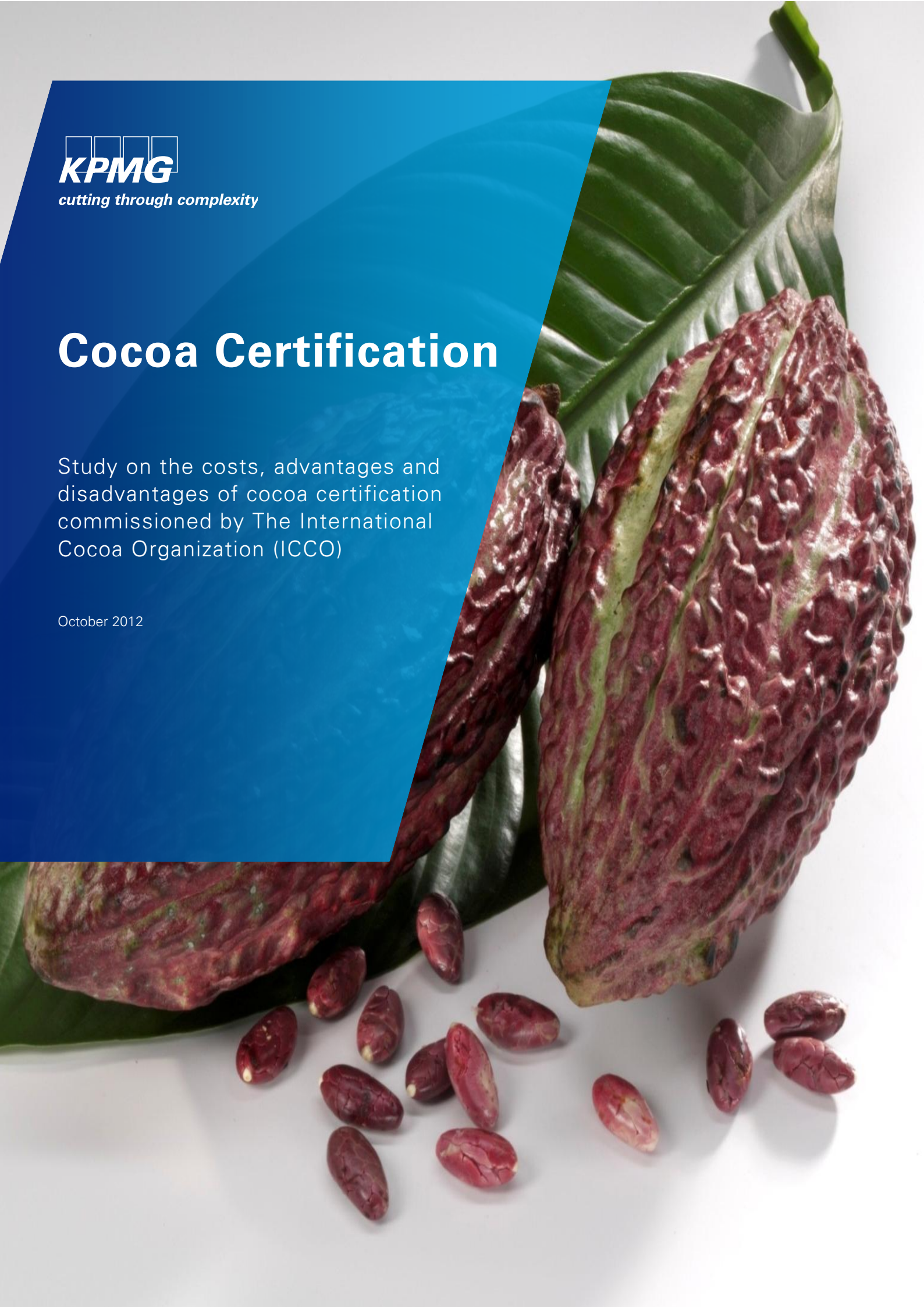
KPMG
cutting through complexity

Cocoa Certification

Study on the costs, advantages and disadvantages of cocoa certification commissioned by The International Cocoa Organization (ICCO)

October 2012



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Executive Summary

Over the last decade the importance of social, environmental and economical issues in the cocoa sector has increased considerably. As a consequence, cocoa certification has been placed at the centre of an international debate amongst the cocoa community.

At this moment, there seems to be no consensus on whether certification is positive for farmers or not. Certification is considered by some as an adequate tool to promote sustainability in the cocoa value chain and to improve the livelihoods of cocoa farmers. Other actors involved in the sector seem to be less optimistic on the net benefits that certification offers at farm level and highlight the burden that it can bring in terms of required investments.

In order to provide more clarity to this debate, KPMG was commissioned by ICCO to conduct a study on the costs and benefits of certification, comprising both a quantitative and a qualitative analysis which aim to elicit the costs, net benefits, advantages and disadvantages of cocoa certification.

As our main objective is to understand the benefit at farm level, this study focuses on the aggregated farmer and coop level in the two main cocoa producing countries: Côte d'Ivoire and Ghana. Three major certification schemes operating in the cocoa sector were included in this analysis: Fairtrade, Rainforest Alliance and UTZ Certified. In Chapter 2 more information can be found about the scope of and the approach used for this report.

In Chapter 3 trends and developments of the cocoa market are presented, showing that the demand for sustainable cocoa has been increasing over the years and this trend will continue over the next years. To secure their cocoa supply and answering to public pressure, companies are establishing ambitious goals and implementing programmes to increase their sustainable cocoa procurement. Another important development is the increasing number of multi-stakeholder initiatives to promote sustainable cocoa production.

In Chapter 4, an overview of certification schemes' requirements based on publically available information show that the process of certification is to a large extend similar across the different schemes. Their philosophy differs, but they all converge in the ideal of fostering sustainable practices in the cocoa chain and of improving the livelihoods of farmers.

A qualitative comparison of audit-checklists and documentation provided by schemes, shows that schemes differ in the way they structure their premium, required fees, certified content required for using the label among others. For instance, while Fairtrade has a fixed premium and a minimum price, the other schemes have premiums determined by the market. Other differences, e.g. mass balance and requirements related to biodiversity and climate change are explained in Chapter 4.

In Chapter 5, we present the results from the literature review which shows there are more advantages than disadvantages of certification at farm, cooperative and also at community level. For the literature review we expanded the analysis to include information about impacts at community and cooperative level, as some qualitative impacts at these levels are relevant

for a complete understanding of the impact of certification for farmers. Higher prices obtained through certification, enhanced bargaining power at the cooperative level and increases in yields positively impact farmers' income. Impacts are also observed on the community level with better working conditions, increased numbers of children attending schools and overall positive impacts in livelihoods.

Nonetheless, disadvantages and shortcomings exist: small-scale farmers seem to be unable to comply with the high costs of certification in the first years. Literature, mainly focussing on other certified crops, already suggests problems to comply with certification schemes and a relatively high churn[1] for farms with less than three hectares and located in remote areas. The main barriers are group forming, (cash for) initial investments and difficulties to set up and maintain the required internal control systems.

Literature on cocoa certification falls short in providing evidence that certification solves persistent problems in cocoa farming like gender inequality and the lack of democratic control in cooperatives. Although all certification schemes prohibit child labour explicitly, there is lack of data on the effectiveness of the schemes in eliminating child labour.

Concerns are also raised around the equitable distribution of premiums to farmers. To determine benefits for individual farmers in cash or in kind, the distribution of premium is a core issue. So far, no independent and publicly available study has been conducted on premium distribution, and further clarification is required to understand the exact distribution of the benefits between farmers and coops. In addition, the current situation with many farmers being certified for multiple labels, causes higher system costs than otherwise required in the longer run.

In Chapter 6, we analysed the benefits on the aggregated farmer and coop level, for both countries in scope, considering a horizon of six years. The overall conclusion is that the archetypal cooperative is likely to have benefited after 6 years approximately US$ 114 per ton after having been certified in Côte d'Ivoire and nearly US$ 382 per ton in Ghana. The pay-back time in Ghana is approximately one year and in Côte d'Ivoire between two to three years.

An average of 89% yield increase in Ghana and 101% in Côte d'Ivoire - which are a consequence of several interventions by certification, such as increased access to pesticide, fertilizer, training and consequence good agricultural practices - and a premium of around US$ 180 per ton are the strongest levers for the business case. If yield increase is assumed to be zero and input costs are excluded, the business case remains positive. When excluding the cost of inputs and benefits of productivity increase, the archetypal cooperative is likely to have benefited after 6 years approximately US$ 84 in Côte d'Ivoire and US$ 38 in Ghana.

For an archetypal coop with 375 members the cumulative net benefits of certification would amount to as much as US$ 1 million in Côte d'Ivoire after six years and to US$ 1,9 million in

[1] The phenomenon of farmers leaving and joining a farmer group.

Ghana. Assuming an equal distribution among farmers in cash or in kind and assuming that coops distribute all benefits after costs are deducted, the cumulative benefit available to farmers would be US$ 2.860 in Côte d'Ivoire and US$ 5.112 in Ghana after being certified for six years. The difference between Ghana and Côte d'Ivoire can be explained mainly by differences in the cost of inputs (due to subsidized fertilizers in Ghana), premium and farm gate prices received by farmers in each country.

This study finds that some farmers are less likely to benefit from certification, in particular these are: 1) farmers with a cocoa plot smaller than 1ha, 2) farmers who are not a member of a coop and 3) farmers who have a low productivity improvement potential. It must be noted however, that even without productivity improvement, farmers of sufficient size will generally benefit from certification.

Even though this study has used several different sources in order to obtain the most accurate information, limitations should be acknowledged. At this moment, there is insufficient independent literature focusing on the impact of cocoa certification. Furthermore, detailed data on the costs and benefits at farm level are not yet monitored through a uniform methodology. Data on yield impact, leakage and premium distribution, was provided by the schemes based on anecdotal evidence, which was not always representative for the majority of the farmer population, reason why the differences per schemes do not enable any definitive conclusions.

In Chapter 7, based on the gaps identified, KPMG recommends ICCO to consider further research into the attribution of costs and benefits to all players in the cocoa value chain, and to clarify the premium distribution on the ground. Yield improvements per scheme, the effect of farm size and pros and cons of multi-certification to farmers and supply chain actors should be analyzed in more depth. In addition, impact assessments of cocoa certification schemes with a long term perspective and allowing comparison between schemes and countries could add valuable information to this debate. These studies should consider possible market risks, such as the impact that a sharp increase in the share of certified cocoa could have on the premium and the impact that changes in international cocoa prices can have on cocoa certification business case.

Finally, research on the social dimension would also be welcomed. The impact of certification on reducing gender inequality and eliminating child labour are areas of extreme importance for the long term success of certification, however, substantial field evidence is still not available.

1 Introduction

The concept of certified cocoa has been at the centre of an intense debate within the world cocoa community in general. This can be explained by the growing importance given to the sustainable supply of cocoa. There is an increased demand in cocoa-importing countries for certified cocoa. Certification is considered by many as an adequate means to comply with sustainability requirements and to improve the living standards of cocoa farmers in particular.

On the other hand, other players in the value chain, such as government authorities and farmer organizations are less optimistic on the net benefits that certification offers to cocoa farmers. There is still a large majority of farmers which cannot benefit from certification because their way of working is not certifiable yet, and they do not have the means (or the incentives) to implement the required changes. Within the community of certified farmers, there are complaints about the burden of certification in terms of compliance costs.

In February 2012, ICCO requested KPMG to conduct a study on the costs, advantages and disadvantages of cocoa certification, with an emphasis on cocoa farmers, with the objective to bring more clarity to this debate. Two consultants were engaged by ICCO in this assignment: one from an importing country and one from an exporting country. The objective of this division was to provide a balanced view of the issue, taking into account local considerations. KPMG was asked to look at the cocoa certification from an importing country perspective. Even though we acknowledge that costs and benefits of certification also exist for other actors in the value chain, identifying and analysing these was not in scope for this study.

This study comprises both a qualitative and a quantitative analysis. The qualitative analysis is based on desk research of available literature on the key differences and similarities of (cocoa) certification schemes and their overall impacts, i.e. advantages and disadvantages at the farmer, local community and cooperative level. The quantitative analysis is based on publically available information from the different certification schemes in scope, as well as information obtained through interviews with certification scheme owners and a consultation session, where the three main certification schemes were put together to discuss and provide feedback on the preliminary results of our analysis. The information obtained was used as input to fine-tune KPMG's comprehensive model for cost-benefit analysis of the cocoa sector, originally developed in an assignment for the Sustainable Trade Initiative (IDH).

This report is divided in the following chapters:

- 'Trends and developments in the cocoa sector' where we explore the context in which cocoa certification is inserted, including key challenges faced by cocoa producers;
- 'Cocoa Certification' where we provide insight into the main certification schemes working with cocoa farmers, namely Fairtrade, Rainforest Alliance, UTZ Certified and Organic pointing out the key differences and similarities;
- 'Literature study' which presents a qualitative analysis of the impact of cocoa certification, based on an extensive literature review;

- 'Cost and benefit analysis' which presents the results of a model for cocoa certification based on the study 'Cost/benefit analysis of cocoa certification in West-Africa (KPMG, 2011), input obtained through additional interviews with actors on the ground, interviews with scheme owners, and an analysis of the input obtained through a detailed questionnaire filled in by scheme owners and their local partners.

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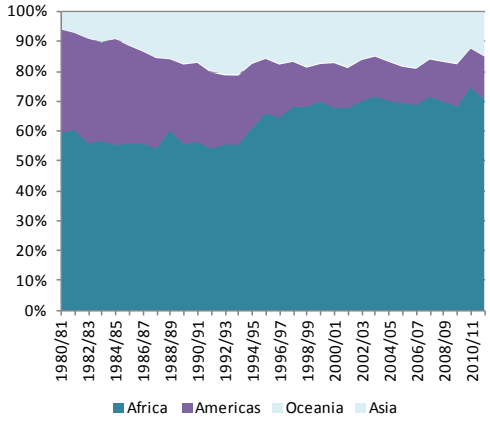
2 Trends and developments in the cocoa sector

In order to understand the cocoa certification context, this chapter explores the current situation of the cocoa market, as well as trends and perspectives for the future years and the challenges that certification proposes to tackle.

2.1 Cocoa production

Cocoa production has been, and still is, concentrated in developing countries, more specifically in West Africa.

Figure 1: Global market share of cocoa producing regions and cocoa production by country[2]



	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	Growth rate
Côte d'Ivoire	1229,3	1382,4	1223,2	1242,3	1511,3	1410,0	3%
Ghana	614,5	729,0	662,4	632,0	1024,6	890,0	8%
Vietnam	0,2	0,4	0,5	2,0	2,5	5,0	109%
Dominican Rep	42,2	45,3	55,0	58,3	54,3	60,0	7%
Liberia	1,7	4,0	4,6	6,3	12,0	8,0	38%
Cameroon	166,1	181,8	223,6	208,5	228,5	210,0	4%
Brazil	126,2	170,5	157,0	161,2	199,8	190,0	7%
Indonesia	545,0	485,0	490,0	550,0	440,0	500,0	-1%
Ecuador	124,5	118,0	135,0	149,8	160,5	175,0	9%
Nigeria	220,0	220,0	250,0	235,0	240,0	220,0	0%

Source: ICCO data

Within this region, Côte d'Ivoire and Ghana accumulate approximately 60% of total global cocoa production. In other regions, there are countries that have been growing consistently over the last years. Upcoming countries to the cocoa production market such as Vietnam, Dominican Republic and Liberia are amongst the fastest growing cocoa producers, even though their production volumes are small in comparison to Côte d'Ivoire and Ghana (see table above). Due to their representativeness in the global cocoa production, this study will focus on the two main producer countries, Côte d'Ivoire and Ghana.

The world cocoa market is known to be volatile as a consequence to weather-related production fluctuations and price speculation[3]. Cocoa plantations suffer of high vulnerability to

[2] Growth rate is calculated as the average of the 3-year moving-averages (midpoint) for the period 2006/07-2011/12

[3] Krain, Servat et al. (2011). Aid for trade case Rainforest Alliance cocoa in Côte d'Ivoire.

diseases, which are said to destroy from 30 to 40% of the world cocoa production. Existing differences on how the market is regulated in Côte d'Ivoire and Ghana have influenced differences in prices operated in each country.

In Ghana, the cocoa trade is kept under control by the government through the operations of Cocobod (The Ghana Cocoa Board, operating in the country since 1947). Cocobod determines prices, buys and sells cocoa among other activities. In Côte d'Ivoire the cocoa market has been liberalized with the government not regulating or interfering in market transactions, influencing the lower farm gate prices in Côte d'Ivoire in comparison with Ghana. In Côte d'Ivoire, by the end of 2012, the government plans to guarantee farmers a minimum selling price following the model established in Ghana.

The concentration of cocoa production in two countries brings extra challenges to the supply chain, which is highly exposed to possible environmental, social or economic shocks and instabilities faced by Côte d'Ivoire and Ghana. The political instability in Côte d'Ivoire in the latest years is also a matter of concern to cocoa producers and importers. There are also additional concerns related to the cocoa supply chain in these countries due to high (informal) taxes.

The production in these countries is characterized by low investments on the farmer level, e.g. in planting new trees or in acquiring farm input for instance. An estimated 35% of cocoa trees in the region are older than 35 years-old, which brings a direct impact to farmers' productivity[4]. Specific reasons influencing this behaviour of farmers include the high volatility of cocoa prices. As most farmers in the region are smallholders with farms below 3ha they tend to have high personal discount rates which discourage further investments in their farms which will only produce possible returns in the medium and long term. Prices volatility also incentivizes some farmers to opt for diversifying their production into other types of crops as an attempt to secure their income.

The low investments in farms, also has a direct impact on the quality of cocoa beans produced. Low or inadequate investments in inputs, the lack of appropriate farmer training and good agricultural practices negatively influence crop quality.

On the other hand, despite the challenges in the sector cocoa demand is on the rise[5]. In the current scenario it is expected to be difficult to meet the future demand without additional interventions to increase productivity and output quality in the sector. As a consequence of the issues mentioned above, supply chain players have been facing the increasing challenge of acquiring sufficient amounts of high quality cocoa beans to meet their demand. In section 3.2 we explore some of the corporate strategies in place to try to tackle this future trend.

[4] Bill & Melinda Gates Foundation (2008). Exploration of Opportunities West African Cocoa.

[5] *ibid*.

2.2 Public concerns and stakeholders' commitments

Apart from the issues related to farmer investments and cocoa prices, there are also concerns in the sector from a social perspective.

Child labour and slavery are still associated with cocoa production in several countries. According to a report from the Tulane University (2011)[6], 50% of the children living in agriculture households in Côte d'Ivoire and Ghana work in agriculture, with 25 up to 50% of these working with cocoa. Actions organized by international initiatives and private stakeholders have been trying to reach out to these children and work on providing them with alternatives, however there is still a long way to go. The topic is also constantly explored by the media, with articles linking child labour and cocoa being published in major media vehicles such as CNN and BBC. Additionally, NGOs have been trying to call attention to the matter in an attempt to increase awareness and demand action from governments and key supply chain actors.

To respond to the public concern and acknowledging their own responsibility, several governmental initiatives have emerged over the past decade to request consumer countries to take greater responsibility over the sustainability of their cocoa supply chain. Below is a non-exhaustive list of few of these initiatives:

- The EU announced its concerns and called for its member states responsibility for the sustainability of the cocoa sector, as they are the world's biggest chocolate consumer[7];
- The Dutch government together with private sector players, NGO's and development organizations signed in 2010 a Letter of Intent where it explicitly announces the objective of having a 100% guaranteed sustainable cocoa consumption in the Netherlands by 2025. The Netherlands is responsible for 25% of all global cocoa processing[8].
- The German government together with members of the private sector, civil society and development cooperation has launched in June 2012 the Sustainable Cocoa Forum, with the objective of increasing the amount of sustainable cocoa produced in countries like Ghana and Côte d'Ivoire and improving the lives of smallholder farmers. The Forum will help to link up initiatives and increase collaboration in the sector. Today, approximately 12,4% of cocoa grown worldwide is consumed in Germany[9].

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[6] Tulane University (2011). Final Report on the Status of Public and Private Efforts to Eliminate the Worst Forms of Child Labour (WFCL) in the Cocoa Sectors of Côte d'Ivoire and Ghana.

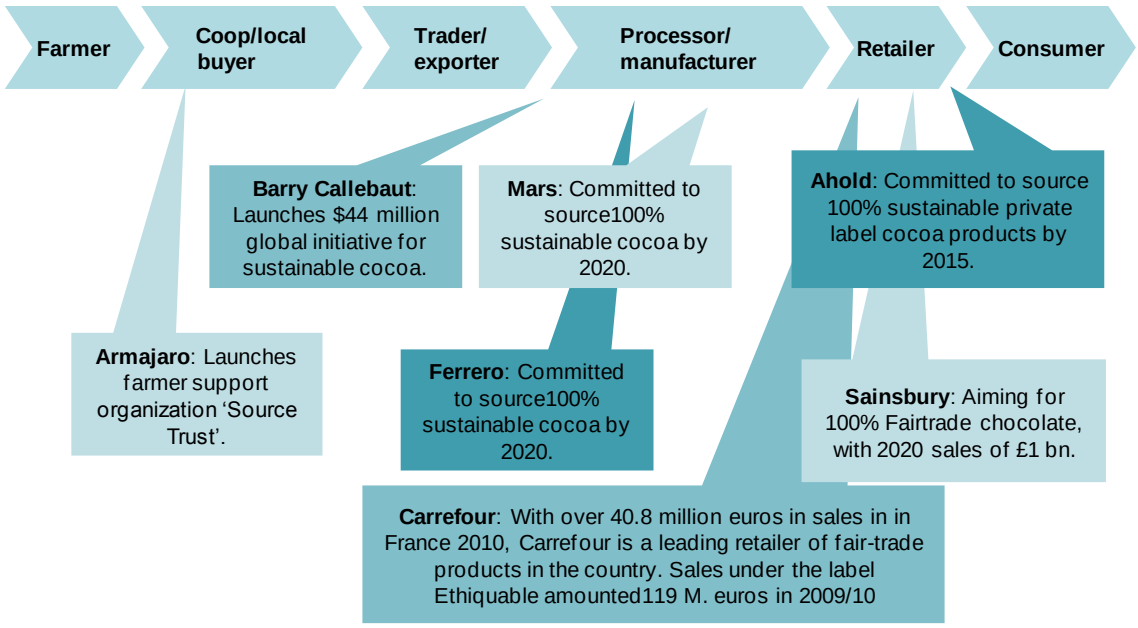
[7] http://www.europarl.europa.eu/news/en/pressroom/content/20120123IPR35955/html/Trade-MEPs-call-for-action-against-child-labour-in-cocoa-production

[8] For more information and an English version of the letter: http://www.idhsustainabletrade.com/news/sustainable-cocoa-through-idhunder

[9] For more information: http://www.bmelv.de/SharedDocs/Standardartikel/EN/International/Sustainable-Cocoa-Forum.html

In addition to government initiatives there are also specific corporate initiatives spread throughout the whole value chain. We see for instance ambitious commitments from the private sector towards the increase of their sustainable cocoa used, with some companies aiming for 100% sustainable cocoa sourced by 2020. A selection of some of these private sector initiatives and commitments is presented below:

Figure 2: Commitments by players in the value chain (not exhaustive)



Source: Companies' websites

One of the results of these commitments is that the demand for certified cocoa is increasing and the private sector is striving to secure their sustainable supply of cocoa.

As a consequence of the commitments, private sector actors are establishing strategic partnerships with other players in the value chain, such as processors, NGO's, certification schemes and development agencies in an effort to secure their supply. For example, Barry Callebaut and Unilever have set up a joint business development plan involving sustainable sourcing. Mars Incorporated is part of a partnership with the three main certification schemes, together with IDH, The German International Cooperation (GIZ) and other private sector actors (Barry Callebaut, ADM and Armajaro) with the support of the World Cocoa Foundation to boost the capacity of the cocoa sector in Western Africa[10].

