Towards sustainable cocoa in Côte d'Ivoire

The impacts and contribution of UTZ certification combined with services provided by companies

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Preface

UTZ aims to create a world where sustainable farming is the norm, and where farmers implement good agricultural practices and manage their farms profitably with respect for people and planet, where industry invests in and rewards sustainable production and consumers can enjoy and trust the products they buy. To this end, UTZ initiated a certification programme for cocoa in Côte d'Ivoire in 2008. By 2012, the programme covered 189 certificate holders with over 44,000 cocoa farmers and by 2017, there were 425 UTZ certificate holders comprising nearly 330,000 farmers.

This report analyses the contribution of UTZ with cocoa companies to changes in cocoa farmer households in Côte d'Ivoire. The contributions focus on how interventions by UTZ and companies with support from partners in the sector to affect yields, incomes and crops, improve working and living conditions, and better protect the environment. To explore UTZ's contribution claims to impacts at farmer household level, we analysed changes at the level of farmer groups, companies and service providers using a mixed method approach, based on interviews in 2013 and 2017 with cocoa farmers, cooperative managers and companies . In addition we analysed data from UTZ, companies and the literature.

In 2012, UTZ, IDH and Solidaridad commissioned Wageningen University & Research (WUR) to determine the effects of the UTZ certification programme which was supported by IDH and Solidaridad, starting with a baseline study. This endline study was commissioned in 2016 by UTZ, IDH and Nestlé. WUR led the study in partnership with Ivorian research organisation Agricole Local Partener (ALP). This report presents the results of the independent endline survey by the research team. It evaluates the effectiveness of the UTZ cocoa programme and associated programmes by companies implementing UTZ certification in contributing to improvements for UTZ cocoa farmers and cooperatives. Based on this evaluation, the report draws lessons and provides recommendations to improve the quality of the programme.

We are indebted particularly to farmers, cooperatives, companies and partners for their collaboration. We thank our research partner ALP for their hard work, and we gratefully acknowledge the assistance, collaboration and constructive feedback from UTZ and IDH staff in Côte d'Ivoire and the Netherlands.

We sincerely hope that this report provides a relevant reference for UTZ, IDH their partners and stakeholders in the further implementation of certification and sustainability initiatives in the cocoa sector in West Africa.

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Summary

Sustainability issues are urgent in cocoa production in Côte d'Ivoire. The cocoa sector continues to face deeply embedded, interrelated challenges around productivity; low income and working conditions; scaling up grouping and service delivery to farmers; negative environmental impacts; and a tight supply and demand relationship with recession and expansion affecting global market and farm-gate prices.

This report analyses the contributions of UTZ and the interventions of companies implementing UTZ certification with groups of farmers in Côte d'Ivoire. The outcomes analysed are increased yields, improved income, improved working and living conditions, and better environmental protection. UTZ initiated a certification programme for cocoa in Côte d'Ivoire in 2008. By 2012 the programme covered 189 cooperatives comprising over 44,624 cocoa farmers and partnerships with eight companies. In 2017 the programme had grown to 425 UTZ certificate holders comprising 330,000 farmers and seven partners (due to mergers).

In 2012, UTZ, IDH and Solidaridad commissioned WUR to determine the effects of the UTZ certification programme, starting with a baseline study. This report presents a follow-up with the results of the independent endline survey. To explore the expected pathway of impacts at farmer household level, changes at farmer group level, company and service provider were analysed using a mixed method approach, based on interviews in 2013 and 2017 with 944 and 426 cocoa farmers respectively, interviews and data from cooperative managers, UTZ and companies. Using a counterfactual, a statistical analysis and qualitative content analysis, comparisons were made of results for 2013 and 2017, of UTZ compared to non-certified farmers, and of farmers receiving different types of services and service packages, and varying intensity of services.

The results indicate that farmers do gain knowledge and implement good agricultural, social and environmental practices, with knowledge and implementation rates improving between 2013 and 2017, especially for non-UTZ farmers. However, knowledge and implementation rates are still low for both UTZ and non-UTZ farmers. Whilst implementation rates are generally higher than farmer's knowledge, barriers were found for fertiliser application and handling diseased pods.

The extent to which cocoa farmers implement good practices as a result of certification, training and other services, has been mixed and limited. UTZ certification plus service packages have not resulted in changing farmer practices to the extent expected. The intensity of training and services decreased over time, levelling out knowledge and implementation improvements. Non-UTZ farmers have also benefitted from training and services between 2013 and 2017.

The question of whether adopted practices lead to better lives, incomes, crops and environment was answered by looking at four main areas derived from the UTZ theory of change. Farmers receiving high intensity service packages are most impacted. UTZ farmers continue to have significantly higher cocoa productivity than non-UTZ farmers. Changes in productivity on a seasonal basis however are attributed largely to the weather. Over time non-UTZ farmers are catching up to similar yields as UTZ farmers. Farmers generally produce under potential, on average 480 kg/ha, indicating there is still room for major improvement. UTZ farmers had significantly higher net cocoa income per hectare in 2017 than non-UTZ farmers. Total cocoa income per household member/day for 2017 is similar for UTZ and non-UTZ farmers. Cocoa per capita incomes remain low, at USD 1.25 per day.

UTZ farmers have seen improvements in their lives, working and living conditions, whereas non-UTZ farmers have experienced fewer changes. UTZ farmers perceive improvements in water and soil, but non-UTZ farmers note few changes towards a better environment.

Positive spill-over effects were also detected, although not anticipated in the pathway to change, contributing to the impact of certification. Service packages appear to work, with specific packages ('agricultural training + one input' and 'agricultural training +pesticides and fertiliser' packages) being significantly associated with increased productivity and net cocoa income improvement for UTZ farmers.

Although the pathways to impact and change are largely confirmed, there remains a gap between what certification is expected to deliver and what it actually has delivered. Impacts have not been felt by all UTZ farmers, and the level of impacts have generally been marginal for crop productivity, incomes and the environment. Lessons learnt from this study are that:
UTZ certification alone has not led to impacts such as improving farmers' livelihoods beyond poverty levels and assuring social risk-free cocoa. One reason is that productivity and income increases are levelling off, with results suggesting that a ceiling has been reached as productivity increases for UTZ farmer plateauing while non-UTZ farmers are catching up to the levels experienced by UTZ farmers.

Confirming the theory of change, pathways to impacts were largely as foreseen: well-functioning cooperatives formed a vehicle to certification, providing packages of services to members. Training and adherence to the UTZ Code of Conduct generally is associated with better crops, incomes and environmental outcomes and knowledge is applied in practice. There were also unanticipated outcomes at producer and company level and the professionalisation of farmers and cooperatives; increased intensity and broader range of services alongside certification and increased farmer satisfaction with cooperatives. There appear to be positive spill-over effects as non-UTZ farmers come into contact with certified farmers, learn and adopt similar techniques to generate higher productivity and cocoa-related income. Certification has functioned as a vehicle to which services have been attached, enabling an increased intensity and broader package of services to be provided.

Recommendations:

1. Focus on topics that matter most: target interventions to match farmers' demographic, economic and farm characteristics, with tailored mixes of service packages that focus on farmers' specific needs and the most problematic practices relating to child labour, input use, shade trees and waste management.
2. Identify barriers and enablers to improve sustainable cocoa production and livelihoods: current incentives of certification and associated services are insufficient to motivate all value chain actors, requiring investments to close sustainability gaps and reinventing tools to sufficiently and adequately implement and diagnose and address sustainability gaps and underlying causes. This includes tensions of (over)supply and low prices which harm farmer incomes, risk mitigation and accessing more profitable value chains, and enabling access to credit.
3. Combine a high intensity package of Good Agricultural Practice training plus pesticides and fertilisers to have higher impact.
4. Engage with complementary sector level interventions, based on evidence of what works.
5. Facilitate the meeting of bottom-up farmer and top-down industry and government visions.
6. Take a transformational approach to provoke systemic change in the Ivorian cocoa sector.

Introduction

1

Introduction

2013 baseline study of UTZ cocoa in Côte d'Ivoire

From 2012 to 2013 a baseline study was conducted by Wageningen Economic Research in Côte d'Ivoire for UTZ, IDH, Cargill and Solidaridad. The baseline study focused on the effectiveness of the UTZ programme (Ingram, Waarts et al. 2014) and of the Sustainable Trade Initiative (IDH) Cocoa Productivity and Quality Program (CPQP) (Ingram, Waarts et al. 2014) for cocoa farmers in Côte d'Ivoire. This report compares the baseline of farm-level situation in 2013 using indicators on yields, incomes and crops, working and living conditions, and protection of the environment with the situation in 2017. The baseline provided an initial assessment of impacts by comparing different groups of cocoa farmers. The baseline report provided information about the inclusiveness of the UTZ cocoa programme in Côte d'Ivoire and evaluated how certification and related activities affected farmers' knowledge and implementation of good agricultural practices and social and environmental issues in line with the UTZ Code of Conduct. It also assessed the added value of certification. Lessons were drawn from the results, feeding into recommendations to improve the quality and effectiveness of the programme.

What is the contribution of UTZ certification and related activities by companies to the socio-economic development of cocoa famers?

This report analyses the contributions of UTZ and the interventions of companies implementing UTZ Certification with groups of farmers in Côte d'Ivoire. The outcome areas analysed are: increased yields, improved income, improved working and living conditions, and better protection of water courses and the soil. To explore the contribution claims of UTZ at farm household level, the interventions and changes at the level of farmer groups, companies and service providers are taken into account.

This report answers this question about the contribution of UTZ certification and related activities by companies to the socio-economic development of cocoa famers by dividing it into sub-questions related to the UTZ Theory of Change:

1. To what extent do cocoa farmers have knowledge regarding good agricultural practices embodied in the UTZ Code of Conduct?
2. To what extent do cocoa farmers implement these good agricultural practices, and why (or why not)?
3. To the degree that these practices are adopted/implemented, do they lead to improved livelihoods, increased income, improved working conditions, better protection of water courses and improved soil quality?

We focused on three main outcome areas, shown in Table 1.1.

Table 1.1 Outcomes of UTZ certification and related company activities

Outcome areas	
Better lives	
1.	Sustainable practices rewarded by the market
2.	Long-term viability of farmer groups
3.	Child labour and rights
4.	Healthy and safe living and working conditions
Better incomes, Better crops	
5.	Farm efficiency
6.	Cocoa farm yield
7.	Profitability and long-term viability of farmers and groups
Better environment	
8.	Knowledge and practices of Good Agricultural Practices (GAP) affecting soil and water quality
9.	Waste management and reduction (related to cocoa production)

2

Context

Context

This section provides an overview of major changes in the cocoa-related economy, value chain and certification that occurred during the period between the baseline in 2013 and 2017. This context is important to understand possible external influences on the outcomes of UTZ certification and the supporting services provided by companies . Key terms are explained in the Glossary in Appendix 1.

Côte d'Ivoire continues to be the largest producer of cocoa worldwide

About 40% of cocoa produced worldwide comes from Côte d'Ivoire (ICCO 2017) and the country has remained the largest producing country worldwide. Cocoa forms 15% of Ivorian GDP, which is 40% of the nation's export earnings (Verter 2016). Ivorian farmers produced a record harvest of 1,690,000 tonnes of cocoa in 2016/2017, attributed to the favourable weather.[1] There were between 800,000 and 1,200,000 small holder cocoa farmers, and 3,000 registered farmer organisations in 2016 (Hütz-Adams, Huber et al. 2016). Cocoa as a cash crop competes with rubber, coffee and palm oil, and also with on average six subsistence crops: maize, yam, chili, eggplant, cassava and plantain (Schroth and Ruf 2014, Comoé and Siegrist 2015, Laven, Bymolt et al. 2017). Farmers combine food and cash crops with different harvest times and income streams ranging from one off to continuous (Laven, Bymolt et al. 2017). In 2012 and 2013 studies indicate that the average gross cocoa income ranged from USD 2,001 to USD 3,387 with generally few differences between agro-ecological zones. However, the median cocoa income is significantly lower than the mean, indicating that that there are more farmers at the lower end of the income distribution curve (Maytak 2014). In the same period, total cocoa farm household incomes ranged on average from USD 2,826 to USD 4,622 (Maytak 2014). Cocoa farmers generally gain the majority of their income from cocoa, ranging from on average 66% of household income in 2017 (Laven, Bymolt et al. 2017) to 75% in 2016 (EMC 2016). In addition to income from other agricultural crops and livestock, a small proportion (2 to 5%) gains income working as agricultural labourers, in transport and from other sources (EMC 2016).

Sustainability issues still urgent in cocoa production

The cocoa sector continues to face a number of deeply embedded, interrelated challenges, including old trees with low tree productivity; low farmer and worker incomes; pests and diseases such as swollen shoot virus, political instability in some origin countries; persistent poor labour and working conditions; challenges to scaling up service delivery to farmers; negative environmental impacts, such as deforestation, soil degradation and pollution; and a tight relationship between supply and demand in the face of growing demand with long-term cyclical recession and expansion booms affecting global market and farm-gate prices (Ruf and Siswoputranto 1995, Nkamleu, Nyemeck et al. 2010, Matissek, Reinecke et al. 2012, Bitty, Bi et al. 2015, Fountain and Hutz-Adams 2015, Kolavalli, Vigneri et al. 2015, Wilson, Vigneri et al. 2016, Internaitonal Cocoa Inititative 2017, Kroeger, Bakhtary et al. 2017, Muilerman and Vellema 2017). Following the global trend in the cocoa value chain (Ingram, Waarts et al. 2018), in Côte d'Ivoire an increasing number of initiatives have been developed and implemented since 2012, increasingly by combinations of national and international public, private, civil society, NGO and research organisations (see Appendix 2), such as the *Plateforme de Partenariat Public-Privé* (Private-Public Partnership Platform) which has over 100 members (Conseil Café-Cacao 2016)

Concentration in the cocoa value chain

The cocoa trade and processing continues to be dominated by a handful of large companies, with the growing market concentration in the industry worldwide reflected in the situation in Côte d'Ivoire: Barry Callebaut, Cargill, Cemoi, ECOM-Zamacom, Olam (which took over ADM in 2015) and Transmar (who took over COCAF Noble in 2014). Smaller companies include Sucden

[1] News reports Reuters January 2 2017, September 11 2017, December 18 2017

(which took over Transmar in 2017), TNCI and NATRA. Many farmer groups sell to directly to companies and exporters such as Cargill and Barry Callebaut. Of the 93 export licenses granted in 2017/2016, only a handful belong to cooperatives. Farmers also sell to local middlemen called *pisteurs*, who sell on to *traitants*. Cocoa bean trading companies, exporting cooperatives and traitants sell to chocolate manufacturers such as Mars, Nestlé, Mondelēz and Ferrero.

The cocoa value chain, shown in Figure 2.1, has remained traditional in the period 2012 to 2017 in the sense that farmers sell to cooperatives, of which a growing (but still small) number also export directly. The government is involved as a regulator and through ANADER, which trains farmers (see Appendix 2), collaborating with companies, research organisations and NGOs. ANADER receives funding from these partners and the Interprofessional Fund for Agricultural Research and Advisory Services (FIRCA). ANADER has worked with companies such as Cargill, ADM, CEMOI, NATRA, Barry Callebaut and organisations such as IDH and World Cocoa Foundation - an umbrella association of companies, and research organisations such as ICRAF.

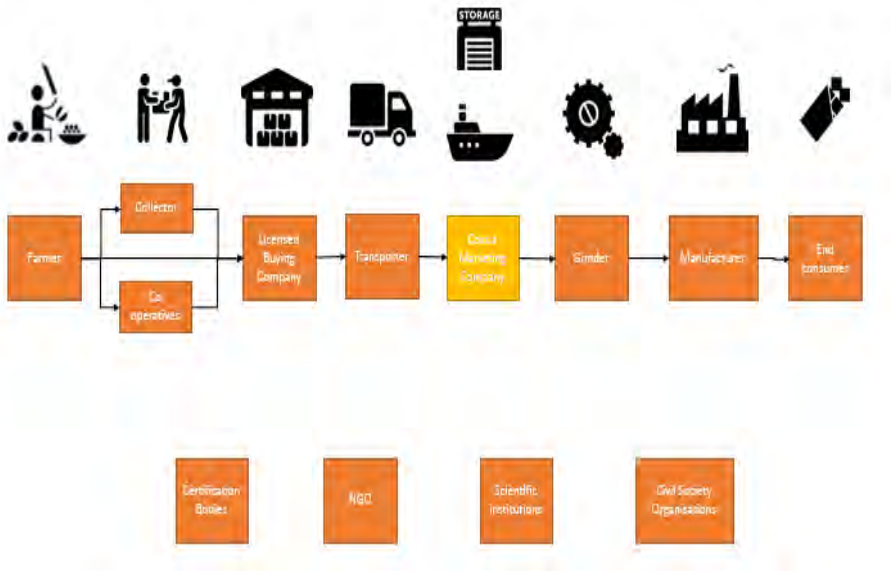

Figure 2.1 Cocoa value chain

Changing and growing nature of certification

Certification of cocoa production in general has continued to grow. The proportion of certified cocoa from Côte d'Ivoire in terms of world market production of certified cocoa beans is high, but the exact proportion is not known and overlaps occur when cocoa has multiple certifications (VOICE Network 2012). In 2011, 55% of certified beans sold globally were certified and the remainder is sold as conventional cocoa (VOICE Network 2012). In 2016, this pattern continued, with less than 50% cocoa produced as certified, actually sold as certified (Fountain 2015).

Table 2.1 Growth of certified cocoa worldwide

	Tonnes certified cocoa			Total tonnes
Year	Fairtrade	Rainforest Alliance	UTZ	
2009	65	13	5	
2010	26			103,696
2011	124	98	214	
2013	176	571	691	1,491,000
2014	218	575	879	
2015	252	491	918	
2016	291	800	1188	
2017		458	1449	

Sources: VOICE Network 2012, Fountain and Hutz-Adams 2015, Fountain and Hutz-Adams 2018

UTZ certified cocoa has seen a similar dramatic growth, shown in Table 2.2, with the majority continuing to originate from Côte d'Ivoire. An estimated 15% of cocoa farmers globally are UTZ certified (UTZ 2017).

Table 2.2 Growth of UTZ certified cocoa worldwide

Year	Tonnes UTZ certified cocoa	Number of UTZ certified farmers	% UTZ certified cocoa from Côte d'Ivoire
2010/2011	70.2	40,032	
2011/2012	214.2	149,436	
2012/2013	534.6	256,111	51%
2015	500,000	190,000	
2016	650,000	260,000	
2017	817,264	744,778	23%

Sources: UTZ 2013, UTZ 2017

Changes in nature of cooperatives

Since 2012 the CCC – with partners such as GIZ - has actively been supporting farmers, particularly women farmers, to register in cooperatives and unions (Conseil Café-Cacao 2016). An estimated 33% (EMC 2016) to 50% (GEFAK 2015) of cocoa farmers in Côte d'Ivoire are organised into groups such as cooperatives. Although a wide range of figures on the number of cooperatives exists, since 2008, the number of farmers registered as members of groups and the number of groups appears to have increased. Around 1,000 cooperatives existed when reforms to the Cooperative Law of 1997 were made[2]. The Coffee-Cacao Advisory Board (*Conseil Café-Cacao,* CCC) recorded 2,310 registered cocoa cooperatives in 2014-15.[3] Other indications are that 1,656 cocoa and coffee cooperatives were registered in 2015,[4] and 1,500 cooperative were registered by the Ministry of Agriculture in 2015[5] and 152 cafe and cocoa cooperatives registered with the Chamber of Agriculture in 2018.[6] The CCC registered 32 cocoa exporting cooperatives in 2013-2014.[3]

There is no single national farmer organisation in Côte d'Ivoire, but unions of cooperatives (UIREVI, ECOOKIM, UCOOPEXCI) and cooperative associations and federations (PMEX-COOPEX, ANAPROCI, Federation of Women Farmers in Cote d'Ivoire) exist. Two international farmers organisations (the World Cocoa Farmers Organisation (WCFO) and International Cocoa Farmers Organization (ICCFO)) have grown since 2014, both with membership bases in the country. As such, there is no unified voice for Ivorian cocoa farmers on a national or international level. Most company interventions are focused on farmers (loosely) organised in cooperatives, while the majority of cocoa farmers remain unorganised. There are few clear strategies to reach these 'high hanging' fruits (Fountain and Hutz-Adams 2018).

Interviews with the managers of non-certified cooperatives in the 2013 sample indicated that some cooperatives had stopped functioning and others had changed their name to revitalise or establish new links with companies and/or to recruit new members. 'Fake' cooperatives[7] have emerged to take advantage of the movement to organise farms and gain access to funding and cocoa supplies. Other changes in the period are that 'pisteurs' have also become certified as 'cooperatives', certifying the farmers supplying to them, providing training and services, for example in Gnato. This approach often aims primarily to secure supply for the pisteur, providing services in return. This differs from the company approach which sought to encourage farmers to form cooperatives and then assisted them to register and manage the cooperative, as was the situation in 2008 to 2013, based on both empowering farmers through certification and services, and securing their supply. Cooperative managers mentioned that in 2017 in areas where there were previously no UTZ cooperatives, these are now common, such as in the areas of Gnato, Tabou and San Pedro. This suggests that pisteurs and traitants are doing the same as companies, namely certification combined with cooperative formation and service provision.

Cocoa prices set by the *Conseil du Café-Cacao*

In January 2012 the CCC was made responsible for the management, regulation, development and price stabilisation of cocoa and coffee production and quality in Côte d'Ivoire (ICCO 2017). The CCC is comprised of representatives of all stakeholders. The CCC introduced major reforms in the form of a single regulatory body and new regulatory system with a focus on the market. This made it possible to have an 'advance' or 'forward' sales structure, so companies have an idea of volumes and prices. The forward sale of 70 to 80% of the next year's harvest occurs through twice-daily auctions. These forward sales auctions – due to end each year in August just before the new crop starts – allow the establishment of a benchmark price for the next crop year. Since January 2012 a price policy has been implemented that sets a minimum state guaranteed price for farmers of 60% of CIF (the price of cocoa plus cost, insurance and freight at the port of destination), with prices announced at the start of the October harvest and valid for one year. Export prices, transport and handling fees were also revised. A stabilisation fund aims to compensate farmers if prices decrease over the year.

[2] http://news.abidjan.net/h/472622.html
[3] http://www.conseilcafecacao.ci/docs/2015/dossier_type_dagrement_societe_cooperative.pdf
[4] http://www.inphb.edu.ci/site_old/Magrinn%20-%20125%20z!25/pdf/repertoire%20des%20acteurs%20socioprofessionnels/cooperatives%20secteur%20cafe_cacao_c%c3%94te%20d%27ivoire.pdf
[5] http://www.agriculture.gouv.ci/
[6] http://icoopaci.ci/visiteureq.php
[7] https://www.confectionerynews.com/Article/2017/12/07/Cemoi-CEO-urges-consumers-to-pay-more-for-sustainable-chocolate, https://www.confectionerynews.com/Article/2017/11/28/Fake-cooperatives-Cocoa-farmer-groups-warn-of-sham-fair-trade-co-ops

Decreasing world market prices between 2016 and 2017, influencing farmers in Côte d'Ivoire

External market factors influence prices in Côte d'Ivoire. World prices are determined by the London Futures exchange, where the cacao price has generally been high since recovering from the low in 2012. Ivorian farmers received 53% of the ICCO (similar to Free on Board (FOB)) price for cocoa in 2014/2015, which amounted to USD 3,057 a tonne in the 2014/2015 cocoa year (Oomes, Tieben et al. 2016). In 2017 it was around 60% of the value at which the CCC has been able to make these pre-sales (Fountain and Hutz-Adams 2018). The trend of gradually rising prices continued since 2012 and reached a six-year high in July 2016. In February 2017 prices slumped dramatically to around €1,576 a tonne,[8] in reaction to high production globally in the 2016/2017 season. Despite the stabilisation fund, the record 2016/2017 harvest led to a price crisis, reducing farm-gate prices for the first time since 2012 by 36%.[9, 10, 11] The CCC reduced farm-gate prices by 36% at the mid-crop pricing in April 2017. The low price demotivated farmers, some of whom did not harvest their cocoa[12] and caused political commotion as some companies stopped buying from farmers and/or did not pay the guaranteed price. The response by the CCC to avoid further price fluctuations, disruption to supply, and economic and political crisis was to sell 400,000 tonnes of the 2016/17 cocoa mid-crop harvest exclusively to locally based grinders via special auctions from January 2017 onwards,[13] aiming to avoid over-selling and to halt further price decreases.

Regulated farm-gate prices lower than in non-regulated countries

The farm-gate prices of the Ivorian regulated system have been on average 20% to 25% lower than in other cocoa-producing countries with non-regulated prices (Oomes, Tieben et al. 2016). This is in contrast with farmers' perceptions, as the farm-gate price increased from 2012 to 2016 reflecting price developments in the world market (Oomes, Tieben et al. 2016).

Environmental degradation

Environmental problems have continued to plague the Ivorian cocoa sector since 2014, particularly ongoing deforestation, especially in protected forests, decreasing biodiversity and increasing soil degradation (Bitty et al. 2016, Higonet et al. 2017, Ruf and Varlet 2017, Kroeger et al. 2017, Noble 2017). Soil degradation is associated with ageing plantations, inappropriate use of fertilisers and pesticides and a low soil organic content (Ruf, Tanoh et al. 2016, IDH 2017). Initiatives to address deforestation and degradation started largely just after the data-gathering period of this study and include a November 2017 Cocoa & Forests Initiative 'Cadre d'Action Commune – Côte d'Ivoire' agreement between cocoa and chocolate companies, WCF, IDH and the government to address deforestation and degradation, which will closely align with the and a proposal for a Reducing Emissions from Deforestation and Degradation (REDD+) initiative (see Appendix 2).

Weather and climate continues to have major impacts on yields

Annual weather patterns have a major influence on cocoa productivity and quality (Zuidema, Leffelaar et al. 2005, Ojo and Sadiq 2010, Eberhard Krain 2011, Läderach 2011). In 2016 the weather was generally favourable across the main central and coastal production zones with sufficient rain, sun and light winds producing a bumper crop.[14, 15] However, excessive rain also contributed to disease in some areas.[16] All the focus groups and cooperative managers in 2013 and in 2017 also confirmed the role of weather fluctuations, shown in Figure 2.2. Future climatic changes are predicted to influence productivity with some areas becoming unsuitable (Lagunes and Sud-Comoe), some remaining suitable - if farmers adapt to the new conditions - and some areas where cocoa is currently not grown becoming more suitable (Läderach 2011).

[8] https://tradingeconomics.com/commodity/cocoa
[9] https://www.bloomberg.com/news/articles/2017-03-30/ivory-coast-cuts-cocoa-price-36-in-blow-for-biggest-grower
[10] https://www.reuters.com/article/us-cocoa-icco/world-cocoa-sector-could-be-in-surplus-for-years-icco-idUSKBN16M377
[11] https://gro-intelligence.com/insights/ivory-coast-cocoa-prices
[12] http://www.reuters.com/article/us-cocoa-ivorycoast-idUSKBN18R1OU
[13] https://www.reuters.com/article/cocoa-ivorycoast/update-2-ivory-coast-to-reserve-400000-t-from-cocoa-mid-crop-for-grinders-idUSL8N1D249H
[14] https://www.reuters.com/article/us-cocoa-ivorycoast-weather/weather-good-for-ivorian-main-cocoa-crop-despite-price-concerns-idUSKBN14G126, https://www.bloomberg.com/news/articles/2017-04-03/pothole-puddles-spell-trouble-for-cocoa-with-record-ivorian-crop, https://www.reuters.com/article/us-cocoa-surplus/supply-glut-risk-as-cocoa-expansion-plans-backfire-idUSKBN16S266
[15] https://www.cnbcafrica.com/news/west-africa/2016/08/10/rain-sunshine-boost-ivory-coast-cocoa-crop-prospects/
[16] https://www.reuters.com/article/us-ivorycoast-cocoa-weather-idUSKCN10X180

Year	Sun	Rain	Other events	Disease	Summary
2013	Intermittant	Favourable			Favourable
2017	Too dry	Favourable Uncertain	Too hot		Unfavourable

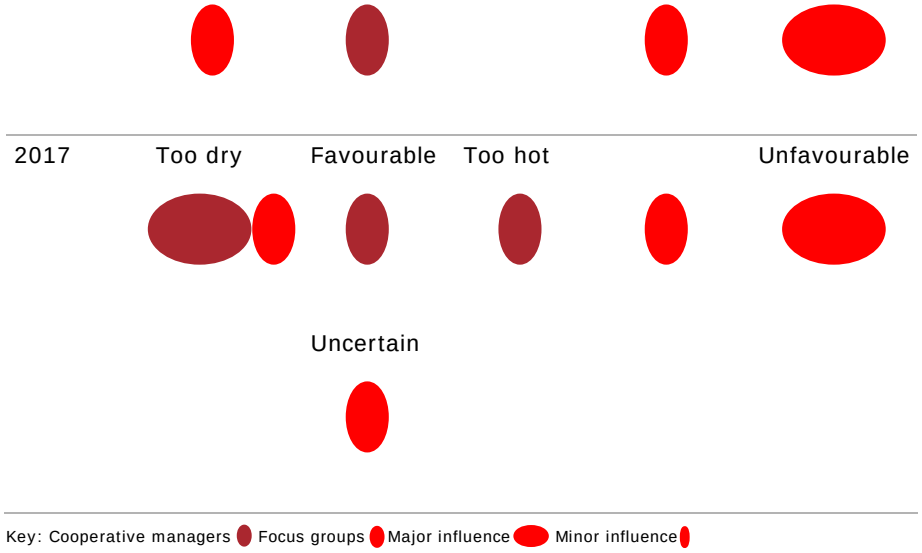

Figure 2.2 Influence of the weather on cocoa productivity, 2013 and 2017
Source: Cooperative managers, Focus group discussion

3

UTZ theory of change

UTZ theory of change

An impact logic (also known as a theory of change) is a tool to understand and visualise the rationale behind a programme, the causal relationships between a programme's activities and its intended outcomes at farmer level. The UTZ theory of change concerns the pathways that interventions and activities by UTZ, partners and services providers expect will result in impacts.

Pathways to enhancing the sustainability of cocoa production

Figure 3.1 shows 'How UTZ works' and depicts (on the left side) the main requirements of UTZ certification and the associated Code of Conduct. Once all UTZ requirements are met and all programme aspects are finalised, the right side shows the expected outcomes and impacts of UTZ certification. These are based on UTZ' 'big picture' approach to make the production of cocoa sustainable. The main impacts expected are enshrined in UTZ's slogan of 'Better farming, Better future'.