Other multi-stakeholders initiatives have also arisen in order to foster sustainability in the cocoa supply chain. These initiatives usually involve a variety of members from private sector,

[10] http://www.idhsustainabletrade.com/cacao-cce

NGOs, governments, certification schemes and development agencies to work together to change current negative practices of the sector.

Table 1: Multi-stakeholder initiatives for sustainable cocoa

	Initiative	Description
	Source Trust	Set up by Armajaro to help farmers improve livelihoods through better crop yields and quality, achieved through sustainable farming practices.
	The International Cocoa Initiative	Oversees and sustains efforts to eliminate the worst forms of child labour and forced labour in the cocoa beans sector and their derivative products.
	World Cocoa Foundation	In cooperation with others, formed by Nestlé in 2000. Promotes a sustainable cocoa economy through economic and social development and environmental stewardship in cocoa-growing communities.
	Roundtable for Sustainable Cocoa Economy	Set up by ICCO, the roundtable incentivises dialogue and sustainability amongst all stakeholders in the cocoa economy.
	COPAL Initiative	Intergovernmental organisation representing 5 producing countries: Ghana, Nigeria, Brazil, Côte d'Ivoire and Cameroon, providing a space for dialogue through conferences and regular meetings of member states
	European Standardization Committee (CEN)	CEN is developing a project to create a European standard for traceable and sustainable cocoa

Sources: TCC (2010). Cocoa Barometer 2010; GTZ (2010). Comparison of Private-Sector Standards applicable to Cocoa Production; IISD (2011). The State of Sustainability Initiatives Review 2010, ICCO, CEN.

With key sector players publically announcing ambitious targets for supplying certified cocoa, governments creating specific initiatives focusing on sustainable cocoa and different stakeholders gathering in initiatives with the common objective of fostering the sustainable production of cocoa, we foresee certified cocoa becoming mainstream in the future. If that is indeed the case, it is still unclear at this moment how the value of premium and certification in general will evolve over time.

2.3 Conclusions

Cocoa production is concentrated in West African countries, specifically in Côte d'Ivoire and Ghana. As both countries account for approximately 60% of total world cocoa production they are the focus of the quantitative analysis in this study.

The demand for sustainable cocoa is also growing and expected to continue to grow over the next years. Major players in the supply chain have made commitments to increase the sustainability of the cocoa they purchase. As the current certified production of cocoa is close to 6% of the total cocoa production, it is foreseen that private sector players will have to increase their efforts to secure their sustainable supply in order to meet their commitments set. In that sense, we already see the establishment of partnerships between value chain actors aiming on increasing the amount of certified cocoa produced.

Independently of the future perspectives, it is important to recall that certification is a tool that establishes requirements to facilitate the sustainable production of commodities. It is an intervention that should complement other interventions taken by the private sector, governments and NGOs and shall not be seen as an end in itself.

3 Cocoa certification

This chapter describes the most significant existing initiatives related to sustainable cocoa, with a focus on certification schemes, providing an analysis of the key differences and similarities in relation to costs and benefits between the most relevant certification schemes for cocoa: Fairtrade, Rainforest Alliance, UTZ Certified and Organic.

3.1 The different certification schemes

Certification is one of the available tools in the market to ensure the application of principles for sustainable production of commodities, like cocoa. It comprises a set of principles addressing social and economic concerns of farmers, farmer groups and communities including environmental requirements. Within their scope the different certification schemes vary in their main focus or strategy for achieving a more sustainable cocoa production with some of them focusing on the creation of sustainable trade relations (e.g. Fairtrade) and others with a greater focus on increasing farmer productivity as a way to strengthen farmers (e.g. UTZ Certified). It can be said that overall they seek improvements in farmers' livelihoods, focus on developing good agricultural practices and on capacity building. It is important to highlight the Fairtrade differs in this sense from other schemes, as increases in productivity is not of the focus. Instead, Fairtrade aims for better and more just trade relations. UTZ and Rainforest Alliance are explicitly about their objective of increasing farmers' yields.

The market share and total production of certified cocoa has been considerably growing. ICCO data on total cocoa production in 2010 suggests that the total cocoa harvest was circa 4.3 million tonnes. It is estimated that the total certified cocoa production for the same year was around 275.000[11] tonnes, meaning that the certification market share has doubled from 3%[12] in 2009 to a little more than 6% in 2010. This does not mean that all the total amount of certified cocoa has reached the final market. Issues related to double-certification, i.e. cocoa that has more than one certificate, and leakage to conventional channels, i.e. certified cocoa that is sold as non-certified in conventional markets, may impact the total certified cocoa available[13].

[11] Fairtrade, Rainforest Alliance and UTZ Certified information derived from Matissek (2012). Sustainability in the cocoa sector – review, challenges and approaches. Organic production information derived from TCC (2010) Cocoa Barometer 2010.

[12] TCC (2010). Cocoa Barometer 2010.

[13] More information on double certification and leakage can be found in Chapter 6.

Table 2: Certification schemes focus areas and volume produced.

Certification Scheme Focus		Volume Certified Cocoa (tonnes)		
		2010	2010 share of certified cocoa	2011
FAIRTRADE	Promote better trading conditions and empower producers. Focus on a wide range of commodities and gold.	106.400	39%	150.000
Rainforest Alliance CERTIFIED Cocoa	Biodiversity conservation and sustainable livelihoods of farmers. Focus on increasing productivity and covers tropical commodities and tourism.	56.000	20%	98.400
UTZ CERTIFIED Good inside	Professionalize agricultural practices and operational management. Focus on increasing productivity. Covers coffee, tea and cocoa.	70.000	25%	214.000
Organic	Focus on production in a sustainable way, without the use of chemical inputs. Focus on a wide range of commodities.	42.500	15%	Not available

Source: 2010 and 2011 numbers are based on information provided by Fairtrade, Rainforest Alliance, UTZ Certified through their annual reports and interviews. 2010 Organic figure is derived from the TCC (2010) Cocoa Barometer 2010.

Based on 2010 figures, we see that the most representative schemes in terms of their certification market share are Fairtrade (39%), UTZ Certified (25%) and Rainforest Alliance (20%).

The Organic label had an estimated market share of 15% in 2010; however as it addresses a niche market, Organic certified cocoa is expected to grow at lower rates than the other schemes. Due to its lower representativeness in terms of market share, a wide variety of (sub) schemes and a different agricultural approach we have opted for not analysing the economics of Organic label and focus our efforts on the largest three schemes: Fairtrade, Rainforest Alliance and UTZ Certified.

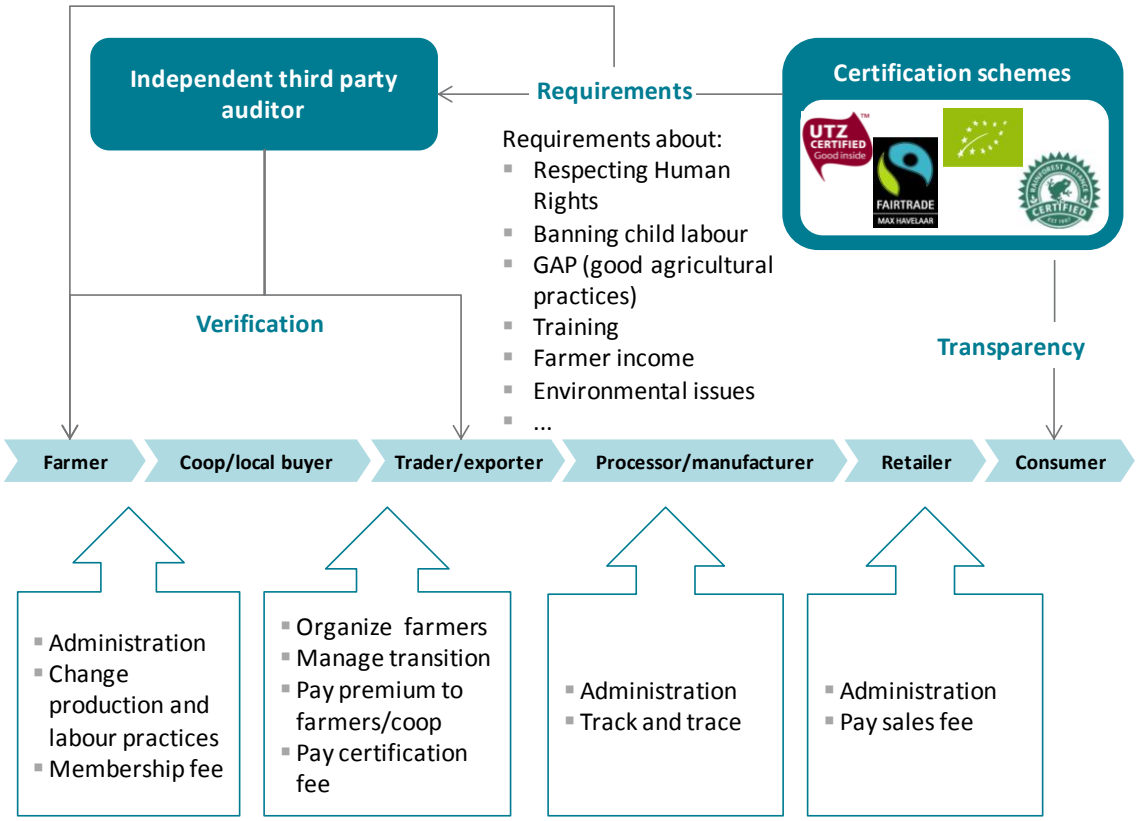
3.1.1 Cocoa certification process

The cocoa certification process is comparable for all certification schemes, with the existence of different requirements covering a range of areas related to social, environmental and

economic issues. The farmers need to comply with the determined requirements, and compliance is verified by independent auditors, through regular audits (frequency varying per scheme). The key changes to adapt to certification happen at farm level, however responsibilities for and costs of certification are distributed through the value chain. We will provide further details into the cost distribution in Chapter 6.

Figure 3 provides an overview of how the process is structured and different roles distributed along the value chain.

Figure 3: Roles and processes related to certification of sustainable cocoa



Source: KPMG Team Analysis

The overall certification process could be described as follows:

- The farmer/coop indicates that they wish to become certified. At this stage they themselves can perform a pre-assessment based on the requirements' check lists available on the webpage of the certification schemes;
- The farmer/coop need to implement an internal control systems (ICS) as part of the schemes' requirements;
- After the ICS is in place, they should go through an internal audit to check their readiness to become certified. If the internal audit result is positive, the farmer

organisation/cooperative will call a third party for the official audit/verification or a pre-audit;

- The farmer/coop can opt to have a third party pre-audit, to check how far they are from meeting the requirements and what needs to be improved. This is an optional step.
- The hired external auditor will evaluate whether the farmer organisation/cooperative is compliant or not, and will visit a certain number of the cooperative members to also check for their compliance with the standards. After the visit the auditor submits its findings to the certification scheme with either a recommendation for granting the certification or with a list of improvements that should be implemented before the organisation gets certified. In the latter case, the organisation will be given a certain amount of time to adequate its practices to the requirements and a second visit by the auditor will be scheduled.
- It is important to note that in the first year, the cooperatives do not need comply with all requirements. Some requirements are necessary from the first year on (e.g. requirements referring to child labour). However, the schemes have a phasing system that allows time for the organisations to adjust to all the requirements. For instance, in the case of Fairtrade the cooperatives have up to 6 years to obtain full compliance.
- Training requirements also varies per certification scheme, with some schemes have different requirements for the 1st, 2nd and 3rd year.

It is important to note that the total costs bared and the party paying for them differs by scheme. The same is applied to who receives the premium. Chapter 6 will explore this in more detail.

3.2 Requirement differences between certification schemes

Even though the overall process of certification is similar among schemes they differ in their specific requirements. We have chosen to highlight the differences encountered in some specific requirements which can have a direct impact on the cost and benefit analysis of the schemes at farm level. To this list we added items not directly linked to the farmer profit and loss (P&L) account, but which we consider important differences for other players. The categories “Mass Balance” and “Certified content required in final product” were included as they can have a considerable impact on the P&L of other actors in the value chain. Differences are also observed in value and type of fees required and in the amount of certified cocoa required for the use of the label. Genetically Modified Organism (GMO) was included as, even though genetically modified cocoa is not available in the consumer market at the moment, once it reaches farmers, it may have an impact on their costs. It is important to note that this possible impact is not explored in this report. Below we present an overview per scheme.

A summary table comparing the schemes can be found in Appendix IV, this table contains a reference to the source documents where we have obtained the information for each requirement category per certification scheme. We have used the latest version of publicly available documents and information derived from the interviews conducted with certification

scheme owners. This is a qualitative overview of requirements: Further details on costs related to these requirements can be found in Chapter 6.

3.2.1 Fairtrade

Table 3: Fairtrade requirements' description

Requirement type	Detail certification scheme
Payment to scheme[14]	Fairtrade does not require producers to pay a fee per volume as is the case for other schemes. However, it charges an initial fee has to be paid by producer groups, varying according to group size, ranging from US$ 1859[15] for groups smaller than 50 members to US$4511 for groups bigger than 1.000 members. In addition, an annual fee ranging from US$ 1521-3601 has to be paid also considering the same group size categories as above mentioned. Even though this does not impact the cost-benefit analysis at farm level it is important to note that Fairtrade also charges fees at the trader level and manufacturer level (licence fees). A licence fee on manufacturer level is charged depending on the country where the product is sold, while for global manufacturers the licence fee is depending on a percentage varying for the level of total turnover.
Audits	Fairtrade members pay a fixed annual audit fee, independently of whether audits have been conducted in that specific year.
Premium received by farmer/cooperative	Fairtrade pays a fixed premium of US$200 in addition to a minimum price of US$ 2.000, both paid to the cooperative. The minimum price is just valid when the market prices are lower than the established value. Fairtrade farmers decide collectively how premium should be used and the auditor has the responsibility to check the premium distribution.
Certified content required in final products	Fairtrade requires 100% of certified content for the use of their label, or at least 20% minimum percentage of total weight of composite product.
Mass balance[16]	Both physical and time mass balance is allowed under Fairtrade standard until 2014. After 2014, only time mass balance is allowed.
Wage level	The recommended wage level under Fairtrade should follow local legislation or the regional average. The choice between the two should be determined by whichever value is the highest. It also requires the gradual increase of wages to above sector average.

[14] Required fees that need to be paid to the certification scheme in order to be able to join their scheme. It comprises entry fees, fees per volume and other direct fees paid.

[15] For all values presented in this report, values in Euros converted to US Dollars using a rate € 1 = US$ 1,30.

[16] For a complete definition of time and physical mass balance please refer to Appendix II: Definitions

Biodiversity and climate change	Fairtrade provides a recommendation on the more efficient use of energy and the replacement of non-renewable sources by renewable ones whenever possible in the processing facilities. It also will require the registration of greenhouse gas emissions savings in case initiatives are in place as of 2017. There are no requirements concerning shade trees.
Waste disposal	From 2014 onwards, farmers are responsible for the waste disposal. They will be required to have designated areas for hazardous waste disposal and storage. In absence of disposal system. The burning of hazardous waste will only be allowed if in compliance with local legislation.
GMO (Genetically Modified Organism)	Genetically modified seeds should not be intentionally used.

3.2.2 Rainforest Alliance

Table 4: Rainforest Alliance requirements' description

Requirement type	Detail certification scheme
Payment to scheme	Rainforest Alliance does not have an entry fee for its members. A fee of US$ 15 per ton is to be paid by the farmer, coop or first buyer/exporter.
Audits	The audit is done annually by a third party audit and prices are determined by the market.
Premium received by farmer/cooperative	Rainforest Alliance does not have a fixed premium price. It does pay a premium to the cooperatives with a value determined by the market ranging from approximately US$ 150 in Ghana and US$ 200 in Côte d'Ivoire. Premium distribution is not audited.
Certified content required in final products	Rainforest Alliance requires a minimum percentage of dry weight end-product to allow the use of their label. Products need to have at least 30% certified cocoa. Rainforest Alliance incentivises the scale up of this percentage to 100%.
Mass balance	Rainforest Alliance does not allow any type of mass balance, requiring the full segregation of its product through the value chain.
Wage level	Rainforest Alliance provides guidelines for wages, however they are not compulsory. It describes that workers should be paid on equal or higher level than the regional wage average. It allows employee housing and food to be deducted from their salaries.
Biodiversity and climate change	Rainforest Alliance has specific requirements for farmers to maintain existing shade trees or plant new ones. Farmers need to have plans in place to reduce their carbon emissions or increase carbon sequestration and they are also required to annually describe their energy use per source and have a plan for

	energy efficiency.
Waste disposal	Farmers are responsible for their waste disposal and should be trained on waste management following the principles established in Rainforest Alliance guidelines. Burning of waste in open air areas is not allowed under any circumstances.
GMO (Genetically Modified Organism)	The use of genetically modified seeds is not allowed.

3.2.3 UTZ Certified

Table 5: UTZ Certified requirements' description

Requirement type	Detail certification scheme
Payment to scheme	UTZ requires an entry fee for first buyers and fees throughout the value chain. An annual fee for supply chain operators is charged, depending on volume in tonnes traded. The fee is ranging from US$ 325 for operators below 100 metric tonnes (MT) of UTZ Certified purchased volume to US$ 5.200 to operators with more than 50.000 MT of purchased volume. A variable fee of US$ 13 per ton is to be paid by the first buyer, whereas a discount applies for large first buyers.
Audits	The audit is done annually by third parties and prices are determined by the market.
Premium received by farmer/cooperative	UTZ does not have a fixed premium. However, its premium value is also determined by the market and paid to the certificate holder. Values range from approximately US$ 152 in Ghana and US$ 140 in Côte d'Ivoire.
Certified content required in final products	The minimum certified cocoa content required in 2012 is of 40%. This percentage is going to gradually increase until 2014, as follows: 60% minimum certified content in 2013 and 95% minimum certified content in 2014.
Type of segregation allowed: mass balance or full segregation	Both time and physical mass balance are allowed for UTZ certified cocoa.
Wage level	For UTZ, wages must at least follow local legislation or sector agreements, whichever is higher and the principle of equal payment (equal work is paid with equal pay, a principle focusing on diversity concerns).
Biodiversity and climate change	UTZ also has specific requirements for farmers to maintain existing shade trees or plant new ones. Even though farmers should have a risk assessment and environmental impact action plan no direct recommendations are given in relation to GHG emissions, as it argues that mitigation is addressed through forest cover and other environmental aspects and the energy use is minimal.
Waste disposal	Limited responsibility of farmers for organizing a waste disposal system, as there are no specific guidelines on how waste should be disposed. On central

	locations, farmers should provide a designated area for waste storage and disposal.
GMO (Genetically Modified Organism)	UTZ does not provide guidance in regard to the use of genetically modified seeds. It states that there are no currently available GMO varieties, reason why the topic is not included in the 2009Code of Conduct.

3.3 Conclusions

Certification schemes operate in similar ways and have as key objective to promote sustainable practices in the cocoa supply chain and improve the livelihoods of farmers in producing countries. Even though similar in the way the certification process is structured, certification schemes differ in their specific focus and requirements. These differences in requirements can have a direct impact on the costs and benefits at farm level. They can also impact certification schemes' attractiveness for actors in the value chain.

4 Literature study on the impacts of certification

This chapter presents the findings of the literature study that was conducted to identify the main advantages and disadvantages of certification from a farmer/coop perspective. The study includes insights from different parts of the world with a special focus on cocoa. Yet, since a relatively limited amount of articles are available for cocoa certification, case studies on other commodities (e.g. coffee, fruit and vegetables) have also been reviewed.

4.1 Selection of 24 primary sources

After scanning approximately 100 documents on applicability, 24 primary sources presenting empirical evidence from field research were selected to be part of the literature study. The underlying selection criteria were:

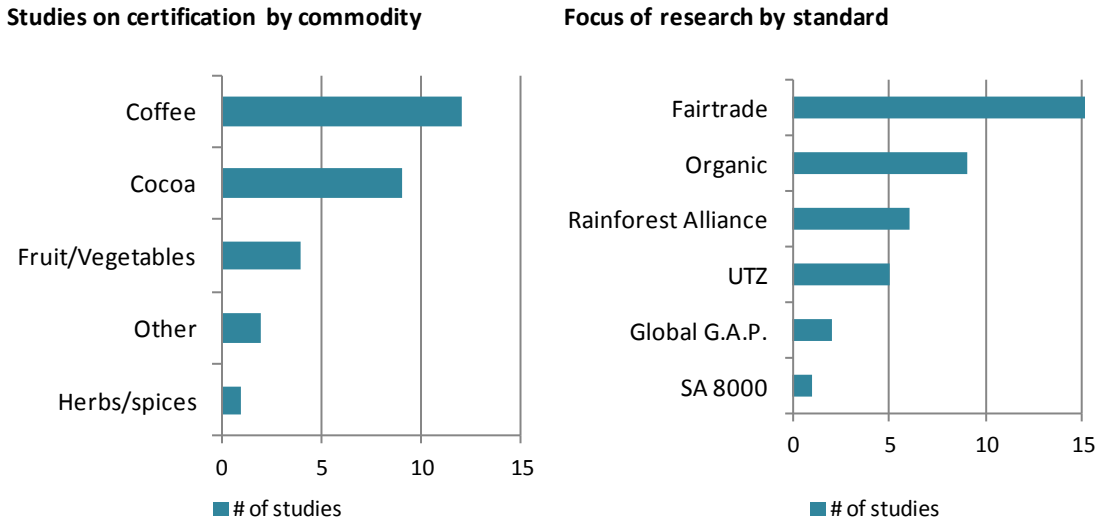
- *Content*: in order to be eligible, studies had to analyse the impacts (rather than drivers or barriers) of certification based on a comparison between certified and conventional farms. The results had to b e derived from field research reflecting actual experience with certification rather than from other literature. In terms of commodities, reports on cocoa were given preference over others with similar characteristics.
- *Balance*: attention was paid to the balanced presentation of results. Papers that appeared to be biased in favour or against certification were left out of the literature study. Concerning the content, the majority of the papers address more than one certification-related issue. The exception are four studies focusing specifically on child labour (2 studies), gender (1 study) and cooperatives (1 study).
- *Quality*: in addition to relevant peer-reviewed papers, publications from research institutes and international organizations have been used. All of these sources have a clear methodology and associated conclusions.

The 24 primary sources were complemented by information from two literature reviews, one discussing gender issues and the other impacts of certification on cooperatives. These literature reviews were used because the primary sources contained insufficient findings on the respective topics. The full list of sources can be found in Appendix VII.

The literature study focuses on certification in general. If there are any scheme specific advantages or disadvantages, they are indicated in the text. The baseline for the analysis of advantages and disadvantages of certification is conventional farming.

Most literature on certification looks at more established schemes such as Fairtrade, Organic, Rainforest Alliance and UTZ, with Fairtrade being covered by the majority of studies (see figure 4). Coffee seems to be the commodity most commonly studied. The charts below show a classification of the literature reviewed according to commodity and standard. Given that, in several cases, a paper includes more than one commodity or standard, the total number of studies presented below exceeds the amount of 24 primary studies included in the literature review.

Figure 4: Studies on certification by commodity and standard



Source: KPMG Team Analysis

4.2 Methods for impact measurement

The impact of sustainable cocoa certification is discussed in various peer-reviewed academic papers. Several publications discuss the methodology of certification impact measurement either from an ecological[17], economic [18] or social [19] perspective. In addition, a number of initiatives have been initiated to measure the impact more structurally:

- ISEAL has developed a guideline called the 'Impact Code'[20] on measuring the impact of sustainable certification from a rather generic perspective;
- The World Cocoa Foundation has launched the Cocoa Measurement and Progress (CocoaMAP)-platform in an apparent effort to measure progress of sustainable cocoa production through a set of indicators.