Figure 3.1 How UTZ works

A focus on outcomes at farmer level

Although the entire UTZ programme is broader (e.g. by working with other actors in the supply chain), this impact evaluation focuses at farmer and farmer group (cooperative) level. Impacts may have been influenced by external factors and have been considered in this study. The impact logic starts with the actions and interventions of the programme and leads to expected changes in farmers' situation, focusing on knowledge and practices of farmers, which are intermediate outcomes. These are influenced directly by the UTZ programme. Actions by UTZ and partners (e.g. training in GAP) are expected to contribute to ultimate outcomes. It is foreseen that there may be unintended effects of certification not captured by internal management systems and audits, and therefore this evaluation also asked open questions about both intended and unintended effects.

A notable assumption in the theory of change is that training and an internal management system (IMS) lead to more professional farmers through better farm management and risk management, and contributes to improved farm resilience by reducing farmers' vulnerability to external shocks, such as adverse weather affecting yields. Also that training and support at cooperative level leads to stronger and professional farmer groups and traitants. In the UTZ Ghana cocoa programme (Waarts et al. 2015), professionalisation was an explicit indicator, based on the assumption that increased professionalism (i.e. increased profitability and long-term risk assessment of farmers and farmer groups) leads to greater productivity and income – and that compliance with UTZ Code and GAP (including IMS) leads to professionalisation.

UTZ Theory of Change revised

UTZ revised its general Theory of Change (Figure 3.2), in part due to revisions to its Code of Conduct in 2014. A new Core Code of Conduct was released in 2015, with different versions for individual and for group-certification, and a product-specific Cocoa Module was published in 2015. Comparing the intervention logic formulated in 2012 and shown in Figure 3.2 to the new

theory of change relating to farmers and farmers groups developed in 2017 – shown in Figure 3.3, the impact pathways, outcomes and impacts have not changed dramatically. The main changes concern:

- More concise terminology.
- New specific knowledge requirements (e.g. decrease in the mandatory number of shade trees).
- A requirement for a child labour monitoring system.
- Gender inclusion is now more specifically addressed.
- The 2017 sector-level focus and UTZ partnership programme is reflected in other, separate UTZ ToCs about policies, supply chains and consumers.
- New certificate holders such as 'traitants', with very large volumes of cocoa beans and large numbers of farmer and their 'pisteur' suppliers.
- Stronger cooperatives that change their trading partner when they do not receive a good price, provide members with services without interventions or support from buying partners or export directly to manufacturers, or decide to not rely on companies to support and finance certification but to finance it themselves.
- Recognises the cascading supply chain interventions from chocolate manufacturers (i.e. Mars, Nestlé, Mondelēz and Ferrero) that make contractual agreements with companies about supplying certified beans – which affects company's interventions.
- Service providers such as ANADER are now recognised in the supply chain ToC.

Using the impact logic to evaluate pathways to impact

In 2012, with UTZ, IDH, Solidaridad and Cargill we identified the expected pathways for change and represented these in a Theory of Change diagram (Figure 3.2). We also reflected upon what would have happened had certification not (or otherwise) been implemented (see Ingram et al. 2014). This counterfactual considers changes which might have resulted from other interventions or the external context (e.g. weather, economic development, policy changes etc.). In 2017, the 2013 Theory of Change was compared to the revised UTZ Theory of Change, shown in Figure 3.2, to see how programmes had changed. External influences were also assessed in 2017, discussed in Section 2 on the context.

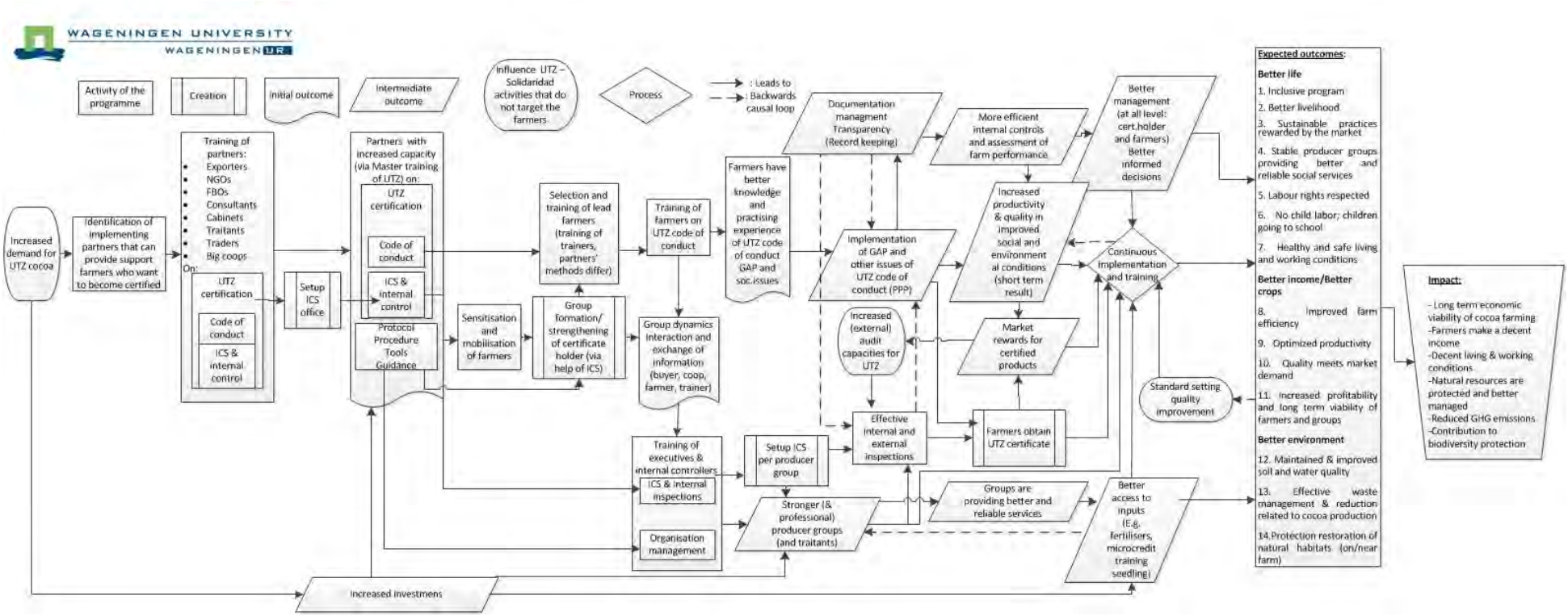

Figure 3.2 Theory of Change 2013
Source: Ingram et al. 2014

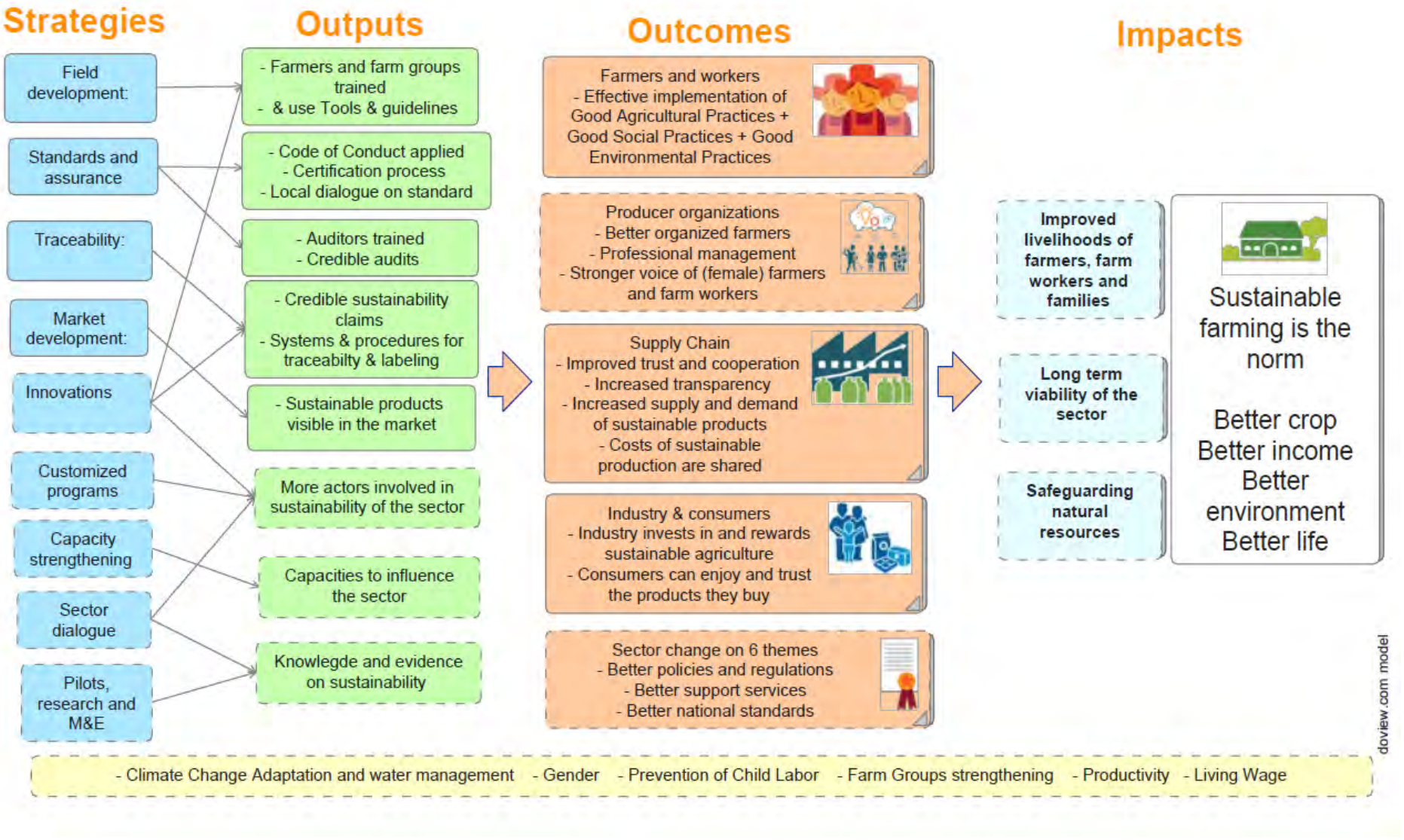

Figure 3.3 UTZ Theory of Change 2017
Source: UTZ 2017

4

Methodology

Methodology

4.1 A plausible counterfactual and theory of change to evaluate impacts

Impact evaluation requires a strong counterfactual design

The aim is to show the impact of UTZ certification and associated company interventions on behavioural changes, the socio-economic development and perceived environmental impact for certified farmers. This is based on the theory of change (Chapter 3) and a counterfactual: What would have happened if farmers were not UTZ certified? We constructed the counterfactual by comparing data from UTZ and non-UTZ farmers in 2013 and 2017, shown in Figure 4.2. This conventional impact evaluation approach compares 'treated' (UTZ) to 'non-treated' farmers to disentangle the role of UTZ. However, UTZ certification is not a one-size-fits-all 'treatment'. Different farmers received different packages of services alongside certification, such as training, agricultural inputs and/or credit. As all farmers in the process of certification in 2013 were fully certified by 2017, we evaluated the associations between the types of services farmers received and different outcomes.

The counterfactual builds on different data sources and analyses

The strategy to identify a good counterfactual depended on the availability of a pool of (comparable) non-certified farmers in 2013 and 2017. This was a challenge because the growth of certification was not known or predictable in 2012. Given this development and the fact that UTZ is not a one size fits all approach, we constructed the counterfactual using a combination of approaches:

1. Comparing data from UTZ farmers in 2017 to UTZ farmers in 2013;
2. Comparing UTZ farmers to non-UTZ farmers in 2013 and 2017;
3. Comparing UTZ farmers and different intensities of services received (see chapter 6); and
4. Using qualitative data to explain changes over time and differences between groups (UTZ versus non-UTZ, or between different service intensities).

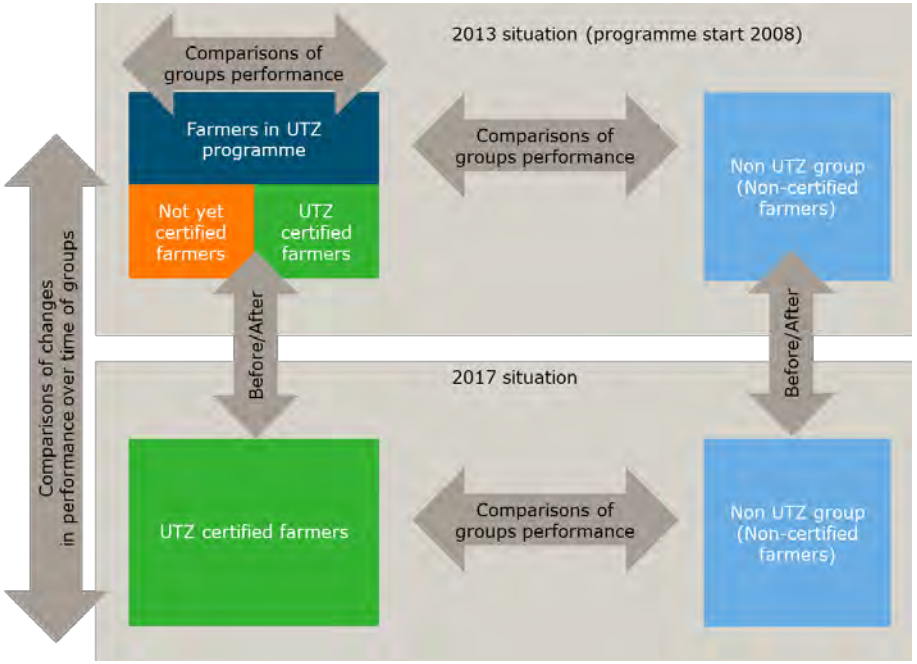

Figure 4.1 Evaluation methodology

The actual counterfactual is fuzzy

The counterfactual is fuzzy because there are different 'treatments' (UTZ Certified farmers + a company services) and/or 'control' (non-certified) farmers. The outcome indicators (such as knowledge of and adoption of certain practices) for certified and uncertified farmers cannot simply be compared, because farmers with certain characteristics (e.g. more experienced farmers) might be part of particular groups (e.g. certified farmers since a long time related to a certain buying company). Often, these characteristic are also related to the outcome indicators.

Comparing just certified versus non-certified is not a robust methodology

Certification impact studies have often compared the outcomes of certified farmers to non-certified farmers. This assumes that non-certified farmers have not changed in the absence of the certification. However, this is often not the case, since there have been numerous interventions in the cocoa sector in Côte d'Ivoire (see Chapter 4 and Appendix 2), many of which are similar to UTZ and corporate interventions, and some of which are provided by the same service providers. UTZ and company's interventions therefore may not only directly influence certified farmers, but may indirectly influence non-certified farmers. Attention to potential spill-over effects and unexpected effects is therefore a critical part of this study.

Variation of services is taken into account

To credibly evaluate the contribution of UTZ to the outcome indicators we proposed to estimate the 'Total Programme Effect' (Elbers et al. 2009, 2014). This approach does not rely on the comparison of a fixed treatment group to a control group, as this is only feasible in a well-defined 'project' in terms of space and scope, but uses the heterogeneity in treatment or treatment intensity in a sample to model in a regression the contribution (partial correlation coefficients) of different types/combinations of services on the outcome (e.g. income, productivity). This method controls for the fact that some farmers are more likely to have received certain interventions. This is done using regression analysis of changes in outcomes variables (e.g. income) on changes in control variables (e.g. age) and changes in interventions (e.g. receiving a training, being certified etc.).

Effect of service intensity analysed for UTZ farmers only

An estimation of the total programme effect was however not possible given the limited variation in a) services received, particularly by non-UTZ farmers and b) farmers characteristics. However, as there was sufficient variation in services received among UTZ farmers, this was used to analyse differences among UTZ farmers and the contribution of different service packages. Given the limited variation in the sample, we could not calculate the total programme effect for all farmers, only for UTZ farmers using dummy variables for different service packages.

4.2 Representative sample of UTZ farmers

The sample of farmer groups is representative

Farmer groups were selected randomly using criteria of certification location and company (see Figure 4.1). Location refers to agro-ecological zones (excellent, good and marginal, see Läderach 2011 for details), with cooperatives randomly distributed across the country in three agro-ecological zones to ensure that the influence of suitability of the area for cocoa growing is captured. UTZ farmers are classified as those farmers that have been supplying to UTZ certified cooperatives in both 2013 and 2017. The sample, shown in Table 4.2, is representative of UTZ farmer groups in Côte d'Ivoire despite the fewer cooperatives and farmers in 2017.

Figure 4.2 Map of locations of sampled farmer cooperatives

Table 4.1 Sample of farmer groups and companies in 2013 and 2017

Company (2013)	Number of farmer groups	Company (2017)	Number of farmer groups
ADM	2	-	-
Barry Callebaut	4	Barry Callebaut	1
Cargill	60	Cargill	20
Cocoaf Ivoire	9	Transmar	1
Natra	1	SCOOPADIS	1
Olam	4	Olam (ADM)	6
Zamacom	6	ECOM (Zamacom)	3
#	3	#	4
CEMOI	2	CEMOI	1
##	6	## Z	8
Total	97	Total	45

independent cooperatives not attached to a company, ## Cooperatives not part of a company program.

A sample of 426 farmers provides the basis for impact evaluation

Shown in Table 4.2, in 2013 944 farmers were sampled and interviewed, and 426 of the same farmers were interviewed in again 2017: this strengthens the statistical analysis by being able to look at change for individual farmers. Many studies conclude on impacts based on a sample of around 150 to 200 for separate programme components. Rarely are regressions based on sample sizes of more than 500; when impacts are not detected with a sample of this size, the impact is likely to be very small. To enable a meaningful analysis of the variance in the sample within budget constraints, the sample was reduced from 944 to 500, with 426 finally reached. The reduction in statistical power to the sample of 426 is relatively small.

The initial selection of farmers was random, but we added farmers in a non-random way to obtain a sufficiently large sample as we experienced an attrition rate of 23% (see Limitations section) of the original sample. This attrition rate was high compared to neighbouring Ghana (Waarts, Ingram et al. 2015). In the verification meeting stakeholders attributed this to the context of large-scale migrations within Côte d'Ivoire related to the conflicts, civil wars and livelihood opportunities. This explanation is similar to that given in other studies (Crook 2001, Ruf 2001, Woods 2003). There is large mix of ethnic groups in the sample, with up to 8 to 13 different ethnic groups farming cocoa in the main cocoa regions, according to the 2013 baseline (Ingram et al. 2014). A large-scale study in 2016 (EMC 2016) also found on average 84% of cocoa farmers were Ivorian, and 16% natives of mainly neighbouring countries.

Table 4.2 Farmer sample

Farmer's certification status	Sample in 2013	Status in 2017	Sample in 2017
UTZ in 2013 and 2017[1]	788	606	339[#]
UTZ in 2013 - Non UTZ in 2017[*]		166	5
Non-UTZ in 2013 - non-UTZ in 2017	156	156	79
Unobtainable [**]		16	237
Total	944	944	426

[1] Same farmers interviewed 2013 & 2017.

* Not used in analysis.

\# Includes: 129 farmers (in 10 cooperatives) in Nestlé Cocoa Action and 498 farmers (2 cooperatives) in Mars programmes.

** Unobtainable due to travel (10%), sick or dead (4%), migrated (3%), refused interview (3%), had destroyed or finished their cocoa farm (3%), or not accessible due to security or road problems (1%).

The 2017 group of farmers is representative for the full 2013 sample

Table 4.3 shows the characteristics of the farmers in the baseline and endline sample (the matched sample). Overall, the subsample matches the baseline sample as most key characteristics are similar. This was tested using regression models for each variable. Farmers interviewed in 2017 differ in three aspects: in the 2017 sample more farmers were in the 'Good agro-ecological zone', own a larger portion of their land and have a slightly higher share of cocoa income in their total gross income. These differences do not bias the overall representativeness of findings.

Table 4.3 2013 baseline and 2017 endline farmer characteristics

Variable	Baseline (N=944)	Endline (N=426)
Female	4%	3%
Farm size (ha)	5	5
Ownership***	81%	90%
Age oldest plot (in 2013)	22	22
Age (in 2013) of the farmer	47	46
Excellent agro-ecological (Zone 1)	47%	50%
Good agro-ecological (Zone 2)**	32%	38%
Marginal agro-ecological (Zone 3)	12%	12%
% cocoa of gross income***	89%	93%
% cocoa farm in production	90%	92%

Valid counterfactual as UTZ and non-UTZ farmers are comparable

The comparison between UTZ and non-UTZ farmers is only reliable if the farmers were comparable before starting with UTZ certification. UTZ certification was not allocated randomly: companies targeted farmers and largely supported them to form groups if they were not already organised in the period 2008 to 2013 and then provided support. We compare farmers on basic characteristics as the 2013 situation of farmers was already influenced by a selection bias by company partners. Table 4.4 shows there are some significant differences between UTZ and non-UTZ farmers, but the differences are limited in size. Non-UTZ farmers have significantly smaller household sizes, smaller farm size (through relatively more under ownership), are older, are more often living in agro-ecological zone 2 or 3, and were less dependent on cocoa as a source of income in 2013.

Table 4.4 2013 sampled farmer characteristics

Variable	Non-UTZ farmers	UTZ farmers
Female	4%	3%
Household size***	7	8
Farm size** (ha)	4	5
Ownership*	85%	77%
Oldest plot (years)	23	22
Age*of the farmer	52	50
Agro-ecological Excellent (Zone 1)	51%	50%
Agro-ecological Good (Zone 2)**	49%	36%
Agro-ecological Marginal (Zone 3)***#	0%	15%
Share of cocoa income***	82%	93%
Share cocoa as total land area***	48%	66%

there are no non-UTZ farmers in zone 3, but this has limited consequences for comparison.

See Glossary Appendix 1 for explanation of statistical significance (*, ** and ***) used in tables.

4.4 Impact and outcome changes as indicators

Producers and cooperatives are the focus of the impact evaluation

The impact evaluation focuses on farmer and cooperative level and evaluates the changes and effects at outcome and impact level. Indicators are the point of departure in choosing the questions to be asked to farmers and cooperative managers. The intervention logic assumes that a certain change at farmer household level leads to the desired outcomes and impact. A cocoa farmer household survey provides the means to test this logic. The intermediate steps are covered by measuring behavioural changes (knowledge and implementation of GAPs and the UTZ Code of Conduct). Quantitative and qualitative data were collected on outcome areas concerning productivity and profitability. The assumptions underlying this logic are shown in Table 4.5. Statistical analyses and qualitative content analyses are used to test the underlying assumptions and the logic itself.

Table 4.5 Theory of Change assumptions

Result
Better life
• Better working conditions and respect for workers and children's rights contribute to a better livelihood and improved standard of living.
• Training and awareness rising, peer pressure and inspections mean that labour rights are respected and prevent child labour, in line with ILO standards (such that children are not conducting hazardous or heavy work, not working during school hours etc.). These factors, together with improved income, contribute reduce child labour.
• Training and criteria on safe practices and safe handling and storage of agrochemicals and agrochemical waste lead to healthy and safe working and living conditions. Together with better access to emergency and primary healthcare this contributes to improved health.
Better crops
• GAPs implemented as a result of training and compliance with certification requirements lead to increased productivity, with a better crop leading to better economic prospects.
• Training, information, inputs and other services are provided to farmers and/or their cooperatives.
• Lead farmers are appointed and trained, farmers organised in cooperatives
• Enhanced knowledge on GAPs due to the training received
Better income
• Improved crops lead to increased production, which leads to increased income.
• Training leads to farmers becoming more entrepreneurial.
• Increased income is invested in the farm (production) and/or improving the standard of living (housing, sanitation, healthcare, education, etc.). Improved farmer profitability and improved farmer resilience, contributes to improved long-term economic viability of farms.
Better environment
• Training on GAP and on safe practices, handling and storage of agrochemicals and agrochemical waste, cocoa waste management and reduction lead to reduce environmental impact compared to conventional production. A better environment will result, where water and soil quality is maintained and improved and natural habitats and biodiversity on and near farm are protected and restored.
• Improved productivity and production efficiency contribute to reduced pressure on land and reduced GHG emissions per unit of produce.

Data collection on a wide range of farm and farm characteristics

The impact and outcome changes were translated into measureable indicators, shown in Table 4.6 and in detail in Appendix 5. All these indicators were used for both the baseline and endline impact evaluation, except for the indicators on farmer inclusiveness and quality, which in agreement with UTZ were not assessed in 2017. Data on the selected indicators was collected from nine different sources, shown in Table 4.7.

Table 4.6 Indicators

Indicator	
Better life	
1.	Farmer characteristics
2.	Programme inclusiveness
3.	Livelihood and standard of living
4.	Sustainable practices rewarded by the market
5.	Stability of cooperatives, services provided and access to market
6.	Labour rights
7.	Child labour and rights
8.	Healthy and safe living and working conditions
Better income, Better crops	
9.	Cocoa production efficiency
10.	Productivity
11.	Quality
12.	Profitability and long-term viability of farmers and groups
Better environment	
13.	Soil and water quality
14.	Waste management and reduction (related to cocoa production)
15.	Protection and restoration of natural habitats (on/near farm)

Table 4.7 Data collection sources

	Data source								
Data source	**Farmer questionnaire**	**Coop manager interview**	**Focus group discussions**	**Company interviews**	**Service provider interviews**	**Company data**	**Stakeholder interviews**	**UTZ data**	**Literature review**
Number interviews	**426**	**14**	**14 115 people**	**7**	**2**	**10**	**2**	**1**	
Indicators									
Better life									
Farmer characteristics, Market, Groups, Livelihoods, Rights, Living & working conditions	√	√	√	√		√		√	√
Better income, Better crops									
Farm efficiency, productivity profitability	√	√	√	√	√	√	√		√
Better environment									
Soil & water quality, Waste management, Protection natural habitats	√	√	√					√	√

4.5 Mixed data collection with household survey as key tool

Questionnaires pilot tested

The endline questionnaires were adapted from the questionnaires used in the baseline in 2013, which were based on the theory of change and resulting indicators and literature on the impact of comparable interventions. The main sections in the farmer questionnaire are shown in Table 4.8. The 2017 questionnaires were discussed and refined following discussions with UTZ and IDH from December 2016 to March 2017. Twelve enumerators and two supervisors were trained and the farmer questionnaire was pre-tested in the field in April 2017. The farmer questionnaires were conducted by ALP from May to October 2017 in French and local dialects by research partner ALP. The other questionnaires were conducted by ALP and Wageningen Economic Research staff from December 2016 to October 2017.

Table 4.8 Topics in farmer questionnaire 2013 and 2017

Section		Topics
A.	Farmer households	Gender, age, ethnicity, household size, education
B.	Cocoa production	Farm area, age, measured farm, own/leased land, certified production, selling price and buyers
C.	Efficiency & productivity	Changes in production, reasons
D.	Production costs	Labour costs per activity, input costs, equipment costs
E.	Certification	Changes in certification, premium received (nominal and a % of total price), training received in last year
F.	Profitability and livelihood	Changes in livelihood, perceptions of certification, sources and level of household income, use of cocoa income, satisfaction with farming, cooperative and livelihood
G.	Market reward	Future of cocoa farming, wishes for children
H.	Implementation of GAPs	Level of implementation of specific GAPs on production, environment & working according to the UTZ Code of Conduct, topics addressed in training
I.	Labour working conditions	Knowledge and implementation of labour rights
J.	Knowledge of GAPs	Level of knowledge of specific GAPs in the UTZ Code of Conduct on production, environment & working environment and addressed in training

Combining and triangulating using nine quantitative and qualitative sources

Qualitative and quantitative data from the questionnaires, interviews, discussions, companies and UTZ was triangulated. During the verification meeting, the participants also triangulated and interpreted the findings, particularly when different data sources provided different results. The conclusions regarding the spill-over effects (the overall effect/influence of UTZ) were also addressed based on findings from the cooperative manager interviews, focus group discussions, company interviews and in the verification meeting.

4.6 Advanced data analysis to build counterfactual

Providing insights into cocoa farmers using simple descriptive data

Data from the household survey were provided to Wageningen Economic Research in Excel format in August 2017. Data were analysed with the statistical software STATA. To give an accurate and realistic representation of the situation we looked into mean, median, standard deviation and minimum and maximum values for indicators (see Appendix 4). We compared these outcomes for different service packages and intensities and compared UTZ certified to non-UTZ certified farmers.

Identifying other influencing factors using advanced statistical models

Advanced regression analyses are used to test the robustness of these results taking into account differences in terms of a limited set of personal, household and farm characteristics (as presented in Table 4.4) and agro-ecological zone. This helps to build the counterfactual in combination with qualitative data to explain observed differences, or lack thereof. These analyses also give us insight into other influencing factors on indicators of interest. While this is not the main aim of this study we report on this for the key indicators. Additional robustness tests were done by adding the number of years the cooperative has been UTZ certified and using different analysis methods. Where the analyses produced strong statistical significance, this is reported in the text and noted in tables - see the Glossary in Appendix 1 for details.

Analysing outcomes for different service intensities to establish a plausible counterfactual

For each indicator we analyse data for two different samples. The first sample is the entire sample including UTZ and non-UTZ farmers. We analyse the absolute differences between UTZ and non-UTZ farmers in 2017 and analyse the changes since 2013. The second sample only includes the UTZ farmers. We do the same analysis (2017 situation and changes since 2013) but for the different service intensities and packages received by UTZ farmers. For this analysis we exclude the non-UTZ farmers, as the group of non-UTZ farmers with higher intensity services levels is too small for any advanced statistical analysis. The results of the main regression analyses on household and farm characteristics are presented in in Appendix 4.

Combination of econometric models to test robustness

Advanced regression analysis were used to test the robustness of results taking into account the limited variances in farmer, household and farm characteristics (see Table 4.4) and agro-ecological zone. This helped to build the counterfactual in combination with qualitative data to explain differences, or lack thereof. These analyses also give insight into other factors influencing the indicators, which are reported on for key indicators in Appendix 4, comparing UTZ with non-UTZ farmers, and comparing UTZ farmers by service intensity.

Gaining insight into changes at cooperative level, interventions and changes at farm household level using qualitative data

Qualitative data were transcribed from interviews and coded based on the indicators, then analysed using content analysis and some simple statistical techniques.

Validation workshop with stakeholders

In March 2018, the results were shared and validated during workshops in Abidjan and in Amsterdam with staff from UTZ, IDH, companies and government stakeholders in the Ivorian cocoa value chain. These discussions were used to further interpret and validate the findings.