International Institute for Sustainable Development (IISD) and the United Nations Conference on Trade and Development (UNCTAD) launched the Sustainable Commodity Initiative. The

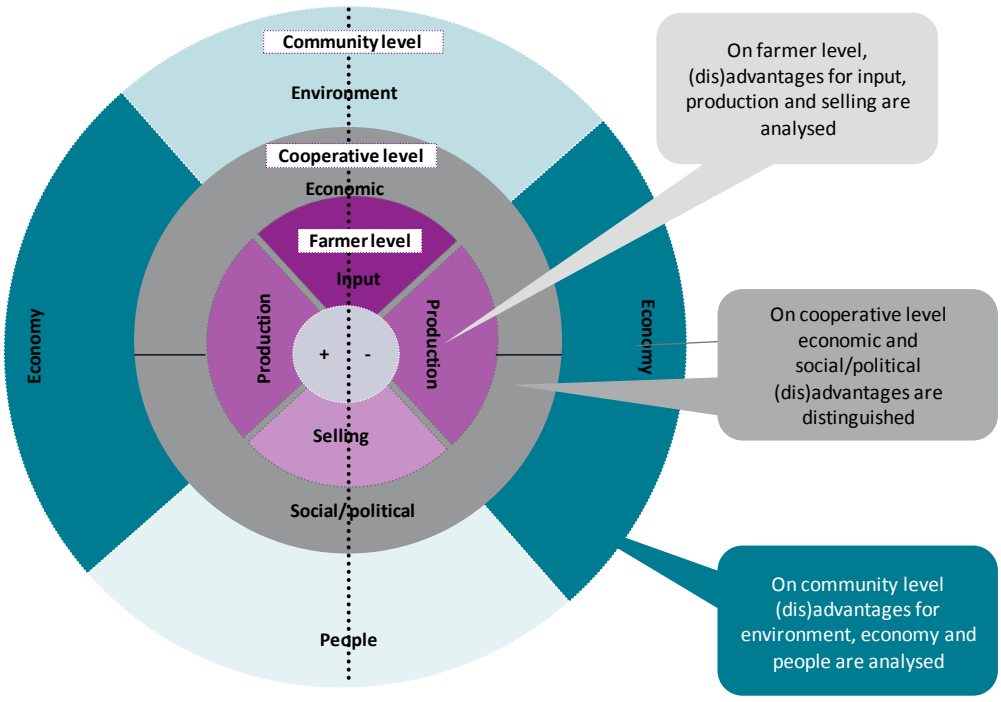
[17] Stem, C., Margoluis, R., Salfasky, N. and Brown, M. (2005). Monitoring and evaluation in conservation: A review of trends and approaches. Conservation Biology 19(2): 295–309.
Frondel, M. & Schmidt, C. (2005). Evaluating environmental programs: The perspective of modern evaluation research. Ecological Economics, Volume 55, Issue 4, pages 515–526
18 Greenstone, M., and Gayer, T. (2009) Quasi-experimental and experimental approaches to environmental economics. Journal of Environmental Economics and Management, Volume 57, Issue 1, pages 21–44
19 Paul, E. (2005). Evaluating fairtrade as a development project: methodological considerations. Development in Practice, Volume 15, Issue 4, pages 134-150.
20 ISEAL, Assessing the Impacts of Social and Environmental Standards Systems v1.0 (2010), http://www.isealalliance.org/our-work/codes-of-good-practice/impacts-code, 03-07-2012.

Committee on Sustainability Assessment (COSA) has developed a methodology to measure impact of sustainability initiatives and are preparing a publication on cocoa (Potts and Giovanucci, 2012). Since the methods available are either in a development phase or more 'guidelines'-based, we applied a KPMG model for the analysis in this report.

4.3 KPMG model to analyse advantages and disadvantages

For the analysis of the advantages and disadvantages of certification a KPMG model has been applied, which distinguishes between impacts on the farm level, the cooperative level and the broader community level. Each category is further subdivided, as illustrated in Figure 5. Input, production and selling are analyzed at the farm level; Economic and institutional/political issues at the cooperative level and environmental, economic and social issues at the community level.

Figure 5: KPMG model used for analysing certification impact at farm, cooperative and community level



Source: KPMG Team Analysis

An overview of the results from the literature study, including the references of the supporting studies per argument can be found in Appendix VI.

4.4 Limitations

The evidence base to judge the advantages and disadvantages of certification schemes from the farmer perspective appears relatively robust, however when drawing conclusions the variability in methodologies and sample sizes has to be taken into account.

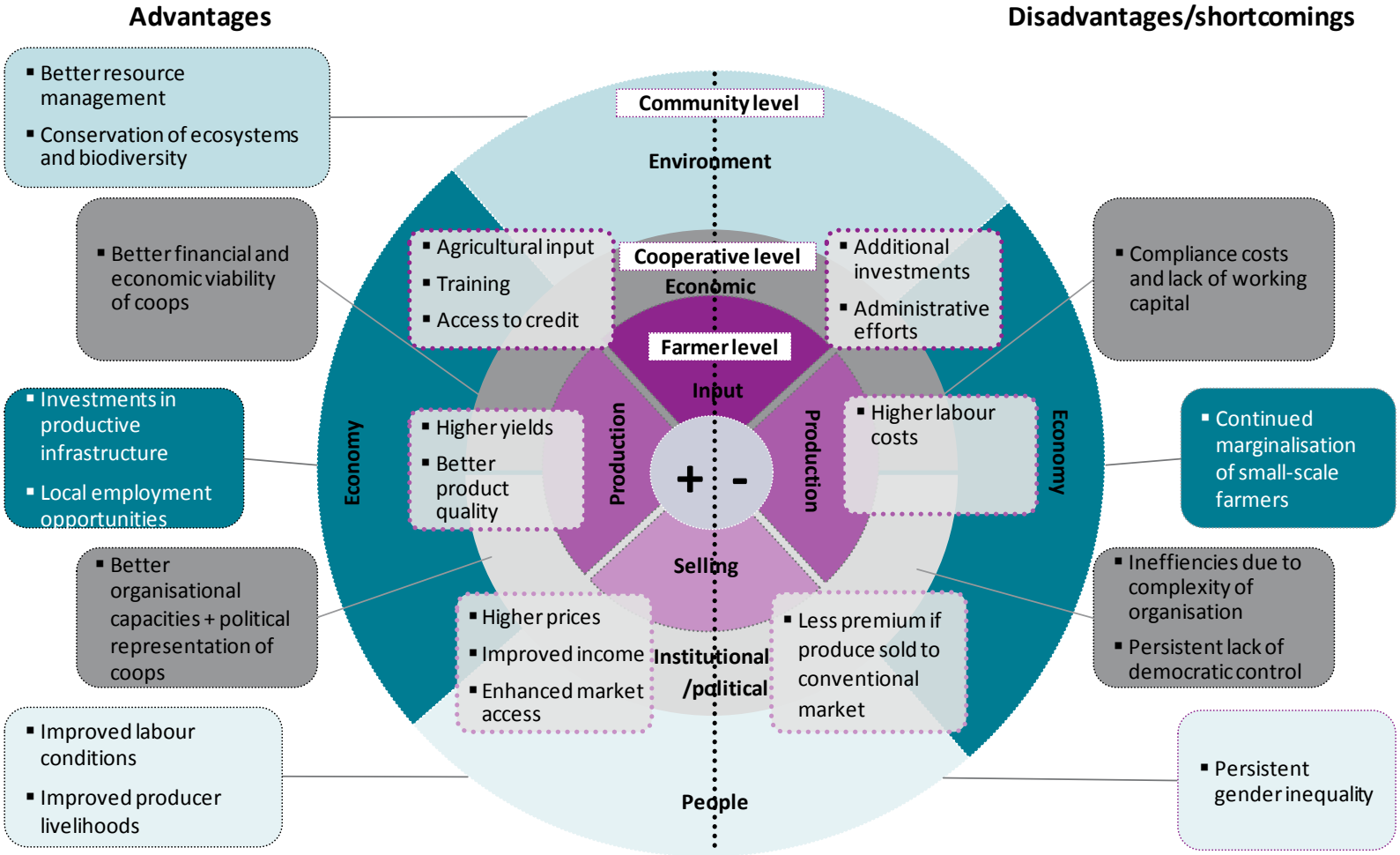
Besides, no differentiation is made between the advantages and disadvantages of individual certification schemes, which means that the arguments presented might not be equally applicable to all schemes, given their different requirements. Major deviations of arguments especially regarding organic certification are indicated in the text.

Finally, as stated before, there is only a limited amount of studies available for cocoa. For now, it is assumed that conclusions from other commodities, in particular from coffee, also apply to a large extent to cocoa. The conclusions, therefore, should be read as a hypothesis for further research.

4.5 Results

The literature review found substantial evidence that certification has improved the social, economic and environmental conditions of farmers and the communities they live in. At the same time there are certain negative effects, presented as disadvantages of certification. Figure 6 summarizes the advantages and disadvantages at the farm, cooperative and community level. It is important to note that some of the disadvantages depicted in the graph are not actually disadvantages of certification but instead describe problems which exist apart from certification and that certification has not managed to solve, yet. In these cases the wording of the argument (e.g. persistent gender inequality) indicates that it should be interpreted as a shortcoming of certification (i.e. a condition already existent that certification does not manage to change) rather than an inherent or structural disadvantage. Figure 6 provides an overview of the advantages and disadvantages of certification from the farmer perspective.

Figure 6: Overview of the advantages and disadvantages of certification from the producer perspective



Source: KPMG Team Analysis

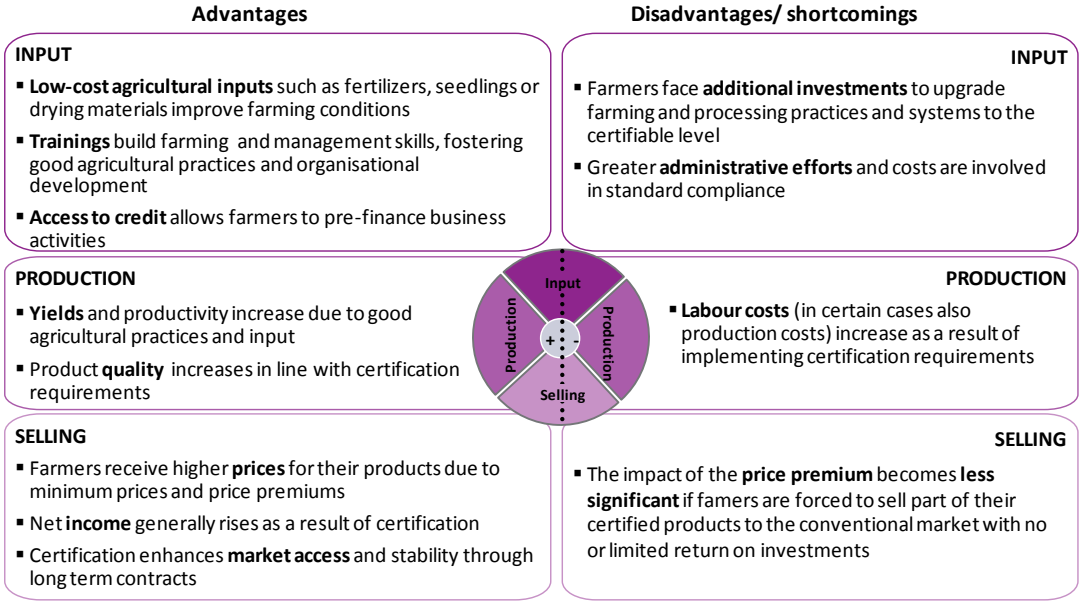
4.5.1 Farm level

The advantages and disadvantages analysed at the farm level, will be presented according to the following dimensions:

- *Input* comprises different forms of (subsidized) input material (e.g. seeds, fertilizers, pesticides etc) as well as technical and management trainings and loans provided to the farmer by other actors in or out of the value chain (e.g. first buyer/ exporter, cooperative, NGOs).
- *Production* describes the actual process of cultivating the crops, thus capturing among others the impacts of certification on product quality and yields.
- *Selling* designates the commercialisation phase of the product (e.g. the cocoa beans), where factors such as market access, trade conditions and price play a key role. On the farm level, the advantages of certification range from financial to non-financial benefits, whereas the disadvantages are mainly cost-related.

In the beginning of each session, the main arguments are summarized. In order to make the results as transparent as possible, 2 numbers are indicated in brackets. The first one stands for the *total amount of studies* supporting the argument, the second one is the *amount of cocoa-related studies* supporting the argument. In certain cases the second number is 0, meaning that the argument has not been found in any of the studies on cocoa, but it is included due to its relevance to the analysis of certification and applicability to the cocoa reality. The argument is then derived from studies on other crops. In appendix VII an overview can be found with information on the literature used, the commodities and certification schemes that are studied.

Figure 7: Advantages and disadvantages of certification at the farm level



Source: KPMG Team Analysis

4.5.1.1 Input

Advantages

- Better access to **agricultural inputs** (sometimes at low costs or even for free) such as fertilizers, seedlings and drying materials improve farming conditions (5;1: addressed by 5 studies in total, among them 1 study on cocoa).
- **Trainings** which farmers do not necessarily have without the intervention of certification build farming and management skills, fostering good agricultural practices and organisational development (8;3).
- **Improved access to credit** allows farmers to pre-finance business activities (7;2).

5 studies describe the increased access to agricultural inputs such as high-nitrate fertiliser, quality seedlings and drying materials (inputs that are used for the process of drying of seeds) through the cooperative as an important advantage of certification as it directly improves farming conditions. Likewise, members of certified cooperatives benefit from access to communal equipment as well as transport for their products (Lyons and Burch, 2007).

Closely linked to this aspect are trainings included in certification requirements and/ or given by other organizations to prepare farmers for certification which help farmers build farming, management and marketing skills, thus fostering good agricultural practices and organisational development. This is confirmed by 8 studies. Potts and Giovanucci (2012) show that trainings have increased 120% in certified farms in comparison to non-certified ones. Krain et al. (2011)

found for instance that the farmers' improved bookkeeping practices facilitated the monitoring of their income, expenses and harvest.

A third advantage of certification is improved access to credit, allowing farmers to pre-finance their business activities (7 studies). According to Fort and Ruben (2008), not only the access to credit but also the amounts of loans received have increased significantly due to the collateral value presented by Fairtrade delivery contracts.

Disadvantages/ shortcomings

- Farmers face **additional investments** to upgrade farming practices and systems to the certifiable level (9;3).
- Greater **administrative efforts** and costs are involved in standard compliance (3;1).

A well documented disadvantage of certification is the additional investments that farmers have to make in order to upgrade their practices and systems to the certifiable level (9 studies). These compliance costs are associated with putting in place new infrastructure and technologies, changing farming or post-harvest practices as well as passing in conformity assessments (i.e. audit charges) (e.g. Akyoo and Lazaro, 2008). Apart from direct investments, the adherence to a certification standard also involves greater administrative and organizational efforts in the form of participating in producer organizations, documenting processes, supporting monitoring and inspection systems and setting up farm accounting systems (e.g. Santacoloma, 2007).

A concern highlighted by Liu et al. (2004) is that farmers without a guarantee of continued access to the land (there is a limited amount of farmers with land title) are unlikely to make these investments required to achieve and maintain certification, having an additional barrier to access certification.

4.5.1.2 Production

Advantages

- **Yields** and productivity increase due to good agricultural practices and improved use of inputs (9;3).
- Product **quality** increases in line with certification requirements (6;1).

At the production level, yields and farm productivity increase due to the application of good agricultural practices and inputs following certification (9 studies). Verkaart (2009) for instance finds that UTZ affiliation in Uganda has contributed to the higher productivity of certified coffee farmers as compared to non-certified farmers. Similarly, Arnould et al. (2009) observe that Fairtrade coffee farmers outproduce non-Fairtrade farmers by using their land more efficiently.

For organic certification, conforming farmers are assumed to be confronted with yield losses once they stop using chemical fertilizers, insecticides, and pesticides. Yet, this only occurs when farms are converted from an "industrial" type of conventional production to a certified organic system. Instead, many African farmers whose fields are already "organic by default" benefit from certification in terms of improved production techniques and higher yields (Akyoo and Lazaro, 2008).

Second, certification appears to have a significant positive influence on product quality (6 studies). This impact is generally attributed to the training provided and the enforced adoption of good agricultural practices (GAP).

The importance of GAP for both yields and quality is illustrated by a study on Rainforest Alliance cocoa certification in Côte d'Ivoire (Krain et al., 2011): "The introduction of integrated pest management methods reduced the number of cocoa pods affected by black pod disease, a severe challenge throughout the entire region, by 35.6%. The farmers also improved their methods of cocoa production in terms of crop management, tree pruning, raising seedlings in nurseries and agroforestry, as a whole. Ultimately, both the quantity and quality of the cocoa produced increased".

Disadvantages/ shortcomings

- **Labour costs** (in certain cases also production costs) increase as a result of implementing certification requirements (7;2).

Certified farmers tend to incur higher labour costs than conventional farmers, which in a few cases leads to higher production costs (e.g. Liu et al., 2004; Bolwig et al., 2007; Gibbon et al., 2009). Yet, Liu and Bolwig note that the benefits of conversion in terms of price premiums and higher crop revenues outweigh the higher production costs.

An increase in labour costs has been observed particularly in the context of organic certification, which is associated with more labour-intensive ploughing, post-harvest handling and processing activities (Fort and Ruben, 2008; Santacoloma, 2007). In order to meet the quality requirements of the organic exporter, farmers employ additional family labour and often hire external workforce (e.g. Bolwig et al., 2007; Jaffee, 2008). According to Jaffee (2008), the costs of hired labour are significantly higher for Fairtrade families than for their conventional counterparts. None of the studies examined attributes a cash value to the hours of unpaid family labour.

Higher labour costs do not necessarily translate into higher production costs. Potts and Giovanucci (2012) report that despite increased labour costs, overall production costs were reduced through the participation in a sustainability initiative. This is confirmed by Lyons and Burch (2007), who document that organic farming resulted in a reduction in the cost of farming, as farmers were able to replace expensive external inputs (including fertilisers and seeds) with organic inputs generally produced on the farm.

4.5.1.3 Selling

Advantages

- Farmers receive higher **prices** for their products due to minimum prices (Fairtrade) and price premiums (13;5).
- Net **income** generally rises as a result of certification (11;4).
- Certification enhances **market access** and stability through long term contracts (8;3).

The majority of the studies (13 out of 22) acknowledges that certified farmers receive higher prices for their products due to minimum price floors and the payment of price premiums. In most cases, higher prices in combination with other factors such as improved yields and better market access translate into higher net incomes for farmers and their families (11 studies).

However the impact of certification on household net income highly depends on the local context, as illustrated by Potts and Giovanucci (2012). The authors find a significant increase of net income from organic coffee and cocoa in Tanzania and Colombia and a negative impact in Mexico and Costa Rica where net income of certified farms decreased compared to the conventional control group. The underlying causes of these opposing trends are not explored. Yet, they show that understanding the local context is crucial when determining strategies for the adoption of sustainable practices.

As a third advantage, certification enhances market access and stability through longer term contractual arrangements (7 studies). Literature reveals that farmers established stable commercial relationships and experienced better opportunities due to being more attractive to customers. At the same time they perceived less risk and more transparency in negotiations, suggesting an increase in their bargaining power. Krain et al. (2011) observe that in Côte d'Ivoire the good practices applied by farmers and the cocoa traceability introduced impressed traders, creating trust in the cooperatives and leading to improved market access. In the survey conducted by Consumers International (2005), all certified farmers agreed that the main motivation for seeking certification was to improve market access and that subsequently negotiating skills and market information were essential to take full advantage of certification.

Disadvantages/ shortcomings

- The impact of the **price premium** becomes **less significant** if farmers are forced to sell part of their certified products to the conventional market due to low demand (6;2).

While price premiums to which certified producers are entitled have shown to contribute to higher incomes, under certain circumstances they appear to yield little effects. The main reason for the erosion of price premiums are changes in supply and demand, meaning that a decline in demand forces certified producers to sell their products on the conventional market. This argument is supported by 6 studies. Liu et al. (2004) cite the cases of coffee from Tanzania

and cocoa from Ghana where only a low percentage of total production was sold on the Fairtrade market. Another study on coffee (Fort/Ruben, 2008) confirms this.

Fort and Ruben (2008) adds the concern about the premium distribution, explaining that a large proportion of interviewed farmers lacked knowledge regarding the distribution and use of the Fairtrade premium. Also, the perceived benefit of the premium is questioned, because when premiums are invested in social and collective infrastructure their perceived advantage is less tangible as they benefit certified and non-certified farmers alike.

While most certification initiatives are associated with price premiums, their structure, amount and distribution criteria are not clear and not consistent across schemes. In some cases mentioned in literature, it seems to be the case that farmers benefit from other intangible commercial advantages of certification (as better bargaining power) than from the premium itself. One study describes that for some organic producers the price premium does not compensate for the additional costs of production in terms of reduced yield. In contrast, it observes that a premium decline for the UTZ scheme is compensated by increased market access and the ability to negotiate long-term contracts (Consumers International, 2005). The latter finding is confirmed by Potts and Giovannucci (2012), who point out that while UTZ farms demonstrate pricing that is only marginally higher than uncertified farms at the global level (4%), they were found to have among the greatest improvements in yields compared to their controls (30%).

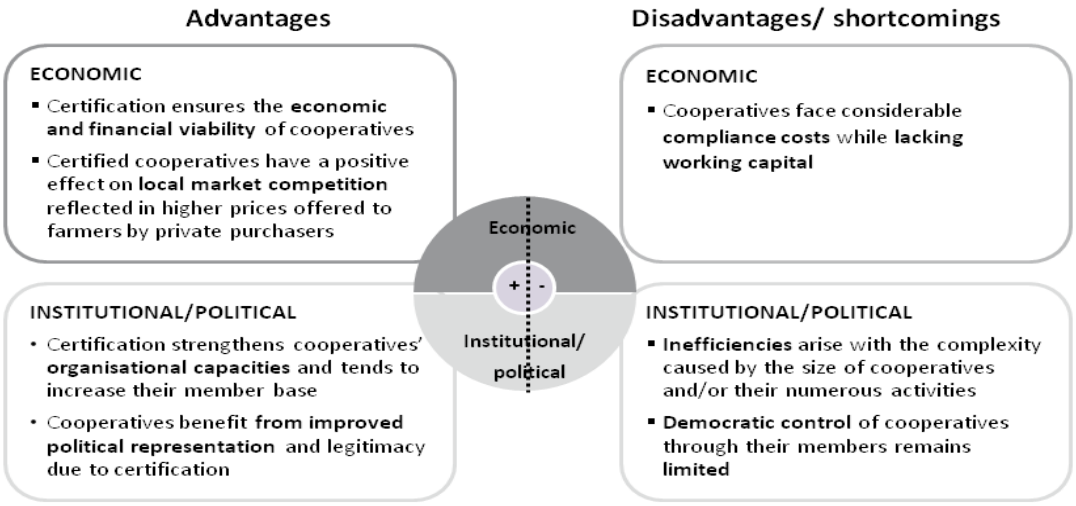
4.5.2 Cooperative level

The analysis of the cooperative level looks at positive and negative impacts experienced by cooperatives as a result of becoming certified. The fact that certification processes are believed to strengthen existing loops and be a driver for group forming, thus facilitating the formation of cooperatives, is not included in this analysis. We focus on the results observed after the cooperative is already formed.

A clear distinction is made between the impacts that arise for farmers through their participation in certified cooperatives (such as increased market access) and the impacts that arise from being in a regular cooperative scheme. The indirect impacts of cooperative systems to farmers and communities are addressed in the other sections.

Figure 8 provides an overview of the advantages and disadvantages of certification at the cooperative level, distinguishing between the economic and the institutional/political dimension. A more detailed explanation is provided in the text below. The evidence base for some of the arguments in this section is limited, since only a few number of studies deals with certification impacts on cooperatives in particular. Further research is necessary to test the robustness of these arguments.

Figure 8: Advantages and disadvantages at the cooperative level



Source: KPMG Team Analysis

4.5.2.1 Economic

Advantages

- Certification ensures the economic and financial viability of cooperatives (2;1).

Certification ensures the continued economic and financial viability of cooperatives as it leads to improved market access, credit services and payment of premium prices (Ronchi, 2002a). This argument is supported by the results of a literature review of 77 studies focusing on the commodities coffee, bananas and cocoa, which has been published by Vagneron and Roquigny in 2011.

Disadvantages/ shortcomings

- Cooperatives face considerable **compliance costs** (4;0) while **lacking working capital** (1;0)

Certified cooperatives incur a variety of compliance costs, that would not be as strict in a normal cooperative setting, ranging from farmer registration, record keeping, inspection, certification, field agency operation, farmer training, and premium payment to farmers (Akyoo and Lazaro, 2008; Santacoloma, 2007; Ronchi, 2002a). Bearing these costs is particularly difficult if cooperatives lack working capital. This is explained by the fact that their members are generally poor farmers without the capacity to invest in administrative skills. The lack of working capital implies that cooperatives are not able to immediately pay their members for

their produce, which in turn reduces their attractiveness for cooperative membership (Milford, 2004).

4.5.2.2 Institutional/ political

Advantages

- Certification strengthens cooperatives' **organisational capacities** and tends to increase their member base (2;2).
- Cooperatives benefit **from improved political representation** and legitimacy due to certification (1;1).

Once cooperatives manage to be compliant with certification schemes requirements, it is shown that certification helps cooperatives to further develop their organizational capacities (Krain et al., 2011; Vagneron and Roquigny, 2011).

The services provided by certified cooperatives, such as training to cooperative members and seems to make them more attractive in the perception of farmers (see Fort and Ruben, 2008; Nelson and Galvez, 2000), which might constitute an incentive for non-members to join these cooperatives. Due to the training sessions in sustainable cocoa farming for example, cooperatives in Côte d'Ivoire increased their membership by about 25% (Krain et al., 2011). Yet, given that Krain et al. (2011) are the only authors to explicitly mention the advantage of growing cooperative membership, further research has to prove the validity of this argument.

Based on their literature review, Vagneron and Roquigny (2011) conclude that Fairtrade positively impacts the representation of producer organizations in institutional networks. The same is true for their political representation and their legitimacy towards their members and other actors (e.g. other producer organizations, decision makers, public administrations, NGOs). This literature review is the only paper addressing this topic, but its findings may be regarded as fairly reliable, given that their are based on the review of a large sample of studies.

Disadvantages/ shortcomings

- **Inefficiencies** arise with the complexity caused by the size of cooperatives and/or the numerous activities associated with the participation in a certification scheme (1;0).
- **Democratic control** of cooperatives through their members remains **limited** after certification (4;2).

First, inefficiencies arise with the complexity which is created by the large size of certain cooperatives and/or their numerous activities. As Milford (2004) argues, as certified cooperatives have to satisfy several needs of their members (e.g. credit schemes, education and other non-financial services), they are likely to have more complex administration procedures and higher expenditures than their regular competitors.

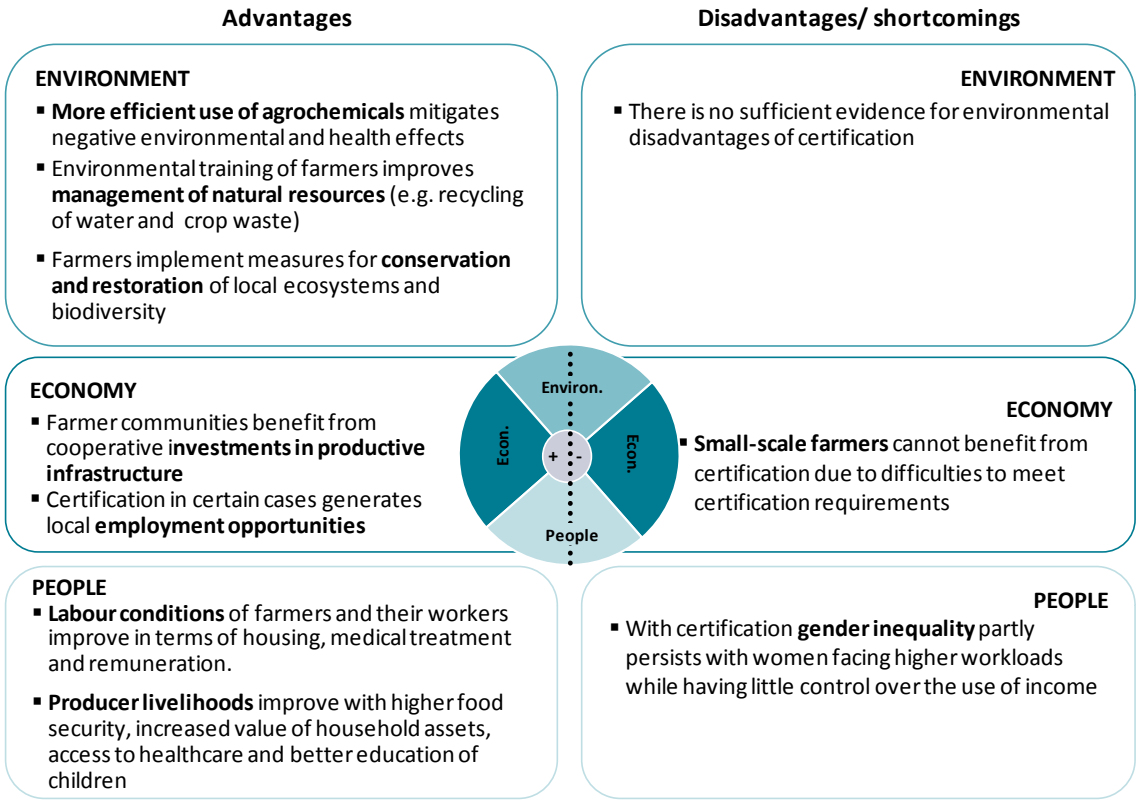
Second, several studies observe a lack of effective democratic control of cooperatives in general through their members. In most cooperatives important issues have to be decided by majority. However if members are not sufficiently educated or informed, they may leave the decisions to cooperative staff, which creates the risk of mismanagement. Even though this is the case for cooperatives in general, certification can increase complexity and worsen this context. The frequent lack of knowledge about Fairtrade among individual members of large cooperatives puts the effective democratic control of these organisations at risk (Milford, 2004; Liu et al., 2004).

The literature review of Vagneron and Roquigny (2011) finds that the principles of democratic, transparent, and participatory governance are often difficult to implement, even within Fairtrade certified organizations. The lack of democratic control is thus not a typical disadvantage of certification but rather a problem that has not been tackled by it so far.

4.5.3 Community level

The community level captures the broader positive and negative impacts of certification on the local environment, the economy and the people. Most advantages seem to result from higher available incomes in farmer households, whereas some of them can also be attributed to community investments made by cooperatives. Key advantages on the community level are the conservation of the local environment and improved livelihoods. Mixed results and possible shortcomings have been found for certain groups, namely women and small-scale farmers (e.g. farmers with less than 3ha and living in remote areas).

Figure 9: Advantages and disadvantages at the community level



Source: KPMG Team Analysis

4.5.3.1 Environment

Advantages

- **More efficient use of agrochemicals** mitigates negative environmental and health effects (6;0).
- Environmental training of farmers improves **management of natural resources** (e.g. recycling of water and crop waste) (4;2).
- Farmers implement measures for **conservation and restoration** of local ecosystems and biodiversity (9;3).

The farmers participating in certification programmes use agrochemicals such as fertilizer, insecticides and pesticides more efficiently. Where farmers have adopted organic agriculture, they are no longer exposed to any hazardous chemicals, but also other schemes require natural methods such as integrated pest management while restricting the application of certain chemicals. Together with the increased spreading of protective clothing and gear use, this practice mitigates harm to farmers' health (6 studies, e.g. Lyons and Burch, 2007;

Consumers International, 2005). A study on Global Gap certification also found farmers to be more aware of the impact of their farming practices, including the use of chemicals, upon the environment (de Battisti et al., 2009). This effect, is however, not yet documented for cocoa certification specifically.

A second environmental advantage is the improved management of natural resources (4 studies). After receiving trainings on the treatment of water or the recycling of waste for example, farmers adjusted their behaviour accordingly. The outcomes of an environmental project analysed by Krain et al. (2011) reflects these changes: wells were more often used in a correct manner, surface water in plantations was less or not at all contaminated and the great majority of farmers maintained their waste management methods disseminated through trainings. This observation is supported by the findings of Potts and Giovannucci (2012), which show that the proportion of cocoa and coffee farmers recycling crop waste increased by 63% following trainings promoted by the certification programme.

Thirdly, certification seems to positively affect natural ecosystems and biodiversity (9 studies). In the context of their agricultural activities, farmers adopt environmentally sound measures such as planting shade trees, producing compost and applying it to fields, building live plant barriers, establishing terraces or marking certain areas for wildlife protection (e.g. Jaffee, 2008; Krain et al., 2011). The stringency of the requirements for the conservation of soil, flora and habitats differs per scheme (KPMG, 2012). While being present in all certification types, the positive environmental effects seem particularly tangible in the case of organic certification.

Disadvantages/ shortcomings

There is not enough evidence in the literature reviewed pointing to environmental *disadvantages* of certification.

4.5.3.2 ***Economic***

Advantages

- Farmer communities connected to certified agriculture benefit from cooperative investments in productive infrastructure (2; 0).
- Certification in certain cases generates local employment opportunities (4;1).

Cooperatives usually invest part of the premium in productive infrastructure available for collective use, which farmers would otherwise not be able to afford. Milford (2004) observes that some Mexican cooperatives have made numerous investments, the most important being a large roasting machine. Similarly, in a case studied by Consumers International (2005), the local cooperative has installed a processing facility (which was too costly for the farmers to buy

on an individual basis), putting an end to farmers' dependence on intermediary coffee processors. More generally, cooperatives invest part of the premiums in road improvement, education services and internal loans, the benefits of which are enjoyed by the communities (Fort and Ruben, 2008).

Certification can create indirect or "spill-over" effects touching local economies. As such, it can lead to more investment in rural areas and to the creation of local employment opportunities at producer organisations (administrative jobs) or at farming, processing and packing of agricultural products. This argument is mentioned by 4 studies (de Battisti, 2009; Lyon, 2010; Santacoloma, 2007; Vagneron and Roquigny, 2011). Other studies highlight that farmers hire additional labour force in order to adapt to the increased workload associated with certification (e.g. Ronchi, 2002a, Verkaart, 2009), creating jobs at local level. Yet the employment effect is negligible in the case of small-scale farmers[21] which tend to hire few if any workers (Krain et al., 2011).

Disadvantages/ shortcomings

- **Small-scale farmers** cannot benefit from certification due to difficulties to meet certification requirements (5;1).

It seems challenging for certification schemes to include small-scale farmers in their system (i.e. the ones with farms with less than 3ha and located in remote areas). This group of farmers continues to face difficulties in accessing certification and maintaining conformity with a given standard (6 studies).

In the case of GLOBALGAP certification of horticultural products in Kenya, for instance, the majority of growers had been dropped or had excluded themselves from the scheme due to problems with implementation of the standard (de Battisti et al., 2009). According to the authors of the study, this decline in the number of small-scale farmers reflects both the increased costs and managerial burden associated with meeting certification schemes' standards and the decrease in external funds to maintain small-scale farmers' participation.

A survey of conventional farmers conducted by Consumers International (2005) reinforces the argument put forth by others (e.g. Verkaart, 2009), that direct costs of certification represent a major difficulty for small-scale farmers. Although the interviewees did not distinguish between schemes, the authors assume that Fairtrade forms an exception in this respect, given that the costs for association are considerably lower than for other schemes. However, they estimate that a barrier remains which consists in achieving the level of collective organization in order to be admitted to the Fairtrade scheme (Consumers International, 2005).

[21] Small-scale farmers are defined as farmers with less than 3 hectares located in remote and isolated areas. See definition list in Appendix III.

The geographical location of these farmers can also be highlighted as a factor for marginalisation, as a cocoa case study conducted by Nelson and Galvez (2000) shows. The cooperative in question reaches many isolated producers, but its geographical coverage is limited meaning that some of the most marginalised small-scale cocoa farmers remain excluded.

4.5.3.3 People

Advantages

- **Labour conditions** of farmers and their workers improve in terms of housing, medical treatment and remuneration (6;3)
- **Producer livelihoods** improve with higher food security, increased value of household assets, access to healthcare and better education of children (12;4)

A total of 6 studies point to advantages of certification related to labour conditions of farmers and workers including less (perceived) child labour. Improved labour conditions manifest themselves in job security, safer workplaces, access to medical treatment as well as in the provision of adequate housing (e.g. Consumers International, 2005; Krain et al., 2011).

The issue of child labour is addressed by 4 studies, with 2 (Beyer, 2012; Tulane University, 2011) focusing exclusively on this topic. Seeking to uphold the child-labour related International Labour Organization (ILO) conventions 182, 138 and 29, each of the established certification schemes in the cocoa sector has incorporated basic labour standards in its code of conduct, however with differing degrees of stringency (Tulane University, 2011).

A few studies directly investigate the impact of certain certification schemes on eliminating child labour. A systematic analysis of the child labour records of social certification standards (including certification schemes) performed by Beyer (2012) provides a comparative picture. For Social Accountability International no child labour was found at any audited facility in the 14 years of SA8000's application. This can be explained by the standards' rigorous requirements to submitting its applicants to self-examinations and prescriptive workplace improvements prior to the initial third-party audit. Rainforest Alliance has found children working on the farms of a number of certification applicants, which resulted in the worksite not being certified. For Fairtrade inspected farms, no aggregated global data on the occurrence of child labour is available according to the author. However, the authors of the Tulane report (2011) cite the example of the Kuapa Kokoo cooperative in Ghana which suspended 7 out of 33 of its cocoa farming communities after the FLO certifier identified Worst Forms of Child Labour (WFCL). Also, in 2009, another West-African cooperative had been suspended by FLO on grounds of non-compliance with ILO 182. After the cooperative issued a corrective action plan and agreed to follow-up audits, the suspension was lifted. According to the report, these examples indicate that the Fairtrade system is effectively working towards the elimination of WFCL (Tulane University, 2011).

Krain et al. (2011) report that WFCL were not encountered within the six cooperatives covered by the studied project in Côte d'Ivoire, as that they did not appear in any of the audit reports undertaken by the Rainforest Alliance. Verkaart (2009) reports that Ugandan UTZ coffee farmers' score better than conventional farmers on the perception of their involvement with child labour.

The studies mentioned above suggest that certification motivates the reduction of child labour at participating farms, however the lack of a larger evidence base supporting this argument prevents final conclusions on this issue and shows the need for further research.

A second, clearly depicted advantage in the "people" dimension are improved producer livelihoods comprising aspects such as food security, health, education and household assets (12 studies).

Bolwig et al. (2007) and Jaffee (2008) find that conversion to organic export production has improved food security by raising households' cash incomes. This is in line with the findings of Costantino and Becchetti (2005) who document significant differences between certified famers and the control sample in terms of monthly household food consumption and dietary quality.

Other changes in living standards brought about by certification are improved homes and increased value of household assets (e.g. cars to transport products to processing facilities) (Ronchi, 2002a; Fort and Ruben, 2008). Rainforest Alliance certified cocoa farms in Côte d'Ivoire were characterized by better homes, with kitchens being separated from bedrooms. Besides, household members were more aware of and implemented practical measures to improve their living conditions (concerning hygiene, etc.) (Krain et al., 2011). Research carried out by Fort and Ruben shows that Fairtrade farmers tend to present higher levels of animal stocks and have increased the value of their agricultural assets. The general well being of farmers has proven to be positively associated with the duration of cooperative involvement (Fort and Ruben, 2008).

Tracking the impacts of certification on health remains difficult. Arnould et al. (2009) conclude that participation in Fairtrade alone is not a statistically significant indicator of health. Yet on average, cooperative participants with at least six years in the program had higher health indexes than others. Concerning access to healthcare, notable progress has been achieved through cooperative investments of part of the premiums. One example is the case of the Kuapa cocoa cooperative. Over 100.000 people (members and non-members) in communities with Kuapa Societies have received free medical attention and prescriptions. The programme was executed at a cost equivalent to only 2% of the Fairtrade premium earned on purchases from Day Chocolate. Besides, water quality and sanitation projects have been implemented by the cooperative (Ronchi, 2002b).

Finally, farmers' adherence to certification standards positively correlates with the education of their children (4 studies). Looking at the results from a study conducted by Bacon et al. (2008) in Nicaragua, 49% of the households affiliated with Fairtrade cooperatives said to have

received support for their educational efforts, while only 20% of the households from conventional cooperatives benefited from this assistance. The improvement of educational opportunities is mainly measurable in terms of the large amount of scholarships awarded by Nicaraguan cooperatives. A study carried out by Ronchi (2002a) in Costa Rica reflects a prolonged the time of education provided to children of certified farmers.

Disadvantages

- With certification **gender inequality** partly persists with women facing higher workloads while having little control over the use of income (4;2)

Despite gender-related objectives in certain standards and the implementation of related programmes in cooperatives, gender inequality seems to persist in certain cases, following certification. 5 studies address this issue, one among them (Lyon et al, 2010) presents mixed, however predominantly positive results. Indicators used by studies to assess gender equality are the percentage of female members in cooperatives and their involvement in decision-making, women's contribution to farming activities and their access to financial resources.

In the case of the Coocafé initiative researched by Ronchi (2002a), the average of female membership for the affiliated nine co-operatives is just under 20%. Interview data reveals that many of these women are members on paper only. Concerning the gender division in labour, a large proportion of women were involved in growing and harvesting tasks. Ronchi highlights this contrast between significant female participation in coffee cultivation and low influence on decision-making.

Bacon et al. (2008) uncover a case where uneven gender relationships contributed to unequal compensation for women's work on coffee farms. Women worked an average of 77 days per year in Fairtrade coffee farms, but only 33 days per year in cooperatives selling to commercial networks. Only 45% of the men in both Fairtrade and conventional cooperatives claimed to share coffee sales with their spouses. In most cases, men were the official members of the cooperatives and they received payment for their coffee. A study by Bolwig et al. (2007) on organic certification arrives at similar results, namely in cash crop systems such as coffee, the traditional roles of men and women within the crop production cycle persist. Although policies are in place to support gender equity they are not yet triggering the fundamental changes required to create a more equitable distribution of burdens and benefits.

Contrasting the evidence presented above, a study by Lyon et al. (2010), observes mainly positive gender impacts of organisational and procedural norms brought by certification. Three areas are highlighted: women's organizations have greater access to network benefits, women gain greater control over farm practices, and women enjoy increased access to cash.

Two literature reviews (Smith, 2011; Vagneron and Roquigny, 2011) reveal mixed results regarding the impact of certification on gender: In some cases Fairtrade has fostered important changes in the opportunities, income, status and representation of women, while in others it appears to be replicating and reinforcing gender-based structures of inequality. The

first case is illustrated by women earning higher incomes and exercising greater decision-making power on the allocation of resources as a result of Fairtrade. Some have also gained access to and influence in producer organisations. On the other hand, there are women for whom Fairtrade has done little to challenge male dominance in the household and in agricultural organisations, and has sometimes even resulted in higher burdens of work or less control over household decision-making. In these cases gender inequality has been deepened rather than challenged by Fairtrade.

4.6 Conclusions

The body of literature on the advantages and disadvantages of certification at the farm, cooperative and community level shows that the number of benefits of certification exceed the number of disadvantages or shortcomings.

From a farmer perspective, higher prices (partly resulting from better quality products, but also as a consequence of premiums and minimum prices) are regarded as the main factor influencing increased income of producers. However, authors also emphasize the crucial role of enhanced business conditions (e.g. market access, technical assistance) in addition to direct monetary benefits. Both aspects reflect in improving producers' livelihoods at the community level.

From the cooperative perspective, enhanced bargaining power and improved organization capacity are detected as clear advantages of certification. Most studies mention disadvantages for both farmers and cooperatives in terms of the higher costs of compliance to a given standard.

At the community level however the consequences of certification for more vulnerable societal groups such as small-scale farmers and women are judged in a more critical way by literature, as certification does not seem to be able to tackle persistent inequality situations for these groups. Certification does not seem to reach small-scale farmers, as they are not capable of affording the high initial costs of certification. In addition, evidence is mixed related to how certification impacts the inclusion of women in the cocoa production.

In several areas of the literature review the limited evidence base made it difficult to draw comprehensive conclusions, indicating a need for further research. This is addressed in Chapter 7.

5 Cost and benefit analysis

This chapter consists of a cost and benefit analysis on the farm/coop level and provides an overview of other costs of cocoa certification that accrue to participants in the supply chain. The chapter first describes the methodology used for the economic comparison of schemes and then proceeds to discussing the quantitative data collection process and findings.

5.1 Methodology

This study attempts to answer the question whether the net effect of certification is positive to the farmer profit and loss account (P&L). It evaluates certification cost and benefits from a micro-economic perspective. The study uses evidence, derived from certification schemes, to populate a generic model, developed by KPMG.

There are three general approaches to the evaluation of certification:

The first method is a pilot study. The major disadvantage of this approach is its sensitivity to context-specific factors related to farmer characteristics and location specific characteristics such as productivity potential. The most accurate source of information is a 'bottom-up' approach, deriving conclusions from aggregated data collected in peered field studies across multiple countries and farmer segments. This approach suffers from a number of drawbacks: (1) it requires significant resources, (2) data should be collected across multiple years, (3) the intervention has already taken place before its usefulness is evaluated. An inverse approach ('top-down' approach) provides the opportunity to assess the costs of an intervention before it is actually implemented. This study has been set up according to a 'top-down' method.

The KPMG model for cocoa certification provides a tool for data collection and interpretation through a structured and objective approach. In our model, certification is represented as an intervention on the farmer/coop profit and loss account (P&L) for an archetypal farmer/coop, representing a particular segment of producers, which provides us with information for our *base model*. The *base model* was developed and populated with data from interviews with stakeholders in Ghana, Côte d'Ivoire and Europe, a previous study from KPMG (2011)[22] for IDH The Sustainable Trade Initiative and literature research that has been issued since the model inception (Ruf et al., 2012)[23]. Throughout the remainder of the report, we will refer to 'base model' and 'base case'. With 'base model' we denote the underlying calculations as developed in KPMG (2011). With 'base case' we denote the data originally used in the base model (KPMG; 2011), which was based mainly on literature study and a set of interviews with sector specialists. We continue using the 'base-case' throughout the remainder of the study to

[22] KPMG (2011). Cost/benefit analysis of cocoa certification in West-Africa, December 2011.

[23] Ruf, F. and Bini, S. (2012). Cocoa and fertilizer in West-Africa, CIRAD/UMR Innovation/IDH.

show that the data provided by schemes deviates to some extend from literature analysis[24]. By using the 'base-case' we are transparent on how the results relate to the available literature so far and the limitations of our approach.

In order to customize the information per certification scheme, we expanded our data collection process by surveying certification scheme owners and by organizing a consultation session for UTZ, Fairtrade and Rainforest Alliance.