4.7 Caveats and limitations

As the main primary data collection method has strengths and weaknesses in terms of the validity of conclusions that can be drawn, the methodology used in 2013 was revised to countervail limitations and weaknesses identified (see recommendations in Ingram et al. 2014). Some additional limitations were identified in this follow-up research. The major limitations of the study are:

- **Relying on survey data** The basis of the study continues to rely on a questionnaire to farmers. This method has inherent problems as it relies on short term memory recall by farmers and possible recollection error, no or poor recordkeeping, interpretation bias and perceptions, particularly of environmental changes which often occur at different timescales compared to livelihood changes (Angelsen, Larsen et al. 2011). This means the data are subject to recollection error and interpretation bias. However, this bias probably also occurred in 2013.
- **Confusion on certification status** Farmers still occasionally appeared confused about their certification status and from whom they had received training. This has been related to the existence and status of 'fake cooperatives' (see chapter 2 on the Context). To circumvent this we used cooperative level data to determine the certification status of farmers.
- **Attrition and de-certification** Almost a quarter of the farmers were excluded from the follow-up research as their cooperatives are no longer UTZ certified. In addition, attrition was high among farmers that still supplied to UTZ certified cooperatives. This means that the farmers of the 2017 certified subsample may not have been entirely representative for all the farmers who have been UTZ certified at a point in time. While the groups are comparable on key characteristics, they may differ in unobservable ways. The certified sample may have an optimistic bias if it so happened that unsatisfied or less motivated farmers dropped out. But it may also have a pessimistic bias, in case the more successful or satisfied farmers have dropped out. To partially address this issue, we interviewed managers of cooperatives who had stopped being UTZ certified, and used UTZ data to explain the reasons why.
- **Definition of service intensity focused on short term** While the analysis of service intensities - in addition to the traditional *with and without UTZ* - is an improvement, it is still limited. Especially as we rely on the use of services at household level for the last year. However, it may be argued that services provided in earlier stages of certification, in the period 2014 to 2015 or even

before, may have delayed effects for some indicators – in particular in terms of yields. For other indicators, the effect may have already occurred after one year, and farmers may not have received services in the last year, while the effects persist (e.g. in terms of practices). We tested the relation to service use in 2013 and find that there were considerable changes in service intensity experienced by farmers in 2012/2013 and 2016/2017. We did not gather data from farmers for the in between period (2014 and 2015) in 2017, based on the assumption that recall would be poor.

- **Spill-over effects not considered in the household analyses.** While data at farm household level shows limited service intensity among non-UTZ farmers compared to UTZ farmers, 60% still received one or more services in the last year. The interpretation of spill-over effects (e.g. the influence of training and information from other sources on the performance of non-UTZ farmers) was taken into account through qualitative data analysis, literature and feedback from the verification meeting.
- **Major differences in labour costs between 2013 and 2017.** This can be explained by several factors. It could be that farmers in the 2013 baseline underestimated the time worked and/or had trouble remembering the amount of time they worked. To address this issue in 2017, the survey questionnaire was changed so that farmers were asked how many days they worked rather than how many hours. Also more categories of labour were added, in response to the answers given in 2013 and insights about labour from the UTZ Ghana study (Waarts et al. 2015). There were two categories of children (instead of one) differentiating between two classes of child labour, and additional categories for other adult family labour (i.e. being helped by neighbours, and abusan). In the baseline survey farmers were asked about their own labour, for children below the age of 15, and hired labour. It appears that the lower number of categories meant that farmers under-reported the labour days spent in total on the farm, in comparison to the more precise reporting in 2017. This has consequences for a meaningful interpretation of the change between 2013 and 2017 for income-related variables and total labour costs. The changes to the questionnaire appeared to result in a more realistic response in 2017 when cross-checked with time spent by farmers reported in other studies (Neale 2016, Vigneri, Serra et al. 2016). A result, only 2017 labour costs and input-out ratio are reported on.

Cocoa farmer characteristics

5

Cocoa farmer characteristics

This chapter presents the general socio-demographic characteristics of the farmers, their farm and production characteristics. The only notable differences between UTZ and non-UTZ farmers in 2017 are in terms of cocoa production.

5.1 Socio-demographic characteristics

Farm size increased slightly but not consistently

The total farm size in 2017 varied widely for both UTZ and non-UTZ farmers, from 1 ha to 43 ha. On average, UTZ farmers owned 4.4 ha in 2017 and 4.1 ha in 2013. Non-UTZ farmers owned 3.8 ha compared to 3.4 ha in 2013. These changes from 2013 to 2017 and between UTZ and non-UTZ farmers are not statistically significant. The total cocoa farm size in production in 2013 was 4.4 ha and in 2017 4.7 ha (both estimated by the farmer and measured using a GPS) and 5.0 ha in 2017 compared to 4.9 in 2013 (for only measured farms). The increase from 4.4 to 4.7 ha is not statistically significant. The increase in the area of measured farms is statistically significant. There was no correlation between farm size and farmer's age, but a correlation was found between farm size and the age of main farm. This means that for every year the main farm exists, the average size of the cocoa farm increased by 0.06 ha.

Continuing gendered cocoa farm activities

The focus group discussions indicated that in the period 2013 to 2017 there were hardly any changes in terms of types of activity men and women conducted on farm. There were however changes in the activities perceived as suitable for children on cocoa farms (in 2017 stated as 'fetching water and playing').

Decrease in number of farmers with multiple certification

In 2013, of the farmers participating in the UTZ programme, 21% were also Rainforest Alliance certified and 2% were both UTZ and Fairtrade certified. This reflected a general trend where as of June 2012, 51% of the 86 UTZ cooperatives had multiple certifications. In 2017 in contrast, 9% were Rainforest Alliance and 5% were Fairtrade (FLO) certified. UTZ data on the multiple certification status of farmer groups indicate that in August 2016 28% of cooperatives were multi-certified, with 24% UTZ and Rainforest Alliance and 7% both UTZ and Fairtrade. According to farmer survey data in 2017 5% of farmers who were UTZ certified were also Fairtrade certified and 9.3% were both UTZ and Rainforest Alliance certified.

Table 5.1 Key cocoa farmer socio-demographic characteristics (2017)

Indicator	Unit of measurement	Results						Significant difference [a]
		Mean	Median	Standard deviation	Minimum	Maximum	Number of respondents	between UTZ certified & non-UTZ certified farmers
Age	Number of years	50	50	11.52	27	92	418	Not significant
Gender	% male	97%					418	Too few women for meaningful analysis
Household size	Number	8	8	3.39	0	18	418	Significant (UTZ 8 non-UTZ 7)
Number of persons the farmer takes care of	Number	12	11	6.63	0	52	418	Weak significance (UTZ 12.6 non-UTZ 11)
Position HH	91% household head, 4%: wife, 2.2% other adult, 3.1% child						423	Not analysed
Particular position in community	Traditional authority 63%, religious leader 9%, family or clan head 1%, cooperative 9%, lead farmer 4%, company 1%, youth group leader 14%, School teacher 1%						176	Not analysed
Migrant status	10% first generation immigrants (92% Burkinabé, 8% Malian), 10% 2nd generation immigrants (92% Burkinabé, 8% Malian), 80% Ivorian						623	Not analysed
Ethnicity	28 ethnic groups: of total Baoulé 46%, Attie 24% Guéré 6%, Bété 5%, Senoufo 3%, others >1%						623	Not analysed
Membership cooperative	Number: 423						418	Not analysed
Farm ownership	% 77% founder, 18% inherited, 4% administrator, 0.2% owner, 0.7% other.						425	Not analysed
Number of cocoa farms	Number	1.57	1	0.81	1	6	425	Not significant
Cocoa farm size (all farms)	Hectares (estimated by farmers or measured)	4.78	4	4.03	0.02	40	413	Not significant
Cocoa farm size (all farms)	Hectares (measured only)	4.99	4	4.16	0.5	40	336	Not significant
Age of main farm	Number of years since establishment	23.70	21	11.38	4	72	319	Not significant

All data from 2017, except data marked with # from 2013 baseline.

See Glossary in Appendix 1 for definition of statistical significance.

6

UTZ' and partner's programmes and services

UTZ' and partner's programmes and services

This chapter presents information on the UTZ programme in Côte d'Ivoire and the sustainability programmes and services offered to farmers and their cooperatives as part of certification by UTZ' partners, the companies and IDH.

6.1 UTZ programme

UTZ starts in Côte d'Ivoire in 2008

In 2007, UTZ launched its cocoa programme with founding members Cargill, ECOM, Heinz, Mars, Nestlé and Ahold and the not-for-profit organisations Solidaridad, Oxfam Novib and WWF. The first pilots in Côte d'Ivoire started in 2008 (two projects with Cargill and two with ECOM). After stakeholder consultations, the UTZ Good Inside Code of Conduct for Cocoa was launched in June 2009 and the Cooperative Agricole de Fiédifoué (CAFD) and Coopaga were certified in August 2009. In November 2009 the first batch of UTZ cocoa arrived in Amsterdam. By December 2009, one more farmer group was certified and 5,400 tonnes had been produced by UTZ cocoa farmers. In January 2010, the Chain of Custody (CoC) and corresponding labelling was finalised and an interim traceability procedure installed and the first UTZ chocolate products appeared in the market: Baronie Easter Eggs, KitKat Australia, Cocio and AH chocolate bars and chocolate letters in Dutch supermarkets.

Continued growth of UTZ programme in Côte d'Ivoire

By June 2012 the UTZ programme covered 189 cooperatives, with 86 cooperatives certified, comprising over 44,624 cocoa farmers, and there were partnerships with eight companies in Côte d'Ivoire. By December 2016, there were 258 UTZ certificate holders with 193,444 group members in Côte d'Ivoire, 28 of which are Chain of Custody UTZ certificate holders. Although the number of certificate holders has been stable, the certificate holders have become larger in terms of the number of members. In 2013 UTZ started certifying private buying companies (known as *traitants),* who buy large volumes of cocoa, at approximately 67% of cocoa purchases, often through a network of local buyers, known as *pisteurs* (EMC 2016). UTZ certified beans have grown exponentially in volume year on year: in 2015 total sales volume was 400,000 tonnes and 300,000 tonnes in 2014. There has been a 72% increase in UTZ cocoa sales from Côte d'Ivoire, with 374 tonnes in 2015, 218 tonnes in 2014, and 199 in 2013 and less than 100 in 2012. In 2016 UTZ cocoa comprised about 6% of total Ivorian production which reaches the market as certified.

In 2015 UTZ registered an Ivorian office, developed a new Code of conduct for cocoa – with Ivorian contributions, and implemented training via the UTZ Academy Online, training all 89 CCC staff in field on the UTZ programme. In 2016 the office grew with 3 new UTZ staff and the start of the Sector Partnership Programme and other projects.

In 2016 UTZ developed a new training strategy to support certification, and trained 363 men and women. The training focuses on 'training the trainers' in the value chain such as exporters, companies and service providers such as the National Support Agency for Rural Development (*Agence Nationale d'Appui au Développement Rural*, ANADER) and consultants. UTZ does not directly train producer organisations, traitants and farmers, but sometimes the cooperative managers (responsible for the Internal Management System) participate in UTZ training.

Quantity of UTZ cocoa beans increases

There has been continued growth in sales of UTZ certified cocoa from almost all origin countries, except for Ghana and a continued major growth in sales from Cote d'Ivoire, shown in Figure 6.1. As of June 2012, UTZ data indicated that 51% of the UTZ certified cooperatives had UTZ and another sustainability certification (all Rainforest Alliance). In December 2016, 11% of cooperatives had multiple certification (8% Rainforest Alliance and 2% FairTrade).

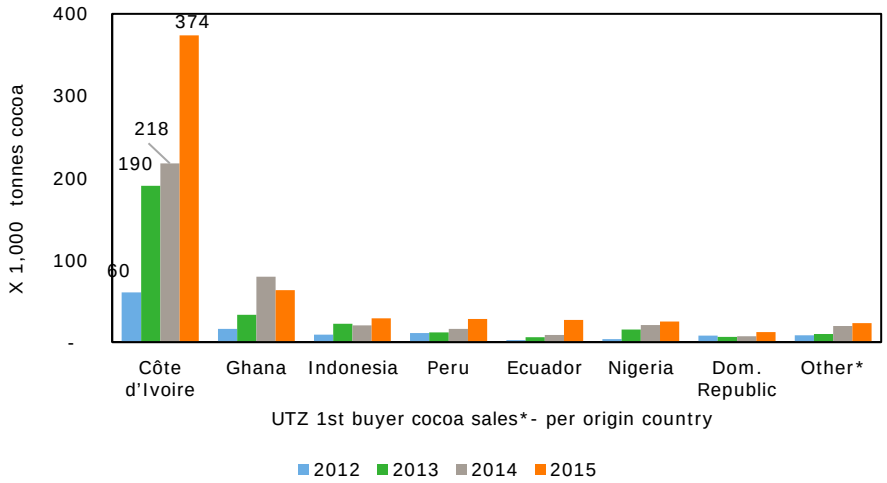

Figure 6.1 UTZ cocoa sales per origin country, 2012-2015
Source: UTZ data 2016.

23% of cooperatives no longer UTZ certified

UTZ[17] reported that globally 9% of all certificate holders had dropped out of the programme in 2011, 12% in 2012 and 25% in 2013. In 2014 in Côte d'Ivoire, 23% of the 218 certificate holders (farmers) dropped out, mainly due to not being able to sell their certified beans, when companies did not renew contracts to purchase certified beans and due to financial problems.

Interviews with the managers of two cooperatives in the 2013 sample who had dropped out of UTZ certification, also indicated that cooperatives stopped being certified because when they were no longer supported by a company; because the cooperative stopped functioning and members sold to other cooperatives or *pisteurs*. This cooperative later restarted with a new name and arranged and paid for its certification. Other cooperatives had temporary problems and stopped, for example when they didn't implement corrective measures after an audit and were suspended, but later recertified. Another cooperative manager indicated that their members were now focusing on coffee rather than cocoa, and so cocoa certification was less important for them.

[17] Drop out analysis UTZ Cocoa programme, July 2015

Changes in farmers being certified

Interviews with UTZ and companies indicated that farmers who have been certified since 2014 differ from those who joined the early years of the UTZ programme: being now attached to *traitants*, having different backgrounds from the early entrants which do not have such close collaboration or as intense level of services.

6.2 IDH Cocoa Productivity and Quality Programme

The Dutch government-funded Sustainable Trade Initiative (IDH) aims to accelerate and up-scale sustainable trade by building impact-oriented coalitions of multinationals, civil society organisations, governments and other stakeholders. Through co-funding and convening public and private interests, strengths and knowledge, IDH aim to create shared value for all partners. The objective is to make sustainability the new norm and contribute to achieving the Sustainable Development Goals. The Cocoa Improvement Programme (CIP1) was a public–private partnership 50% funded by IDH running from 2008 to December 2012. IDH convened and aligned parties accounting for approximately 30% of the chocolate market and focused on the largest producer countries: Côte d'Ivoire, Ghana, Indonesia, Nigeria, Cameroon and Ecuador. The CIP1 aimed to be a major force behind the up-scaling of certification, strongly promoting UTZ, increased market demand for certified chocolate, the institutionalisation of sustainability in the sector, and the dissemination of innovative sustainability practices.

The IDH Cocoa Productivity and Quality Programme (CPQP) sought to catalyse large-scale positive impact and stimulate innovations on effective farmer support and improved production by mainstreaming the results of the CIP1 and ran from April 2011 to 2015. The CPQP aimed to assist large numbers of smallholder cocoa farmers to move out of poverty and make the transition to running viable businesses for sustainable cocoa production. The CPQP promoted a variety of tactics and tools to create change in cocoa production, focusing on four tools: good agricultural practices (GAPs), input provision; standards systems (certification), and farmer aggregation and financing mechanisms. The CPQP focused more on service delivery models and fertilisers than the CIP1. The €7 million CPQP provided match-funded capital through a competitive grant process

that advances the cocoa market in the areas of quality, productivity, professionalisation of farmers and their organisations, total quality standard systems, financing, and coordination and alignment The CPQP aimed to train more than 50,000 farmers and certify over 30,000 farmers, to produce over 64,000 tonnes of certified cocoa and make UTZ Certified cocoa widely available on the international market. The CPQP therefore assisted in the growth of UTZ certification and is relevant to this study. The CPQP aimed to bring together partners to cover over 40% of the worldwide cocoa processing industry and 30% of worldwide chocolate manufacturing businesses. It involved local governments, UTZ, Solidaridad, UNDP, WCF and WWF and private sector participants including Ahold, ADM, Armajaro, Barry Callebaut, BT Cocoa, Cargill, Continaf, ECOM, Ferrero, Friesland Campina, Mars, Heinz, ICCO, Nestlé, Swiss Contact, Oxfam Novib, Petra Foods (Delfi) (IDH 2012). The majority of cocoa companies collaborating in the CIP1 and CPQP collaborated in this study, shown in Table 4.1.

The IDH Cocoa Fertilizer Initiative (2012-2017)[18] started as part of the CPQP. It aimed to restore soil fertility to key cocoa growing regions in Côte d'Ivoire, limiting farm expansion and deforestation, and ultimately enabling farmers to improve their livelihoods by turning cocoa farming into a sustainable business, by increasing the availability of high-quality cocoa fertiliser at an affordable cost to cocoa farmers. The initiative led to large scale private sector fertiliser 'workstream' initiatives through CocoaAction, a World Cocoa Foundation-hosted sustainability strategy platform of large chocolate and cocoa companies. The Cocoa Fertiliser Initiative assisted companies (ECOM, Mondelez, CEMOI and Barry Callebaut) and the CCC and fertiliser suppliers to improve fertiliser distribution to cooperatives; and training. Cargill was also supported with coaching farmers on fertiliser adoption. Research was also conducted on soil fertility and fertiliser application effects and associated variables. Results reported by IDH (2017) included that companies have set targets on volumes of fertiliser to be distributed to farmers; the price of fertiliser has decreased by approximately 20% through leveraging supply chain interactions; innovations in the private sector occurred, seeking to tackle risk sharing; partnerships between supply-chain partners, financiers, and coops have created new models to deliver fertiliser to the farmers; and insights to soil status and mapping and rejuvenation have been made, leading to new studies.

[18] https://www.idhsustainabletrade.com/initiative/cocoa-fertilizer-initiative/

The IDH Cocoa Learning and Innovation Program (CLIP) followed up the CPQP, from 2016 and runs to 2020. It focuses on learning and innovation, productivity, farm and coop investment, developing financial products for cocoa sector; cocoa farmer nutrition in collaboration with 8 companies in CdI and Ghana and the NGOGAIN; and on forest conservation though a landscape level programme that focuses on forest cover, land use planning in the Tai forest area located in south western Côte d'Ivoire bordering Ghana, and farmer livelihoods.

6.3 Company programmes and services

UTZ certification accompanied by company sustainability programmes

UTZ certification has been implemented in Côte d'Ivoire through partnerships with eight companies in the period 2008 to 2013. Due to the merger of ADM and Olam and the cooperative SCOOPADIS obtaining a permit to export beans rather than sell through NATRA, there were six company partners in 2017. These companies have working relationships with the cooperatives from which they purchase cocoa beans. All the companies have corporate social responsibility programmes, summarised in Table 6.2, which include certification as well as other interventions. Of the farmers participating in the UTZ programme, 9% were also Rainforest Alliance certified and 5% were both UTZ and Fairtrade certified. This reflects the general trend: as of June 2012, 51% of 86 UTZ cooperatives had multiple certifications and by August 2016 28% were multiple certified, with 24% UTZ and Rainforest Alliance and 7% both UTZ and Fairtrade. Both prior to, and during the UTZ certification programme there have been and continue to be services provided as part of the programmes which address many issues covered by UTZ. An overview of relevant activities is provided in Appendix 2, see also Hatløy (2012).

Changes in the nature of company programmes over time

Figure 6.2 provides an overview of the services provided by companies participating in the UTZ programme. Services such as cooperative capacity building, farmer training, farmer development, financial support, community development and processing related activities were foreseen in the theory of change to potentially impact the key indicators. The table highlights the differences between company approaches to implementing certification as a

standalone activity or as part of a package of services. It also shows that since 2014 companies have focused more on providing agronomic, farm inputs (pesticides, fertiliser, herbicides, seedlings, protective equipment etc.), finance, seedlings and community services, and less on farmer training and certification. This is because cooperatives have been certified for at least five years, making such support less of a priority.

Table 6.1 Company cocoa sustainability programmes

Company	Programme	Period	Details
ADM	Socially and Environmentally Responsible Agricultural Practices Programme	2001-2014	70 cooperatives, 22,000 farmers, UTZ, RA and Fairtrade Certification.
Barry Callebaut	Quality Cocoa for a Better Life programme Quality Partner Program, Forever Chocolate	2010 2017-date	Partnership with cooperatives since pre 2008, 92 cooperatives, 77,000 farmers. Includes one of largest traitants. UTZ & Fairtrade & RA certified.
Cargill	Cocoa Sustainability Program, Cocoa Promise	2003-2012 2012-date	113 cooperatives UTZ certified
Cocoaf Ivoire	-	2010	UTZ, RA and Fairtrade
Transmar	-		7 certified cooperatives
Natra	-	2010-	UTZ certification, 1 cooperative
Olam	Olam Livelihood Charter Cocoa Action charter	2010-date	350 cooperatives stopped multiple certification. UTZ certified
SCOOPADIS	-	2006	3,000 UTZ certified farmers of 15,000 members
ECOM Zamacom	Akwacao (agronomy division)	2008	2,000 certified RFA & UTZ
CEMOI	Transparence Cacao	2009 2016	11,500 farmers, certified RFA & UTZ

Sources: Company interviews (n=7), Service provider interviews (n=1).

UTZ certified farmers receive a higher intensity of services

The number of services provided is termed 'service intensity'. Nine farm level services were identified from the company and farmer questionnaires:

- Finance
- Agricultural (GAP) training
- Cooperative training
- Management training
- Social training
- Access to fertiliser, seedlings or pesticides via cooperative
- Free farm inputs (such as fertiliser, pesticides, farm equipment and personal protective equipment).

Table 6.3 shows the intensity of services reported as received by farmers in the last year. This measure of service intensity captures only short term effects. However, services provided in 2014 to 2015 and even earlier, may have delayed effects for some indicators – in particular in terms of productivity, as changes to agricultural practices such as pruning, mulching, fertiliser application, planting new trees or grafting may only be manifested in productivity changes between one and up to four years later (Binam, Gockowski et al. 2008, Ruf and Agkpo 2008, Baah 2010, Fan, Brzeska et al. 2013, Maro, Mrema et al. 2014). For other indicators, outcomes maybe occur after one year, and farmers may not have received services in the last year, although the effects of services provided persist (e.g. in terms of knowledge learnt continuing to influence practices)(Daniel, Guest et al. 2011).

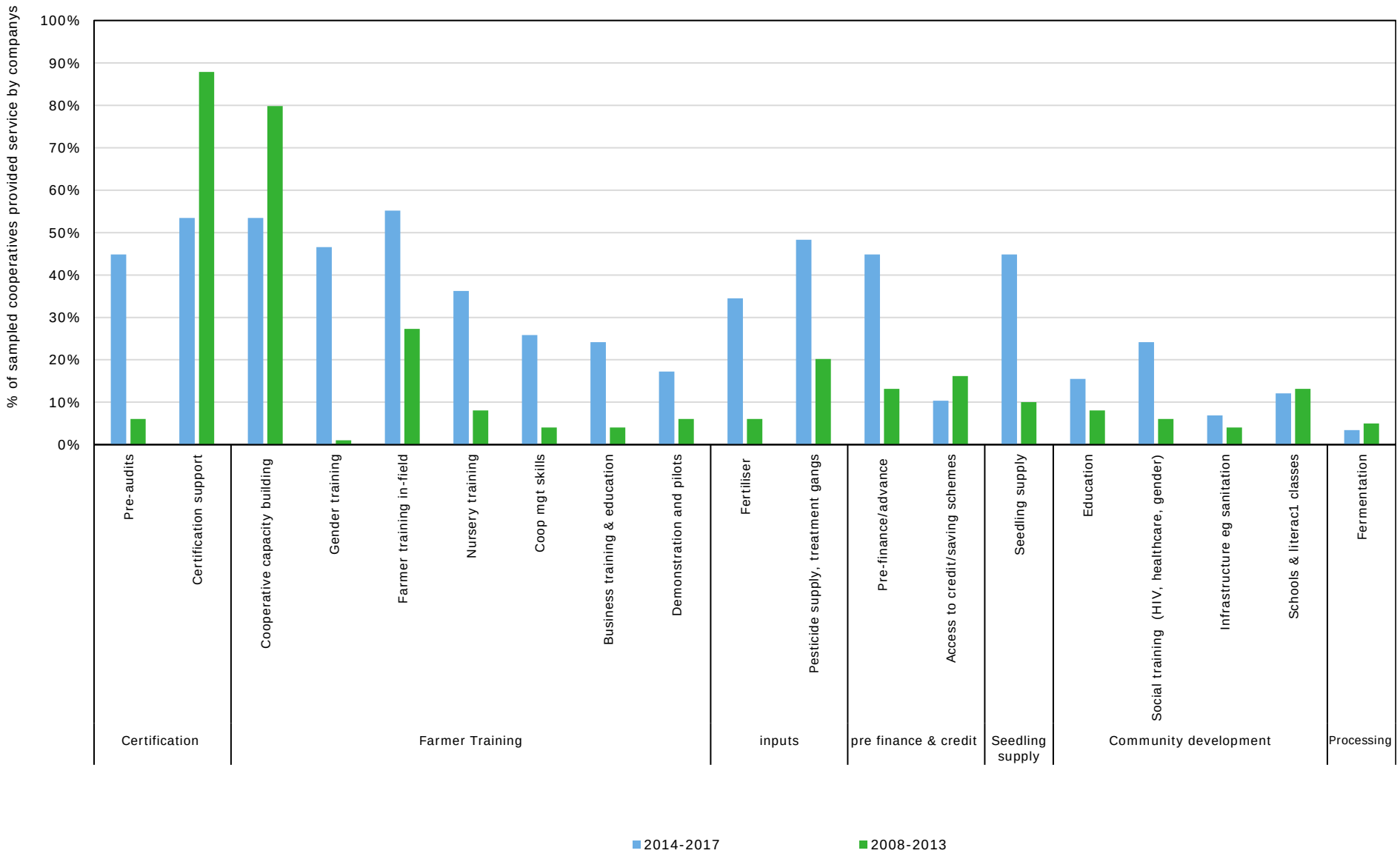

Figure 6.2 Services provided by companies to cooperatives

Sources: Company interviews (n=7), Service provider interviews (n=2).

Table 6.3 shows that the majority (85%) of UTZ certified farmers received two to five or more services. Free inputs and agricultural (GAP) training were given in all levels of service intensity. Social and management training were services provided mostly in the higher service intensities. One-third of UTZ farmers received inputs (fertilisers or pesticides) and agricultural training.

Table 6.2 Intensity of services provided to cooperatives

Service intensity	UTZ	Non-UTZ
No services	5%	38%
1 service	9%	38%
2/3/4 services	38%	21%
5 or more services	47%	4%

Source: Farmer questionnaires (n=339).

Service intensity is not significantly related to certification timescale

Table 6.3 shows the correlation between years of certification (of the cooperative) and the service intensity to farmers in the last year, which it is not statistically significant. The tendency is that farmers in cooperatives certified for 5 years or longer receive more services, but the intensity of services tends to decrease significantly after seven years.

Table 6.3 Differences in service intensity and years certified

Years cooperative certified	Number of farmers	Number of services	1 service	2/3/4 services	5 services or more
5	39	0%	0%	41%	59%
6	60	7%	10%	38%	45%
7	133	3%	8%	35%	54%
8	76	11%	13%	37%	39%
9	30	7%	10%	57%	27%

Source: Farmer questionnaires (n=339).

Five service packages identified

The combinations of services reported as provided by companies and received by farmers, termed a 'service package' were analysed. Only UTZ farmers were analysed because the number of non-UTZ farmers receiving different services was too small for statistical analysis. Five service packages were found, shown in Table 6.5. Whilst 5% of UTZ certified cooperatives had received no services at all (shown in Table 6.3), 11% of the certified farmers had received no agricultural services, shown in Table 6.4.

Table 6.4 Service packages provided by companies via cooperatives to farmers

Service packages	% of UTZ farmers
No agricultural services	11%
Agricultural training only	14%
Pesticides AND/OR fertiliser (no agricultural training)	12%
Agricultural training AND (pesticides OR fertiliser)	31%
Agricultural training AND pesticides AND fertiliser	32%

Source: Farmer questionnaires (n=339).

Significant and large decrease of service intensity over time

Forty per cent of UTZ farmers received the same level of service intensity in 2013 as in 2017, 13% experienced a higher intensity, and 47% a lower intensity. The largest portion of UTZ farmers (29%) shifted from high intensity (>5 services) to 2 to 4 services. There were considerable changes in the intensity of the package of services received: 20% of UTZ farmers experience the same intensity of services provided, 25% an increase in intensity, and 55% a decrease. More farmers now have access to pesticides, but less have received agricultural training.

Reduction in training and service intensity related to farm characteristics and time certified

Farmers with higher importance of cocoa (income and share) in 2013 experienced less reduction in the intensity of services received. Farmers who are certified longer, experienced a higher reduction in the intensity of services received. During the verification meeting, this was explained as usually at the start of certification a farmer is supported more and this support decreases over time because 1) the cooperative and farmer become fully certified (2) the service programme ends or changes 2) services are not (longer) required by the farmer or cooperative, i.e. a farmer feels they have has received sufficient training or the training is not tailored sufficiently to the farmers needs. Whilst farmers' scores on knowledge and implementation of the UTZ Code of Conduct and GAP (see Results chapter and Appendix 6 for details) indicate that either more knowledge (e.g. via training) or different or more incentives are needed, farmers experience barriers to the implementation of practices due to the (additional) labour and resources required.

Key farm characteristics are similar for different intensities of services provided, except for age, zone and time certified

Table 6.6 shows key characteristics of UTZ farmers who have received different service packages. While differences exist, most are not significant (statistical significance is indicated with asterisks, see the Glossary in Appendix 1 for details), implying that the profiles of farmers receiving services are similar, except for differences in age (older farmers receive less services), for farmers in the marginal agro-ecological zone 3 (less services in less favourable cocoa zone 3) and the length of time a cooperative has been certified (decreasing level of services by cooperatives certified for a longer period).

Table 6.5 Key farmer characteristics and service intensity

Variable	No services	1 service	2/3/4 services	5 or more services
Female	0%	3%	5%	2%
Household size	8.50	8.27	8.41	8.57
Farm size	6.53	4.12	5.11	5.62
Farm ownership	89%	87%	78%	72%
Oldest plot	24.78	22.17	21.75	21.53
Age***of farmer	54.78	55.10	50.55	47.89
Agro-ecological zone1	39%	47%	55%	47%
Agro-ecological zone2	28%	33%	33%	39%
Agro-ecological zone3*	33%	20%	12%	14%
Share cocoa	94%	89%	92%	94%
Years cooperative certified**	7.44	7.33	7.05	6.83

Source: Farmer questionnaires (n=339).