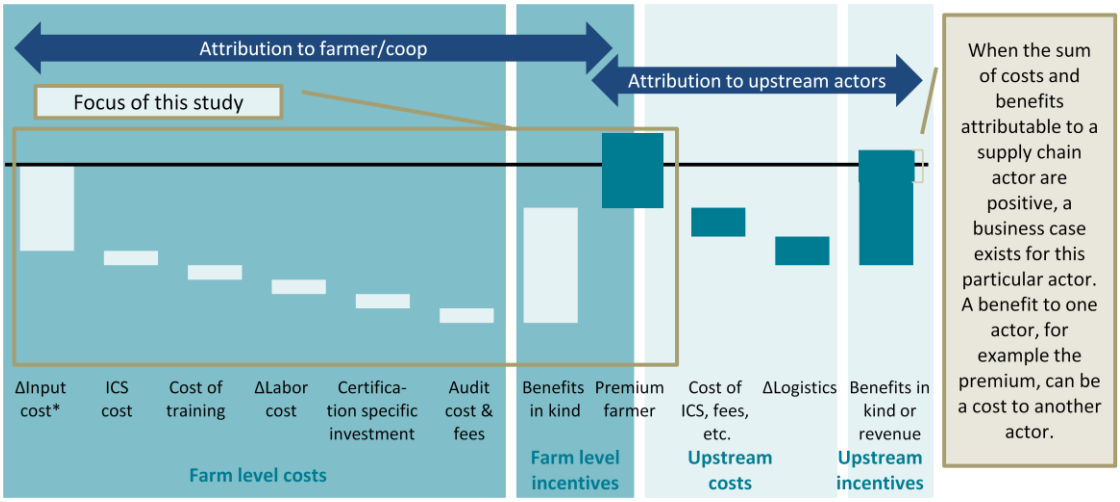
A challenge in impact assessment is whether a cost or benefit should be attributed to the farmer, coop or exporter level, or should not be attributed to certification at all. We have chosen to aggregate the farmer and coop level, as this was the aggregation level of the majority of data available to certification scheme owners.

We have also chosen to attribute yield improvement to certification. This decision was made based on the following rationale, derived from findings from the previous KPMG study (2011) and the literature review presented in this study: Farmers encounter difficulties in accessing credit, inputs and trainings to improve their agricultural practices and to increase their productivity. Certification is a tool that, as seen in Chapter 5, increases the access of farmers to input and training which enable increases in yield. Additionally, KPMG (2011) has shown that coop/exporters have a strong economic incentive to promote certification. This incentive follows from the portion of premium that is available to the coop/exporter and the difference in farm gate price and price received by the coop/exporter. Figure 10 illustrates how costs and benefits accrue to different levels in the supply chain.

The overview in figure 10 shows how the scope of costs and benefits has been defined for this study.

[24] By focusing on only 9 variables/parameters (less than 20% of the relevant variables that have been identified), we allow a very limited bandwidth of variation between schemes.

Figure 10: Cost-benefits of certification[25]



5.1.1 Limitations

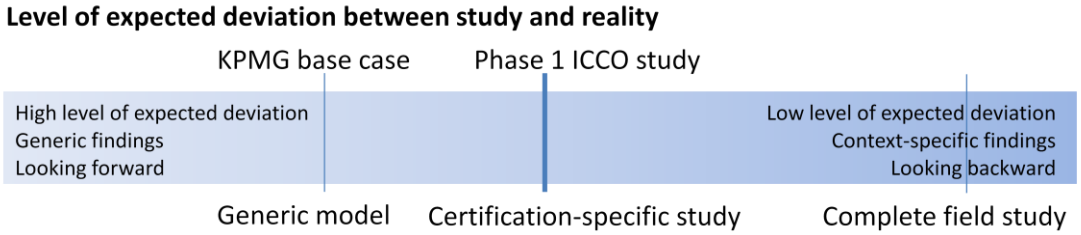
Due to the methodology followed for data collection and the data provided in this study there are limitations that should be considered when analysing the results of this study.

It is important to note that the reliability of the data used for this study is limited and has required the use of assumptions and estimations. There is not much detailed data available yet about sustainability in the cocoa sector. The data used in this study have been provided by certification schemes based on their best knowledge at the moment, however no field study was conducted by KPMG to collect the data. KPMG did not perform procedures to verify the accuracy or completeness of the data provided. It is possible that a field study can produce deviating findings due to higher accuracy of data. Therefore, the information presented here should be cautiously interpreted in this context.

We discuss only those costs that are directly attributable to actors in the supply chain. This means that some benefits, such as benefits to the farmer community, are not included in the scope of this quantitative analysis. However, we include benefits that can have an impact on the financial situation of a farmer such as productivity increases and grants. This study focuses on the aggregated farmer and coop level. The study abstracts from investments such as tree rejuvenation/densification, pre-financing and buying/re-selling cocoa beans by farmers.

[25] * the symbol Δ or 'delta' indicates ' incremental'

Figure 11: Level of expected deviation between study and reality



An overview of areas for further research is provided in Chapter 7.

5.2 Impacts of certification

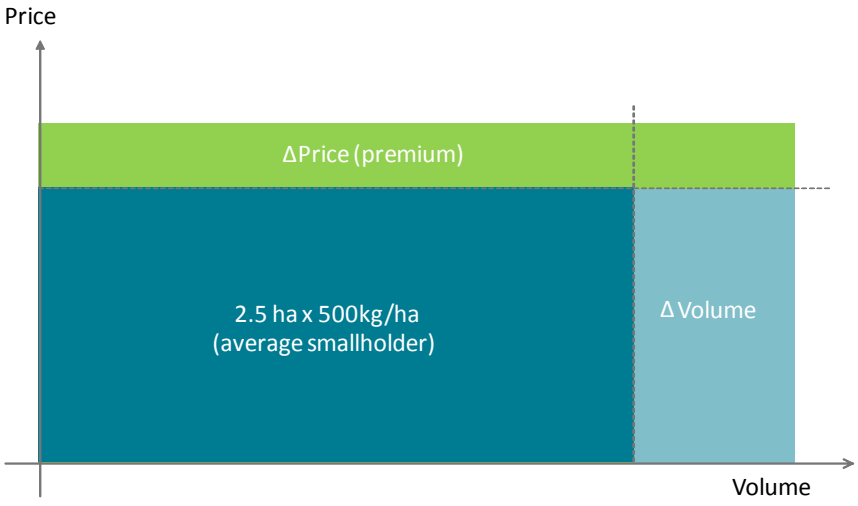
The study found that regardless of certification scheme, during the transition towards certification, productivity improvement is the dominating driver improving the farmer/coop P&L.

We acknowledge that yield improvements could be made without the intervention of certification. However, as buyer/coops and farmers have an interest in working together to obtain yield improvement, and certification requirements provide farmers with access to the key enablers of productivity (optimized use of fertilizer, pesticide, trainings and good agricultural practices) we assume in our model that yield improvement goes together with certification and vice versa. This assertion results in the calculation of gross farmer income as illustrated in Figure 12**.**

Formula 1:

$$Gross\ farm\ income_t = (volume + \Delta volume_t) * (farmgate\ price + premium)$$

Figure 12: Productivity and price determine farm/coop income



Source: KPMG presentation Supply Chain Conference 2011

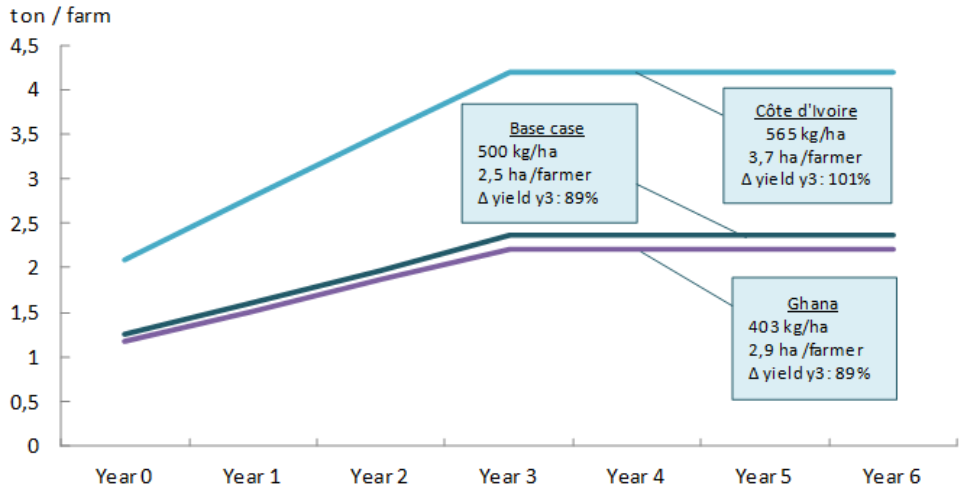
5.3 Productivity improvements are different per country and per farmer

For the purpose of this analysis we have defined an archetypal farmer for both countries analysed, Côte d'Ivoire and Ghana. To enable comparison and allow us to examine the cost-benefits of certification in general, without going into certification or country specific data we have also determined a base case farmer.

The base case farmer has characteristics of the typical farmer referred to by literature and used in KPMG (2011). He/she has a farm size of 2,5 ha, produces 500 kg/ha before certification and is certified according to a non-specified scheme, using modelled average values found in literature for the key variables. This farmer obtains a productivity improvement of 89% in 3 years resulting from input usage and application of Good Agricultural Practices (GAP).

Our archetypal farmer in Ghana has a farm size of 2,9 ha, produces 409 kg/ha before certification and has a yield improvement in 3 years of 89%[26]. Our archetypal farmer in Côte d'Ivoire has a farm size of 3,7 ha, produces 565 kg/ha before certification and has a yield improvement of 101% in 3 years[27]. Hence, yield improvements for archetypal farmers in Côte d'Ivoire and Ghana are projected to develop over 3 years time. Figure 13 shows how yield develops over time for each of the archetypal farmers[28].

Figure 13: Projected yield improvement in farmer/coop model



[26] Yield improvement figures for Ghana and Côte d'Ivoire are derived from Ruf et al. (2012) that shows that when applying fertilizer, in combination with pesticide, productivity increases over 3 year with 89% in Ghana and 101% in Côte d'Ivoire compared to an untreated plot.

[27] See note 24.

[28] KPMG has considered the same yield improvement for all certification schemes. Based on Potts and Giovannucci (2012), UTZ Certified states that there is preliminary evidence that yield improvements attributed to UTZ are higher than for the other schemes. However due to the assumptions used and limitations acknowledged by the authors of the study we have opted for using Ruf et al. (2011).

Further to yield improvement, farmer costs are expressed as input and compliance costs. Input costs include cost of fertilizer and pesticide application costs x labour costs. Compliance costs comprise audits, planting shade trees and the development of an Internal Control System (ICS), office, insurance and transportation costs (if applicable). Subsidization comprises any form of grant funding in kind or in cash.

Formula 2:

$$Net\ farm\ income = gross\ farmer\ income - input\ costs - compliance\ cost + subsidization$$

5.4 Differences between certification schemes [29]

In the base case we have made assumptions on how costs are attributed to either farm or coop. The division between coop and farmer will be discussed first, subsequently we will discuss the differences between schemes where our analysis will combine the farmer and coop level.

Most schemes are or have been setting up impact measurement and evaluation systems for cocoa only recently. Therefore, this study is an initial step in data collection and a number of notes will be made along with the presented data to draw attention to limitations and assumptions related to the data.

This study builds on field data provided by independent interviewees and collected through interviews with NGO's and with scheme owners UTZ[30], Fairtrade and Rainforest Alliance[31] in the period from April to July 2012. The data on which this analysis builds was based on a questionnaire defining and surveying 33 variables. Scheme owners were asked to fill out the questionnaire either for a specific farmer group or for the farmer population certified to date. In addition we interviewed a scheme-independent supply chain actor to check certain assertions.

During interviews, based on our analysis of key differences between schemes and the variables with the most impact on the farmer/coop P&L, the 33 variables were narrowed down to 9 variables. These are the variables premium, multi and conventional leakage, ICS, labour and training costs, hardware investment, audit costs and fees.

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[29] The data presented in the remainder of the chapter are provided by schemes in a questionnaire or on KPMG Cost-Benefit Analysis (2011). Conclusions are derived from KPMG analysis.

[30] UTZ data comes from WAFF/Solidaridad, a private implementer of UTZ and UTZ Certified itself. UTZ indicates that some requirements may be available at lower rates for private implementers (for example trainings), as NGO's often work in a pilot setup.

[31] Rainforest Alliance has pointed out that the data provided are based on a farmer group of 1000 members in Ghana and 300 members in Côte d'Ivoire. They state that scientific research is required to make a more reliable comparison.

In this analysis we will focus on the selected variables as described below in more detail. For the remaining variables we have used data from the base case (KPMG, 2011). The numerical assumptions for the base case can be found in Appendix VIII.

5.4.1 Premium paid per ton of certified cocoa

The term 'premium' refers to the amount of money paid for the product in addition to the price of conventional products (non-certified cocoa). Although farmers and coops are not always paid per volume or in cash, the premium has been modelled as a quantifiable amount[32]. The premium is a transaction between the cocoa bean buyer and the coop/farmer. Premium is a differentiator between schemes.

Table 6: Premium per certification scheme

Premium				
in US$ per certified ton of cocoa[33]	**Base case**	**RFA**	**UTZ**	**FT**
Ghana	195	150[34]	152,40	200
Côte d'Ivoire	195	200	140	200

An issue of debate is how the premium is or should be divided between the farmer, coop and exporter. In some cases the premium is saved for the farmer on a bank account and used to finance future certification expenses, in other cases a proportion of the premium was paid to the farmer directly in cash, in other cases farmers decide collectively how to spend the premium. Sometimes, the exporter reduces the premium with its certification expenses, such as the cost of audit.

5.4.2 Leakage to conventional channel

Leakage indicates the proportion of production of a certified farmer that is not sold as certified product. In other words, the percentage of cocoa that is sold to the conventional channel without certificate. Leakage can occur for several reasons: 1.there is insufficient demand for the certified product, 2. the farmer is not incentivized to sell the product as certified, 3. the farmer has immediate cash-needs and sells its products to the first buyer available. Leakage

[32] Fairtrade would like to point out that certification can impact the price received by farmers not only through the payment of a premium, as certification also contributes to a better negotiation process for farmers, to improved trading relationship and to higher product quality. The value stated in Table 6 is only considering the premium paid to Fairtrade products as part of the certification scheme requirements.

[33] Note that the premium is here represented per certified ton, while in the next paragraph the premium will be calculated per ton produced.

[34] Rainforest Alliance indicated this premium was the amount received by the coop.

comes at a cost towards certification and can be reduced by increasing loyalty, respondents indicate different remedies to leakage[35]. In the model leakage is represented as follows:

Formula 3:

$$Gross\ farm\ income_t = (volume + \Delta volume_t) * (farmgate\ price + (1 - (m + a_t c)) * premium)$$[36]

whereas m=leakage due to multi-certification, c = leakage to conventional channel, a = time bound reduction of conventional leakage and t = time in years

5.4.3 Multi-certification leakage

Producers, coops or exporters might be incentivized to certify producers for more than one certification scheme. The rationale behind this might be to reduce risk if demand from one channel lags behind. In this study, multi-certification is defined as a producer is certified by at least two of the three schemes: UTZ, RFA or FT.

Rainforest Alliance indicated a relatively high level of leakage due to multi-certification (30%), while Fairtrade and UTZ indicated they did not monitor leakage due to multi-certification, providing estimates ranging from 0 to 10%.

In the model, leakage to the conventional channel reduces over time, as we project and perceive a stronger demand for certified products. Leakage to other certified channels is expected to remain stable over time.

5.4.4 Cost of Internal Control System (ICS) and group forming

Cost of an ICS administrator, lead farmers, office space, transport etc. These administrative costs are incurred on the level of the coop to keep administration[37], to conduct internal audits and store certified product in accordance with requirements. The cost of ICS consist of a fixed cost for group forming and hardware equal to each certification scheme, while cost of personnel (HR) is differentiated per scheme.

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[35] Some 'best practices' in reducing leakage are: Increased trust with LBC; use of 'fair' for weighing; availability of cash at buying post; payment of premium price at buying post; pre-financing; Investment in the community; provision of inputs; subsidizing schooling, long term contracting; farmer training, community development; providing improved planting materials.

[36] This formula applies to prices higher than the Fairtrade minimum price. We consider that the minimum price provides a form of income insurance to farmers. However, this insurance is only effective when buyers are committed to Fairtrade. In a competitive market, opportunistic buyers are incentivized to use a certification scheme with the lowest possible cost. Hence, under common economic assumptions and assuming equal value to end-consumers and zero 'switching cost', Fairtrade could be a viable alternative to the mainstream market only if its net cost is equal to or lower than other certification schemes.

[37] Examples of administration requirements are volume of production, agrochemicals usage, salaries paid, premium paid.

5.4.5 Labour cost

Labour cost may seem to be not specified in certification schemes requirements. However, in their criteria most schemes set out requirements on the level of wages a farmer has to pay[38], a value that differs per scheme.

In this study we assume costs for labour are similar for each scheme[39], but differ per country. Labour costs are calculated based on the time spend on certification and the day rate for hired labour. A part of the labour required to become and remain compliant with certification requirements may be executed by the farmer himself. As these costs can be seen as an opportunity cost to the farmer, the total cost of labour is included against the rate of a day-worker.

The amount of labour required was based on questionnaires which contained two items: the initial amount of time required by farmers and the amount of time returning. The initial time investment by farmers was estimated to be 30 hours. The recurring time investment on keeping the Internal Control System up-to-date was estimated to be 3 hours per week, or 156 hours per year.

5.4.6 Training cost

Schemes have different requirements with regards to training for farmers and farm workers. Training may cover agrochemical handling and application, productivity improvement and Good Agricultural Practices, safety, improving participation and representation, protecting rare and endangered species, handling invasive species etc. Training can be organized and funded by local offices[40]. Because education can be organized in groups, the costs of training usually accrue to the coop level. Training is repeated each year, see assumptions' details in Appendix VI.

5.4.7 Certificate related investments in hardware

This cost group comprises certification scheme specific investments, e.g. agro-chemical storage, protective equipment, shade trees, etc.

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[38] Most payments to schemes are described in documents provided on schemes' websites. We refer to the scheme documentation references in the Appendix IV where all available documentation used to populate the each variable of the model is listed per scheme.

[39] The day rate of labour is calculated as an average of the day rates provided by the certification schemes for each country. For Ghana a day rate of US$ 4,18 was used and for Côte d'Ivoire a day rate of US$ 3,5. An effective working day of 30 hours per week was assumed to calculate annual labour cost.

[40] In Ghana and Côte d'Ivoire, local Fairtrade offices provide a part of the required training. *"At an overall level, based on our experience in cocoa in the two case study countries, this division is estimated as a 60:40 division of costs whereby the Fairtrade system picks up 60% and costs accruing to cooperatives are estimated at 40% of total training costs."* (source: correspondence with Fairtrade International).

5.4.8 Audit costs

Cost of an external audit including travelling expenses. Audits are a visit by a third party or a scheme representative to evaluate whether a coop/farm is compliant with the schemes' requirements. Due to travelling expenses and focus on the coops' ICS, the audit has a fixed component and a variable component based on the number of members.

Table 7: Audit costs per certification scheme

Audit cost (number of farmers in a coop is stated between brackets)			
in US$ per coop per year	**RFA**	**UTZ**	**FT**
Ghana	8500 (1000)	6500 (300-500)	2561 (251-500)
Côte d'Ivoire	7500 (300)	4331 (400)	2561 (251-500)

5.4.9 Fees (variable/fixed)

Fees are paid to certification schemes as a remuneration for provided services. Rainforest Alliance and UTZ do not charge fees to farmers or farmer groups, Fairtrade charges at the onset a fixed fee to coops based on the number of members[41]. See Chapter 3 for a qualitative comparison.

5.4.10 Chain of custody cost (not included in model calculation)

This study provides a viewpoint on cost-benefits of certification on the farm level. However, schemes set rules for other participants such as traders, processors and FMCG-manufacturers for using the certification label. This category of costs is denoted at 'chain of custody cost'; this includes fees but also chain of custody audits and the cost of compliance i.e. keeping administration. Our analysis found that chain of custody cost can vary per scheme and can accrue to different parties in the chain. Generally, UTZ chain of custody costs are based on a membership fee. Rainforest Alliance estimates total chain of custody costs to be about US$ 30 per ton. Fairtrade has varying fees per country where the end-product is sold, with tailored fees for 'global accounts'. The table provides an estimated range of chain of custody cost per scheme. These costs are not included in the model output provided henceforth.

[41] The schemes have argued that most fees are not invoice to farmers or farmer groups. We therefore represent these fees in the next section.

Table 8: Chain of custody costs per certification scheme

Chain of custody costs			
Variable (in US$ per certified ton)	**RFA**	**UTZ**	**FT**[42]
Lower bound	15	13	5
Upper bound	15	13	~58,5
Fixed (in US$ per supply chain operator)			
Lower bound	4000	325	1638
Upper bound	4000	5200	3003

Additional scheme specific rules affecting costs in the chain of custody are 'Certified content required in final products' and 'Mass Balance'. Chapter 4 presents a qualitative overview of differences between schemes for these variables. Furthermore, the cost of transportation can be affected by rules for the transfer of certification credits, see for a further discussion Appendix V. Quantifying these costs is very much dependent on the configuration of a specific supply chain.

In addition to costs, the actors in the Chain of Custody encounter a number of benefits. Amongst these benefits are 'supply chain security', for example by reducing the probability child labour was used in the production process. Other benefits are consumer impacts such as reputational benefits.

5.5 Results of cost-benefit analysis

This section will discuss several characteristics of certification and a calculation of cost-benefits based on the methodology discussed thus far. For cumulative values, we use a cut-off period of 6 years. This means that we present cost-benefits accruing in 6 years time to the farmer/coop.

5.5.1 Average net benefit

Based on the input of certification schemes and base case variables, we can calculate the effect of certification per metric ton produced by farmers. For each scheme, this cost per ton has been calculated over 6 years, taking into account time dependent factors such as yield improvement and leakage. The average over six years is calculated for each scheme as:

[42] For Fairtrade we have encountered license fees (charged as a % of revenue) in the range of 0,22% (minimum for global accounts) - 2,5% (Max Havelaar, Netherlands). Based on KPMG analysis, we estimate the licence fee range of 0,22% - 2,5% results in a fee range of US$ 5-58,50 per ton of beans. The license fee is partially re-invested in producer countries (8%), see http://www.fairtrade.org.uk/includes/documents/cm_docs/2009/l/licence_fee_doc_jul08final.pdf

Fairtrade also charges a fixed fee to traders. A small supply chain operator handling 100 tons would be legible to pay US$ 16,38 per ton. For a major integrated operator (trading 50.000 tons) this would amount to US$ 0,089.

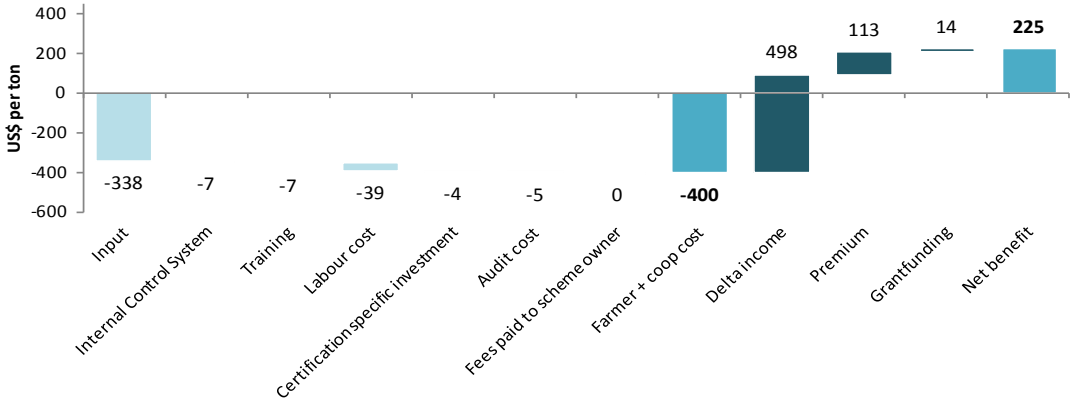
Formula 4:

$$Aggregated\ net\ benefit\ per\ ton\ over\ 6\ years^{43} = \frac{\sum_{t=0-6} \Delta net\ farmer\ income_t}{\sum_{t=0-6}^{g} farm\ size\ x\ yield_t}$$

whereas g= country being either Ghana or Côte d'Ivoire and t = time in years

An average of cost-benefits UTZ, Fairtrade and Rainforest Alliance is shown for both Ghana and Côte d'Ivoire in figure 14. Net benefit is represented at the most-right column.

Figure 14 Net benefit per ton over a 6-year period based on averages of model variables



The figure indicates that cost of input and labour are the most important cost factor. Other costs are relatively small in size and the total cost of certification is US$ 400. On the benefits size, delta income is the biggest factor, which contains the benefits of productivity improvement. Other benefits are premium and grant funding. The total amount of benefits is US$ 625. When costs are deducted from benefits, the balance or net benefit is US$ 225 per ton. When productivity improvement *and* input costs are left out of the calculation, the net benefit is still US$ 65 per ton. This means a business case for certification exists, even when productivity improvement is not attributed to certification.

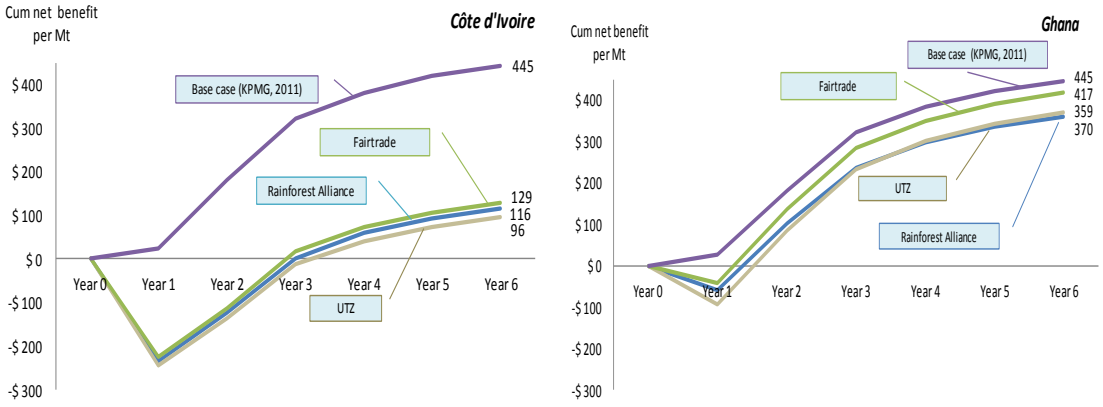
5.5.2 Net benefit per country

In general, certification schemes have similar payback periods. In figure 15, development of benefits over time per metric ton of cocoa have been plotted. In this representation, the loss of certified volume through leakage to the conventional channel and multi-certification are factored in. Despite differences in leakage and premium paid, due to the dominating impact of productivity improvement, schemes have comparable payback periods[44].

[43] Note Δ net farmer income refers to formula 2 of this chapter and is not the same as 'delta income'.

[44] Due to the limitations of this study cause by the robustness of the data available at the time, it is important to note that a field study would be required to a definitive differentiation of the net benefit per scheme.

Figure 15: Average cumulative net benefit per metric ton produced

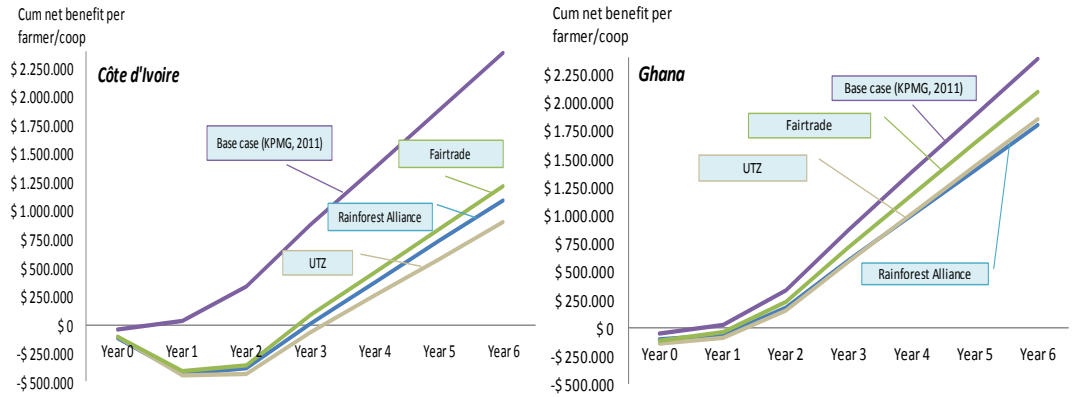


The base-case shows a higher net benefit because it was based on prices in 2011, which were considerably higher than 2012. The scheme-specific calculations are on average lower because they are based on actual prices and include an opportunity cost for labour.

For Côte d'Ivoire, investments in fertilizer put a high burden on farmer P&L in year1. The shape of curves in both countries from year 2 onwards shows a quickly increasing benefit in year 2-3. The annual benefit per ton remains stable and positive from year 5 onwards.

In figure 16 the same cost-benefit analysis is represented, aggregated for farmer and coop together (farmer/coops). This overview shows farmer/coops in Ghana after 4 years have accumulated an average benefit of US$ 1.916.826. In Côte d'Ivoire the average benefit accumulated in 4 years time amounts to US$ 1.072.353. The calculation has been performed for a coop with 375 members, which are all assumed to be archetypal farmers. The difference between Ghana and Côte d'Ivoire can be explained by differences in the cost of inputs, premium and farm gate prices received by farmers in each country.

Figure 16: Cumulative net benefit per farmer/coop



The curves show a high initial investment in Côte d'Ivoire due to high input costs and a lower investment in Ghana. Overall, investments in certification return a payback between 2-3 years in Côte d'Ivoire and about 1 year in Ghana.

Assuming an equal distribution among farmers in cash or in kind and assuming certification is provided against cost-price to farmers by the coop, the farmer would benefit from certification US$ 2.860 in Côte d'Ivoire and US$ 5.112 in Ghana in 6 years[45]. Farmers in Côte d'Ivoire have the potential to benefit more from productivity improvement (Ruf et al, 2012), hence they also benefit more if market price recovers than farmers in Ghana.

5.6 Comparison of schemes per country[46]

The below overview shows the cost-benefits of certification per certification scheme for Côte d'Ivoire and Ghana. The costs-benefits are calculated as the average over a six year period from the onset of certification. It is important to highlight that the data reliability used for this study is limited. As mentioned previously, there is not much detailed data available yet in the cocoa sector on cost-benefits of certification. There is a probability that field study will produce deviating findings. Schemes have provided data for a cost-benefit analysis. To ensure transparency we will show graphs per scheme. It is desirable at this stage of data collection not to derive definitive conclusions on differences between schemes.

5.6.1 Côte d'Ivoire

In Figures 17 to 19 a comparison is made of cost-benefits for the three certification schemes in Côte d'Ivoire. This calculation is based on the accumulated cost-benefits over a six year period accruing to the aggregated farmer and coop level, divided by the total amount of cocoa beans produced by a coop's members.

[45] It cannot be concluded from these figures that certification is more beneficial in a particular country as only a limited number of variables in Ghana and Côte d'Ivoire have been compared. Moreover, farmer groups are far from homogenous, differences between farmers within a country might be as pronounced as difference between farmers in different countries.

[46] The sources for the graphs in sections 6.5- 6.7 are derived from KPMG team analysis based on information provided by certification scheme owners.

Figure 17: Cost-benefits of Fairtrade certification in Côte d'Ivoire over a 6-year period

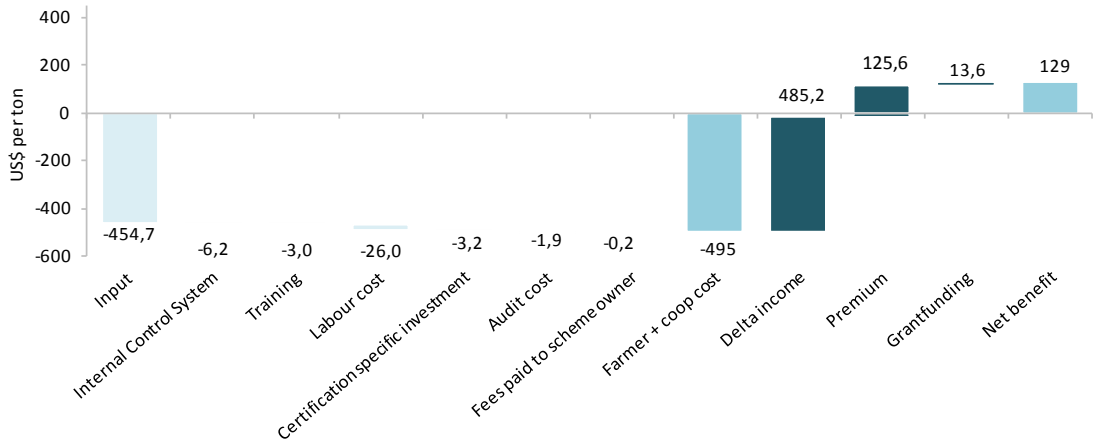


Figure 18: Cost-benefits of Rainforest Alliance certification in Côte d'Ivoire over a 6-year period

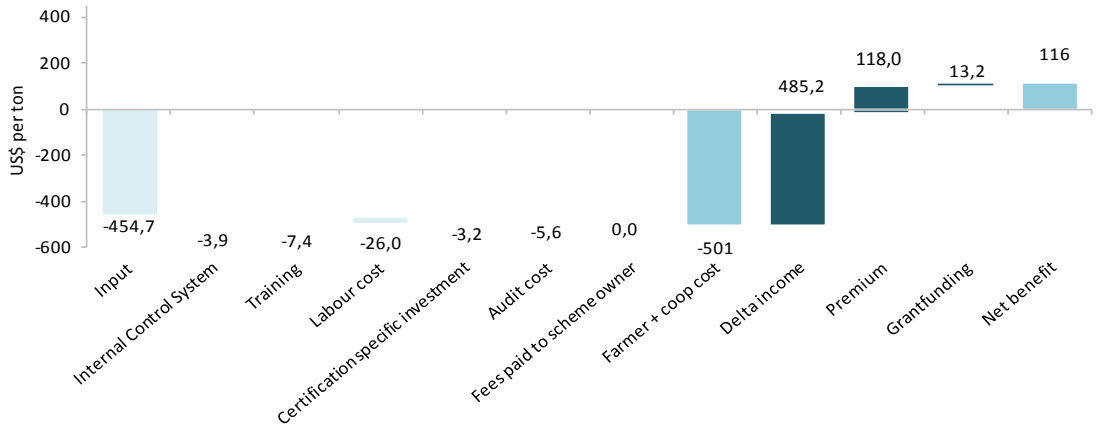
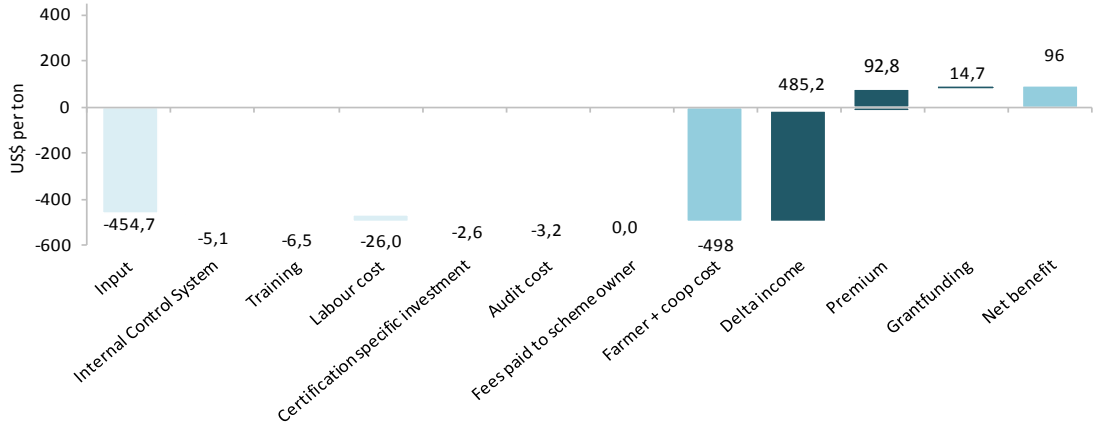


Figure 19: Cost benefits of UTZ certification in Côte d'Ivoire over a 6-year period



Compared to Ghana, pesticides used by cocoa farmers are not subsidized and fertilizer is relatively expensive due to logistics, however potential for yield increase is larger (Ruf et al., 2012).

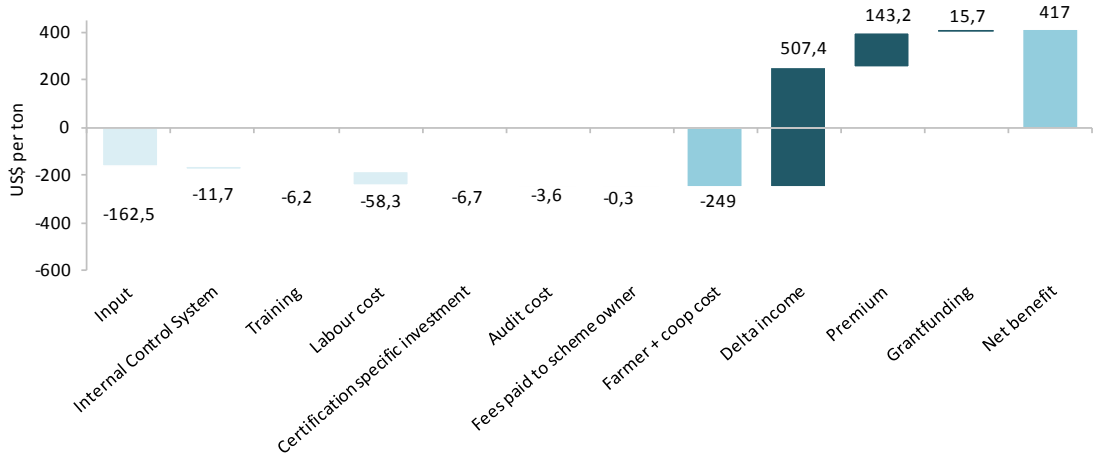
Training costs per ton are smaller for Fairtrade, resulting from their assertion that the Fairtrade system pays for an estimated 60% of all training costs that would be incurred by cooperatives[47]. Our survey findings indicate audit cost for Rainforest were highest ($US 7.500) per coop. Size of coops might have an effect on the audit cost per ton[48]. The premium is an important determinant of net-benefits. To include the effect of leakage/multi-certification, figures were adjusted according to *Formula 3*. In summary, with high leakage, premium per produced ton is lower.

In summary, net benefit of certification in Côte d'Ivoire is on average US$ 114 per ton produced on average between years 1- 6. Excluding costs and benefits of productivity increase, the net benefit is US$ 84 per ton produced.

5.6.2 Ghana

In Figures 20 to 22 a comparison is made of certification scheme performance in Ghana. This calculation is based on the accumulated cost-benefits over a 6 year period accruing to a farmer and coop, divided by the total amount of cocoa beans produced by a coop's members. The following graphs present cost-benefit of certification per scheme:

Figure 20: Cost-benefits of Fairtrade certification in Ghana over a 6-year period



[47] The gross training costs of Fairtrade were based on the average training costs of UTZ and Rainforest Alliance.

[48] For RFA group size was 300 members, for UTZ 400 members and for FT 122-6767 members.

Figure 21: Cost-benefits of Rainforest Alliance certification in Ghana over a 6-year period

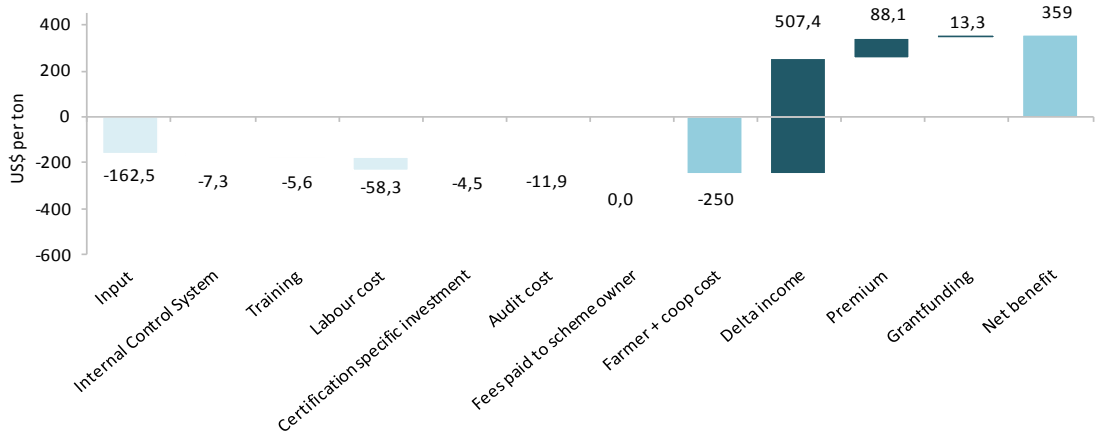
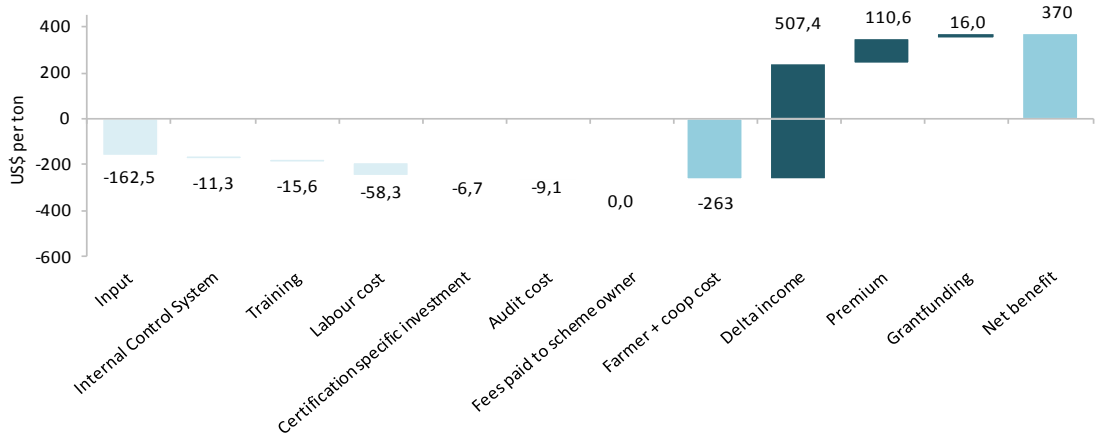


Figure 22: Cost-benefits of UTZ certification in Ghana over a 6-year period



In Ghana, fertilizer for cocoa farmers is relatively cheap, while pesticide is almost fully paid for by governmental organization COCOBOD.

The survey indicates cost of ICS can vary in Ghana. This may be due to the variety of organizational forms encountered in Ghana[49], or to scheme specific differences. Training costs for Fairtrade are low, due to the assertion that the Fairtrade system pays for an estimated 60% of costs that would be incurred by cooperatives.

[49] In Ghana, coops tend to be clustered, however we have encountered alternative organizational forms such as a semi-commercial implementer. The group size for which costs have been indicated are very different, for RFA 1000 members, for UTZ 300-500 and for FT 350 (while for clustered/2nd grade coops they indicate 50.000 members).

Certification specific investments differ somewhat, most investments consist of storage, planting shade trees, waste disposal, hygiene and protective equipment. Certification scheme owners have different views on what costs should be included and what cost should not be included. Much is context specific, for example, an empty barn may be used for storage and hence is not accounted as a cost.

Audit costs vary per scheme, Rainforest Alliance has indicated audit cost for coops to be US$ 8.500[50], while Fairtrade has indicated farmer/coops pay a fixed fee per year of US$2.561[51]. Premium is very much different per scheme, which has been discussed in chapter 6.

In summary, net benefit of certification in Ghana is on average US$ 382 per ton produced on average between years 1- 6. Excluding costs and benefits of productivity increase, the net benefit is US$ 38 per ton produced.

5.7 Strategic considerations on certification

The following section discusses considerations we have encountered during the data collection process, which impact the cost benefit analysis of certification.

5.7.1 Potential negative effects to the farmer/coop

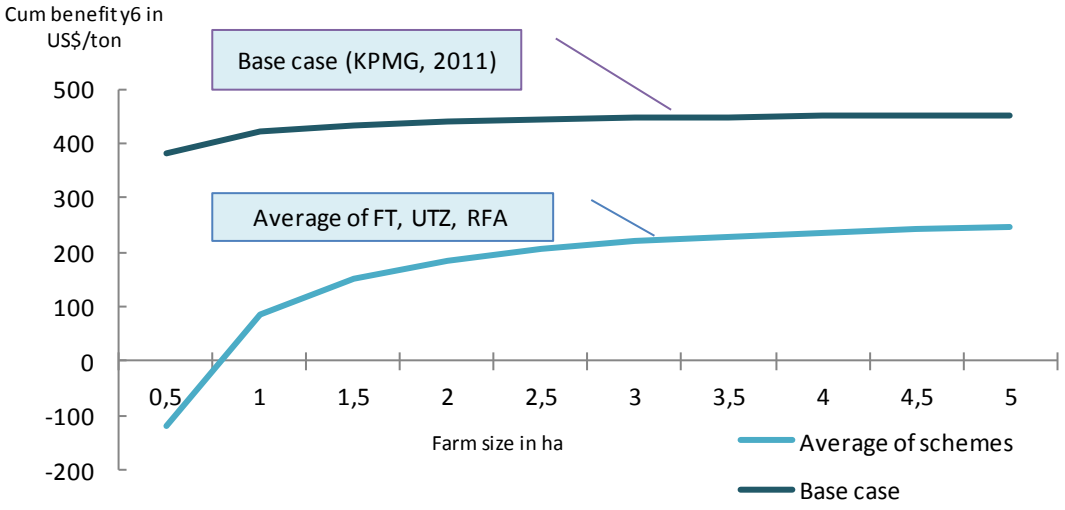
The cost-benefit analysis in this chapter is based on costs and benefits for an archetypal farmer and conclusions show there is a business case for this archetypal farmer. Some farmers deviate from the archetypal farmer and hence the business case will be less pronounced. We will discuss some risks imposed on farmers that result from certification.

We find that farmer/coops benefit from certification because their benefits in sum are larger than their aggregated costs. A potential negative effect of certification might arise from the exclusion of cocoa from the market when certification is mainstreamed. Such concerns are raised in literature by Bacon et al. (2008); de Battisti et al. (2009); Consumers International, (2005); Nelson and Galvez (2000); Verkaart (2009). Figure 23 shows the relation between farm size and cumulative benefits in year 6. This analysis, based on respondent's data, indicates that larger smallholder farmers benefit more from certification than smaller farmers, this finding applies especially to farmers with a plot below 1 ha. Previous research supports this finding (Romanoff, 2008, p16).

[50] This figures reflects audit costs for 1000 farmers.

[51] This amount is calculated based on an archetypal coop of 375 members.

Figure 23: Cumulative net benefit in year 6 in relation to farm size[52]



Another way to differentiate between farms is improvement potential. Some farmers may have more potential to increase their productivity than others. Uncertainty about their improvement potential imposes a risk on farmers. If they make an investment in inputs, such as fertilizer and pesticide, they do not know in advance how much their productivity will improve.

On the long term, we admit that productivity improvements should remain in balance with demand. The global sprawl in attention for certification could strengthen the 'boom and bust'-cycle (Anga, 2011)[53,] which is a period of undersupply and high prices followed by a period of oversupply and cocoa prices falling below farmer subsistence level. In a similar fashion, supply of certified cocoa could exceed the demand for certified cocoa. To ensure the premium on certification does not disappear, supply and demand should remain in balance. This consideration applies in particular to UTZ and Rainforest Alliance, who do not define a minimum amount of premium and leave the valuation of certification to the market instead. Fairtrade defines a minimum price and a minimum premium, which could be seen as a safeguard against supply and demand imbalances.

[52] In this calculation, 'average' is based on the farm sizes as represented in Appendix IX. Some data has been given by respondents on a per ha basis. Most schemes have higher membership fees for larger participants. The reader be aware these consideration are not included in the line 'average'. On the contrary, the line 'base case' does not include any scheme specific fees.