7

Results per outcome

Results per outcome

Better income, better crop

7.1 Sustainable practices rewarded by the market

More farmers received premiums albeit at a lower amount than in 2013

Twenty-six per cent of farmers reported selling to their cooperative mainly because of the price. Farmers also sell to *pisteurs* if they need cash, especially urgently. Only UTZ farmers received premiums for certified cocoa. more UTZ farmers report having received a premium in 2017 (77%) than in 2013 (58%). The premium ranged from CFA 30 to 50/kg, on average CFA 38/kg, 4.2% of the average annual selling price. The premium in 2017 was statistically significantly lower than in 2013, when the average was CFA 45.5/kg.

Forty-two per cent of cooperative managers indicated that the premium doesn't cover the costs of certification and that it takes on average 20 years for cocoa to be profitable (ranging from 5 to 25 years). Both cooperative managers and farmers said they have no influence on the premium paid by companies to the cooperative. Cooperatives and farmers do influence the percentage of the premium shared by the cooperative and farmer, which is generally decided during the cooperative's General Assembly.

UTZ reported that 76% of the certified cocoa was sold as certified and that certified cooperatives receive on average €84/tonne (CFA 55,020/tonne) premium.

Average seasonal cocoa selling prices were CFA 700/kg and 1100 CFA/kg in 2017

Farmers report that they were generally paid CFA 700/kg for dried cocoa in the low season (*petite trait*) and CFA 1,100 /kg main season (*grande trait*). This corresponds with the price set by the CCC in the period. Farmers occasionally sell at lower price to 'pisteurs' if in need of urgent cash or credit. Most companies pay out premiums twice a year, coinciding with major periods of farmer household expenditure, such as the new school year. Fifty per cent of cooperative managers indicated that the buying price has not changed due to certification.

Price remains a major motivation

The main reason farmers gave for their cooperative to sell to a particular company was the price. Training and credit were mentioned second and third. Forty-three per cent of farmers gave more than one reason, while 56% said they did not know why.

Increase in contract security and competition

Twenty-one per cent of cooperative managers indicated that there have been more buyers since 2016, with 14 mentioned in total, and 50% said they have more long-term buying commitments since 2016.

Post-harvest practices result in good cocoa quality

Twenty-eight per cent of focus group discussions reported quality increases. Farmer scores on post-harvest practices and quality were high. UTZ farmers scored 0.8 out of 1 in 2017, with non-UTZ farmers catching up to 0.7. There were no significant differences between 2013 and 2017 or between UTZ and non-UTZ farmers. Cocoa quality improvements were attributed by stakeholders in the verification meeting largely to the CCC reform in 2013. Training given to farmers to assure and improve drying - as part of GAP may also have contributed.

7.2 Farm efficiency

Unusual farmer's labour costs

The total labour days reported by farmers in 2017 are much higher than in 2013 – see limitations discussed in the Methodology section. As a result of this difference, only labour costs and input-out ratio for 2017 are reported on.

Benchmark data for time spent on cocoa farming activities vary widely, also reflecting different data gathering approaches. Neale (2016) estimated 600 adult farmer labour days on cocoa in Ghana in 2014, based on an assumed 6-day working week and two non-working weeks per year. Vigerni and colleagues (2016) reported that in Côte d'Ivoire most labour on cocoa farms is carried out by adult men, while children contribute a small proportion of farm labour (around 5% of total household labour days used) and that average daily wages are between CFA 2,000 and 3,000 (USD 4 to 6), just above the national minimum agricultural daily wage of CFA 2,000. Using a similar methodology to this study, they calculated that on average 11 person-days per hectare of labour were used on farms of over 5.9 ha, which is less than one-fourth of the 48 person-days reported by farmers with farms of less than or equal to 1.70 ha. Vigneri and colleagues (2016) also found that labour productivity increases at higher land quartiles, however comparing yields by land quartile suggests that the increase in labour productivity does not fully compensate for the decline in labour use. In Côte d'Ivoire, fewer labour days (both household and hired) are used per hectare as land size increases, suggesting a potential labour constraint for farmers with larger landholdings.

No difference between UTZ and non-UTZ farmers' economic efficiency of inputs and hired labour

A farmer's average economic efficiency (also known as the ratio of output to inputs) is calculated as gross income divided by total production costs. The higher the ratio the more efficient the farmers are (i.e. more output with the same input). Eighty per cent of all farmers had access to or used inputs – the same for UTZ and non-UTZ farmers. There was no significant difference between the efficiency of non-UTZ and UTZ certified farmers when controlled for other factors. The input-output ratio for both non-UTZ and UTZ farmers was 2.8 in 2017 (see Table 7.1). This means income from cocoa farming is 2.8 times higher than input costs. The input costs of cocoa production include all labour costs (i.e. both farmers own labour and family labour (non-hired labour) and hired labour), plus farm input costs.

Table 7.1 Input-output ratio 2017

	Mean	Median	Std. Dev.	Min	Max	N
Input-output ratio	2.8	2.0	2.7	0.1	20.2	324

UTZ farmers receiving a higher intensity of services have higher economic efficiency than farmers receiving fewer services

UTZ farmers who received full service package have significantly higher efficiency ratios, shown in Figure 7.1. This implies that complete agro-service packages work well, making farmers more efficient.

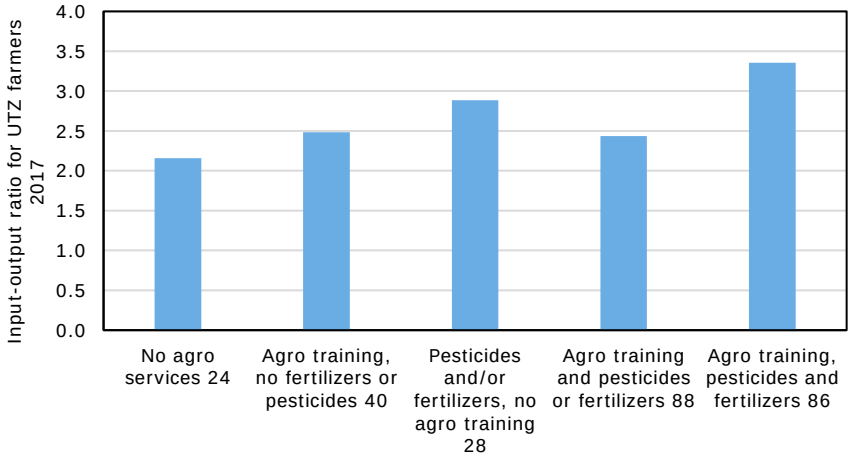

Figure 7.1 Farmers' input-output ratios

7.3 Cocoa farm productivity

Cocoa yield per tree could not be measured as most farmers (still) do not know number of cocoa trees (98% of all farmers in 2013 and in 2017).

UTZ farmers continue to have significantly higher productivity

Productivity is defined as cocoa yield per hectare. Farmers' reports on yields and (measured and estimated) farm size are based on recall and where available, on records such as sales receipts. UTZ farmers had significantly higher productivity in 2013 and in 2017 than non-UTZ farmers, shown in Figure 7.2. However, the average yield of UTZ farmers stayed the same between 2013 and 2017, whilst non-UTZ farmers' productivity has increased considerably with 143 kg/ha on average. Since non-UTZ farmers' productivity increased, the difference in productivity between UTZ and non-UTZ farmers has become significantly smaller. Though the productivity gap between non-UTZ and UTZ farmers has become smaller, the upper range of productivity, shown in Figure 7.2, is significantly higher for UTZ than non-UTZ farmers.

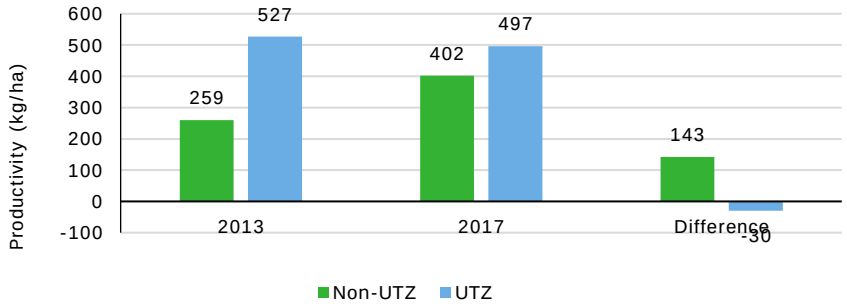

Figure 7.2 Cocoa productivity per hectare

Benchmarks to compare the productivity of the farmer sample in 2013 ranged from 620 kg/ha certified (N'Dao 2012), 576 kg/ha Rainforest Alliance certified (COSA 2012), and for non-certified farmers' 570 kg/ha non-certified (N'Dao 2012), 565 kg/ha (KPMG 2012), 450 kg/ha (HatlØy 2012), 435 kg/ha 352 kg/ha (Gockowski and Sonwa 2007) and 334 kg /ha non-certified (COSA 2012). In 2016 similar yields were reported, from 435 kg/ha (Balineau, Bernath et al. 2016) and an average of 668 kg/ha ranging from 321 to 1200 kg/ha for farmers with at least 2 ha cocoa farms (EMC 2016). These surveys suggest that other farmers were in a similar range to farmers in the study in both time periods, and also that that productivity in 2016 has not increased considerably, despite one study indicating that yields have increased steadily since 2009, related to better maintenance of farms and intensive use of fertilisers, insecticides and fungicides (EMC 2016).

Changes in production attributed in 2017 mostly to weather

External influences (see the Context chapter 2) were indicated as a factor that can affect productivity either positively or negatively. The different data sources all point towards unfavourable weather decreasing productivity, with no clear trends for agro-ecological zones and affecting both UTZ and non-UTZ farmers. Shown in Table 7.2, in 2017 most (62%) UTZ and non-UTZ farmers reported an increase, with a similar proportion of UTZ and non-UTZ farmers reporting a decrease in production. Non-UTZ farmers reported a higher increase than UTZ farmers compared to 2013 (11% more) compared to UTZ farmers reporting a 5% increase.

Table 7.2 Changes in cocoa production

	2017 %		Change 2013-2017	
	UTZ n=338	Non-UTZ n=79	UTZ	Non-UTZ
Increase	62	62	5	11
Decrease	35	38	-4	-7
Same	2	0	-2	-4
Do not know	0.9	0	0.6	0

In 2013 28% of certified farmers named certification as the reason for production change, in 2017 this was not mentioned (see Table 7.3). Instead, the weather was a major factor mentioned by 39% of farmers. Pesticides and spraying are cited more frequently than in 2013. Farmers indicated that the causes for decreases in productivity in 2017 are similar to 2013: 1) bad weather/little rain (33%); 2) death/disease, 28%; 3) lack of fertiliser, 27%; 4) ageing farm 21%; and a 5) lack of spraying, 15%. Farmers also provided the reasons for changes (both improvements and decreases) in their cocoa production, shown in Table 7.3.

Table 7.3 Reasons cited by farmers for changes in cocoa production

2013 top 5	%	2017 top 5	%
Certification	28	Little rainfall/dryness	39
Training	25	Spraying	30
Spraying	17	Fertiliser	29
Pesticides	15	Pesticides	27
Little rainfall/dryness	15	Good rainfall	24

Higher productivity associated with higher service intensity

The more services UTZ farmers received, the higher their yield in 2017. Regression analysis indicates that yield is higher for UTZ farmers who received more services in 2017, when controlling for various household and farm characteristics, shown in Figure 7.3, with no statistical difference between 2013 and 2017. The most intensive package is positively associated with higher yields. Training adds value to the provision of inputs, shown in Figure 7.4. For the farmers receiving the highest service package intensity, the difference between 2013 and 2017 is statistically significant compared to the change of farmers receiving no services.

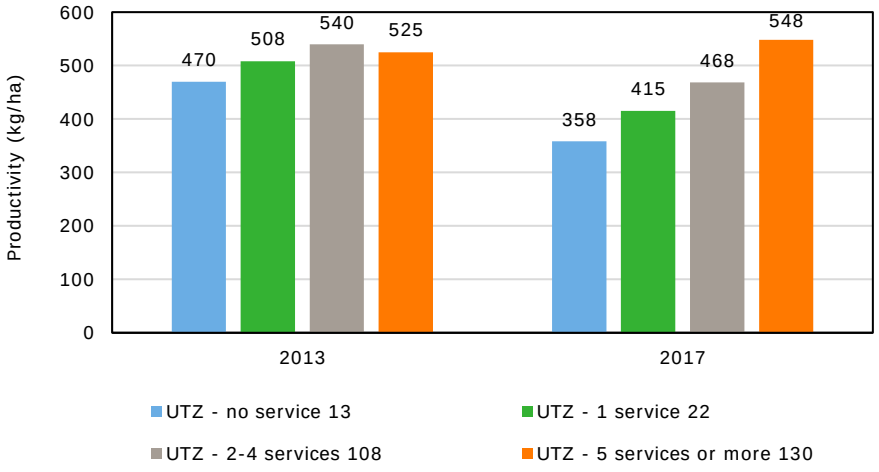

Figure 7.3 Cocoa productivity per hectare related to service intensity

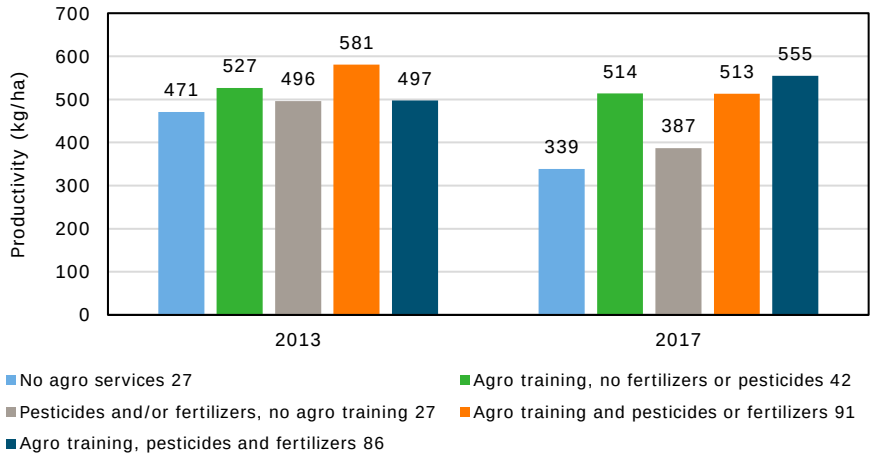

Figure 7.4 Cocoa productivity per hectare related to agricultural service packages

Farmer household data shows lower levels of productivity than focus groups and management interviews

The data sources reported different productivity rates, shown in Figure 7.4. Farmers' reports of their productivity gathered in the questionnaire were different than figures discussed in focus groups and by cooperative managers. Cooperative managers mostly reported progressive increases in productivity, with one reporting a decrease as their cooperative switched to coffee production and one non-UTZ cooperative reporting no change. Increases in productivity were attributed to increased training, knowledge and application of GAP (pruning, inputs, cleaning and sanitary harvest), favourable weather and the use of inputs.

Table 7.4 Cocoa productivity per hectare

Data source	Number of responses	Average Kg/ha 2017	Average Kg/ha 2013	Range kg/ha
Focus groups	10/14	650	446	500-1,000
Cooperative managers	6/14	610	453	500-800
UTZ farmers	339	497	527	35-1,583
Non-UTZ farmers	79	402	259	11-1,333

Explanations of the differences between data sources provided by stakeholders and in the verification meeting include:

1. New members joining cooperatives – giving cooperative managers a higher perception of productivity.
2. Over reporting caused by the focus group discussion technique.
3. Fatigue as the older certified farmers are less motivated than the younger ones (this was not confirmed by regression analysis).
4. Spill-over caused by farmers training others after they have received training, as 60% of UTZ farmers reported training others in 2017 and 83% in 2013.
5. Non-UTZ farmers' productivity is catching up to the level of UTZ farmers because they have also received training + services.

Most farmers only plant 'Cacao Ghana'; one fourth combine it with other varieties

About 26% of farmers said they plant more than one species of cacao tree – there is no difference between certified and non-certified farmers. The proportion of farmers planting more than one cocoa tree species has not changed. In comparison to 2013, 30% and 25% of non-UTZ and UTZ-farmers respectively planted more than one variety. 'Cacao Ghana' was the most common species, planted by 64% of UTZ and 70% of non-UTZ farmers, followed by 32% of non-UTZ farmers and 17% of UTZ farmers using 'Cacao Francais', Mercedes by 26% and 34% respectively, 2% and 1% using 'Cacao Brésil' and one farmer planted 'Satmaci'. The dominance of one species has possible negative implications concerning vulnerability to disease and adaptation to climatic changes (Läderach 2011, Medina and Laliberte 2017, Medina, Meter et al. 2017).

7.4 Income and profitability

Clarifying cocoa and household income

Cocoa income refers to income from cocoa farming. Gross cocoa income refers to income from cocoa from which no costs have been deducted. Net cocoa income refers to gross cocoa income minus costs for hired labour paid by the farmer and farm input costs. Net cocoa income does not include a farmer's own labour and labour by other adults that is unpaid and therefore does not directly affect the cash income received by the farmer (see the Glossary in Appendix 1 for more details). Household income refers to all sources of income generated by the farmer household from agriculture and other sources. Costs for farm inputs and hired labour were reported for the main farm and then extrapolated to calculate costs for the total farm in production (by first calculating input costs per hectare and then multiplying this by the total farm size in production).

As the baseline data regarding hired labour shows lower amounts of labour used for most farming activities, a comparison between 2013 and 2017 for UTZ and non-UTZ farmers has not beem made and net income is reported for 2017 only.

UTZ farmers have significantly higher net cocoa income per hectare

The average gross cocoa income was CFA 1.5 million in 2013 and CFA 2.4 million in 2017 (based on cocoa production from all farms). Net cocoa income in 2017 was on average CFA 2.3 million. The accumulated inflation rate over the period was about 1%. The net income difference between UTZ and non-UTZ farmers (shown in Figure 7.5) is not statistically significant, but UTZ farmers had significantly higher net incomes per hectare in 2017, on average CFA 83,000 per ha more. Factors that are logically (and statistically strongly) related to net cash income are total farm size, household size and share of land devoted to cocoa. please rephrase to make this clearer. Older farms tend to have a lower income per hectare.

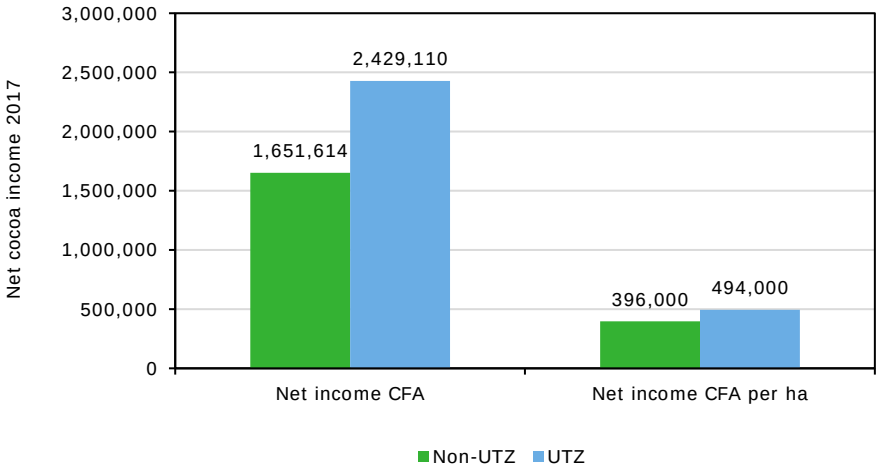

Figure 7.5 Net cocoa income and net cocoa income per hectare, 2017

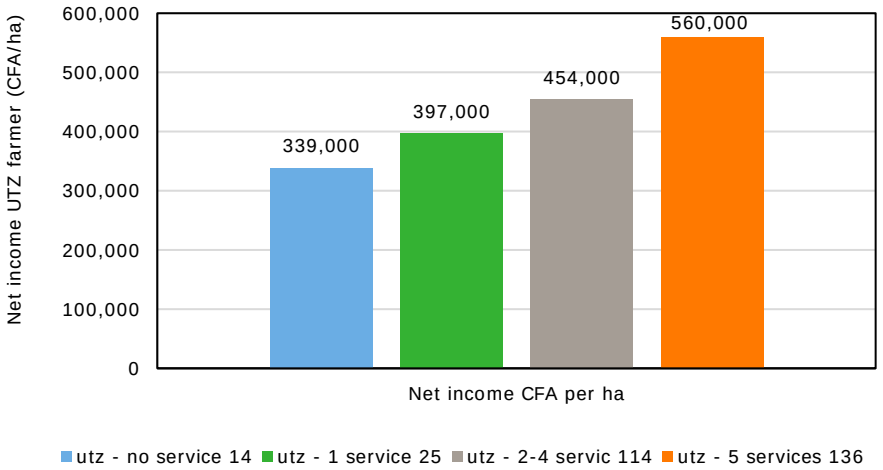

Figure 7.6 UTZ farmer's net cocoa income associated with service package intensity

Productivity, higher prices and lower costs contributed to higher net income

The differences in cocoa income between UTZ and non-UTZ farmers were attributed by stakeholders in the verification meeting to the price increases as part of the reform, and that non-certified farmers also had access to inputs, services and training. In the focus group discussions, 35% of groups attributed increased income to productivity increases, as did 71% of cooperative managers, but 50% of groups also reported increased costs of production, mainly labour and inputs. The price decrease was not mentioned as the majority of interviews with farmers occurred prior to the price decrease.

UTZ farmers with higher service intensity have significant higher net cocoa income and net income per ha in 2017

There are strong, significant differences between UTZ farmers' net cocoa income and net cocoa income per hectare related with higher service intensities, shown in Figure 7.6. The same is true for UTZ farmers with a fuller agro-service package (agro training and one input, agro training and pesticides and fertiliser). This is a result of the higher cocoa productivity per hectare.

Total net cocoa income per household member/day for 2017 is similar for UTZ and non-UTZ farmers

On average farmer household members have a net cocoa income of USD 1.25 per day, with UTZ and non-UTZ cocoa income being similar with a weak statistical significance. Net cocoa income per family labour day for 2017 is similar for UTZ and non-UTZ farmers. Factors positively related to net cocoa income per household member include total farm size and share of land devoted to cocoa, whilst household size is negatively related (as income is divided amongst a larger number of household members). The good agro-ecological (zone 2) and marginal agro-ecological (zone 3) are negatively correlated, meaning that when a farmer is located in zone 2 or 3, they tend to have a lower net income per family labour day than farmers in zone 1 (excellent zone). This is logical as these zones are less suitable for cocoa growing than the excellent zone.

Other studies have different results of cocoa income per household in the similar time period, which can only be compared if the methodology and exchange rates are presented. Using a similar methodology to this study, Hamelink (2015) reported a net cocoa income household member/day of USD

1.14 for a cocoa farmer in Soubre region based on a 6.8 person household, whereas a living income has been calculated as USD 2.15 a person/per day, and the World Bank poverty line is just under USD 2.00 a person/per da. In contrast, Foblets and de Groot Ruiz (2016) reported that a cocoa farmer household (not a household member) in Côte d'Ivoire earns on average €3.5/day from cocoa, equivalent to an annual income of around 40% of the living income. The annual living wage for an Ivorian worker, also as reported by True Price and IDH is €2,869 (Fobelets and Ruiz 2016).

Total net income per household member/day for 2017 is higher for farmers receiving complete agro-service package

For UTZ farmers, those receiving a higher service intensity have higher net income USD/household member/day (weak significance). The net cocoa income USD/member/day significantly increases by USD 1.0 when farmers receive more complete agro-services (agro training plus one or both inputs).

Cocoa continues to be main source of household income

In 2017, the cocoa farmers had on average one other source of income, ranging from one to a maximum of four sources, with 72% of farmers having a second source of income. In 2017 on average farmers earned CFA 569,895 from other income sources. There were no differences between UTZ and none UTZ farmers in terms of the number of income sources and amount per source. The most important source of income on average was cocoa (91% of farmers), rubber (6%), food crops (2%) and others (1%). The second most important income sources were food crops (43%), rubber (20%,) coffee (14%) and cocoa (11%).

Expenditures and investments remain similar over time

Farmers were asked about how they spent cocoa incomes in the last year (see appendix 5 for details) and if expenditures stated the same, increased or decreased. There was no change in the type of agricultural expenditures (purchasing inputs and equipment for cocoa and other crops, and paying hired labour for cocoa and other crops) by either UTZ and non-UTZ farmers. UTZ farmers who received a low intensity service package significantly increased agricultural spending compared to UTZ farmers receiving no services. For farmers receiving more intense services, no change was found and they have not increased their spending. In general, shown in Table 7.5, UTZ farmers' investments are slightly (not significantly) different than non-UTZ and the number of categories they invested in slightly increased over time. The number of farmers investing in agriculture (cocoa and other crops) is low in both periods. This may be explained by farmers having other priorities, such as their basic household needs, shown in Table 7.5.

UTZ farmers spending more on labour and inputs in 2017

Shown in Table 7.5, in comparison to 2013, more UTZ farmers made expenditures related to hired labour and inputs on crops other than cocoa, and fewer made expenses on mobile phones or other equipment. The focus group discussions indicated that hired labour costs had increased since 2014, costing around CFA 150,000 to 240,000/team/season or CFA 15,000 to 25,000/day, and that the increase was related to the availability and willingness of labour, rather than certification. Investments are low for both UTZ and non-UTZ farmers.

For UTZ farmers receiving low intensity service packages, spending on livelihoods was significantly higher over the period 2013 to 2017, but for farmers in more intense service groups no change was found. Both UTZ and non-UTZ farmers reported spending most on food, medicine and children's school fees and between 2013 to 2017 UTZ farmers' spending increased in comparison to non-UTZ farmers, with weak statistical significance. In 2017 UTZ farmers reported significantly increased spending compared to non-UTZ farmers, while in 2013 UTZ and non-UTZ farmers spent around the same.

Table 7.5 Cocoa household expenditure and changes 2013-2017

Expenditure category#		% farmers 2017		% change 2017-2013	
		Non-UTZ	UTZ	Non-UTZ	UTZ
Agriculture	Inputs and equipment (cocoa)	73	71	13	7
	Inputs and equipment (other crops/livestock)	21	31	4	14
	Hired workers (cocoa)	29	37	13	-1
	Hired workers (other crops/livestock)	15	22	10	15
Non-agric.	Investment in business	14	15	-8	-9
Livelihood	Food	94	95	1	9
	Family healthcare	93	96	-2	1
	Children school fees	85	91	-9	-3
	Mobile phone	16	30	-31	-31
	Electrical goods radio/TV/solar	7	16	-20	-27
	Household & house	18	30	-12	-14
	Motorcycle	21	29	-8	-5
	Funerals	53	64	53	64
	Other	24	24	4	-4

#Percentages do not total 100 as multiple answers possible.

Literature indicates that in 2017 hired workers received an average wage of €1.6/day, about 20% of the living wage and that the annual wage earned by on-farm workers is €477, while the legal minimum wage is €659/year. The annual living wage for an Ivorian worker, as calculated by True Price, should be €2,869 (Fobelets and Ruiz 2016).

Certified farmers are more satisfied with their livelihood than non-certified but satisfaction has decreased

Farmers were asked about their satisfaction concerning eight livelihood categories: knowledge of good practices on cocoa production; farmer group management; access to price information on agricultural products; type and number of sources of income; housing condition and access to electricity, water; family health; children's education; and household income. Farmers who are satisfied or very satisfied for at least 5 out of 8 categories were considered satisfied about their life. In general, UTZ farmers were significantly more satisfied in 2017 than non-UTZ farmers: 47% versus 10%. There is no statistical evidence that satisfaction about livelihoods changed since 2013 using this livelihood indicator.

Overall farmer's satisfaction decreased from 53% in 2013 to 40% in 2017. Among UTZ farmers satisfaction decreased by 14% and for non-UTZ farmers increased by 1%. This may be related to the lack of increased productivity. Farmers may also be more aware of cocoa farming potential than four years ago. UTZ farmers were significantly more satisfied in 2017 than non-UTZ farmers: 47% versus 10%. There is no statistical evidence that satisfaction on livelihood changed since 2013 using this livelihood indicator.

In general, the average number of categories for which farmers were satisfied or very satisfied is 2.2 for non-UTZ and 4.3 for UTZ farmers. This difference is statistically significant. However, there is statistically weak evidence that the average satisfaction for UTZ farmers decreased from 4.8 in 2013 to 4.3 in 2017. This may be related to the lack of increased productivity or farmer's higher awareness of cocoa farming potential.

7.5 Long-term viability of farmers and farmer groups

Farmers plan to continue cocoa farming but don't want their children to become cocoa farmers

Similar to 2013, in 2017 74% of UTZ farmers plan to continue cocoa farming in the next five years. This ratio is statistically similar for non-UTZ farmers (70%) in 2017. However, more non-UTZ farmers want to continue in cocoa compared to 2013 (a significant increase of 8%). In 2017, more farmers (46%) wanted their children to continue cocoa farming than in 2013, when 31% did, which is a significant increase of 15%. There are no differences between UTZ and non-UTZ farmers, in either years. More than half of UTZ farmers want their children to go into other jobs, such as becoming a doctor or government official.

A stronger, but similar message was given in the focus group discussions, where 13 of the 14 groups didn't want their children to go into cocoa. In nine groups (7 UTZ and 2 non-UTZ) farmers have reduced the number of cocoa trees. However farmers in UTZ groups tended to think that cocoa is a good,

stable activity. Cooperative managers agree, believing most farmers (13/14) plan to continue investing in cocoa but the majority (12/14) do not want their children to continue in cocoa.

UTZ farmers perform slightly better at record keeping and improve over time

The UTZ Code of Conduct requires that farmers and cooperatives keep records to enable traceability. Shown in Table 7.6, UTZ farmers score above average (75%) and UTZ farmers who receive more services have better knowledge on advantages of record keeping. The knowledge score for record keeping is significantly higher among UTZ certified farmers in both years, but increased more among non-UTZ farmers. Knowledge on record keeping also increased for UTZ farmers receiving a higher intensity of services, but did not change since 2013 except for the group receiving no services, which seems to have caught up by 2017.

Table 7.6 Knowledge about record keeping, 2013-2017

Knowledge	Score % 2017		Change % 2017-2013	
	UTZ	Non-UTZ	UTZ	Non-UTZ
Advantages of keeping records	75	67	6	33
	**	***	***	***

UTZ farmers indicate to have increased access to some inputs

Shown in Table 7.7, compared to 2013, in 2017 UTZ farmers report an increase in access to certain inputs (pesticides, ANADER services and price information), but not for nurseries and fertilisers. Satisfaction levels for all services increased for UTZ farmers. Non-UTZ farmers also report an increase in access to inputs, however this is a small group (n=16, 20% of total control group). Non-UTZ farmer's satisfaction with access to inputs has declined, but this may be biased as 2013 data were based on a very small sample, with sometimes only one non-UTZ coop farmer accessing a service.