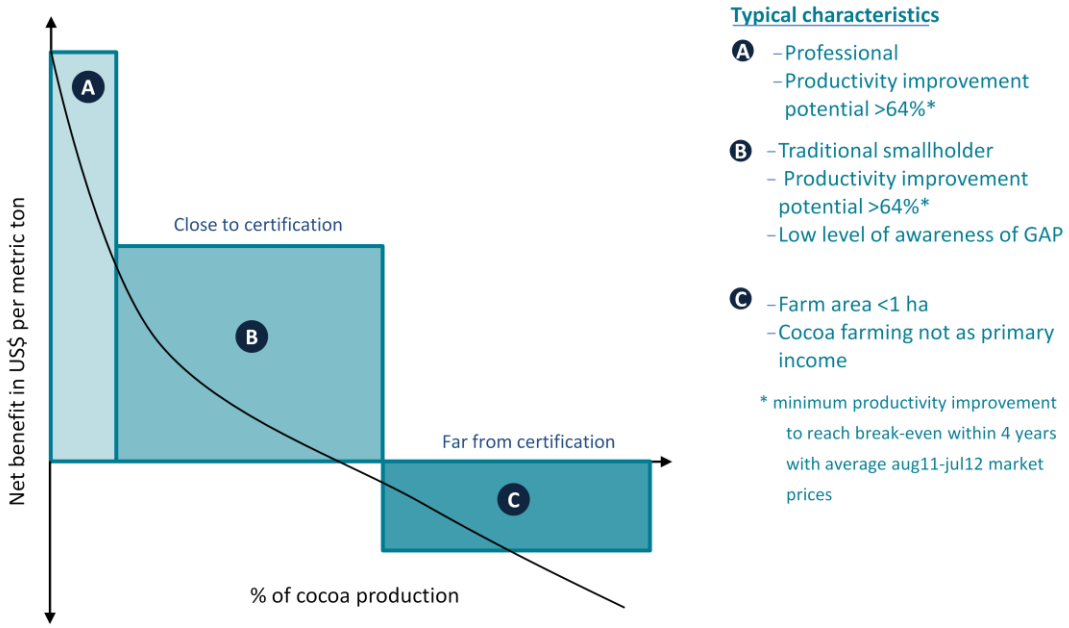
[53] Anga, J.-M., "The Future of the World Cocoa Economy: Boom and Bust?" presented at the 5th Indonesian International Cocoa Conference, Bali, 7-8 July 2011.

In addition to farmer specific risks, there are also systemic risks which should be taken into account when assessing the costs and benefits of certification. Further analysis is required to compare the impact of systemic risk between schemes.

5.7.2 Farm segmentation

In the previous section we found some farmers benefit more from certification than others. A high benefit per metric ton of certified cocoa, implies a lower cost of certification. From an industry perspective, it follows that some farmer segments can be certified at lower costs than other farmer segments as is illustrated in figure 24.

Figure 24: Farmer segments



To maximize total benefits from certification against the lowest total costs, investments could for instance focus on the incremental (marginal) farmer entering the population of certified farmers as they require the least investments to achieve certification requirements. However more research is necessary to conclude this, and further field research is required to understand the relative size of groups B and C for each country.

5.7.3 Premium distribution between farmer and coop

Premium is the second most important determinant of farmer/coop level benefits. The distribution of the premium between farmer and coop is yet reported to a limited extend. We have asked scheme owners to provide an indication of the cash-to-farmer ratio as % of the farmer/coop premium.

- Rainforest Alliance indicated in Ghana 45-55% premium is paid in cash to farmers. In Côte d'Ivoire, 50% is paid to farmers.

- UTZ indicated 50% was paid in cash to farmers in Ivory Coast. In Ghana, UTZ indicated 23% was saved on the coops bank account and 24% was used for training and ICS expenses, while the remaining 53% was paid out to farmers in cash.
- Farmers certified Fairtrade decide collectively on distribution, according to the Fairtrade standard. Fairtrade reported that according to 2010 data for Ghana the premium is spend by coops as follows: 1) 75% of the premium was used as 'cash payments'[54], 2) 14% was spend on investments in inputs, equipment and training and 3) 'business development' represented 9% of premium.

It should be noted this anecdotal evidence requires further substantiation and might not be based on a comparable scope and definition. Hence, care should be taken when interpreting these findings. E.g. in interviews with an independent supply chain actor, it was found in some cases that the premium was saved for farmers on a bank account which was used in later years to pay for certification expenses.

5.7.4 Multi-certification and transferral rules

On the individual farmer level, multi-certification might be beneficial, as it provides farmers with access to different sales channels. However total cost of certification may increase from a system-perspective as investments are made for adapting the farm/coop to specific requirements. Making certification systems 'inter-changeable' might be advisable from an economic viewpoint. This could take different forms, for example better alignment of requirements, recognition of chain of custodies, joint auditing and/or joint invoicing of payments to schemes. The economic benefits of this should be analyzed in the second phase of this study.

Another important strategic issue are rules for the transfer of certificates/credits through the supply chain. A broad explanation of its implications is developed in Appendix VI. Due to its impact on logistics and leakage, transferral rules can imply significant hidden costs, in particular for large operators in the supply chain. Moreover, transferral rules determine to a large extend the scalability of a certification scheme.

5.8 Conclusions

Our cost-benefit analysis shows that farmers in general can benefit from certification, provided that certain conditions are met. The study finds that certification can provide a net benefit to farmers, although the magnitude of benefits differs per country. It should be noted that yield improvement can have a significant effect on farmer P&L. However our calculations show that there is still a net benefit when yield improvement *and* input cost are not included.

[54] The Fairtrade organization defines the category 'cash payments' as: "cash payments and bonuses made to farmer members of the producer organization, as well as other forms of direct financial support to members not fitting in the above categories."

We find that some farmers do benefit more from certification than others, in particular farms with a large plot of cocoa trees benefit more than farmers with small plots. More case studies, field work or monitoring are required to really differentiate between schemes from a farmer perspective.

We found some differences with regards to scheme requirements in relation to wages, premium, certification specific investments and training. The level of data reliability at the time of writing this report does not enable more detailed conclusions.

In addition, the lack of detailed information about the distribution of premium between farmer and coop did not allow us to disentangle premium values to the farmer level. This matter requires additional research. More detailed research based on field study could also elicit if the expenses resulting from multi-certification outweigh the benefits in terms of risk reduction and niche marketing on the farmer level.

Interviews with actors on the ground indicate that additional structured interviews, supplemented with 'due diligence' data gathering at the level of cooperatives/first buyers could provide the detail required to deal with outstanding concerns regarding the future pathway and impact of certification.

6 Areas for further research

Based on the conclusions from this study, KPMG has identified the following areas where further research would be advisable. We recommend ICCO to:

1. Study the **value chain perspective**, from farmer to coop, trader, processor, retailer and consumer. This to get a better understanding of the attribution of costs and benefits throughout the chain and of the impact of risks on the farmer level (e.g. risks related to price fluctuations and a sharp increase in the share of certified cocoa could have on the premium).
2. Get more accurate information on **costs and benefits on the ground**. KPMG would recommend ICCO to conduct a field study to better understand the costs and benefits at farm level. Some areas that could be further explored in this study are:
   - The attribution of **costs and benefits between coops and individual farmers**. This would show whether farmers benefit individually from certification or not.
   - The actual **premium distribution.** This would provide better insights in the factual distribution of the premium and the amount of money that actually goes to the farmer.
   - The costs of **group churn, agrochemicals usage, product handling, agrochemical application, re-juvenating trees, wages etc.** This would enable further insight into the differences between cost-benefits per scheme[55].
3. Gain deeper insights in **certification schemes impact assessments** with a long term perspective. Most of the literature analysed constitutes a "snapshot" of the status quo in implementation of certification schemes . Impact assessment methodologies are set up via various initiatives such as by World Cocoa Foundation and Committee on Sustainability Assessment (COSA). We recommend ICCO to closely monitor the methodology and results of these studies for applicability.
4. We believe that some farmers are easier certifiable than others, which effects the costs-benefits on the long term. We recommend to study the effect of **farm size/productivity potential** and the impact on costs of certification in more detail.
5. Increase understanding of the **pros and cons of multi- certification**. A clear overview of additional expenses resulting from multi-certification against the benefits of multi-certification (i.e. in terms of risk, constant improvements due to 'competition'). Conclusions could support arguments around encouraging certification scheme owners to avoid unnecessary forms of multi-certification and/or reduce leakage.

[55] In the current study, only a part of variables (<27%) have been differentiated between UTZ, Fairtrade and Rainforest Alliance, while for the remaining variables default values were used . More precise information on particular requirements set by certification schemes could improve the accuracy of our model findings.

6. Gain more evidence on the social impact of certification. Understanding how certification impacts **gender equality** in specific contexts and its contribution of to the **elimination of child labour**.

Appendices

Appendix I: References[56]

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[56] For certification schemes' specific documentation used in this study, please refer to the list presented on Appendix IV

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Appendix II: List of Acronyms

CoC	Chain of Custody
COCOBOD	Ghana Cocoa Board
Coop	Cooperative or farmer group
FMCG	Fast Moving Consumer Goods
FT	Fairtrade
GAP	Good Agricultural Practice
ha	Hectare
HR	Human resources
ICS	Internal Control System
IDH	The Dutch Sustainable Trade Initiative
ILO	International Labour Organization
Mt	metric ton
NGO	Non-governmental organization
RFA	Rainforest Alliance
UTZ	UTZ Certified
WFCL	Worst Forms of Child Labour

Appendix III: Definitions

Base case	Farmer defined in previous literature-based KPMG study (KPMG, 2011)
Base model	The underlying calculations as developed in KPMG (2011).
Coop/ Cooperative	Farmer group organization
First buyer/exporter	A supply chain actor who is the first commercial actor in the supply chain, starting at the farmer level.
Group churn	The phenomenon of farmers leaving and joining a farmer group.
Leakage	The phenomenon of a difference between potential production of certified farms and sales of certified product.
Mass balance	When a certification system applies the principle of mass balance, certified cocoa is allowed to be mixed with conventional cocoa. At any step in the supply chain, being either a unit of transportation, storage or processing (conversion), the certification system requires to keep administration of the volume going in and out of the unit. The unit's administration is audited to ensure no more certified product is leaving the system than it enters. The term 'mass' refers to the fact that the administration is based on weight and not on volume or critical content.
▪ Time–based mass balance	When a certification system allows time-based balance, a stock keeping unit in the supply chain is allowed to build a buffer of certification credits. This allows the unit some flexibility when supply and demand temporarily do not match. For example, if production of certified cocoa is high in one year and demand for certified product is low, while demand for conventional cocoa is high, the unit can deliver certified cocoa as conventional without losing its claims of having certified product in stock. The duration a certification credit can be claimed is usually a defined period. The time-based balance requirement ensures certification does not lead to unnecessary logistical movements or interruptions in the flow of certified product.
▪ Physical mass balance	When a certification system allows physical balance, a juridical entity in the supply chain is allowed to move certification credits between geographically distant units in the supply chain without

	moving the cocoa physically. This allows the unit flexibility when supply and demand do not match geographically. For example, if production of certified cocoa beans is high in Ghana and demand for certified cocoa beans is low in Ghana's cocoa bean processing units, a processor in Côte d'Ivoire is allowed to sell certified cocoas products without having to move certified cocoa beans from Ghana to Côte d'Ivoire. Physical balance requires that the amount of certified product flowing into the juridical entity equals the amount of product leaving the entity and an administration providing this balance is required. The physical balance requirement ensures certification does not lead to unnecessary logistical movements or interruptions in the flow of certified product.
▪ Segregation	When a certification system applies the principle of segregation, certified cocoa is not allowed to be mixed with conventional cocoa at any stage in the supply chain. Segregation is often seen as similar to a mass balance system not allowing physical or time-based balance.
Payment to schemes	Required fees that need to be paid to the certification scheme in order to be able to join their scheme. It comprises entry fees, fees per volume and other direct fees paid.
Retroactive certification	Certifying cocoa beans or products that have been produced before the official data of certification, having been in storage or on the fields.
Small scale farmers	Cocoa farmers with less than 3 hectare located in remote and isolated areas.
Smallholders	Cocoa farmers with less than 5 hectare on average of cultivated area.

Appendix IV: Detailed comparison of certification schemes' requirements

The table below presents the key differences of the certification schemes for the selected topics. For each certification schemes a reference to the source used is made. The reference system can be found on Appendix V with a complete list of documents used for each certification scheme. This shall facilitate tracking back the information presented and enable the reader to search for further details if desired.

Table 1: Overview of comparison between certification schemes requirements

	Fairtrade	Reference*	RFA	Reference*	UTZ	Reference*
A. Payment to scheme	No fee per volume Entry fee for small producers	FT_MF1	Fee per volume for exporter but no entry fee	interview	Fee per volume for first buyer and fees through supply chain	UTZ_MF
B. Premium received farmer/ coop	Fixed premium + minimum price paid to coop	FT_PRE	Premium determined by market paid to coop	interview	Premium determined by market paid to certificate holder	interview
C. Audit	Fixed fee per year	FT_MF1 chapter 4	Fee per year determined by market	interview	Fee per year determined by market	interview
D. Certified content	100% or minimum percentage of total weight composite product	FT_LP	Minimum percentage of dry weight end-product. At least 30% to bear RAC seal. Encouragement to scale up to 100%	RFA_LP section 3	Minimum content will increase gradually up to 95% in 2014	UTZ_CUS page 10
E. Mass balance	Time and physical based (up to 2014) mass balance allowed	FT_CUS page 7,8	No mass balance allowed	RFA_CUS	Time and physical based mass balance allowed	UTZ_CUS
F. Wage level	Following local legislation or regional average whichever is the highest	FT_GC1 3.3.17	Equal or higher than regional average	RFA_CL_CD 5.4	Following local legislation and equal payment	UTZ_CL_GH 77, 78
G.Biodiversity and climate change	No requirements regarding shade trees. Farmer needs to document practices on GHG and renewable energy	NA FT_GC1_ 3.2.39	Requirement to plant and/or maintain trees Farmers needs to carry out plan on renewable energy and GHG savings	RFA_CL_CD 2, 3 RFA_GC1 1.11, 10.6	Requirement to plant and/or maintain trees No requirement about GHG savings	UTZ_GC1 chapter 3
H. Waste disposal	Farmer responsible after 2014. Burning of waste allowed in absence of disposal system.	FT_GC1 section 3.2.30	Farmer responsible. Burning of waste in open air not allowed.	RFA_GC1_chapter 10.2-3	Limited responsibility farmer (for organizing waste disposal system)	UTZ GC3 criterion 50 (certificate holder responsible)
I. GMO	No GMO	FT_GC1 section 3.2.32	No GMO	RFA_GC1 page 6	No standpoint	UTZ_GC3 footnote 2

Appendix V: Reference list of certification schemes specific documents used

Table 2: Reference list per certification scheme

Brief description	UTZ	Latest version	Ref. code*
File 1: Country/product specific checklist	UTZ CERTIFIED Good Inside Code of Conduct Local Annex for Cocoa: Ghana	feb-2010	CL_GH
File 2: Generic checklist	Code of Conduct Checklist v1.0 scope: Group certification for Smallholder farms Code of Conduct Annex for Cocoa Good Inside Code of Conduct v 1.0	undated jan-10 apr-09	GC1 GC2 GC3
File 3: Membership fees	UTZ CERTIFIED Cocoa Program Membership Types and Fees 2011-2012 Membership types and fees 2011-2012	dec-2010	MF
File 4: List of maximum residue limits	NA	NA	MRL
File 5: Prohibited agrochemicals	List of banned crop protection products	jun-2012	LBP
File 6: How certification works	UTZ Certification protocol	jul-2009	CPC
File 7: Labelling policy	Cocoa Labelling & Communications Policy	feb-2011	LP
File 8: Auditor requirements	See UTZ certification protocol		ARQ
File 10: Chain of Custody	Chain of Custody Checklist for Cocoa v 3.0	nov-2011	CUS

Brief description	Rainforest Alliance	Latest version	Ref. code
File 1a: Country/product specific checklist	Interpretation Guidelines - Indicators for Sustainable Cocoa Production in Côte d'Ivoire	apr-2009	CL_CDL
File 1a: Country/product specific checklist	Interpretation Guidelines - Indicators for Sustainable Cocoa Production in Ghana	apr-2009	CL_GH
File 2: Generic checklist	Sustainable Agriculture Standard version 2 Group Certification Standard version 2	jul-2010 mar-2011	GC1 GC2
File 3: Membership fees	Participation Agreement FAQ	may-2012	MF
File 4: List of maximum residue limits	NA	NA	MRL
File 5: Prohibited agrochemicals	Prohibited pesticide list	nov-2011	LBP
File 6: How certification works	Sustainable Agriculture Certification Manual Group Certification Policy version 2 Farm Certification policy	feb-2012 mar-2011 apr-2009	CPC1 CPC2
File 7: Labelling policy	Use of Seal Guidelines	may-2007	LP

File 8: Auditor requirements	SAN Auditor Requirements	mar-2010	ARQ
File 10: Chain of Custody	Chain of Custody Standard	may-2012	CUS

Brief description	Fairtrade	Latest version	Ref. code*
File 1: Country/product specific checklist	Fairtrade Standard for Cocoa for Small Producer Organizations	may-2011	CL
File 2: Generic checklist	Public Compliance Criteria List – SPO – ED 4.5 En 01 Generic Fairtrade Standard for Small Producer Organizations (SPO)	feb-2012 may-2011	GC1 GC2
File 3: Membership fees	Fee System Small Producer Organization (FLO-Cert) Trade Certification Fees (FLO-Cert) Appendix 4: Licence Fee 2012 (Stichting Max Havelaar, the Netherlands)	dec-2011 dec-2011 undated	MF1 MF2 MF3
File 4: List of maximum residue limits	NA	NA	MRL
File 5: Prohibited agrochemicals	Red and Amber list	jan-2012	LBP
File 6: How certification works	Certification Standard Operating Procedure	dec-2011	CPC
File 7: Labelling policy	Generic Fairtrade Trade Standard Section 2.2 Product Composition	may-2011	LP
File 8: Auditor requirements	NA	NA	ARQ
File 9: Price/premium information	Fairtrade minimum price and fairtrade premium table	mar-2012	PRE
File 10: Chain of Custody	Generic Fairtrade Trade Standard	may-2011	CUS

Appendix VI: Rules for the transfer of certification credits

The way of formal transfer of certification credits through the supply chain can be an important factor to diversify certification schemes and also impact the costs through the value chain. Three transferral methods are distinguished: book & claim, mass balance and segregation.

The Book & claim method records the sale of certified products at the farm gate without the necessity to trace the certified product through the chain. Upstream supply chain actors can buy a certificate usually via an e-platform and use a label on their packages. In the cocoa chain, no major certification scheme works with this transferral method.

Mass balance entails a set of rules which can be quite puzzling and are key to a certification scheme's scalability. Strict rules on mass balance can create hidden costs for supply chain actors as they may be stuck being unable to use certification credits they previously acquired. Less stringent mass balance rules allow supply chain actors to optimize their certification strategy and minimize leakage. However, less stringent rules carry the risk of misuse or mistake, although a strong system design with sufficient checks and controls may safeguard the reliability of certification schemes. We distinguish two types of mass balance rules; time-based balance and physical balance. Fairtrade allows time based balance[57], UTZ allows time and physical balance. Time based balance allows for the transfer of credits over time when there is a time lag between supply and demand, while physical balance implies the transfer of credits between geographically distant units. The economic difference between these types of mass balance rules will be explained in the next section.

When allowing transferral through segregation, certified cocoa is not allowed to be mixed with conventional cocoa at any stage in the supply chain. This transferral method is applied by Rainforest Alliance[58] and products which are certified organic.

The cost of mass balance rules

A calculation example may elicit the particularities and potential costs of mass balance systems

Table 3: Type of certificate transfer

Type of transfer	
Scenario	**Scheme transfer rule**
1. All certified goods are certified according to scheme A	Scheme A allows segregation only
2. All certified goods are certified according to scheme B	Scheme B allows time based mass balance only
3. All certified goods are certified according to scheme C	Scheme C allows time based and physical mass balance

[57] Until 2014 both physical and time-based mass balance are allowed, thereafter only time-based mass balance is allowed.

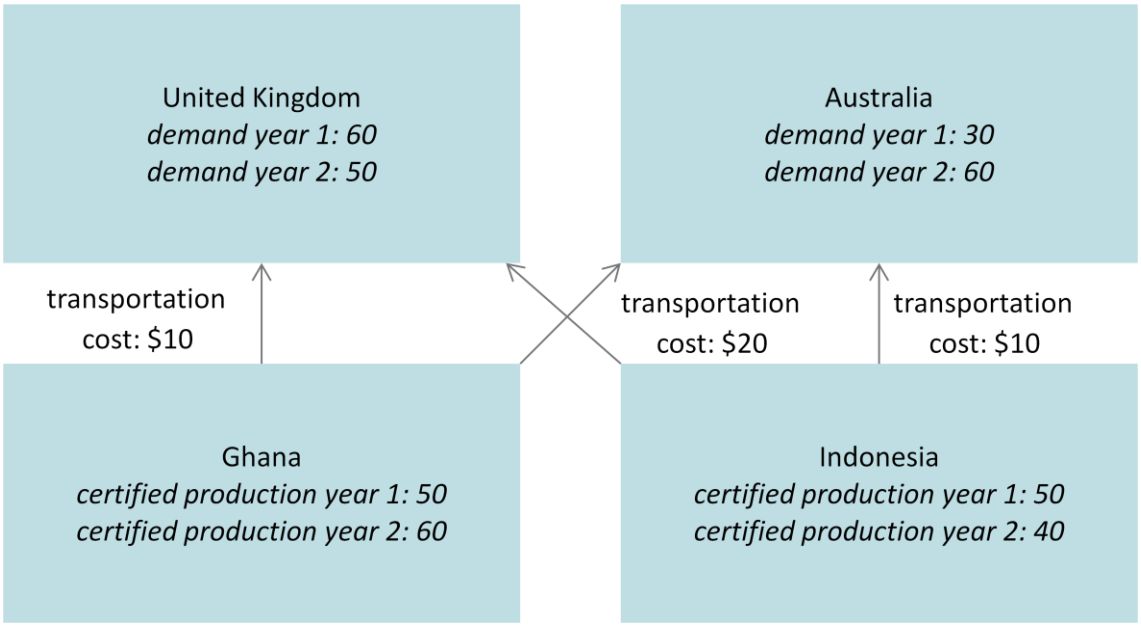
[58] The authors of this report doubt whether Rainforest Alliance strictly adheres to segregation. No information about transferral rules has been provided by Rainforest Alliance.

Suppose a supply chain consists of a processor and producers in two production countries; Ghana and Indonesia. From Indonesia, cocoa is sold to Australia and from Ghana, cocoa is sold to the UK. A fictitious supply chain is pictured in figure 1.[59]

Suppose a situation where in year 1, Indonesia produces 100 units of which 50 are certified. In the same year in Ghana, 100 units are produced of which 50 are certified. Suppose in year 1 demand in the UK is 60 units, while demand in Australia is 30 units.

Suppose in year 2, demand in Australia increases to 60 units, while in Indonesia supply is, due to a bad weather, only 40 units of certified cocoa. Meanwhile, demand in the UK drops to 50 units, while supply in Ghana increases to 60 units.

Figure 1: Example of certification transfer



Suppose at the beginning of year 1, the processor has no stock of credits or cocoa. Assuming the processor is optimizing its supply chain, the following outcome would be expected in year 1:

Scenario 1: To meet demand, the processor transports 10 units from Indonesia to the UK.
Scenario 2: Identical to scenario 1.
Scenario 3: The processor uses credits acquired in Indonesia in the UK, while buying conventional cocoa in Ghana or elsewhere. He can thus sell 60 units in the UK and 30 units in Australia while buying 50 units of certified cocoa in Ghana and 40 units certified cocoa in Indonesia. He does not have to move the goods physically.

[59] This example is not based on a real-world situation.