Table 7.7 Changes in UTZ and non-UTZ farmer's access to inputs

Farmers	Input supply reason for membership 2017 % of farmers	Input supply as motivation for cooperative membership change % 2017 to 2013	Access % to input 2017	Change % access to input 2017-2013
UTZ	6	-9	57	2
Non-UTZ			47	18

UTZ farmers who received a higher intensity of services receive more input related services, as could be expected. The level of satisfaction also increases significantly as intensity increases, shown in Table 7.8.

Table 7.8 UTZ farmers' access to inputs correlated with service intensity

Group	% min. 1 input access service	% min. 1 input access service, diff to 2013	% min. 1 input access service	% min. 1 input access service, diff to 2013
UTZ - No services				
UTZ - 1 service	48	-43	41	-20
	***			
UTZ - 2-4 service	91	4	69	35
	***	*	**	**
UTZ - 5 services	99	14	87	58
	***	*	**	**

No change in access to price information but satisfaction increased for UTZ farmers compared to non-UTZ farmers

In 2017 there was no significant increase in number of farmers that have access to market information on sales. The level of satisfaction increased for UTZ farmers from dissatisfaction to slight satisfaction, shown in Table 7.9.

Table 7.9 Change in access to market information and timely payment by buyer 2013-2017

	Access/use % 2017		Access/use % 2013		Satisfaction with access to information 2017*		Change 2017-2013 satisfaction with access to information	
	non-UTZ	UTZ	non-UTZ	UTZ	non-UTZ	UTZ	non-UTZ	UTZ
Market price information	19	29	-50	-49	-1.0*	0.56***	-2.0**	1.8*
Payment on time by buyer	80***	68	50	31	0.15	0.62**	0.00	0.32

Satisfaction is measured on a 5 point scale of -2, -1, 0, 1 and 2.

The focus group discussions indicated that for UTZ and non-UTZ farmers information on prices was obtained from lead farmers (*paysan relais*), community or government radio (mainly) or TV, and extension officers. Also that there were no changes in information sources since 2013. Information on prices of inputs and technical advice was obtained from cooperatives, companies and pisteurs.

Increased farmer and cooperative professionalism

A measure of farmer professionalism is that farmers know and implement, adopt or apply good agricultural, environmental, social and business practices, inputs, tools and labour to manage their farms as a (professional, entrepreneurial) business and conduct monitoring of improvements in farmer practices. This definition is based on the assumption that professionalisation leads to improved livelihoods through the route of a combination of higher productivity and quality, crop diversification and improved market access, with both technical and life skills enhancing the increased adoption of new knowledge and eventually, long-term behavioural change, making them more likely to perform better as professional farmers thus turning low-yield and income farms into profitable ventures. Professionalisation refers to both agronomic as well as leadership, social, financial and entrepreneurial skills.

A measure of farmer organisation professionalism is that these groups support members to become (more) professional, this may be through the services provided to members and farmer's satisfaction with them. This is based on the assumption that professionalisation leads to stronger, well run and transparent organisations in terms of profitability, accessing markets and efficiently and effectively providing services required by members (Moulianitaki and Laven 2016, SwissContact 2016, Lindt Cocoa Foundation 2017, Cocoa Abrabopa 2018, Source Trust 2018).

UTZ farmers becoming more professional

Four of the 12 UTZ cooperative managers interviewed reported that they perceive farmers were becoming more professional, with one UTZ cooperative manager noting that '*certification changed the perception of farmers to invest in cocoa and become more professional*'. Another cooperative manager reported that '*the advantages of certification are that the way of living changed and the mentality of farmers changed, they have become more professional*'.

Shown in Table 7.10, UTZ farmers were generally more satisfied than non-UTZ farmers on all indicators - except for access to inspection information and timely payment - and were generally more satisfied in 2017 with these services than in 2013. Farmers' satisfaction that payment by their cooperative is on time has not increased compared to 2013, but it is more positive for UTZ farmers in 2017.

Table 7.10 Farmers' access to and satisfaction with services provided by their cooperative

Type of service#	Access & use services 2017		Access & use services 2013		Satisfaction 2017		Satisfaction 2013	
	UTZ	Non-UTZ	UTZ	Non-UTZ	UTZ	Non-UTZ	UTZ	Non-UTZ
Access to training	86%	74%	11%	25%	0.83	0.54	-15	1.00
Information on input prices	53%	26%	45%	75%	0.77	-0.20	35	1.00
Market information	29%	19%	-49%	-50%	0.56 ***	-1.00 *	1.8 *	-2 **
Share information from internal inspections	32%	38% ***	55%	88%	0.56	0.60*	0.82	0.60
Share information from external inspections	48%	38% ***	49%	88%	0.60	0.33	0.67	0.33
Information about ANADER services	62%**	38% ***	42%	38%	0.78	0.40	0.50**	-0.33
Access to fertilisers	43%	11%	83%	100%	0.85	0.50	0.23	1.00
Access to nurseries / pod	51%	26%	60%	100%	0.84	0.75	0.26	1.00
Access to pesticides	74%	47%	37%	75%	0.83	0.13	0.29	1.00
Access to credits	53%	37%	71%	75%	0.73	0.20	0.30	1.00
Insurance systems	10%	0%	93%	75%	0.76	.	0.19	1.00
Assistance relations with service providers	13%	11%	88%	75%	0.65	1.00	0.51	1.00
Commercial activities	30%	42%	81%	100%	0.39	0.25	0.51	0.75
Payment on time by buyer	68%	80% ***	31%	50%	0.63	0.27	0.34	0.50
Get a good price	77%	68%	32%	67%	0.89	0.92	0.39	1.00

Reported only for farmers reporting to have received services, Satisfaction measured on a scale from -2 (very unsatisfied) to 2 (very satisfied). As the number of observations are low when the scores are not statistically significant, these should be interpreted with care.

UTZ cooperatives becoming more professional

The organisation of cooperatives was seen as becoming more professional by 7 UTZ cooperatives of the 14 cooperative managers asked, aiding them to provide services, the premium, access to credit, development projects, cocoa quality and access to different types of services and buyers. A cooperative manager also mentioned that a sign of professionalisation was increased bargaining power and that '*the exporters listen to us more*'.

In the focus group discussions similar results were reported: the majority of cooperatives were perceived as well run. The provision of services such as input programmes and training were seen as the major incentives to become certified and remain cooperative members. Non-UTZ cooperatives were seen as less well run. Eight cooperative managers were satisfied with quality of services they provide to farmers and 10 (all UTZ) managers indicated that their members are satisfied with their services, stating indicators such as farmer loyalty, increases in membership, that the premium was paid (on time), services up-taken, and collaborating with additional partners to provide services.

Benchmarking professionalism

In a study of 1,530 cocoa farmers across Côte d'Ivoire farming over 2 ha of cocoa in 2016, 5% were classed as 'professional farmers': those who are implementing a broad set of best practices (maintenance and pruning of the farms, alternation of manual and chemical weeding, regular application of mineral fertilisers sometimes enhanced by timely application of organic manure, insecticide and fungicide treatment (EMC 2016).

UTZ cooperatives facilitate cocoa sales

Shown in Table 7.11, in 2017 90% of UTZ farmers stated that their cooperative facilitates selling their cocoa, compared to 75% of non-UTZ farmers, with no statistically significant change compared to 2013. However, UTZ farmers satisfaction with this service increased in 2017 and is higher than non-UTZ.

Eleven per cent of UTZ farmers received assistance selling to *pisteurs* in 2017, a major decrease compared to 2013 and no non-UTZ farmers received assistance in 2017. However, the satisfaction score for UTZ farmers in 2017 is 0.66, which implies farmers are mildly satisfied and appear more so than in 2013.

Table 7.11 Farmers' perceptions and satisfaction of cooperative services

Type of service	% of farmers in 2017		Change % 2017-2013		Satisfaction score 2017*		Satisfaction score change 2017-2013	
	UTZ	Non-UTZ	UTZ	Non-UTZ	UTZ	Non-UTZ	UTZ	Non-UTZ
Cooperatives sell members' cocoa	90 **	75 ***	50	76	0.86 **	0.5 ***	0.82 ***	-2 *
Assistance selling to *pisteurs*	11	0	-82	-100 ***	0.66	n.a.	0.14	n.a.

Due to few observations scores on satisfaction levels should be interpreted with care.

Improvements in information for farmer's decision making

One of the indicators of professionalism is how farmers perceive the transparency of the Internal Management System, information on audits and information about services provided by their coop. For the first two services, 38% of farmers said their cooperative provides this service –with no difference between UTZ and non-UTZ farmers. Sixty-two per cent of UTZ farmers received information from ANADER about cocoa farming versus 38% of non-UTZ farmers, with no significant changes compared to 2013.

Since few farmers reported their satisfaction level, the scores are not significant in a statistical test and should be interpreted with care. One exception is that UTZ farmers are significantly more satisfied about the information on ANADER services in 2017 than in 2013.

Mixed picture of market incentives for sustainable cocoa

Cooperative managers presented both positive and negative responses regarding the rewards for producing sustainable (certified) cocoa. Three of the 14 interviewed had linked up with more buyers since 2016 and 50% have had long-term buying commitments since 2016. Six indicated that the premium doesn't cover certification costs and 7 that the buying price had not changed due to certification. Ten managers indicated that cooperatives are not in a strong bargaining position and cannot influence the premium value, which is set by the 'company or UTZ'. Producing cocoa takes time: farmers reported that it takes average 20 years for cocoa to be profitable (with a wide range of 5 to 25). This suggests that market rewards have a long time delay as investments in cocoa production may have occurred years previously.

Cooperatives formed as a vehicle to certification

The majority of cooperatives (75%) have been formed as part of the programme activities since 2008. The formation and support of cooperatives has been one of the major activities accompanying certification by five of the companies participating in the UTZ programme. Farmers indicate high levels of satisfaction with the types and level of services provided by their cooperative. They also point out that their cooperatives need to be more transparent and accountable, particularly in providing information on prices and benefits, on how premiums are used by the cooperative and the need to train managers.

Cooperative capacity building has been one of the main activities conducted by companies in conjunction with the UTZ certification programme, with 80% of groups sampled having received support to professionalise. This support included mainly training but also financial support to become legalised, provision of transport, equipment, and payment of the salaries of support staff.

Well-functioning UTZ cooperatives

The cooperatives in the UTZ certification programme appear to function relatively well, as between 59 and 74% of farmers feel represented by their officials. Farmers experienced that complaints lead to action and note that officials are replaced when they do not function properly. Even though UTZ farmers are relatively satisfied with the functioning of their cooperative, about two-thirds made suggestions for improvements. Similar observations were made in the focus groups and other stakeholder interviews: 33% mentioned that the need to improve transparency of information on prices and benefits; 20% indicated the need for (more) information on how the proportion of the premium retained by the group is used, that accountability should be improved and that managers should be trained.

Cooperatives generally provide packages of four services to members

Cooperatives reported providing between one to six services, with on average four, shown in Figure 7.7. Two cooperatives provided services since 2010, most since 2014. In eight of the 12 focus groups, an increase in services provided was mentioned by the UTZ certified cooperatives. Ten of the

12 stated that services are a major motivation for farmers to become and stay certified.

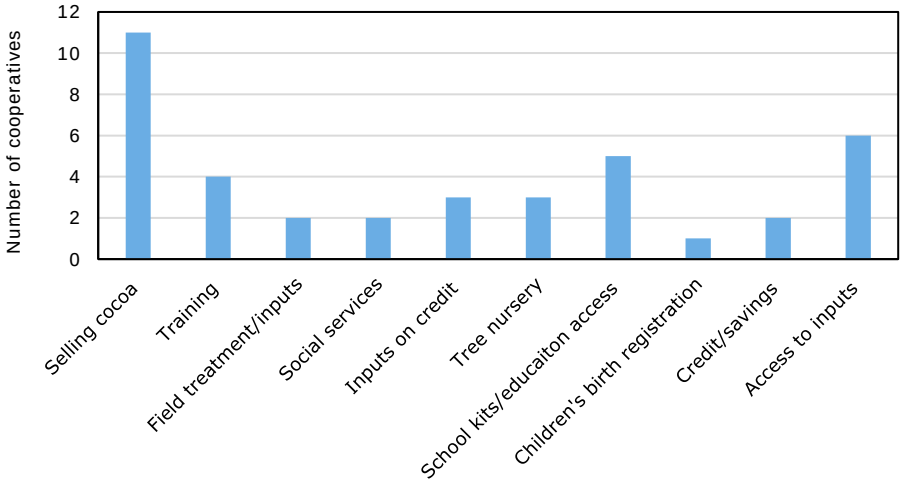

Figure 7.7 Services provided by cooperatives to members in 2017
Source: Cooperative manager questionnaires (n=14)

Better life

7.6 Healthy and safe living and working conditions

Improvements in access to social services

Four of the 14 UTZ cooperative managers and eight of the 14 focus groups reported improved access to social and community services - such as schools, health, school kits - which were provided by cooperatives and/or partners.

UTZ farmers' knowledge on GAPs on protective clothing is better than non-UTZ farmers but did not improve over time

UTZ farmers have higher knowledge about protective equipment than non-UTZ farmers. There were no differences among UTZ farmers when the relationship with service intensity was analysed.

Knowledge of use of personal protective equipment declines

There appears to be a discrepancy between knowing the reasons for using protective equipment, and using them, as farmers with low knowledge do report using protective clothing. Farmers seem to know significantly less about the reasons for using protective equipment than in 2013. Farmers were asked to name up to four advantages of using protective equipment. These answers were converted into a score between 0 and 1. Both UTZ and non-UTZ farmers know less about the advantages of protective clothing than in 2013, a significant decline. UTZ farmers outperform non-UTZ farmers in terms of knowledge with strong significance: their knowledge is very low at 0.057 compared to 0.161 in 2013. This finding suggests that UTZ certification initially helped to increase the knowledge of farmers in 2013 but that this effect has not been sustained over time. This finding is in line with a recent review of the adoption of farming practices (Petrokofsky and Jennings 2018).

Use of personal protective equipment improves

UTZ farmers reported better implementation of GAPs on protective clothing than non-UTZ farmers, with no differences between UTZ farmers related to service intensity. UTZ farmers scored 0.117 points (on 0-1 scale). However, there is room for improvement as farmers do not use all protective items. Personal protective equipment use was assessed for seven items, assigned a score of minimum 0 and maximum 1. Figure 7.8 shows the average scores of UTZ and non-UTZ farmers.

In 2017 UTZ farmers use protective equipment significantly more than non-UTZ farmers, after correcting for household characteristics, although the average score of 0.133 (strongly significant) is low compared to the desired outcome (i.e. using all 7 items). The difference over time (2017-2013) is also significant at 0.117 for UTZ farmers. The regression analysis leads to the conclusion that UTZ farmers are implementing the use of protective equipment better than non-UTZ farmers.

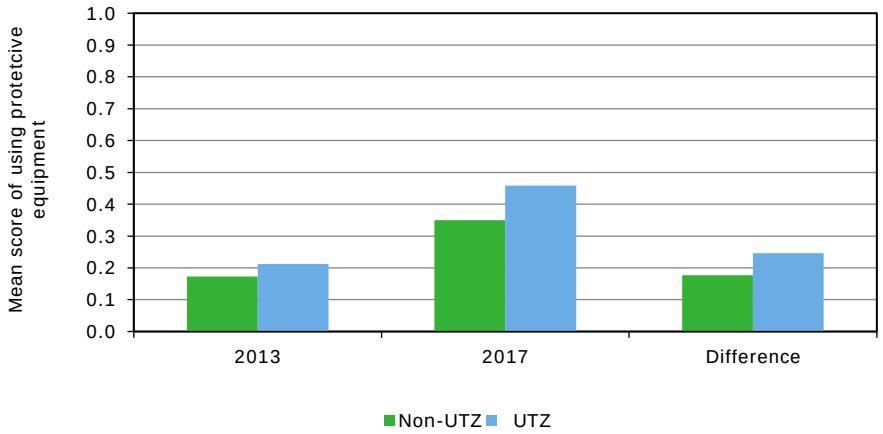

Figure 7.8 Use of personal protective equipment

Impact of community development/social projects

In the focus group discussions, participants indicated that certification had helped improve working conditions for labourers and for sharecroppers (*abusan* and *abunun,* see glossary in Appendix 1). Although wages had increased, this was not seen as related to certification. Five cooperative managers also reported improved working conditions attributed to certification, such as the use of spraying gangs for the application of farm chemicals, GAP training and the presence of first aid kits. Eleven managers of the 14 UTZ cooperatives interviewed noted that they had invested in community projects, such as schools, health centres, community halls and markets. Investments by companies were also evidenced in interviews with companies, at levels slightly higher than in 2013.

7.7 Child labour and rights

Decreased but continuing practice of children conducting hazardous work by UTZ and non-UTZ farmers since 2013

According to the UTZ Code of Conduct, children and minors (below 18) are only allowed to conduct light work on family farms for a limited number of hours as long as the work does not jeopardise their physical and mental well-being or interfere with their schooling. In addition, children should not conduct hazardous or unhealthy work (e.g. at night, or with dangerous substances or equipment) and should always be accompanied by an adult relative. Figure 7.9 shows that the proportion of UTZ farmers reporting using child labour has decreased from 2013 to 2017 but that 16% of UTZ farmers report that their children conduct activities which are prohibited by the Code of Conduct. This indicates that compliance with the UTZ Code of Conduct increased for UTZ farmers from 75% to 84% and non-UTZ farmers from 82% to 86% between 2013 and 2017.

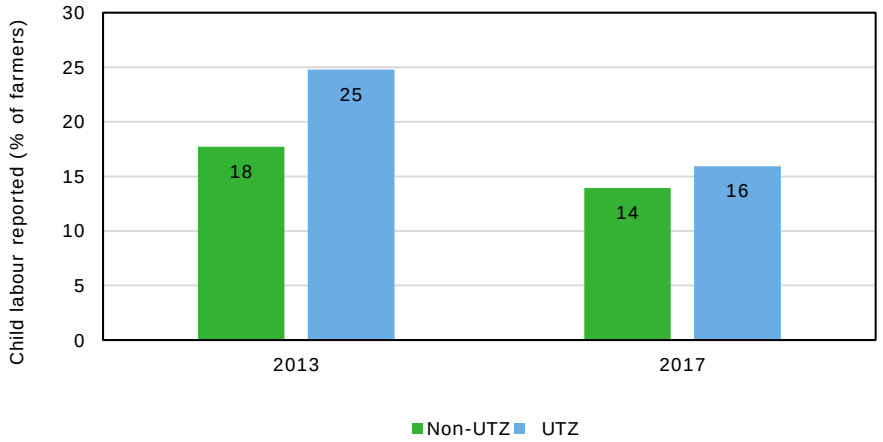

Figure 7.9 Percentage of cocoa farms where children conduct hazardous activities

Table 7.12 shows the number of days spent by children on cocoa farming activities, as reported by all farmers. Notable is that for most activities except pod breaking, harvesting and drying, only a very small number of respondents reported that these activities were conducted by children. The hazardous or unhealthy activities where a larger number of children, aged between 15 and 18, work a considerable number of days are the application of fertilisers, herbicides and pesticides and pod breaking.

Table 7.12 Activities conducted by children on cocoa farms 2017

	Number of days in 2016/2017 cocoa season worked by children											
	Children <15 years of age						Children (15-18 years)					
	UTZ			Non-UTZ			UTZ			Non-UTZ		
	Number of farmer respondents	Days worked by children	Days worked by children per HA	Number of farmer respondents	Days worked by children <	Days worked by children HA	Number of farmer respondents	Days worked by children	Days worked by children per ha	Number of farmer respondents	Days worked by children	Days worked by children per ha
Land/soil preparation	1	90	10		0	0		0	0	1	21	42
weeding	2	81	64.8		0	0	14	31.7	11	6	27.7	10.5
Pruning#	1	12	1.2	1	9	18	3	14	3.7		0	0
Fertiliser application#		0	0		0	0	8	7.4	2.6	4	8.5	3.6
Insecticide use#	1	9	0.9		0	0	3	3	2.0	1	3	0.9
Herbicide use#	1	9	0.9		0	0	14	5.1	1.4	2	2.5	0.8
Harvest	2	71.5	28.3		0	0	23	27.2	12.0	7	33.1	13.3
Pod breaking#	2	22.5	11.7		0	0	45	21.4	8.7	11	19.5	10
Fermentation	1	20	2		0	0	9	27.7	12.6	4	32.2	12.2
Drying	3	34.3	28.9		0	0	21	40.5	15.7	5	38.2	20.5
Sorting	2	30.5	18.5		0	0	5	17	4.8	2	11	15.1
Transport to cooperative	0	0	0	1	3	6	1	4	4.0	3	8.7	6
Transport farm to village	2	22.5	11.7		0	0	9	13.4	6.1	5	7.2	4.3

#Cocoa farm activities prohibited by the UTZ Code of Conduct for children under 18

UTZ farmers have better knowledge on child labour rights, but overall knowledge on rights is low

Farmers were asked whether they knew the minimum age children are allowed to work on the farm. We calculated the knowledge score based on the activities which children can and cannot do on the farm according to the UTZ Code of Conduct. This knowledge score on child labour activities is scaled from 0-1, 1 being the highest attainable score (Figure 7.10).

Thirty-five per cent of UTZ farmers know the minimum age for children to work on the farm, compared to 18% of non-UTZ farmers. On average 32% knew the correct minimum age. Knowing the minimum age is weakly correlated with being an UTZ certified farmer. In 2013 UTZ farmers had a higher level of knowledge than non-UTZ farmers on the activities which children are not allowed to do on the cocoa farm, this difference diminished in 2017. Considering the difference over time compared to non-UTZ, UTZ farmers' knowledge statistically significantly decreased by 0.225.

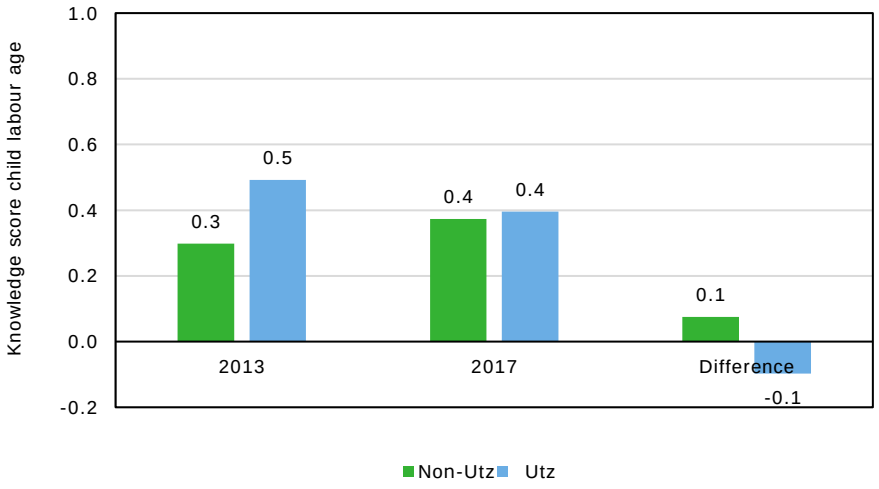

Figure 7.10 Knowledge of child labour rights and activities on cocoa farms

UTZ farmers score the same as non-UTZ farmers on their knowledge of what children can and cannot do on the farm in 2017. In 2013 there was a statistically significant difference with UTZ farmers having higher knowledge levels than non-UTZ farmers. There is no difference in knowledge levels of farmers receiving more intense services and no difference for farmers receiving different levels of agro training and fertilisers or pesticides.

Eleven of the focus group discussions and 5 of the 14 cooperative managers reported improved knowledge about child labour rights and schooling children.

Child labour awareness campaigns

Increased general knowledge and awareness of child labour rights, particularly for non-UTZ farmers, is attributed to wide scale campaigns by the government, but also ANADER training and NGOs, raising awareness about child labour on cocoa farms (see the Context section in chapter 2 for more information).

Increased contact with local community representatives for labour rights

In 2017 38% of UTZ farmers and 9% of non-UTZ farmers indicated an inspection regarding (child) labour had taken place. Compared to 2013, there was an increase of 5% for non-UTZ, and 11% for UTZ farmers.

Fewer UTZ farmers are satisfied about the status of children's education than in 2013

In 2013 73% of UTZ farmers were satisfied or very satisfied about improvements in their children's education, in 2017 this decreased to 57%. In contrast, in 2013 28% non-UTZ farmers were satisfied while in 2017 this increased to almost 38%. Due to small sample sizes no firm conclusions can be drawn. Seventy-six per cent of UTZ farmers perceived a positive change and 24% were neutral or reported a negative change. These statistics could not be compared to 2013 as there were too few responses.

7.8 Soil and water quality

Farmers use more compost, but overall level is low

More farmers use compost than in 2013, with on average 21% of UTZ and 18% of non-UTZ farmers using compost in 2017, compared to 14 and 4% respectively in 2013. There is no statistically significant difference between UTZ and non-UTZ farmers. Cooperative managers confirmed the low levels of composting. Although five cooperative managers had received composting training and attributed soil improvements to this training, the effort involved in composting was often not seen as viable and too much work.

GAP and community projects contribute to soil and water quality

Eleven cooperative managers (10 of which were UTZ) and 13 of the focus group indicated that water quality had improved since 2013, due to better water pumps, in part provided by cooperatives, companies and ANADER. Half of the managers and half of the focus groups reported improved soil quality – mainly due to less or better input use and implementation of GAPs. In non-UTZ cooperatives no differences were noted.

UTZ farmers continue to score better on GAP, but there is still room for improvement

The UTZ Code of Conduct requires GAP regarding weeding, pruning, handling diseased pods and harvesting that in turn affect soil and water quality. Farmers could score a maximum of 1 point, or 100%, for indicating that they applied the correct practices. Table 7.13 shows that scores on handling diseased pods and pruning are low, but for weeding and harvesting UTZ farmers score above 90%. The scores are significantly higher among UTZ certified farmers in 2017, with the exception of harvesting, where scores for UTZ and non-UTZ farmers are similar. Practices regarding pruning and handling diseased pods indicate there is room for improvement.

Table 7.13 Mean scores for GAP implementation

GAP	Score % 2017		Change % 2017-2013	
	UTZ	Non-UTZ	UTZ	Non-UTZ
Weeding	97	90	0	0.4
	***	***	***	***
Pruning	60	45	12	-9
	***	***	**	
Handling diseased pods	36	13	8	5
	***	***		
Harvesting at the right time	91	95	15	7
	*	***	*	*

Farmers receiving a higher intensity of services score better and have improved their practices more from 2013 to 2017

The scores for these four GAP were combined into one average score and analysed for UTZ farmers. Table 7.14 shows that UTZ farmers receiving more services scored better on the implementation of GAP. While the score for the two lowest service groups is the same in 2013 and 2017, farmers receiving more services in 2017 had higher scores compared to 2013.

Table 7.14 Mean scores GAP implementation correlated with service intensity

UTZ farmers	Score % 2017	Change % 2017-2013
UTZ - No services	59	3
	***	
UTZ - 1 service	68	3
	**	
UTZ - 2-4 services	71	8
	***	**
UTZ - 5 services	73	11
	***	***

GAP for use of chemical inputs increased over time, but there is still room for improvement

Farmers could score a maximum of 1 point, or 100% regarding their reported practices using chemical inputs (pesticides, fertilisers and herbicides). Table 7.15 shows that regarding timely application of fertiliser and the frequency of application, UTZ and non-UTZ farmers score the same, with low scores of 30% and 49% respectively, and improvements since 2013. Correct storage is practiced more by UTZ farmers, although in comparison to 2013 this score decreased by 18%. UTZ farmers outperform non-UTZ farmers on input storage.

Table 7.15 Mean scores for GAP chemical inputs implementation

GAP re chemical input	Score % 2017		Change % 2017-2013	
	UTZ	Non-UTZ	UTZ	Non-UTZ
Timely application	23	30	14	18
		***		***
Frequency of application	48	49	18	28
		***		***
Chemical storage	49	28	-18	6
	***	***	***	

Service intensity hardly affects GAP relating to chemical inputs

The scores of these three practices were combined into one mean score and for UTZ farmers, tested for service intensity, shown in Table 7.16. UTZ farmers in higher service groups have not improved their practice score and also not in comparison to 2013: UTZ farmers scored 0.34 out of 1. This suggests that UTZ farmers who have received more intense levels of services do not practice GAPs related to inputs any better.

Table 7.16 Mean scores for GAP implementation for inputs and service intensity packages

UTZ farmers	Implementation Score % 2017	Change % 2017-2013
UTZ - No services	34	-4
	***	
UTZ - 1 service	40	7
UTZ - 2-4 services	40	2
UTZ - 5 services	41	5

UTZ farmers plant more shade trees, but about half of the farmers does not know the appropriate shade tree density

In 2013, 19% of UTZ farmers reported they had planted shade trees in the previous two years (compared to 0.5% of non-UTZ). In 2017, 27% UTZ and 2% non-UTZ farmers reported planting shade trees in the previous two years. In 2017, 18% of all farmers combined (of which 85% UTZ farmers) did not plant shade trees because they have already enough shade trees on the farm.

Meeting the UTZ Code of Conduct requires that farmers maintain at least 12 shade trees distributed evenly per hectare of their cocoa plot. Shade trees, especially diverse and indigenous trees, increase vegetation on farms and along water courses, contributing to the protection of natural habitats and biodiversity conservation. Farmers were asked a knowledge question on how far apart shade trees should be planted. The best practice is between 2.8 and 4 metres. A large proportion of farmers did not answer or did not know know (12 or more per hectare 45% in 2013 and 40% in 2017, every 4 metres respectively 58% and 43%). The data on shade tree spacing is thus unreliable for statistical analysis because most farmers failed to respond. Shown in Table7.17, 2% of farmers (all UTZ) in 2013 correctly answered that spacing should be every 4 metres, which increased to 7% in 2017. More UTZ than non-UTZ farmers correctly answered that there should be 12 or more shade trees per ha. However, the ratio has not changed since 2013.

Table 7.17 Shade tree density

Shade tree density	Year	UTZ	Non-UTZ	Total
Every 2.8-4 metres	2013	2	0	2
	2017	6	1	7
12 or more per hectare	2013	23	4	26
	2017	22	3	25

7.9 Waste management and reduction

UTZ farmers maintain a higher and stable good practice regarding agrochemical use and waste chemical management

The scores on five questions regarding how farmers apply and manage agrochemicals and chemical waste have been converted into a score between 0 and 1, 1 being the highest and indicating 100% compliance with good practice. Shown in Figure 7.11, UTZ farmers score higher in both years, although this difference has decreased over time as non-UTZ farmers are catching up. UTZ farmers score 7 out of 10 on average, on handling agrochemicals and waste well. In the focus group discussions 12 (11 of which were UTZ) noted improved waste management and attributed this to training from ANADER – both as part of certification and for non-UTZ cooperatives. Nine of the 14 cooperative managers, 8 of which were UTZ, noted that farmers had improved waste management.

Receiving agro training in combination with pesticides results in the best implementation of GAP

For UTZ farmers experiencing high and low service intensity, there is no difference in between their scores on agrochemical use and waste chemical management. However, UTZ farmers receiving agricultural training and pesticides performed better in 2017 than UTZ farmers with no training at all (see Figure 7.12), and these UTZ farmers also improved their score significantly compared to 2013.

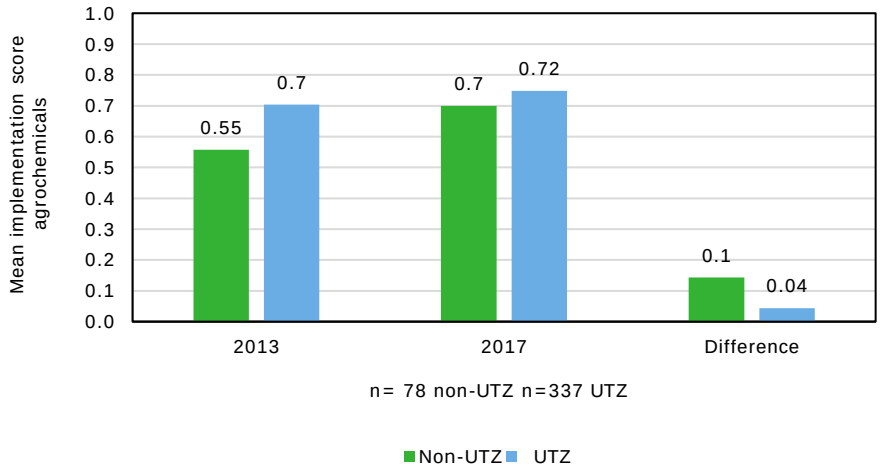

Figure 7.11 Mean scores GAP implementation of agrochemicals and waste

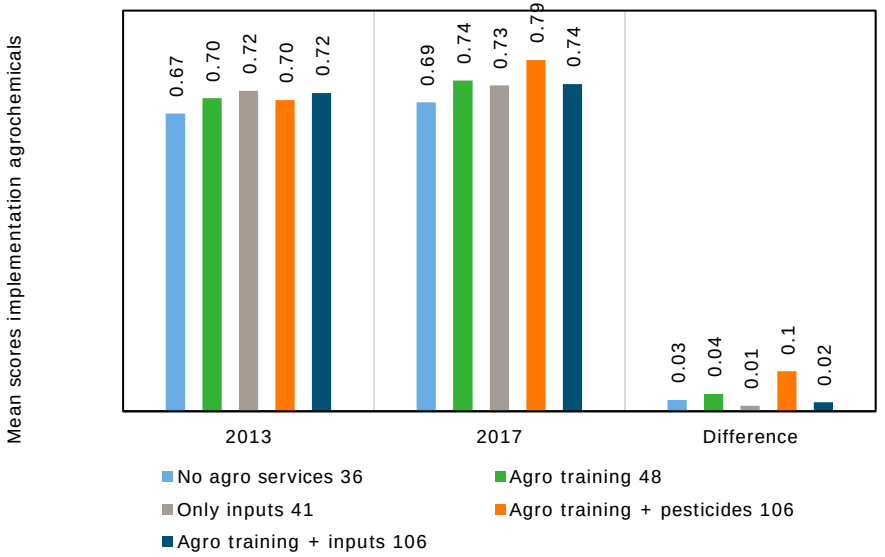

Figure 7.12 UTZ farmers' mean scores for implementation of agrochemicals and waste with agroservice packages

8

Conclusions & Recommendations

Conclusions & Recommendations

We conclude here on the contribution of UTZ certification and related activities by companies to the socio-economic development of cocoa famers.

8.1 To what extent do farmers gain knowledge and implement GAP, and why (or why not)?

Certified farmers show improved knowledge and implementation rates between 2013 and 2017. Non-UTZ farmers are catching up

Figures 8.1 to 8.4 show that knowledge and implementation rates for UTZ farmers have improved since 2013 for harvest practices, personal protective equipment, labour rights, child labour, and waste management. Non-UTZ farmers scored lower than UTZ farmers both 2013 and in 2017, but have generally seen bigger improvements (statistically significant) in both their knowledge and implementation in this period. This finding suggests that UTZ has had an added value in raising knowledge and practices, but has levelled out, and that non-UTZ farmers are catching up to similar levels as UTZ farmers.

But knowledge and implementation rates are still low for both UTZ and non-UTZ farmers

However, despite increases over time, knowledge and implementation scores are generally low, averaging under 50%. A knowledge and implementation rate of 100% is difficult to obtain with large groups of farmers with different socio-demographic characteristics, challenges and choices. Scores of 80% or higher were found for 3 of the 22 knowledge and practice measures:

1. Child labour: percentage of farmers whose children do not conduct hazardous activities on the cocoa farms (84% for UTZ and 86% non-UTZ farmers respectively). This means that 16% of UTZ certified farmers still do not comply with the UTZ Code of Conduct on this requirement.
2. Harvesting: 91% of UTZ and 95% of non-UTZ farmers harvest at the correct time.
3. Weeding: 97% of UTZ farmers and 90% of non-UTZ farmers use recommended weeding techniques.

Implementation rates generally higher than knowledge

Knowledge and adoption are not always connected. When farmers were questioned about both, implementation rates were often higher than knowledge rates, such as for the following practices:

- Child labour and farm activities
- Protective clothing
- Harvesting at the right time
- Weeding
- Pruning

Studies indicate this result is common: farmers can implement practices well even if they can't articulate why. This can be explained by farmers copying practices that appear productive, or when farmers have different, often indigenous explanations and perceptions of practices and resulting outcomes (Birkhaeuser, Evenson et al. 1991, Ayenor, Röling et al. 2004, Blackie 2006, Wartenberg, Blaser et al. 2018).

Knowledge rates are higher than implementation rates for fertiliser application and handling diseased pods

This finding implies that there are barriers to adoption of these GAPs. Explanations include accessibility, affordability and timely availability of fertiliser, knowledge of correct fertiliser dosage for specific agro-ecological conditions, of the productive efficiency of treating diseases and pests, and the capacity and willingness to invest additional labour and inputs related to payback time (Ruf, Tanoh et al. 2016, IDH 2017, Wartenberg, Blaser et al. 2018).

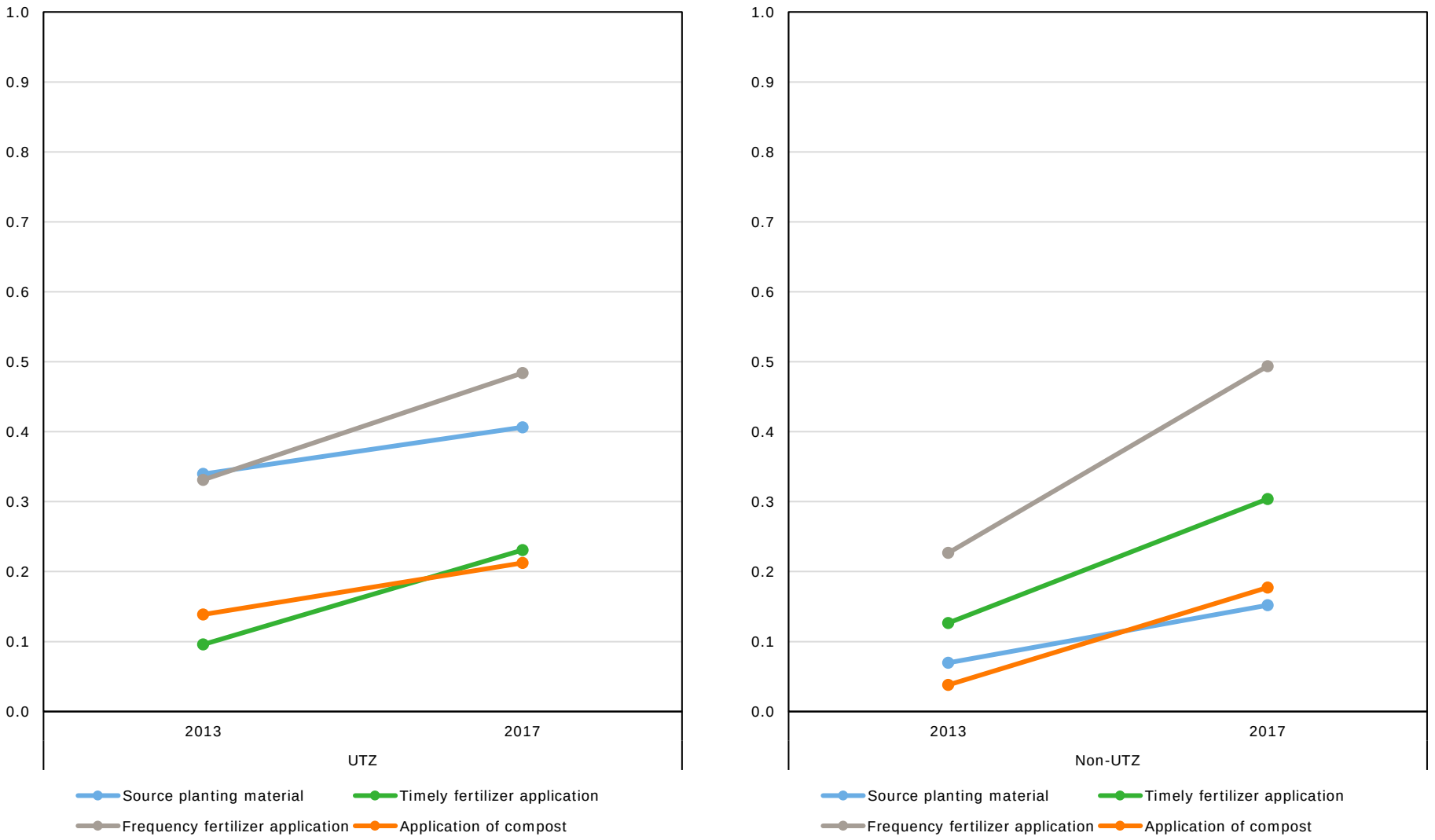

Figure 8.1 Knowledge and implementation of GAPs concerning input use

No significant differences between UTZ and non-UTZ farmers over time for these practices.

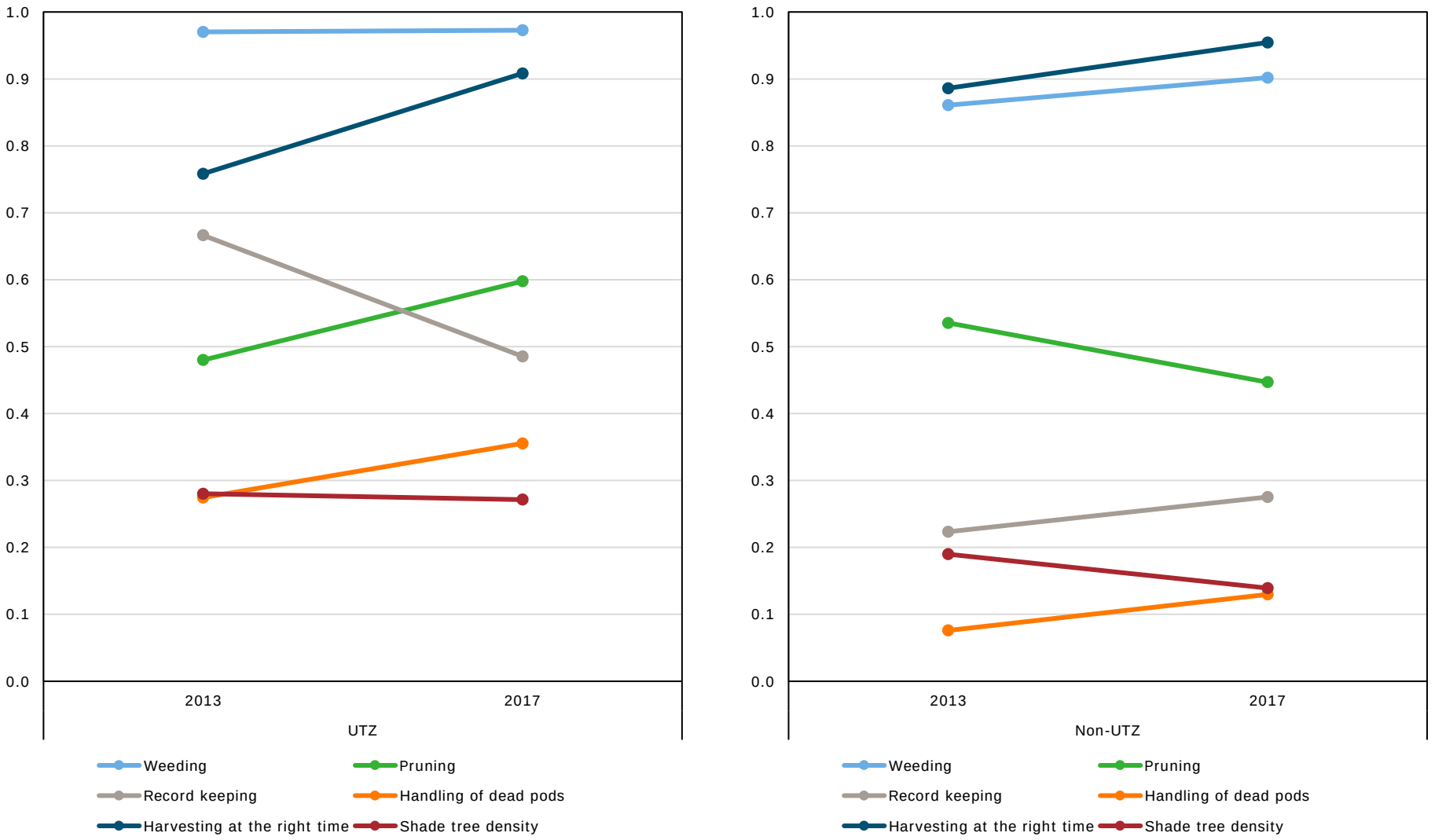

Figure 8.2 Knowledge and implementation of GAPs on farm management

Significant differences between UTZ and non-UTZ farmers over time for harvesting at the right time (positive), pruning (positive), weeding (negative but weeding can hardly be improved for UTZ farmers, they scored very high already in 2013), record keeping (negative).

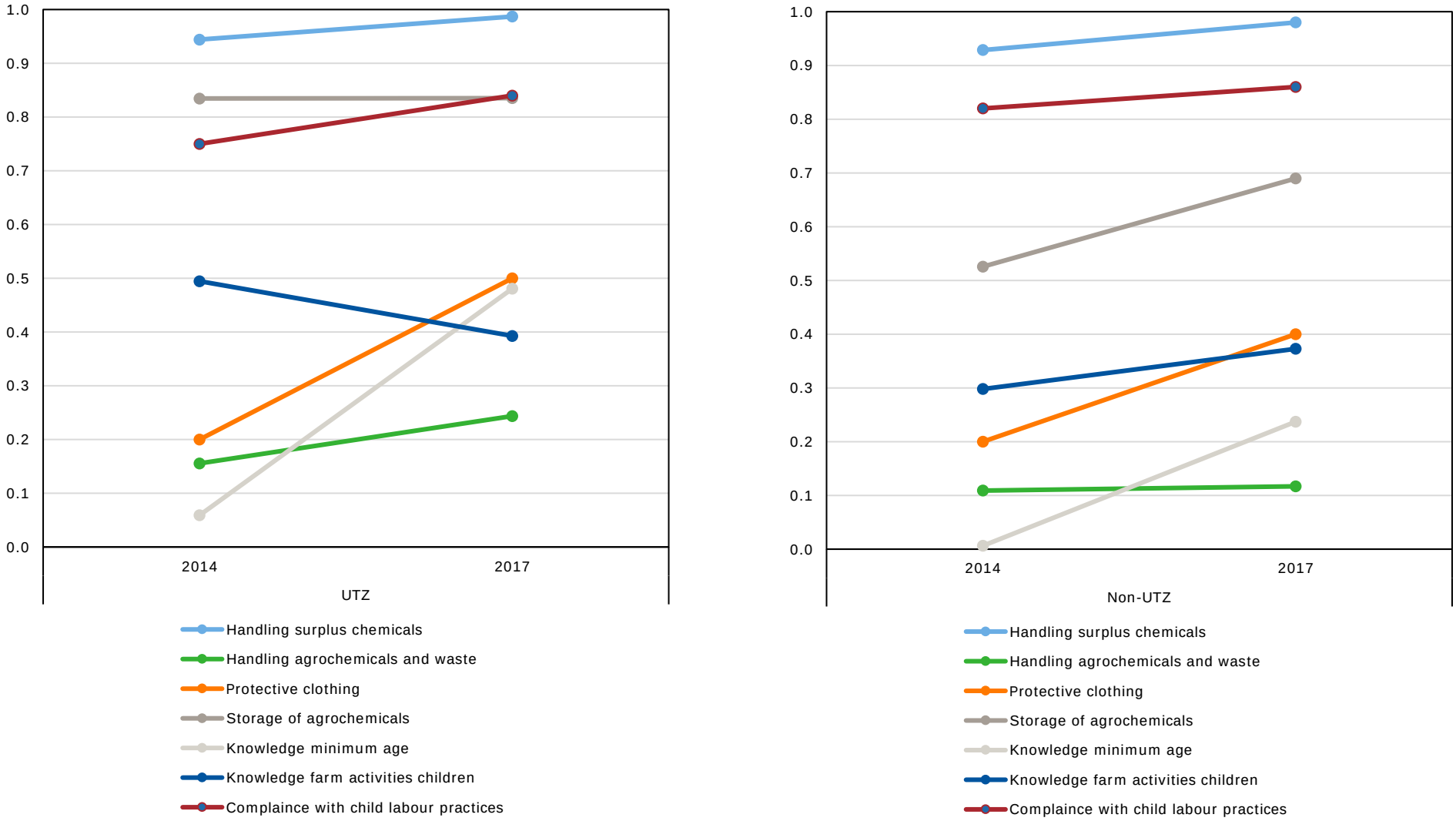

Figure 8.3 Knowledge and implementation of GAP (relating to child labour, healthy and safe working conditions)

Significant differences between UTZ and non-UTZ farmers over time for knowledge on the minimum age for children to work (positive), storage of agro-chemicals (negative, a reason is that the UTZ farmers already have a high score in 2013 which remains high in 2017) and knowledge of what activities are not allowed to do on the farm (negative).

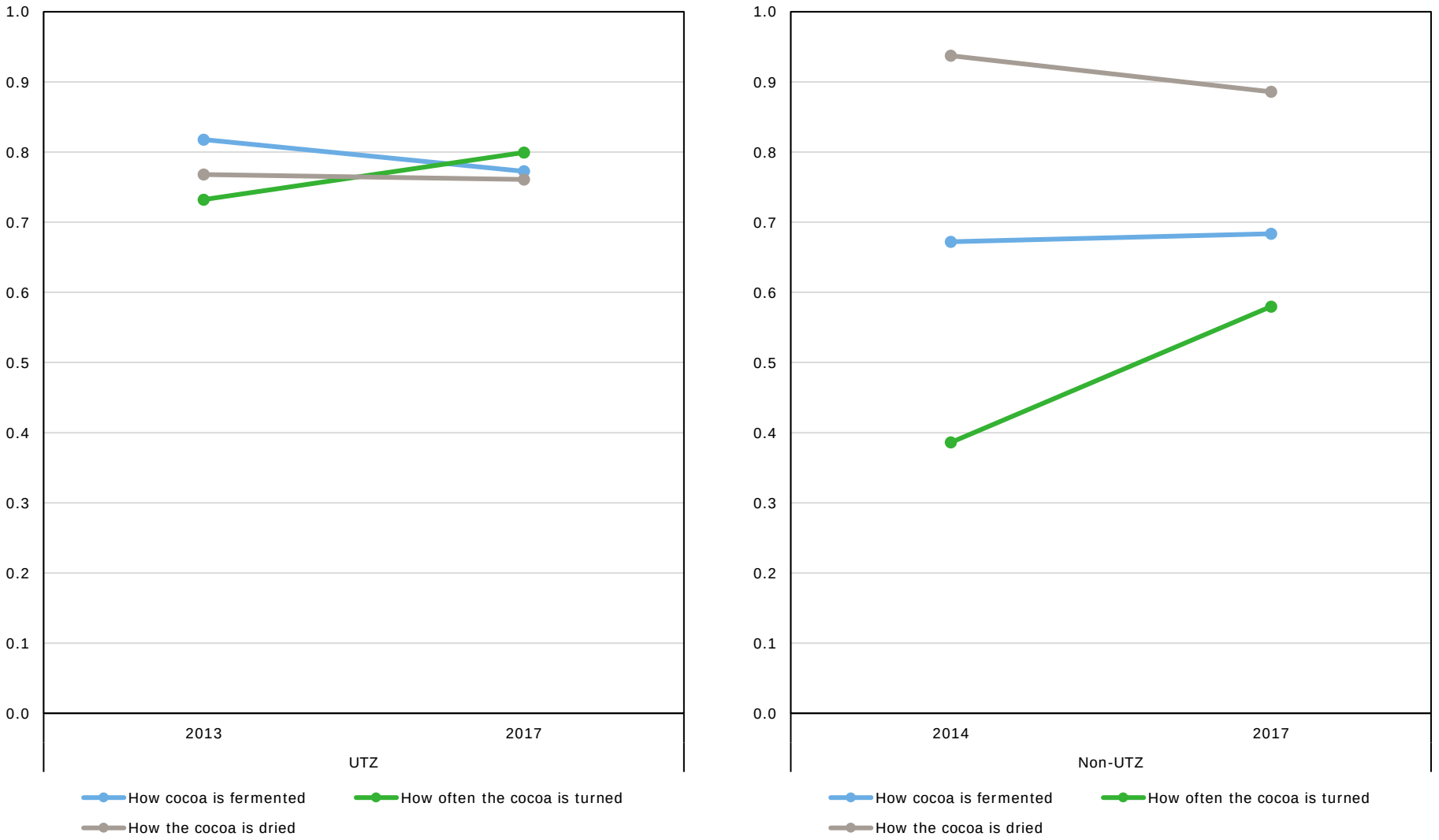

Figure 8.4 Knowledge and implementation of environmental and cocoa quality related practices

Significant differences between UTZ and non-UTZ farmers in evolution over time for how often the cocoa is turned (negative), but this is because UTZ farmers implemented this already quite well in 2013 with some improvement towards 2017. While the non-UTZ farmers improved this practices quite much between 2013 and 2017, having a much lower score in 2013 than the UTZ farmers.

8.2 To what extent do cocoa farmers implement these good agricultural practices, and why (or why not)?

UTZ Certification + service packages have not resulted in changing farmer practices to the extent expected

The results suggest that the extent to which certification, training and other services have influenced the implementation of GAP, as foreseen in the UTZ Theory of Change, has been mixed and limited. To address this, an understanding of the multiple barriers to adopt GAP is needed. As farmers have diverse demographic, economic and farm characteristics, more targeted and tailored service packages that focus on specific needs and the problematic GAPs of child labour, input use, shade trees and waste is needed.

The intensity of training and services decreases over time, levelling out knowledge and implementation improvements

UTZ farmers have in general received more intensive service packages since 2013 – particularly training, which following the impact logic, leads to improved knowledge and practices. However, evidence from the farmer questionnaires, companies and UTZ and the verification meeting all suggest that farmers who have been certified longer, either received a lower intensity of services in 2016 and 2017 or participate less in training and services. This finding helps to explain the lack of a significant increase (and even decrease for 4 practices) in GAP knowledge and implementation rates for UTZ farmers compared to 2013.

Non-UTZ farmers have also benefitted from training and services between 2013 and 2017

Since 2013 non-UTZ farmers have had increasing access to training and services (shown in Section 6). These have often been provided by service providers (notably ANADER) who have replicated training provided as part of certification beyond certified farmers. ANADER and other service providers have also increasingly adopted UTZ-style GAP training content as their standard. Child and labour rights is an example of where both certified and non-certified farmers have been targeted by numerous initiatives across the cocoa zone in Côte d'Ivoire (see Appendix 2) to increase awareness of child and labour rights, monitor the situation and implement actions to address underlying structural problems.

8.3 Do adopted practices lead to better lives, incomes, crops and environment?

The extent to which good practices embedded in the UTZ Code were adopted and implemented was foreseen to lead to improved livelihoods, increased income, improved working conditions, better environmental protection.

Farmers receiving high intensity service packages most impacted

Better crop: Shown in Figure 8.5, UTZ farmers continue to have significantly higher cocoa productivity than non-UTZ farmers, but this decreased slightly in 2017. Farmers attribute changes in production in 2016/2017 mostly to weather. Over time the non-UTZ farmers are catching up with UTZ farmers. Both groups however produce under the potential yield, on average 480 kg/ha, indicating there is room for major improvements. That some farmers in this sample have reached productivity rates of up to 1,400 kg/ha indicates that higher productivity is possible. Farmers receiving more intensive service packages have higher productivity levels. Input provision combined with targeted training appear to be the most effective interventions. The dominance of low-yielding cocoa varieties may be contributing to low yields, and increases the risk of vulnerability to pests and diseases.

Better income: UTZ farmers had significantly higher net cocoa income per hectare in 2017 than non-UTZ farmers, shown in Figure 8.5. Total cocoa income per household member/day for 2017 is similar for UTZ and non-UTZ farmers. But cocoa incomes remain low, at USD 1.25 per day. Increases in incomes in 2016/2017 were due in part of productivity increases for some farmers, but largely to external factors, such as the price reform in 2013 and favourable weather for some farmers. UTZ farmers receiving complete agricultural service packages are more efficient – generating higher gross cocoa income compared to total production costs, implying that complete agricultural service packages work well. The certification premium is still highly valued by farmers, despite constituting 4.2% of the buying price on average. Over time the non-UTZ farmer cocoa incomes have been catching up to the level of UTZ farmers. Cocoa continues to be main source of household income,

the first main crop for 96% and the second most important crop 11% of farmers. Factors positively related to net income per household member include total farm size and share of land devoted to cocoa, whilst household size is negatively related. This may contribute to the feeling of UTZ cooperative managers that their farmers were becoming more professional.

Better life - working and living conditions: UTZ farmers have seen improvements, whereas non-UTZ farmers have experienced fewer changes. Cooperatives have provided services that improve living and working conditions. Labour rights and children's work continue to be issues of concern, as although the proportion of UTZ farmers reporting using child labour decreased from 2013 to 2017, 16% of UTZ farmers report that their children conduct activities which are prohibited by the Code of Conduct. UTZ farmers are making more investments in hired labour and inputs, although labour costs have increased. Farmers plan to continue cocoa farming but don't want their children to be cocoa farmers. In general farmers' satisfaction with their lives decreased. This could be due to multiple factors, ranging from the price reform and weather affecting productivity, and incomes – as well as changing expectations.

Better environment: UTZ farmers perceive improvements in water and soil, but non-UTZ farmers note few changes. There is a continued very low rate of adoption for composting, despite knowledge. Shade trees appear to have been extensively planted in the period up to 2013, but planting shade trees has decreased, may be due to having sufficient on-farm tree cover.

Productivity and income increases are levelling off

UTZ farmers have reached a ceiling in terms of production and income, aided by a package of training and high intensity services. The results suggest that it is difficult to go beyond this ceiling to achieve significant income improvements with the current approach. Also that scaling up to move a larger group of farmers towards a higher income and profitability has not been possible, although non-UTZ farmers are catching up to this celling. Their increases in productivity are explained by the fact they have also received similar services and organisational support, although not in same intensity as the UTZ cooperatives. Services are now also being offered to non-UTZ farmers by pisteurs and traitants as an incentive to ensure farmer loyalty. Cooperatives have been created and certified as a means to access markets, rather than in the cooperative spirit common in the early years of the UTZ and company programmes. These aspects help explain why farmers are less satisfied with their cooperatives. However, farmers are still happy to have received 'new' services.

UTZ Certification and related activities valued by farmers

Certification has provided a means to rapidly upscale sustainable cocoa production and allow farmers to access to certified markets where they can benefit from premium prices, a reward for sustainable good agricultural production practices. Certification has promoted more professional producer associations, which farmers perceive as providing a wider range of benefits, although as in 2013, services can still be improved. Farmers perceive that the UTZ programme leads to increased productivity and income.

Unanticipated outcomes at producer and company level

The adoption of UTZ certification since 2008 has stimulated changes at farmer group level, including:

- Professionalisation of farmers and cooperatives
- Increased intensity and broader service package alongside certification
- Increased farmer satisfaction with cooperatives

UTZ certification has created ripples at company and service provider level, creating a ‘cooperative + service package' model that is now common in both the corporate cocoa sector as well as in government extension service provision. As illustrated in Figure 8.1, certification can be seen as a vehicle to which services have been attached, enabling an increased intensity and broader package of services to be provided.

	Difference 2013-2017 UTZ	Difference 2013-2017 non-UTZ	Significant difference in evolution UTZ vs non-UTZ	Influence of service intensity?	Influence of service packages?
Yield in kg/ha	2013: 527 kg/ha 2017: 497 kg/ha Diff. -30 kg/ha -6%	2013: 259 kg/ha 2017: 402 kg/ha Diff. +143 kg/ha +55%	2013-2017	The more services the higher the yield	Only package 'Agro training + pesticides + fertilizer'
Net income per hectare	2017: 494,000 CFA 2013: *	2017: 396,000 CFA 2013: *	2017	(UTZ) The more services, higher income	(UTZ) full package 'Agro training + pesticides + fertiliser
Net income per household member	2017: 1.39 $ 2013: *	2017: 1.63 $ 2013: *	2017		
Could not analyse (labour costs 2017 higher compared to 2013 without a reasonable explanation					

Legend

Positive significant change

No significant change

Negative significant change

Figure 8.5 Impacts on better crops and incomes

Positive spill-over effects

The growth of cocoa certification across Côte d'Ivoire since 2013 has meant that there is more chance that non-UTZ cooperative members and plausibly also farmers who are not members of cooperatives come into contact with certified farmers. This was evidenced by the UTZ data on cooperative growth and locations, the qualitative data and verification meeting. This means that the chance of spill over of knowledge and practices from certified to non-certified farmers has increased. Farmer data also indicates that both UTZ and non-certified farmers share lessons from training they have received with other farmers, though less UTZ farmers did so less than in 2013 (60% compared to 83% in 2017). When farmers share knowledge, they notice that others changed their practices. Therefore although not anticipated in UTZ theory of change, spill-over effects contribute to the impact of certification.