Assuming the processor is optimizing its supply chain, the following outcome would be expected in year 2:

Scenario 1: To sell 50 units in Australia, the producer moves 10 units from Ghana and cannot meet demand for the remaining 10 units, in the UK, the processor sells 50 units.
Scenario 2: The processor sells 60 units in Australia by selling 40 units of the year 2 crop, selling 10 units of the credits that were left-over in Indonesia in y1 and moving 10 units from Ghana to Australia. The processor can sell 50 units from Ghana in the UK.
Scenario 3: Identical to scenario 2. However, the processor does not have to move goods physically from Ghana to Australia.

To calculate the total cost in the supply chain, we can assume that transportation from Indonesia to Australia costs $10 and from Ghana to UK also $10. Transportation from Indonesia to UK and from Ghana to Australia costs $20.

Table 4: Transportation cost in example

Transportation cost				
	Transfer type	year 1	year 2	total
Scheme A	Segregation only	$1000	$1100	$2100
Scheme B	Time-based mass balance only	$1000	$1100	$2100
Scheme C	Time and physical mass balance	$900	$1100	$2000

In addition to mileage and transportation costs, the choice of mass balance rule can also affect the opportunity for premium optimization at the farmer/coop level. Suppose the premium on certified cocoa paid to the farmer/coop is $10 per unit. Assume the farmer/coop gets only paid for certified cocoa if the processor can sell the cocoa as certified.

Table 5: Premium paid to farmer/coop in example

Premium paid to farmer/coop						
		year 1		year 2		total
		Ghana	Indonesia	Ghana	Indonesia	
Scheme A	Segregation only	500	400	600	400	1900
Scheme B	Time-based mass balance only	500	500	600	400	2000
Scheme C	Time and physical mass balance	500	500	600	400	2000

Conclusions

It should *not* be inferred by this example that time based mass balance and physical mass balance do not differ for the producer or that segregation always results in lower pay-out to farmers. However, from the previous example it can be inferred that mass balance rules affect the total cost-benefit for a supply chain. A more detailed scenario analysis would allow for a supply chain level cost-benefit calculation for different current and future configurations of the cocoa supply chain. Such a scenario analysis should be considerate for the fluctuations in supply and demand that are typical in agricultural supply chains.

Appendix VII: Reference list for literature review of farm, cooperative and community level impact

Table 6: Literature study overview of publications and arguments

Literature study on advantages and disadvantages of (cocoa) certification				
Dimensions	**Advantages (summarize argument)**	**Studies mentioning argument**	**Disadvantages (summarize argument)**	**Studies mentioning argument**
FARM LEVEL				
Input	Agricultural inputs such as seedlings or drying materials improve farming conditions along with technical assistance (5)	de Battisti et al. (2009), Krain et al. (2011), Fort/Ruben (2008), Liu et al. (2004), Verkaart (2009)	Farmers face additional investments to upgrade farming and processing practices and systems to the certifiable level (9)	Akyoo/Lazaro (2008), Consumers International (2005), de Battisti et al. (2009), Verkaart (2009), Krain (2011), KPMG (2012), Liu et al. (2004), Gibbon et al. (2009), Liu et al. (2004),
	Trainings build farming and management skills, fostering sust. agricultural practices and organisational development (8)	Consumers International (2005), de Battisti et al. (2009), Krain et al. (2011), Liu et al. (2004), Nelson/Galvez (2000), Santacoloma (2007), Verkaart (2009), Potts/Giovannucci (2012)	Greater administrative and organisational efforts and costs are involved in standard compliance (3)	de Battisti et al. (2009), KPMG (2012), Santacoloma (2007)

	Access to credit allows farmers to pre-finance business activities (6)	Bacon et al. (2008), de Battisti et al. (2009), Fort/Ruben (2008), Nelson/Galvez (2000), Verkaart (2009), Jaffee (2008)		
Production	Yields and productivity increase due to good agricultural practices (9)	Arnould et al. (2009), Consumers International (2005), de Battisti et al. (2009), Gibbon et al. (2009), Jaffee (2008), Krain et al. (2011), Liu et al. (2004), Verkaart (2009), Potts/Giovannucci (2012)	Labour costs (in certain cases also production costs) increase as result of implementing certification requirements (6)	Akyoo/Lazaro (2008), Bolwig et al. (2007), Jaffee (2008), Liu et al. (2004), Fort/ Ruben (2008), Santacoloma (2007)
	Product quality increases in line with certification requirements (6)	de Battisti et al. (2009), Consumers International (2005), Jaffee (2008), Krain et al. (2011), Liu et al. (2004), Verkaart (2009)		

Selling	Farmers receive higher prices for their products due to minimum prices (Fairtrade) and price premiums (13)	Arnould et al. (2009), Bolwig et al. (2007), Costantino/ Becchetti (2005), Consumers International (2005), Krain et al. (2011), Fort/Ruben (2008), Gibbon et al. (2009), Jaffee (2008), Liu et al. (2004), Nelson/Galvez (2000), Ronchi (2002), Verkaart (2009), Potts/Giovannucci (2012)	The price premium becomes negligible if supply exceeds demand, as famers are forced to sell part of their certified products to the conventional market (6)	Akyoo/Lazaro (2008), Nelson/Galvez (2000), Fort/Ruben (2008), Bolwig et al. (2007), Krain et al. (2011), Liu et al. (2004)
	In most cases net income rises as a result of certification (11)	Arnould et al. (2009), Bolwig et al. (2007), Costantino/ Becchetti (2005), Fort/Ruben (2008), Gibbon et al. (2009), Jaffee (2008), Krain et al. (2011), Lyons/Burch (2007), Verkaart (2009), Potts/Giovannucci (2012), Liu et al. (2004)		
	Certification enhances market access and stability through long term contracts (7)	Consumers International (2005), de Battisti et al. (2009), Krain et al. (2011), Liu et al. (2004), Lyons/Burch (2007), Nelson/Galvez (2000), Ronchi (2002)		

COOPERATIVE LEVEL				
Economic	Cooperative organisation enhances market access, bargaining power and competition among local purchasers (5)	Milford (2004), Bacon et al. (2008), Fort/Ruben (2008), Lyons/Burch (2007), Ronchi (2002)	Inefficiencies arise with the complexity caused by the size of cooperatives and/or their numerous activities (1)	Milford (2004)
	Economies of scale and investments in productive equipment become possible through the cooperative (5)	Consumers International (2005), Fort/Ruben (2008), Liu et al. (2004), Verkaart (2009), Milford (2004),	Cooperatives face considerable compliance costs while lacking working capital due to the poverty of their members (4)	Milford (2004), Akyoo/Lazaro (2008), Santacoloma (2007), Ronchi (2002)
Social/political	Empowerment of farmers takes place through provision of monetary and non-monetary benefits by and participation in cooperatives (6)	Bacon et al. (2008), Fort/Ruben (2008), Liu et al. (2004), Lyons/Burch (2007), Milford (2004), Krain et al. (2011)	Effective and democratic control of cooperatives through their members is limited (3)	Milford (2004), Krain et al. (2011), Liu et al. (2004),
COMMUNITY LEVEL				
Environment	Reduced use of agrochemicals mitigates negative environmental and health effects (6)	Consumers International (2005), de Battisti et al. (2009), Liu et al. (2004), Lyons/Burch (2007), Fort/Ruben (2008), Verkaart (2009)	There is not enough evidence in the studies reviewed which points to environmental disadvantages (1)	Fort/Ruben (2008)

	Environmental training of farmers improves management of natural resources (e.g. recycling of water used for processing) (4)	Bacon et al. (2008), Consumers International (2005), Krain et al. (2011), Potts/Giovannucci (2012)		
	Farmers implement measures for conservation and restoration of local ecosystems and biodiversity (8)	Bacon et al. (2008), Krain et al. (2011), Consumers International (2005), Jaffee (2008), Liu et al. (2004), Lyons/Burch (2007), Potts/Giovannucci (2012), Verkaart (2009)		
Economic	Communities connected to certified agriculture experience positive impacts as a result of cooperative investments (5)	Bacon et al. (2008), Consumers International (2005), Fort/Ruben (2008), Ronchi (2002), Verkaart (2009)	Small-scale farmers tend to be marginalised due to difficulties to meet certification requirements. Once certified they often continue struggling with low incomes and food insecurity (5)	Bacon et al. (2008), de Battisti et al. (2009), Consumers International (2005), Nelson/Galvez (2000), Verkaart (2009)

People	Labour conditions of farmers and their workers improve in terms of housing, medical treatment, protective equipment and remuneration. (4) Reduced child labour is suggested (3)	Arnould et al. (2009), Beyer (2012), Krain et al. (2011), Verkaart (2009), Potts/Giovannucci (2012), Consumers International (2005)	With certification gender tends to persist with women facing a higher workloads while having little control over the use of income. (4)	Bacon et al. (2008), Bolwig et al. (2007), Krain et al. (2011), Ronchi (2002) Positive: Lyon et al. (2009) Neutral: Verkaart
	Producer livelihoods improve with higher food security, increased value of household assets and better education of children (11)	Arnould et al. (2009), Bacon (2008), Bolwig et al. (2007), Constantino/ Becchetti (2005), Consumers International (2005), Krain et al. (2011), Fort/Ruben (2008), Jaffee (2008), Ronchi (2002), Potts/Giovannucci (2012), Verkaart (2009)		

Appendix VIII: Literature study: overview of literature per commodity and certification scheme

Table 7: Literature review overview of publications per commodity and certification scheme

	Source	Commodity	Certification scheme
	PRIMARY LITERATURE (based on empirical field research)		
1	Akyoo, A., E. Lazaro (2008) 'An Accounting Method-Based Cost-Benefit Analysis of Conformity to Certified Organic Standards for Spices in Tanzania', DIIS Working Paper 2008:30. Danish Institute for International Studies, Copenhagen.	Spices	Organic
2	Arnould, E.J., A. Plastina and D. Ball (2009). Does Fair Trade Deliver on Its Core Value Proposition? Effects on Income, Educational Attainment, and Health in Three Countries. Journal of Public Policy & Marketing, 28:2, pp. 186-201.	Coffee	Fairtrade
3	Bacon, C. M., et al. (2008). Are Sustainable Coffee Certifications Enough to Secure Farmer Livelihoods? The Millenium Development Goals and Nicaragua's Fair Trade Cooperatives. Globalizations, 5:2, 259-274.	Coffee	Fairtrade
4	Beyer, D. (2012). Child Labor in Agriculture: Some New Developments to an Ancient Problem, Journal of Agromedicine, 17:2, 197-207.	Cocoa	Rainforest Alliance, Fairtrade, Social Accountability International
5	Bolwig, S. Gibbon, P., Odeke, M. (2007). Certified organic export production – implications for economic welfare and gender equity amongst smallholder farmers in tropical Africa. Danish Institute for International Studies, Copenhagen.	Coffee, cocoa, pineapple	Organic
6	Consumers International and International Institute for Environment and Development (2005). From bean to cup: How consumer choice impacts upon coffee producers and the environment.	Coffee	Fairtrade, Organic, UTZ, Rainforest Alliance
7	Costantino, M. and Becchetti, L. (2005). The Effects of Fair Trade on marginalised producers: an impact analysis on Kenyan farmers. Università Tor Vergata/ FORMEZ, Rome.	Coffee	Fairtrade

8	de Battisti, B., MacGregor, A. J. and Graffham, A. (eds.) (2009). Standard bearers: Horticultural exports and private standards in Africa. International Institute for Environment and Development, London.	Fruit/Vegetables	Global GAP
9	Fort, R. and R. Ruben (2008a). 'The impact of Fair Trade certification on coffee producers in Peru', in Ruben, R. (ed.) The impact of Fair Trade. Academic Publishers, Wageningen, pp. Chapter 3.	Coffee	Fairtrade
10	Gibbon, P., Lin, Y., Jones, S. (2009). Revenue effects of participation in smallholder organic cocoa production in tropical Africa: a case study. Danish Institute for International Studies, Copenhagen.	Cocoa	Organic
11	Jaffee, D. (2008). "Better, but not great": the social and environmental benefits and limitations of Fair Trade for indigenous coffee producers in Oaxaca, Mexico', in Ruben, R. (ed.) The impact of Fair Trade. Academic Publishers, Wageningen, pp. Chapter 9.	Coffee	Fairtrade
12	Krain, E., Miljard, E., Konan, E., Servat, E. (2011). Trade and Pro-Poor Growth: Introducing Rainforest Alliance Certification to Cocoa Production in Côte d'Ivoire. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).	Cocoa	Rainforest Alliance
13	Liu, P., Andersen, M., Pazderka, C. (2004). Voluntary Standards and Certification for Environmentally and Socially Responsible Agricultural Production and Trade. Food and Agriculture Organization. Chapter 1.	Banana	Fairtrade, organic
14	Lyon, S. et al. (2010). Gender equity in fairtrade–organic coffee producer organizations: Cases from Mesoamerica. Geoforum 41: 93–103.	Coffee	Fairtrade, organic
15	Lyons, K. and D. Burch (2007). Socio-Economic Effect of Organic Agriculture in Africa. International Federation of Organic Agriculture Movements (IFOAM).	Other	Organic
16	Milford, A. (2004). Coffee, Co-operatives and Competition: The Impact of Fair Trade. Chr. Michelsen Institute (CMI).	Coffee	Fairtrade
17	Nelson, V. and Galvez, M (2000) 'Social Impact of Ethical and Conventional Cocoa Trading in Forest-Dependent People in Ecuador, NRET, University of Greenwich.	Cocoa	Fairtrade
18	Potts, J. and Giovannucci, D. (2012). COSA: Global Findings v. 1. Committee on Sustainability Assessment/ SECO (unpublished report).	Coffee, Cocoa	Fairtrade, Organic, UTZ, Rainforest Alliance, Other

19	Ronchi, L. (2002a). The impact of Fair Trade on producers and their organizations: A case study with Coocafé in Costa Rica, Policy Research Unit: University of Sussex, Sussex.	Coffee	Fairtrade
20	Ronchi, L. (2002b). Monitoring impact of Fairtrade Initiatives: A Case Study of Kuapa Kokoo and the Day Chocolate Company. Twin.	Cocoa	Fairtrade
21	Santacoloma, P. (2007): Certification costs and managerial skills under different organic certification schemes - Selected Case Studies. Food and Agriculture Organization.	Fruits/ vegetables	Organic
22	Tulane University (2011). Final Report on the Status of Public and Private Efforts to Eliminate the Worst Forms of Child Labour (WFCL) in the Cocoa Sectors of Côte d'Ivoire and Ghana.	Cocoa	Fairtrade, UTZ, Rainforest Alliance,
23	Verkaart, S. (2008). Effects of Utz Certified and Fair Trade on coffee producers in Uganda and Tanzania: Certification and the people and profit dimensions of Corporate Social Responsibility. Radboud University Nijmegen.	Coffee	UTZ, Fairtrade
24	KPMG (2012): Certification and biodiversity. Exploring improvements in the effectiveness of certification schemes on biodiversity.	Cocoa, fisheries	UTZ, Fairtrade, Rainforest Alliance, Global GAP, Other
SECONDARY LITERATURE (based on a review of existing studies)			
25	Smith, Sally (2011). Review of the Literature on Gender and Fairtrade. Developing a Conceptual Framework for Fairtrade Gender Impacts.	Coffee, cocoa, fruit and vegetables (*Not included in count)*	Fairtrade (*Not included in count)*
26	Vagneron, I., Roquigny, S. (2011). What do we really know about the impact of Fair Trade? A synthesis. PFCE, Paris.	Coffee (*Not included in count)*	Fairtrade (*Not included in count)*

Appendix IX: Archetypal farmer characteristics

The table below indicates all the archetypal farmer characteristics for the base case, for Côte d'Ivoire and for Ghana. These variable were deemed of secondary importance when comparing certification schemes, reason why assumptions were made.

The base case uses data from KPMG (2011).

Table 8: Archetypal farmer characteristic

Archetypal farmer assumptions per country *				
	Côte d'Ivoire	**Ghana**	**Base case**	
base yield	565	403	500	kg /ha
yield increase	101%	89%	89%	
yield in final year (year 4)	1.136	762	945	kg /ha
farm size	3,7	2,9	2,5	ha
group churn	0	0	0	% farmers leaving the group per year
retroactive certification	0	0	0	# of years
grant funding	50	50	50	$ per certified ton
grant funding period	3	3	3	# of years
cost of pesticide	96	0	96	$/ha/year
cost of fertilizer	420	125	135	$ /ha/year
labour day-rate	3,5	4,18	0	$ / day
work done by farmer ('sweat equity')	0%	0%	100%	% of total amount of work
initial farmer time investments	30	30	0	hours
farmer time for ICS	3	3	0	hours per week
farm gate price	47%	53%	70%	%of export price
market price	2463	2463	2050	$ / 1000 kg
time of selling certified cocoa after first investment	1	1	1	# of years
group size	375	375	375	# of group members
group forming	3500	3500	3500	$/group

Table 9: Explanatory notes on archetypal farmer characteristics

Notes on archetypal farmer assumptions per country	
base yield	The productivity figures resemble average productivity for 2006-2010 as published by FAO Data.
yield increase	Based on average yield increase in Ruf et al. (2012). In this 3-year field study, yield improvement resulting from fertilizer application (in combination with using pesticide), was estimated to be on average 89% in Ghana and 101% in Côte d'Ivoire.
farm size	Average size of certified farms in case studies collected through questionnaires. These figures do not represent an average of certified farms for the country.
group churn	Group churn means the number of farmers leaving and joining a group each year, which affects the group forming and training cost. Because the concept was found difficult to evaluate in a questionnaire, this cost driver, although likely to be material, has been left out of the analysis. Only included was a fixed cost of group forming irrespective of certification scheme or country.
retroactive certification	Certification schemes have different rules on selling cocoa beans harvested prior to an audit as being certified. We do not take this difference into account.
grant funding	The rapid expansion of certification in the cocoa sector has occurred simultaneously with a lot of attention from philanthropic funds[60]. Our questionnaire findings indicate funding rates differ per country and type of implementer ranging from a few US$ to US$180 per certified ton. Based on respondents' feedback, we think US$50 per certified ton for the duration of three years is a good approximation for grant funding.
grant funding period	Grant funding is found to be a temporary provision during the start-up phase of a new or expanding farmer group. We found 3 years to be most common duration.
cost of pesticide	The Ghanese governmental organization COCOBOD funds pesticide application in Ghana. Yield increases due to pesticide application in Ivory Coast have been attributed to certification, hence, for Ivory Coast, a cost was included based on KPMG (2011)
cost of fertilizer	Fertilizer is not subsidized, data are based on (Ruf et al., 2012)

[60] A non-exhaustive list of organizations includes IDH – Initiative Sustainable Trade US$10 mln up to 2011, Comic Relief Fund £5 mln, DfiD £12 mln, Global Environment Facility UD$ 5 – 20 mln, Bill and Melinda Gates Fund US$90 mln (not fully committed to certification).

labour day-rate	The day-rate for a worker was based on the average indicated by three certification schemes for each country. This day-rate is not representative for the country or for the cocoa industry.
additional work done by farmer	The amount of 'sweat' equity, the time investment by the farmer as part of the total amount of work that needs to be done on the cocoa farm. This variable depends on the farmer family composition (Jaffe, 2007), other sources of income and cultural characteristics. The base-case study assumed no labour costs. To include opportunity cost to the farmer, in this study we assume all labour is hired externally.
initial farmer time investments	The farmer time investment includes the time invested in planting shade trees etc., we have not included farmer time for the duration of training sessions.
farmer time for ICS	The time farmers spend on certification
fertilizer subsidy	Although fertilizer is only partially paid by the farmer, full yield benefits have been accounted for.
farm gate price	Farm gate price is calculated as exporter/co-op price x farm gate price%. The farm gate price% is based on ICCO (2010) data and represents the average farm gate price % over 2000-2009. The farm gate price% is a proportion of the average ICCO daily price in $/ton[61]. (Fairtrade requires a price of $US 2000 on the co-op level, we assume the cocoa price does not drop below this level)
market price	The market price is based on the average ICCO daily price for the period Aug11-Jul12, our price assumption is $US 2463.
time of selling certified cocoa after first investment	The ramp-up period of certification might be different per region, relating to strength of the certification-network in a particular region. We assume the time for setting up ICS, administrative procedures by scheme owners and hosting a first audit etc. requires a similar amount of time for each scheme.
group size	Although grouping of farmers in each situation is different due to geography, initial organization of farmers etc., we have chosen a standard group size to allow comparability of group related costs.
group forming	Cost of forming a cooperative organization, this cost is a rough estimate.

[61] ICCO (2010), "World Cocoa Economy-past and present".

Appendix X: Model input per scheme

Table 10 Data provided by each scheme based on questionnaire and additional correspondence

Costs per scheme[62]								
			Ghana			Côte d'Ivoire		
		Base[63]	FT	UTZ	RFA[64]	FT	UTZ	RFA[65]
1. Premium[66]	$/MT cert	195	200	152,40	150	200	140	200
2. Leakage conventional[67]	% of production	30	38	36,2	10	38[68]	30	10
3. Leakage multi-certification	% of production	10	0	0	30	10	10	30
4. Cost ICS HR	$ / group / year	4860	12500[69]	12000	7000	12500	9960	7000
5. Cost training one-off[70]/[71]/[72]	$ / farmer	60	33,30	83,3	30	30,00	65,3	75
6. Cert-specific investment - hardware	$ / farmer	25	90[73]	90	60	80[74]	65	80
7. Cost audit	$ / group / year	6250	2561	6500	8500	2561	4331	7500
8. Cost certification fee variable[75]	$/MT	0	0	0	0	0	0	0
9. Cost certification fee fixed	$ / group / year	0	267[76]	0	0	267[77]	0	0

[62] FT is an abbreviation of Fairtrade and RFA of Rainforest Alliance.
[63] All figures in base case are based on KPMG (2011)
[64] RFA has provided data based on a group size of 1000 farmers in Ghana, where possible we have adjusted this data for the archetypal group size of 375 farmers.
[65] RFA has provided data based on a group size of 300 farmers in Côte d'Ivoire, where possible we have adjusted this data for the archetypal group size of 375 farmers.
[66] The premium was defined as the amount received by the coop. For Ghana, it is important to note the LBC's (Licensed Buying Company) receive a premium which is, after deductions, paid to the coop. The amount represented here, was indicated by certification schemes to be the amount paid by the LBC to the coop.
[67] Leakage to the conventional channel is expected to reduce over time due to 'loyalty building' activities such as crop financing. In three years time from the moment of certification, leakage to conventional channel is modelled to decrease 50% (in 3 steps).
[68] Based on sales data from Ghana
[69] For a group of 5000 farmers, as ICS cost occur on a coop level we assume costs to be similar for coops with a lower number of members.
[70] Training costs are expected to recur for 50% in the second and subsequent years.
[71] Fairtrade has indicated training cost are for 60% provided by local offices. Assuming the total amount of training required is the same for all schemes, we have calculated training cost to be 40% of the upper-bound of training cost by UTZ and RFA to calculate
[72] UTZ has indicated to encounter differences between the cost of training provided by a local NGO and the cost of training provided by a corporate implementer. We have used the average of three data points provided by UTZ to calculate training cost in Ghana and Côte d'Ivoire respectively.
[73] FT had no specific data available on the required certification specific investment. We have taken an upper bound value.
[74] See previous note.
[75] The scheme owners of RFA and UTZ charge a variable fee, they have indicated farmers and coops are never charged a fee.
[76] FT producer pay an initial fee upfront depending on size, in our analysis this fee is depreciated over 6 years.
[77] See previous note.

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Appendix XI: List of stakeholders/ experts consulted for this report

KPMG would like to express its gratitude for contributions and collaboration through the process of writing this report by the following experts:

Certification schemes

Fairtrade

Samantha Dormer (on behalf of Fairtrade International)

Rainforest Alliance

Eric Servat

UTZ Certified

Albertine de Lange

Other organizations in the cocoa field

Solidaridad/WAFF

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