Figure 8.6 Certification as a vehicle for services

Service packages

Service packages appear to work, with specific packages (the 'agricultural training + one input' package, and the 'agricultural training +pesticides and fertiliser' package) being significantly associated with increased productivity and net cocoa income improvement for UTZ farmers. UTZ farmers with a complete agricultural service package earn a significantly higher net cocoa income and a higher net cocoa income per hectare in 2017. Cocoa income is also higher for UTZ farmers who received a fuller agricultural service package (agricultural training + one input, agricultural training + pesticides and fertiliser). UTZ certified farmers receive more intensive service packages: the majority received more than two services. However, 47% of UTZ farmers experienced a decreased intensity of services in 2017 compared to 2013, which has implications for their productivity and income in the short term future, which could be expected to remain static.

Contribution of UTZ

The wide variety of support and services provided by UTZ and partners did not permit us to estimate total programme effects. The main reason is that due to the relatively small variation in services provided and farmer characteristics, we cannot correlate services with farmer characteristics.

Confirming the theory of change: pathways to impacts as foreseen

The Theory of Change (ToC), described in Chapter 3, foresaw that UTZ and their partners interventions would have specific, intended impacts. The impact logic (shown in Figure 3.3) assumes that training and adherence to the code of conduct will lead to better crops, income and environment outcomes and knowledge is turned into practice.

Figure 8.2 shows that in general the pathways to impact are confirmed. Regression analyses of all farmers (UTZ and non-UTZ) were conducted to test if the assumptions of relationships are statistically significant. Farmer's knowledge of GAPs is positively correlated with the overall implementation of GAPs, and positively correlated with higher productivity per hectare and an increase in gross income per hectare. Knowledge is partly associated with implementation: good agricultural and environmental practices are positively related to knowledge but social practices are not correlated.

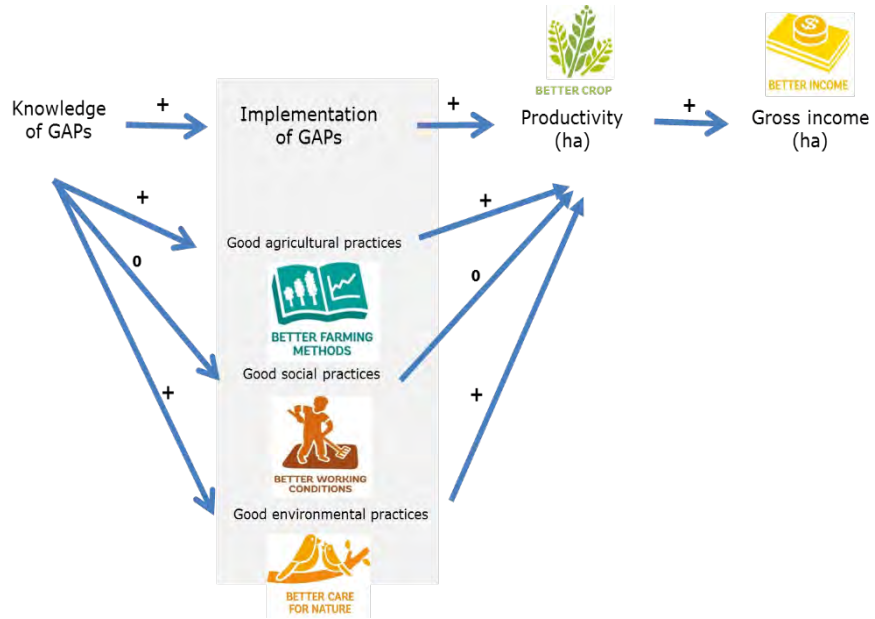

Figure 8.7 Confirming UTZ impact pathways

Key: + significant positive correlation between indicators, 0 no significant correlation between indicators.

8.4 Conclusions

Although the pathways to impact and change are largely confirmed, there remains a gap between what certification is expected to deliver and what it actually has delivered. Impacts have not been felt by all UTZ farmers, and the level of impacts has generally been marginal for crop productivity, incomes and the environment. Lessons learnt from this study are that:

- UTZ certification alone has not led to impacts such as improving farmers' livelihoods beyond poverty levels and assuring social risk-free cocoa.
- However, certification plus training and a high intensity package of services has led to higher levels of productivity and incomes.
- Most farm and farmer characteristics do not appear to influence the outcomes of certification plus training and services received, however farmers who are younger, in excellent or good agro-ecological zones and who have been certified for a shorter periods (five to 7 years), and farmers with a higher share of cocoa in their total income have been more positively affected.
- Although certification falls short of general expectations, it has generally contributed to improving farmer's knowledge and implementation of good farmer agricultural, social and environmental practices over time.
- However, despite certification and having received associated services and inputs for between 3 and 8 years, farmers have not achieved high levels of knowledge on key aspects of the UTZ Code of Conduct.
- High knowledge is associated with high adoption of practices. A knowledge and implementation rate of 100% is difficult to obtain with large groups of farmers with different sociodemographic characteristics, challenges and choices. Scores of 80% or higher were found for 3 of the 22 knowledge and practice measures on child labour, harvesting and weeding. Implementing such practices is challenged by a vicious circle of poverty as farmers compromise on activities which cost time and cash to implement.
- Non-UTZ certified farmers have been catching up in terms of productivity and incomes, knowledge and implementation of good practices. This reflects the certification model (grouping farmers, training on GAP and providing access to services and inputs) has also increasingly been adopted outside of the realm of certification - but not as intensively as the model provided by UTZ certification and associated services and inputs by companies.
- Whilst the premium for certification and services associated with certification and stronger cooperatives are valued by farmers, it does not provide sufficient incentive to invest in all the sustainable practices seen as desirable for sustainable cocoa production by UTZ. The rate of the premium has not increased over time and continues to form a small proportion of the selling price, providing only a minor economic incentive.

8.5 Recommendations

The topics which matter

As farmers have diverse demographic, economic and farm characteristics, more targeted and tailored mixes of service packages that focus on farmer's specific needs and the most problematic practices relating to child labour, input use, shade trees and waste management are needed.

Barriers and enablers to improve sustainable cocoa production and livelihoods

The incentives currently created by certification and associated services have been insufficient to motivate all value chain actors – farmers, companies, local authorities and consumers – to make the investments needed to close sustainability gaps. The existing tools (standard, assurance and training) are insufficient and/or inadequately implemented and unable to diagnose and address the existing sustainability gaps and the underlying root causes**.**
The persistent problems of poverty, human rights and environmental degradation in cocoa production, extend beyond cocoa farming. Enablers include:

- Finding solutions to avoid the ongoing tensions of (over)supply and low prices which harm farmer incomes and not dis-incentivising farmers to take actions to increase productivity, such has replanting with improved genetic stock, and improving soil fertility.
- Supporting farmers to be able to select from a mix of mechanisms to help them to foresee, take action and mitigate the risks of global market price shocks and variability. This can include: support for diversification and/or professionalisation taking into account individual farmer's farm and demographic characteristics; accessing and developing value chains for cocoa beans not linked to global commodity prices such as fine flavour or bean to bar markets.
- Enabling access to credit so that farmers can invest in farm professionalisation and diversification to weather future price fluctuations.

Which service packages and how many?

Given that higher cocoa productivity and net cocoa incomes is associated with a higher number of services and the combination of certification with agricultural training, pesticides and fertilisers – this package of service is recommended. The frequency and topics need to be tailored to the length of time a farmer has been certified- providing periodic refresher training when knowledge or adoption levels indicate this is needed, and updating curricula based on new evidence and insights into GAPs. Services which also fulfil farmers most stated need for access to credit, reduce labour costs and which deliver easy gains in soil quality are also important.

Complementary interventions based on evidence of what works

This report provides evidence of the growing acknowledgement in the cocoa sector that certification needs to work alongside complementary interventions to deliver impact. The data collection efforts for this study highlighted that most companies are collecting similar types of data on farmers characteristics, productivity and their interventions and impacts. Whilst companies are implementing similar types of interventions, these are in different combinations, focuses, level of detail, delivery modes, targeting and frequency, the details of which could not be captured in this study. Yet information of a pre-competitive nature on how effective these interventions and services are remains largely unshared on a national or value chain level. Thus valuable lessons of what does and particularly what doesn't work, and the near real-time outcome metrics that are increasingly collected, are generally not shared. As a result, complementary interventions based on new evidence of what works trickle down slowly or only in an ad-hoc fashion into the cocoa sector.

Facilitating the meeting of bottom up farmer and top-down industry and government visions

Whilst the increasing number of platforms and joint initiatives via the government, the Interprofession and organisations such as the WCF mean that a common sustainability vision and indicators for the sector in Côte d'Ivoire is being developed, this is largely top-down. Farmer organisations are not empowered sufficiently to have a unified, national farmer voice that informs advocates and from farmer level upwards about the interventions and services most needed, that work effectively.

A transformational approach needed

This results of this study suggest that systemic change and transformation in the sector is urgently needed, and that UTZ's sectoral strategy is timely. Sector transformation implies that structural unsustainable practices (environmental, social and economic) are dramatically reduced and where they persist, adequate mechanisms are in place to address them. Sectoral transformation requires structural interventions that go beyond the scope of the certification offering and beyond the unit of the farm. Achieving this is a major challenge, requiring new ways of thinking and working, with multiple actors collaborating across and beyond the value chain, with each implementing distinct but mutually reinforcing activities, guided by a common vision that can be measured with commonly agreed metrics of success. Based

on this study, the outcomes and impacts of what certification has and can realistically achieve in the future are clearer. Other interventions are needed to achieve the desired, positive impact. Given the traction certification has in Côte d'Ivoire, UTZ could act as a catalyst for sector transformation by working to align stakeholders and take more evidence-based decisions. Co-creating sustainability with all stakeholders – notably the farmers and the government - will mean agreeing on real and appropriate incentives with long-term, multi-stakeholder programmes to address these systemic issues.

A transformational approach means shifting from certifying compliance to a standard towards implementing and measuring improvements against priority sustainability objectives based on local context and farmers' needs being integrated into international commodity chains. The current farm level focus also needs to change to a landscape level to capture off farm impacts- notably environmental impacts such as deforestation. A new focus on supporting legal, jurisdictional framework and its enforcement to create a strong fundament for farmers rights, can provide a stronger basis for voluntary commitments made through certification.

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Appendix 1 Glossary and definitions

Term	Definition
Changes in needs (income, food, water, status, health, education, other)	Farmer perception based on open questions with qualitative answers possible.
Classified forest (*foret classée)*	Classified forest is the property of the state and if cocoa is farmed in classified forest it is effectively illegal. In some cases is hoped that in time the state will declassify and the farmer becomes the owner.
Cocoa farm in production	The area of the cocoa farm in hectares that is planted with cocoa trees. Land out of production refers to fallow land, and/or where cocoa trees have been cut or land is being preapred for planting cocoa trees in the future.
Control or comparison	Denotes non-UTZ certified farmers used as a comparison to the UTZ farmers.
Cooperative	Cooperative is used to denote groups of farmers that are legally registered as an association or cooperative in Côte d'Ivoire.
Economic efficiency	See input-output ratio
Exchange rate	Monetary units are stated in the currency used in Côte d'Ivoire, the African Financial Community Franc (*Communauté Financière Africaine*) (CFA) and euros. The prevailing exchange rate during the research period was CFA 655 to €1.
Farm input costs	Farm inputs refer to the costs of all these farm inputs together
Farm or agronomic inputs	Agronomic inputs include fertiliser, herbicides, pesticides and seedlings
Founder (*fondeur*)	This implies ownership of both land and crops (i.e. cocoa, rubber, coffee, oil palm, etc.). Both Ivorian's and Burkinabe can own land and crops.
Gross cocoa income (gross cocoa revenue)	Yearly cocoa production from all cocoa farms multiplied by the average price per kg for cocoa paid to farmers in CFA per kg.
Implementation of good agricultural practices (cocoa)	Farmers were asked 24 multiple choice questions on GAP. Correctly answered questions correspond to the requirements of the UTZ Code of Conduct. The answers were score related to the correctness of the answer. For each question a score was derived for each farmer on a scale between 1 and 10. The overall score for the implementation of good agricultural practices was measured as an average of all scores for the individual scores.
Inheritance or inheritance with ownership (*Héritier, propriétaire)*	After division of land form inheritance, ownership is complete. Depending upon the region, women as well as men may inherit. In the South and South West of Côte d'Ivoire women inherit more frequently, whereas in other areas only men tend to inherit. Burkinabe women generally have no inheritance rights. Whilst Burkinabe have purchased land in Côte d'Ivoire, generally this is customary and they do not have officially registered land title deeds.
Input costs of cocoa production	Includes all labour costs (both farmers own labour and family labour, and hired labour), plus farm input costs, in CFA. Input costs are calculated by the number of times a product is applied multiplied by unit multiplied by price per unit of input (fertilisers and crop protection products such as fungicide and pesticide) Time (opportunity costs) to become UTZ Certified and investing in PPE have not been taken into account in input cost calculations.
Input-output ratio	A farmer's average economic efficiency (also known as the ratio of output to inputs) is calculated as gross income from cocoa divided by total production costs. The higher the ratio the more efficient the farmers are (more output with the same input).
Knowledge of good agricultural practices (cocoa)	Farmers were asked 12 multiple choice questions on GAP. Correctly answered questions correspond to the requirements of the UTZ Code of Conduct. The more correct answers a farmer, the higher the score for the individual question. For each question a score was derived on a scale between 1 and 10. The overall knowledge score was measured as an average of all scores for the individual scores.

Term	Definition
Labour costs of cocoa production	All reported time (in days) spent on specific named cocoa production activities worked by an individual in the cocoa year multiplied by an average price of labour (CFA 2000 per day). Family labour costs are calculated using the same price as for hired labour. These data were aggregated for all tasks by type of labour for men, women, children in the household, and different types of hired labour, and calculated, also as labour days per hectare and kg. Not included are costs and time spent by farmers on training, communal 'shared' labour gangs, non-paid work as a lead farmer, time spent on internal management systems and on auditing. Farmers indicating zero labour costs were not included in the calculations.
Living income	Based on multi-stakeholder 'Community of Practice' definitions, the concept refers to a living income for a household (not associated with one particular crop) defined as total household income in cash and kind, net of taxes) required to afford a decent standard of living (food, water, healthcare, transport, clothing, housing, education, and other essential needs including provision for unexpected events for all members of an average household.
Manager (*Gestionnaire)*	A manager of a field(s), which generally belongs to someone in their extended family i.e. father or mother or be managed after a parent's death while the family sorts out inheritance. Informally the manager receives one-third of the revenue. Generally higher amount of revenue is obtained when managed on behalf of a father than a mother, due to cultural norms of respect and tendency not to negotiate with one's mother.
Net cocoa income	Yearly production of cocoa from the main farm, minus total production costs (hired labour and family labour and farm inputs) for the main farm. Net cocoa income is calculated as gross income from cocoa minus farm input costs and hired labour costs, in CFA. Income is calculated based on the average price paid per kg in each season for the quantity sold in that season.
Net income per household member	Net income per household member is calculated based on net income in CFA divided by household size and 365 days and multiplied by the prevailing CFA/USD exchange rate on 5 March 2017 of CFA 1 = USD 0.00187645.
Productivity	The quantity of cocoa in kg produced per hectare. based on farmers reports of their farm size (both measured and non-measured).
Profitability	Net cash income from cocoa farming per hectare, in CFA.
Satisfaction with interventions of companies programmes	Farmer perception, 3-point Likert scale and open question
Satisfaction with livelihood	Farmer perception, 5-point Likert scale
Satisfaction with services of cooperative	Farmer perception, 3-point Likert scale
Sharecropper worker with 33% revenue share (*Abusan / main d'oeuvre en remuneration de 33%*)	Workers on productive land with no ownership rights or claims. They receive 1/3 of revenues from the owner of the land worked, the owner keeps 2/3. The majority of workers are male. It is estimated that only a very small proportion of women work as abusan.
Sharecropper worker with 50% share of revenue *(Abunun / main d'oevre en renumeration de 50% utilisation de terre)*	Workers on productive land with no ownership rights or claims. They receive 1/2 of revenues from the owner of the land worked, the owner receives 50%. If the land is 'bad fields' abunun works with 50% of revenues and abunun also with 50%.
Statistical significance	'Significant(ly)' refers to *strong* statistical significance. This means that the probability of incorrectly rejecting the null hypothesis is below 5% ($p(\alpha<0.05$, shown as ** in tables) or 1% $p(\alpha<0.01$ shown as *** in tables) i.e. less than one in a thousand chance of being wrong. When the probability is 10% or lower the term *weak* significance $p(\alpha<0.10)$ is used (shown as * in tables).
Total cocoa production costs	Labour + input costs. Not included in these costs are the costs of equipment and personal protective equipment, in-kind costs, such as of spraying gangs or communal 'shared' labour. Time (opportunity costs) to become UTZ Certified and investing in PPE have not been taken into account in cost calculations.
Total gross income	All sources of gross income for the household, including cocoa.
Under guarantee (*Prise en garantie – garantie*)	An arrangement either between two farmers, between farmer and buyer or between farmer and somebody with financial resources, where the land and crop is used as a guarantee for a loan. The person who has received the farm as guarantee may use abusan workers to farm the land. Income from the

Term	Definition
	land and crop is the property of the person who has the land in guarantee. Land under guarantee can become the property of the lender in the case of a long-term loan and when an agreement is reached between the two parties. It is also possible that the owner works in the field and has no abusan.

Appendix 2 Côte d'Ivoire cocoa programmes 2014-2017

Table A2.1 Programmes, projects and initiatives in the Côte d'Ivoire cocoa sector

Name	Partners	Period	Links
Cargill, ADM, Barry Callebaut, Outspan, ECOM, CEMOI	Corporate programmes with consultants, cabinets, ANADER		
Cocoa & Forests Initiative 'Cadre d'Action Commune – Côte d'Ivoire'	private sector cocoa and chocolate companies, WCF, IDH and the government	2017-	IDH https://www.idhsustainabletrade.com/landscapes/wider-tai-area-cote-divoire/ https://www.idhsustainabletrade.com/landscapes/wider-tai-area-cote-divoire/ http://www.cocoasoils.org/ https://www.idhsustainabletrade.com/uploaded/2017/11/CDI-Framework-Final.pdf https://www.idhsustainabletrade.com/uploaded/2018/02/Report-Launch-of-the-activities-of-the-Joint-Framework-of-Action-of-the-Cocoa-and-Forests-Initiative-in-Côte-dIvoire.pdf
Cocoa Community Development Fund (CCDF)	WCF, ANADER, Winrock	2014(?)-?	http://www.worldcocoafoundation.org/wp-content/uploads/TOT-Blog-Post-FINAL1.pdf
Cocoa Promise	Cargill, ANADER	2008 –2017	https://www.confectionerynews.com/Article/2008/11/06/Cargill-teams-up-with-ANADER-for-rural-development http://www.fdbusiness.com/cargill-continues-to-support-cocoa-sector-in-cote-divoire/
COCOALINK	Nestlé, CCC, ANADER	2013-2016	http://www.nestlecocoaplan.com/nestle-joins-cocoalink-in-the-cote-divoire/
Comité de gestion de la filière *Café Cacao* (CGFCC)	Cocoa-related institutions		
Fairtrade certification	Fairtrade + Agro Eco Louis Bolk Institute& Rabobank, the Dutch structure Control Union for organic certification and FAIR TRADE		
Forest Friendly Cocoa, Côte d'Ivoire	Mondelez, MinSeDD, REDD+ Cote d'Ivoire, UNDP	2017-	https://www.tfa2020.org/en/publication/forest-friendly-cocoa-cote-divoire/
German Technical Cooperation (GIZ)	PRODEMIR – Program de Développement Economique en Milieu Rural		
Green Commodities Facility	United Nations Development Fund (UNDP), Cote D´Ivoire Sustainable Cocoa Initiative NORAD, World Cocoa Foundation (WCF), International Cocoa Initiative (ICI), Echoes – Youth Education and Livelihoods Program, UNDP and the		

Name	Partners	Period	Links
	Associations of Chocolate Manufacturers from Denmark, Finland, Norway and Sweden		
Farm & coop investment program	IDH, Conseil du Cafe Cacao, partners	2016-date	https://www.idhsustainabletrade.com/initiative/farm-cooperative-investment-program/
International Labour Organisation (ILO)	International Cocoa Initiative		
International Cocoa Organisation (ICCO)	CNRA Centre National de Recherches Agronomiques/CFC/ICCO/Bioversity Project on Cacao Germplasm Evaluation		https://www.bioversityinternational.org/.../CFC_ICCO_Review.pdf
Kraft Foods, Hans Neumann Stiftung& farmers, Rainforest Alliance	Sustainability alliance, Market Oriented Promotion of Certified Sustainable Cocoa		
Mars	Sustainable Cocoa Initiative (Cocoa Development Centers (CDC) and Cocoa Village Clinics (CVC): rehabilitation of old and aging farms with good planting material, soil fertility management, solid agricultural practices including pest and disease control IMPACT project with Government of CI, ICI, AIECA, AFRICARE, SOCODEVi, STCP, RAINFOREST ALLIANCE, IFESH, INADES, BFCD		
Ministry of Agriculture (MINAGRI)	Fonds Interprofessionnel pour la Recherche et le Conseil Agricole (FIRCA)		
Cocoa Life programme	Mondelez (Cadbury), Conseil du Café Cacao (CCC), CARE, farmers		
National Agency for Rural Development (ANADER)	Extension services, promotion of farmer's skills and entrepreneurship by designing and implementing appropriate tools and conducting agricultural extension services. Fight against disease Swollen Shoot (Pilot Project) Project certified sustainable cocoa production		
National Confectioners Association, CAOBISCO, ECA& farmers	Regional Trade Associations and their memberships		
Cocoa Plan	Nestlé & CNRA		
Nestlé Action Plan on Women in the Cocoa Supply Chain	International Cocoa Initiative (ICI), ANADER	2013-2015	https://www.nestle.com/asset-library/documents/creating-shared-value/responsible-sourcing/women-cocoa-supply-chain-progress-report-jan-2015.pdf
Alliance	Olam International and Blommer Chocolate& farmers		
Organic certification	Organic + Agro Eco Louis Bolk Institute		

Name	Partners	Period	Links
Plateforme de Partenariat Public-Privé (Private-Public Partnership Platform)	Over 100 members from national and international public, private, civil society, NGO and research organisations	2012-date	
Project Pro Planteurs	GIZ, DOPA-MINAGRI, CCC	2015-date	https://www.kakaoforum.de/fileadmin/Redaktion/Studien/GISCO_COOP_Report_GEFAK_final.pdf
Rainforest Alliance certification	Rainforest Alliance certificaiton, COSA		
Signatories include governments and representatives of the cocoa industry and witnesses include social activists, NGOs and labour unions	International Cocoa Initiative (ICI) to eliminate the worst forms of child labour and forced labour and the Harkin Engel Protocol		
Survey of Child Labor in the Cocoa-Growing Areas of Cote d'Ivoire and Ghana	Tulson Payson Center	2014-	
Towards Child Labour Free Cocoa Growing Communities in Cote d'Ivoire and. Ghana through an Integrated Area Based Approach	USAID		
UTZ Certification	UTZ, IDH		
Vision for Change partnership	Mars Inc., ICRAF, CNRA, Agence Nationale d'Appui au Développement Rural (ANADER)	2011-2017	https://www.worldagroforestry.org/project/land-health-surveillance-system-smallholder-cocoa-ivory-coast
WCF African Cocoa Soil Fertility Initiative	CCC, ANADER, WCF, ICRAF, ANADER	2014-?	http://www.conseilcafecacao.ci/docs/pppp_2_session/Panel_1-WCF_PPPP_presentation_San_Pedro.pdf
World Cocoa Foundation (WCF)	Cocoa Livelihoods programme, Cocoa Link, WCF African Cocoa Initiative (WCF/ACI), Grow Africa		https://www.growafrica.com/groups/world-cocoa-foundation-cote-divoire

Appendix 3 Descriptive and statistical outcomes

Table A3.1 Descriptives

Indicator	Unit of measurement	Results – total sample (UTZ & non-UTZ)						Significant difference [a]
		Mean	Median	Standard deviation	Minimum	Maximum	Number of respondents	between UTZ certified & non-UTZ certified farmers
Age	Number of years	50	50	11.52	27	92	418	0
Gender	% male	97%					418	Too few women for meaningful analysis
Household size	Number	8	8	3.39	0	18	418	0
Number of persons the farmer takes care of	Number	12	11	6.63	0	52	418	0
Position HH	91% household head, 4%: wife, 2.2% other adult, 3.1% child						423	Not analysed
Particular position in community	Traditional authority 63%, religious leader 9%, family or clan head 1%, cooperative 9%, lead farmer 4%, company 1%, youth group leader 14%, School teacher 1%						176 [B]	Not analysed
Migrant status	10% first generation immigrants (92% Burkinabé, 8% Malian) 10% 2nd generation immigrants (92% Burkinabé, 8% Malian)						623 [B]	Not analysed
Ethnicity	28 ethnic groups: of total Baoulé 46%, Attie 24% Guéré 6%, Bété 5%, Senoufo 3%, others >1%						623 [B]	Not analysed
Membership cooperative	Number: 423 farmers, 17 non-UTZ, 339 UTZ						418	Not analysed
Farm ownership	% 77% founder, 18% inherited, 4% administrator, 0.2% owner, 0.7% other.						425	Not analysed
Number of cocoa farms	Number	1.57	1	0.81	1	6	425	0
Cocoa farm size (all farms)	Hectares (estimated by farmers & known measured)	4.78	4	4.03	0.02	40	421	0
Cocoa farm size (all farms)	Hectares (measured)	4.99	4	4.16	0.5	40	336	Not analysed
Age of main farm	Nr of years since establishment	24	21	11.38	4	72	326	0
Cocoa production (main farm)	Kg	1808.62	1400	1540.24	3	8000	357	+
Cocoa production (all farms)	Kg	2280.96	1700	2137.11	3	17000	363	+

Indicator	Unit of measurement	Results – total sample (UTZ & non-UTZ)						Significant difference [a]
		Mean	Median	Standard deviation	Minimum	Maximum	Number of respondents	between UTZ certified & non-UTZ certified farmers
Total labour costs#	CFA per hectare	204861.2	159666.7	204619	150	2625000	410	0
Total input costs#	CFA per hectare	8829.01	5625	10325.84	110	88500	301	-
Total production costs	CFA per hectare	729444.6	603250	617114.9	6000	6043600	420	+
Total production costs per kilogram	CFA per kg	813.23	442.65	1425.50	30.45	17500	356	0
Productivity (main farm)	Kg per hectare	482.97	450	253.71	6	1800	357	+
Productivity (all farms)	Kg per hectare	481.96	440	246.20	11.25	1583.33	363	+
Cocoa production efficiency [c]	Input/output ratio (gross income/total production cost)	3.55	2.40	4.49	0.06	35.70	365	0
Gross income from cocoa (all farms)	CFA per year	2402565	1690441	2273110	3183.9	18500000	363	Not analysed
Gross income from cocoa (main farm) [c]	CFA per year	1902829	1441950	1639305	3183.9	8800000	357	Not analysed
Net cocoa income [c]	CFA per year	1816758	1323730	1621488	-170060	8766600	357	Not analysed
Net cocoa income per hectare	CFA. per hectare						356	+
Gross income from other sources	CFA per year	569895.4	250000	913304	5000	6000000	129	Not analysed
Gross total household income [d]	CFA per year	2569695	2428285	1831940	3183.9	18600000	368	Not analysed
Farmer's reported satisfaction with livelihood	39% (very) satisfied on at least 5 life categories						426	Not analysed

Notes: [a] Cost calculated based on costs for the main cocoa farm only. [b] Cost calculated based on costs for the main cocoa farm only. [c] Based on main farm only [d] Based on farmers reported income net cocoa. Income and gross income from other sources. #Total labour costs and total input costs reported if farmer mentioned to have these costs. Some farmers received farm inputs (pesticides, fertiliser, protective equipment etc) for free. B= Baseline data. Key: + significant positive difference, - significant negative difference, 0 no significant difference.

The table below gives an overview of data for UTZ and non-UTZ farmers. In addition the outcomes of the dif-in-dif model is presented including the control variables as described in section 6 as well as the results from the model including the control variables as described in section 4 and a model with fixed effects at household level. The tests are based on matched sample and only provided for sample size over 20.

Table A3.2 Descriptive and statistical outcomes for UTZ and non-UTZ farmers

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
service intensity 2017 for 2013 year interaction	339	2.28	339	2.28		79	0.87	79	0.87		1.40***	1.40***			
agro services: none-complete	339	2.60	339	2.60		79	0.42	79	0.42		2.18***	2.18***			
at least one agro training			339	0.77				79	0.18	0.18***		0.60***			
training lead farmer (gestion de cooperatives)			339	0.14				79	0.03	0.03		0.12***			
training good social practice and/or health			339	0.35				79	0.13	0.13***		0.22***			
training management competences			339	0.26				79	0.08	0.08**		0.18***			
access to fertiliser (via coop)			339	0.40				79	0.03			0.38***			
if farmer has market access to pesticides (via coop)			339	0.71				79	0.10			0.61***			
access to seedlings (via coop)			339	0.49				79	0.06			0.43***			
at least 1 agro-input for free	339	0.13	339	0.63	0.49***	79	0.03	79	0.49	0.47***	0.11***	0.13**	0.02	0.01	0.02
years of certification coop level	339	2.99	339	6.99	4.00	79	0.00	79	0.00		2.99***	6.99***	4.00	4.00	4.00
If farmer certified by FLO			339	0.06				79				0.06**			
If farmer certified by Rainforest Alliance			339	0.12				79				0.10***			
utz certified in both years/control in both years	339	1.00	339	1.00		79	0.00	79	0.00		1.00	1.00			
coop membership 2013 based on 2017	339	1.00	339	1.00		79	0.22	79	0.22		0.78***	0.78***			
Agro-ecological conditions	339	1.65	339	1.65		79	1.53	79	1.53		0.12	0.12			
1 female 0 male	339	0.03	339	0.03		79	0.04	79	0.04		-0.01	-0.01			
HH size in 2017	339	8.47	339	8.47		79	7.35	79	7.35		1.11***	1.11***			
Share gross cocoa income	321	0.91	289	0.94	0.02*	74	0.77	67	0.92	0.15***	0.15***	0.02	-0.13***	-0.14***	-0.14***
total farmsize	339	5.33	333	8.78	3.44***	79	4.14	76	10.64	6.47***	1.19**	-1.86**	-3.03***	-3.06***	-3.00***
total cocoa farm size - both years	339	5.33	339	5.33	-0.01	79	4.14	79	4.71	0.57*	1.19**	0.62	-0.58	-0.59	-0.58
farm size in production	339	4.53	339	4.87	0.35*	79	3.88	79	4.27	0.39	0.65	0.61	-0.04	-0.01	-0.04
farm size in production if measured	338	2.75	339	4.50	1.76***	79	3.29	79	1.69	-1.60***	-0.55	2.81***	3.36***	3.47***	3.36***
Age of main farm	313	21.93	264	23.79	1.89***	74	23.45	55	22.75	0.88	-1.51	1.04	1.28	0.92	0.55
Nr of years the oldest plot existed	339	21.86	299	23.97	2.31***	79	23.29	69	24.41	1.60	-1.43	-0.43	0.83	0.52	0.73
Owner of # of farms	339	0.87	339	1.29	0.42***	79	0.94	79	1.52	0.58***	-0.07	-0.23**	-0.16	-0.17	-0.16
total owned farm size	339	3.79	339	4.43	0.64**	79	3.62	79	4.18	0.56	0.17	0.25	0.08	0.07	0.08
output divided by input (all inputs)			286	3.39	n.a.			67	3.45			-0.06			
total input costs	339	66713	339	84756	18042.40**	79	55834	79	64121	8286.91	10879.36**	20634.85	9755.49	10032.59	9755.49
costs of inputs (agro-input, hired labour) per ha	316	22720	288	31125	-7937.52***	72	29467	67	33966	4498.38	-6747.89**	-2840.66	3907.23	3056.85	4235.47
total non-labour input costs per hectare	331	13700	335	5761		77	20310	78	8902	-11401.00***	-6610.21***	-3141.17***	3465.36*	2472.90	3418.21*
total costs hired labour in CFA	339	28504	339	65634	37130.12***	79	14341	79	40104	25763.49***	14162.66***	25529.29*	11366.63	12338.89	11366.63

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
total costs hired labour in CFA per ha	331	7552	335	14949	622589.18***	77	7591	78	15128	7541.59*	-38.78	-179.00	-167.77	-105.90	-475.86
sum of all labour costs in CFA	335	119789	332	742575	7393.48***	79	68219	76	554872	486713.92***	51570.15***	187703.08**	135875.20*	120220.16	130574.38*
total labour costs CFA per ha	328	36703	328	202060		77	30323	75	218423	7541.59*	-38.78	-179.00	-167.77	-105.90	-475.86
Averaged total price CFA/kg	339	725	338	1056	330.90***	79	725	79	1059	334.14***		-3.23	-3.23	-0.69	-3.23
price cocoa in CFA main season	339	725	335	1080	354.57***	79	725	79	1079	353.86***		0.71	0.71	3.31	0.71
price cocoa in CFA low season	339	725	335	933	207.61***	79	725	78	923	198.08***		9.54	9.54	13.12	9.54
annual production kg for both years	321	2348	289	2446	81.75	74	1031	67	1675	641.80***	1316.78***	771.60***	-558.30*	-553.02*	-573.37*
productivity in kg/ha	315	520	289	500	-22.44	72	256	67	411	150.36***	263.98***	89.07***	-174.64***	-178.89***	-172.74***
change in production 2016/2017	335	1.48	335	1.40	-0.08*	78	1.53	79	1.38	-0.15*	-0.05	0.02	0.07	0.10	0.06
Reason for change - certification	326	0.35	339	0.12	-0.23***	76	0.03	79	0.06	0.04	0.33***	0.06	-0.27***	-0.27***	-0.26***
Reason for change - spraying	326	0.19	339	0.30	0.10***	76	0.12	79	0.34	0.22***	0.07	-0.04	-0.12	-0.14*	-0.12
Reason for change - lack of spraying	326	0.05	339	0.09	0.04**	76	0.25	79	0.20	-0.05	-0.20***	-0.12***	0.09*	0.10*	0.10*
Reason for change - new plantation	326	0.10	339	0.06	-0.04*	76	0.17	79	0.10	-0.07	-0.07*	-0.04	0.03	0.04	0.03
Reason for change - replantation	326	0.04	339	0.05	0.01	76	0.04	79	0.08	0.04		-0.03	-0.03	-0.04	-0.03
Reason for change - new cocoa variety	326	0.02	339	0.03	0.01	76	0.00	79	0.01	0.01	0.02	0.01	-0.01	-0.01	-0.01
Reason for change - pesticides	326	0.17	339	0.28	0.11***	76	0.13	79	0.29	0.16**	0.04	-0.01	-0.05	-0.06	-0.07
Reason for change - fertiliser	326	0.06	339	0.28	0.22***	76	0.05	79	0.33	0.28***	0.01	-0.05	-0.06	-0.08	-0.07
Reason for change - training	326	0.32	339	0.09	-0.23***	76	0.01	79	0.05	0.04	0.31***	0.04	-0.27***	-0.27***	-0.27***
Reason for change - death/disease	326	0.09	339	0.13	0.04*	76	0.24	79	0.10	-0.14**	-0.15***	0.03	0.18***	0.21***	0.18***
Reason for change - ageing farm	326	0.09	339	0.10		76	0.13	79	0.11	-0.02	-0.04	-0.02	0.02		0.01
Reason for change - traditional variety	326	0.01	339	0.00	-0.01	76	0.00	79	0.04	0.03*	0.01	-0.04***	-0.04***	-0.04***	-0.03**
Reason for change - lack of treatment	326	0.05	339	0.03	-0.02	76	0.18	79	0.14	-0.04	-0.13***	-0.11***	0.02	0.04	0.01
Reason for change - lack of fertiliser	326	0.10	339	0.10	0.01	76	0.29	79	0.20	-0.09	-0.19***	-0.10**	0.09*	0.12**	0.08
Reason for change - lack of training	326	0.01	339	0.01	-	76	0.04	79	0.01	-0.03	-0.03	-	0.02	0.03	0.02
Reason for change - All been eaten	326	0.00	339	0.01	0.01	76	0.00	79	0.01	0.01		-	-0.01	-0.01	-0.01
Reason for change - Lack of hired labour	326	0.03	339	0.03	-0.01	76	0.07	79	0.05	-0.01	-0.03	-0.02	0.01	0.02	0.01
Reason for change - No time	326	0.01	339	0.01		76	0.00	79	0.01	0.01	0.01	-	-0.01	-0.01	-0.01
Reason for change - farm is far away	326	0.02	339	0.01	-0.02**	76	0.00	79	0.01	0.01	0.02	-0.01	-0.03	-0.03	-0.03
Reason for change - No money for cultivation	326	0.02	339	0.01	-0.01	76	0.04	79	0.01	-0.03	-0.02	-0.01	0.02	0.02	0.02
Reason for change -Disagreement on familiy land	326	0.00	339	0.01	0.01	76	0.01	79	0.01	-	-0.01**	-0.01	0.01	0.01	0.01
Reason for change - Territory not clearly defined	326	0.00	339	0.00		76	0.00	79	0.01	0.01		-0.01	-0.01	-0.01	-0.01
Reason for change - pest (like swollen foot)	326	0.03	339	0.03	-0.01	76	0.01	79	0.01	-	0.02	0.01	-0.01	-0.01	-0.01
Reason for change - good rainfall	326	0.04	339	0.25	0.20***	76	0.08	79	0.23	0.15***	-0.04	0.02	0.06	0.04	0.06
Reason for change - A lot of rain/high humidity	326	0.05	339	0.04	-0.01	76	0.00	79	0.03	0.03	0.05**	0.01	-0.04	-0.03	-0.04
Reason for change - Little rain/low humidity	326	0.17	339	0.18	0.01	76	0.12	79	0.13	0.01	0.05	0.05	-	-0.01	-
Reason for change - illness farmer			339	0.01	0.01*	76	0.01	79	0.01		-0.01**	-	0.01	0.01	0.01
Reason for change - No money for hired labour			339	0.01	0.01	76	0.00					0.01	0.01	0.01	0.01
Reason for change - other	326	0.08	339	0.05	-0.03	76	0.12	79	0.03	-0.10***	-0.04	0.02	0.06	0.07	0.08*
Reason for change - lot of sun/dryness	326	0.00	339	0.24	0.24***	76	0.00	79	0.10	0.10***		0.14***	0.14***	0.13**	0.13**
how many tree species farmer uses	331	1.29	330	1.39	0.10**	75	1.29	76	1.37	0.08	-0.01	0.02	0.03	0.03	0.02

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
if farmers uses compost	339	0.14	339	0.21	0.07***	79	0.04	79	0.18	0.14***	0.10**	0.04	-0.07	-0.08	-0.07
dummy not planted shadetrees because enough	339	0.19	339	0.14	-0.05*	79	0.19	79	0.10	-0.09	-	0.04	0.04	0.04	0.04
Reason for selling to company - Price	336	0.32	336	0.26	-0.06*	5	0.00	78	0.08			0.19***			
Reason for selling to company - Credit	336	0.07	337	0.09	0.02	5	0.00	78	0.06			0.02			
Reason for selling to company - Inputs	336	0.15	320	0.06	-0.09***	5	0.20	78	0.00			0.06			
Reason for selling to company - Training	336	0.34	333	0.15	-0.19***	5	0.20	78	0.01			0.14***			
Reason for selling to company - Other service	336	0.07	333	0.03	-0.03*	5	0.00	78	0.01			0.02			
Reason for selling to company - I owe them money	336	0.00	289	0.00		5	0.00	78	0.00						
Reason for selling to company - other	336	0.14	333	0.05	-0.10***	5	0.00	78	0.00			0.05*			
Reason for selling to company - they pay cash			333	0.07	n.a.	0	.	78	0.04			0.03			
Reason for selling to company - I don't know	336	0.35	333	0.50	0.15***	5	0.80	78	0.82			-0.32***			
# reasons for selling to company farmer mentions	336	1.09	338	0.70	-0.39***	5	0.40	78	0.21			0.49***			
If better access to input market since last year?	339	0.55	332	0.58	0.02	79	0.25	79	0.46			0.12*			
If money would you buy agro-inputs	338	0.54	338	0.61	0.07*	78	0.45	79	0.44			0.17***			
gross income both years from main farm	321	1566380	285	2030250	457418.03***	74	738207	65	1412696	673733.87***	828173.07***	617554.31***	-214806.95	-227633.17	-223397.05
gross income both years from cocoa prod	321	1692480	289	2575645	877837.73***	74	747808	67	1767034	1018329.27***	944671.60***	808610.88***	-138459.02	-128709.70	-140355.57
cash net income both years from main farm	321	1498869	285	1940537	436317.26***	74	681890	65	1340526	658408.95***	816979.17***	600011.34***	-221440.68	-235361.27	-231158.90
net income cocoa income-input costs calculated	315	1623714	289	2429110	806548.41***	72	665206	67	1651614	978108.46***	958508.20***	777495.01**	-163204.31	-146350.77	-131909.67
total income from other sources than cocoa	337	195057	336	162187	-33067.06	76	570906	79	233311	-335895.31	-375849.72***	-71124.22	302786.54**	312886.84**	294390.70**
total gross income cocoa and other sources	325	1873908	294	2717198	835662.30***	75	1316356	67	2042133	720586.05**	557552.15**	675065.65**	145430.17	207163.78	196115.11
cocoa profitability = net income per ha	314	377238	284	527857	150280.76***	72	160907	65	425113	259297.60***	216331.41***	102743.71***	-113233.75**	-116514.72**	-105258.74*
cash net income per hh member in USD per day	315	1.14	289	1.63	0.50***	72	0.52	67	1.39	0.86***	0.62***	0.24	-0.34	-0.35	-0.31
net cash income per family labour day	291	70060	281	34798	-35383.40***	66	32987	59	21569	-12250.22*	37073.73**	13228.57	-23826.63	-26091.77	-22948.53
# of income sources farmer has (incl cocoa)	339	1.51	339	2.17	0.65***	79	1.70	79	2.33	0.63***	-0.19**	-0.16	0.02		0.02
# of other income sources farmer has	339	0.51	339	1.17	0.65***	79	0.70	79	1.33	0.63***	-0.19**	-0.16	0.02		0.02
price premium received per kg	203	45.49	213	38.12	-7.37***	0	.					0.62			
Spending cocoa income social	336	2.76	339	2.81	0.04	79	2.81	79	2.71	-0.10	-0.05	0.10	0.14*	0.12	0.14*
Spending cocoa income on agriculture	336	1.26	339	1.60	0.35***	78	0.97	79	1.30	0.33**	0.28**	0.30**	0.02	0.06	0.01
Count var livelihood: out of 9 categories	339	4.73	339	4.32	-0.41**	79	0.71	79	2.19	1.48***	4.03***	2.13***	-1.89***	-1.80***	-1.89***
Count score of implementation q94-96	337	0.71	339	0.44	-0.27***	78	0.50	78	0.19	-0.31***	0.21**	0.25***	0.04	0.06	0.04
Did you get visit from (child) labour inspection?	332	0.27	331	0.38	0.11***	76	0.04	77	0.09	0.05	0.23***	0.29***	0.06	0.06	0.06
Child labour days summed				50.84	37.89***				78.00	18.64***		-27.16			
when farmer says child does hazardous activities	339	0.25	339	0.16	-0.09***	79	0.18	79	0.14	-0.04	0.07	0.02	-0.05	-0.04	-0.05
knows minimum age is 18 for child to work	339	0.06	339	0.48	0.42***	79	0.01	78	0.24	0.23***	0.05**	0.24***	0.19***	0.18***	0.19***
satisfaction on improvement education children?	329	0.74	338	0.26	-0.48***	34	-0.32	79	-0.04	0.29	1.07***	0.30**	-0.77***	-0.73***	-0.82***
Perception improvement of education kids	116	0.29	339	0.76	0.47***			79	0.68		-0.71	0.08	0.78*		0.40
If farmer uses muffler for protection	336	0.24	338	0.47	0.23***	79	0.15	78	0.35	0.19***	0.09*	0.12**	0.04	0.05	0.04
If farmer uses boots for protection	310	0.63	338	0.82	0.19***	79	0.72	78	0.81	0.09	-0.09	0.01	0.11	0.10	0.13*
If farmer uses hat for protection	314	0.22	338	0.51	0.29***	79	0.13	78	0.40	0.27***	0.09*	0.11*	0.02	0.02	0.02
If farmer uses jumpsuit for protection	314	0.10	338	0.33	0.23***	79	0.03	77	0.27	0.25***	0.07**	0.05	-0.02	-0.04	-0.02

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
If farmer uses eyeglasses for protection	314	0.13	338	0.33	0.21***	79	0.06	78	0.21	0.14***	0.06	0.13**	0.07	0.03	0.07
If farmer uses trenchcoat for protection	313	0.12	338	0.39	0.27***	79	0.01	78	0.19	0.18***	0.11***	0.20***	0.09	0.08	0.08
If farmer uses gloves for protection	313	0.15	337	0.35	0.20***	79	0.08	78	0.22	0.14***	0.07*	0.13**	0.06	0.06	0.06
count uses if in possession q37	336	1.49	338	3.21	1.72***	79	1.18	78	2.44	1.26***	0.31	0.77***	0.46	0.40	0.47
score 0-1 for use of protective clothing	336	0.21	338	0.46	0.25***	79	0.17	78	0.35	0.18***	0.04	0.11***	0.07	0.06	0.07
(Dis)satisfaction on service q62a_1	38	-0.16	277	0.83	0.99***	3	-0.33	11	0.45						
(Dis)satisfaction on service q62a_2	146	0.34	168	0.77	0.43***	3	-0.33	5	-0.20						
(Dis)satisfaction on service q62a_3	45	0.02	287	0.86	0.84***	3	-0.33	12	0.50						
(Dis)satisfaction on service q62a_4	251	0.59	93	0.56	-0.04	4	0.00	2	-1.00						
(Dis)satisfaction on service q62a_5	173	0.57	101	0.56	-0.04	4	0.00	5	0.60						
(Dis)satisfaction on service q62a_6	155	0.55	151	0.60	0.04	4	0.00	6	0.33						
(Dis)satisfaction on service q62a_7	133	0.45	197	0.78	0.33***	3	-0.33	5	0.40						
(Dis)satisfaction on service q62a_8	266	0.23	134	0.85	0.61***	4	0.00	2	0.50						
(Dis)satisfaction on service q62a_9	191	0.24	159	0.84	0.61***	4	0.00	4	0.75						
(Dis)satisfaction on service q62a_10	119	0.27	234	0.83	0.56***	4	0.00	6	0.17						
(Dis)satisfaction on service q62a_11	223	0.28	166	0.73	0.45***	4	0.00	4	0.25						
(Dis)satisfaction on service q62a_12	291	0.18	33	0.76	0.58***	4									
(Dis)satisfaction on service q62a_13	292	0.28	35	0.66	0.33**	4									
(Dis)satisfaction on service q62a_14	275	0.50	41	0.66	0.10	4									
(Dis)satisfaction on service q62a_15	251	0.49	91	0.40	-0.10	4	0.00	6	0.00						
(Dis)satisfaction on service q62a_16	118	0.31	221	0.63	0.33***	3	-0.33	13	0.15						
(Dis)satisfaction on service q62a_17	100	0.36	244	0.89	0.53***	3	-0.33	11	0.91						
(Dis)satisfaction on service q62a_18	186	0.05	2	1.00		3	-0.33								
Service: Access to training	319	0.12	325	0.86	0.75***	4	0.75	16	0.69						
Service: Information on input prices	322	0.45	325	0.53	0.07*	4	0.75	16	0.31						
Service: Sell my cocoa	322	0.14	324	0.90	0.76***	4	0.75	16	0.75						
Service: Market information on sales	320	0.78	324	0.29	-0.49***	4	1.00	16	0.19						
Service: info internal inspections	320	0.54	321	0.32	-0.22***	4	1.00	16	0.38						
Service: info external inspections	321	0.48	323	0.48	-	4	1.00	16	0.38						
Service: Information ANADER services	321	0.41	323	0.62	0.20***	4	0.75	16	0.38						
Service: Access to fertilisers	320	0.83	324	0.42	-0.41***	4	1.00	16	0.13						
Service: Access to nurseries/pods	320	0.60	325	0.51	-0.09**	4	1.00	16	0.31						
Service: Access to pesticides	321	0.37	324	0.73	0.36***	4	1.00	16	0.44						
Service: Access to credits	318	0.70	325	0.52	-0.18***	4	1.00	16	0.38						
Service: Insurance systems	312	0.93	322	0.10	-0.83***	4	1.00	16	0.00						
Service: Assistance relations pisteurs	315	0.93	322	0.11	-0.82***	4	1.00	16	0.00						
Service: Assistance with other service providers	314	0.88	322	0.13	-0.74***	4	1.00	16	0.00						
Service: Commercial activities	312	0.80	322	0.30	-0.51***	4	1.00	16	0.38						
Service: Payment on time by the buyer	312	0.38	317	0.68	0.31***	4	0.75	15	0.80						
Service: Get a good price	308	0.32	324	0.76	0.44***	4	0.75	16	0.69						

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
Service: Other	200	0.93	323	0.01	-0.92***	4	0.75	16	0.00						
number of input related services	339	0.86	339	0.84	-0.02	79	0.05	79	0.15	0.10**	0.81***	0.69***	-0.12**	-0.11*	-0.12**
total sum of 17 services - q62	325	0.56	325	0.48	-0.08***	4	0.91	16	0.36						
I feel represented by the coop managers	138	1.28	324	0.82	-0.45***	5	1.20	14	0.71						
I feel I have an influence on	172	1.31	324	0.84	-0.47***	6	1.00	14	0.50						
q65_1 perception farmer	320	0.33	326	0.71	0.38***	6	0.25	16	0.34						
q65_2 perception farmer	321	0.39	328	0.63	0.25***	7	0.21	16	0.25						
q65_3 perception farmer	321	0.15	328	0.77	0.62***	7	0.21	16	0.41						
q65_4 perception farmer score	321	0.22	327	0.67	0.45***	7	0.21	16	0.31						
mean score if coop well-managed (score_q65_1-4)	322	0.27	328	0.69	0.42***	7	0.21	16	0.33						
Improvement coop? - No	339	0.25	337	0.21	-0.04	79	0.08	17	0.18	0.10	0.18***	0.03	-0.14	-0.17	-0.04
Improvement coop? - Training of managers	339	0.19	337	0.18	-0.01	79	0.03	17	0.06	0.03	0.16***	0.12	-0.04	-0.07	-0.01
Improvement coop? - Bookkeeping	339	0.21	336	0.35	0.15***	79	0.03	17	0.24	0.21***	0.18***	0.12	-0.06	-0.09	-0.03
Improvement coop? - Transparency price	339	0.35	337	0.35		79	0.01	17	0.41	0.40***	0.34***	-0.06	-0.39***	-0.44***	-0.41**
Improvement coop? - Transparency premium	339	0.16	337	0.21	0.05	79	0.01	17	0.41	0.40***	0.15***	-0.20**	-0.35***	-0.36***	-0.31**
Improvement coop? - Negotiate a higher price	339	0.01	337	0.14	0.13***	17	0.00	17	0.00		0.01	0.14*	0.13	0.14	0.13
Improvement coop? - Other	339	0.31	337	0.25	-0.06*	77	0.04	17	0.18	0.14**	0.27***	0.07	-0.20*	-0.11	-0.18
children to continue in cocoa farming	215	0.31	321	0.45	0.14***	28	0.32	73	0.52	0.25***	-0.01	-0.07	-0.09	-0.11	-0.23*
contine cocoa farming and/or diversify	334	0.76	314	0.80	0.05	78	0.63	71	0.77	0.15**	0.13**	0.03	-0.10	-0.14*	-0.11
where get seedlings/cocoa pods from	338	0.34	339	0.41	0.07**	79	0.07	79	0.15	0.08*	0.27***	0.25***	-0.02	-0.02	-0.02
Scaled score for implement_q71	336	0.97	339	0.97		79	0.86	79	0.90	0.04*	0.11***	0.07***	-0.04**	-0.04**	-0.04**
Scaled score for implement_q72	336	0.48	339	0.60	0.12***	79	0.54	79	0.45	-0.09	-0.06	0.15***	0.21**	0.20**	0.21**
Scaled score for implement_q76	337	0.27	339	0.36	0.08**	79	0.08	79	0.13	0.05	0.20***	0.23***	0.03	-0.01	0.02
Scaled score for implement_q77	338	0.76	339	0.91	0.15***	79	0.89	79	0.95	0.07**	-0.13***	-0.05*	0.08*	0.08*	0.08*
Mean score of q71, q72, q76, q77	337	0.62	339	0.71	0.09***	79	0.59	79	0.61	0.02	0.03	0.10***	0.07**	0.06**	0.07**
Scaled score for implement_q73	334	0.10	338	0.23	0.14***	79	0.13	79	0.30	0.18***	-0.03	-0.07	-0.04	-0.04	-0.04
Scaled score for implement_q74	314	0.33	339	0.48	0.16***	75	0.23	79	0.49	0.27***	0.10*	-0.01	-0.11	-0.14*	-0.10
Scaled score for implement_q75	337	0.67	338	0.49	-0.18***	77	0.22	79	0.28	0.05	0.44***	0.21***	-0.23***	-0.24***	-0.24***
mean implementation score of q73,74,75	336	0.37	339	0.40	0.03	79	0.19	79	0.36	0.17***	0.18***	0.04	-0.13***	-0.14***	-0.13***
Scaled score of implementation q78	337	0.82	339	0.77	-0.04**	79	0.67	79	0.68	0.01	0.15***	0.09**	-0.06	-0.07	-0.05
Scaled score of implementation q79	338	0.73	338	0.80	0.07**	79	0.39	79	0.58	0.19***	0.35***	0.22***	-0.13*	-0.18***	-0.13*
Scaled score of implementation q80	337	0.77	338	0.76	-0.01	79	0.94	78	0.89	-0.05*	-0.17***	-0.12***	0.04	0.04	0.05
Mean score of post harvest practice q78-80	337	0.77	337	0.78		79	0.67	78	0.72	0.05	0.11***	0.06**	-0.05	-0.07**	-0.05
If farmer has 12 or more shade trees per ha	339	0.28	339	0.27	-0.01	79	0.19	79	0.14	-0.05	0.09	0.13**	0.04	0.05	0.04
If farmer plants shade trees every 2,8-4 metres	156	0.06	203	0.13	0.08**	19	0.00	37	0.08						
If farmer has planted shadetrees previous 2 years	335	0.24	338	0.33	0.09***	79	0.03	77	0.09	0.07*	0.21***	0.23***	0.02	0.02	0.03
Scaled score of implementation q88	333	0.94	338	0.99	0.04***	77	0.93	75	0.98	0.05**	0.02	0.01	-0.01	-0.01	-0.01
Scaled score of implementation q89	333	0.16	338	0.24	0.09***	78	0.11	77	0.12	0.01	0.05	0.13**	0.08	0.08	0.08
Scaled score of implementation q90	335	0.80	339	0.87	0.07**	79	0.73	78	0.88	0.15**	0.07	-0.01	-0.08	-0.07	-0.08
Scaled score of implementation q93	336	0.83	339	0.84		78	0.53	78	0.69	0.16***	0.31***	0.15***	-0.16***	-0.19***	-0.16***

indicator	utz					non-utz					utz-non-utz				
	2013		2017		dif ttest*	2013		2017		dif ttest*	2014 ttest	2017 ttest	dif ttest*	robust to CV**	robust to FE
	N	Mean	N	Mean		N	Mean	N	Mean						
Mean score of implementation q88-91, 93	337	0.70	339	0.75	0.04***	79	0.55	78	0.70	0.15***	0.15***	0.05***	-0.10***	-0.11***	-0.10***
If hired labour, have contract regarding the work?	331	0.48	339	0.34	-0.14***	78	0.45	78	0.15	-0.29***	0.03	0.18***	0.15*	0.18**	0.16*
Do you have declaration CNPS for hired labour?	329	0.01	337	0.01	-	78	0.00	78	0.00		0.01	0.01	-	-	
Know labour rights (hours working etc)?	334	0.23	337	0.09	-0.14***	78	0.05	78	0.04	-0.01	0.18***	0.06	-0.12**	-0.13**	-0.13**
farmer knows minimum age is 18 for child to work	339	0.06	339	0.48	0.42***	79	0.01	78	0.24	0.23***	0.05**	0.24***	0.19***	0.18***	0.19***
Did you get visit from (child) labour inspection?	332	0.27	331	0.38	0.11***	76	0.04	77	0.09	0.05	0.23***	0.29***	0.06	0.06	0.06
Scaled score for knowledge q100	338	0.95	339	0.99	0.04***	79	0.87	78	1.00	0.12***	0.08***	-0.01	-0.08***	-0.08***	-0.09***
Scaled score for knowledge q101	338	0.96	337	0.99	0.02***	79	0.70	78	0.97	0.27***	0.26***	0.02	-0.25***	-0.24***	-0.25***
Scaled score for knowledge q102	338	0.91	326	0.94	0.03***	79	0.70	67	0.94	0.25***	0.21***	-	-0.21***	-0.21***	-0.22***
Scaled score for knowledge q103	336	0.79	331	0.90	0.11***	78	0.47	77	0.84	0.37***	0.31***	0.06	-0.26***	-0.27***	-0.27***
Scaled score for knowledge q104	333	0.72	336	0.92	0.20***	79	0.72	76	0.97	0.26***		-0.05**	-0.05	-0.07	-0.04
Scaled score for knowledge q105	337	0.69	329	0.75	0.06**	75	0.34	77	0.67	0.32***	0.35***	0.09**	-0.26***	-0.29***	-0.26***
Scaled score for knowledge q108	335	0.48	337	0.34	-0.15***	77	0.30	79	0.28	-0.03	0.18***	0.06***	-0.12***	-0.12***	-0.12***
Scaled score for knowledge q109	338	0.94	332	0.96	0.02***	77	0.85	79	0.97	0.11***	0.09***	-	-0.09***	-0.08***	-0.09***
Mean scores of knowledge q100-104, 109	338	0.85	339	0.92	0.07***	79	0.67	79	0.91	0.24***	0.18***	0.01	-0.17***	-0.17***	-0.17***
Scaled score for knowledge question q111	335	0.49	337	0.39	-0.10***	79	0.30	79	0.37	0.07*	0.20***	0.02	-0.18***	-0.17***	-0.17***

The tables below give an overview of data by service package as defined in section 6. In addition the outcomes of the dif-in-dif model is presented including the control variables as described in the methodology in section 4. Tests are based on matched sample and only provided for sample size over 20.

Table A3.3 Descriptive and Statistical outcomes by service package

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
Service intensity 2017 for 2013 year interaction	339	0.000	1.000	2.000	3.000	339	0.000	1.000	2.000	3.000	654			
Agro services: none-complete	339	0.000	0.339	2.196	3.515	339	0.000	0.339	2.196	3.515	654			
At least one agro training	339	0.000	0.000	0.000	0.000	339	0.000	0.210	0.736	0.957	654	0.30***	0.76***	0.96***
Training lead farmer (gestion de cooperatives)	339	0.000	0.000	0.000	0.000	339	0.000	0.000	0.068	0.252	654	-0.00	0.06	0.25***
Training good social practice and/or health	339	0.000	0.000	0.000	0.000	339	0.000	0.000	0.169	0.632	654	-0.00	0.13	0.63***
Training management competences	339	0.000	0.000	0.000	0.000	339	0.000	0.000	0.095	0.485	654	-0.00	0.08	0.48***
Access to fertiliser (via coop)						339	0.000	0.016	0.189	0.675	327			
If farmer has market access to pesticides (via coop)						339	0.000	0.048	0.635	0.951	327			
Access to seedlings (via coop)						339	0.000	0.000	0.311	0.773	327			
At least 1 agro-input for free	339	0.113	0.065	0.115	0.129	339	0.000	0.694	0.588	0.761	654	0.67***	0.67***	0.85***
Years of certification coop level	339	1.240	1.613	2.696	2.779	339	2.680	3.548	6.236	6.706	654			
If farmer certified by FLO						339	0.038	0.000	0.041	0.080	327			
If farmer certified by Rainforest Alliance						339	0.038	0.048	0.101	0.123	327			
Utz certified in both years/control in both years	339	0.367	0.500	0.897	0.982	339	0.367	0.500	0.897	0.982	654			
Coop membership 2013 based on 2017	339	0.377	0.565	0.946	1.000	339	0.377	0.565	0.946	1.000	654			
Agro-ecological conditions	339	1.679	1.661	1.527	1.663	339	1.679	1.661	1.527	1.663	654			
1 female 0 male	339	0.019	0.048	0.047	0.018	339	0.019	0.048	0.047	0.018	654			
HH size in 2017	339	7.774	7.855	8.277	8.509	339	7.774	7.855	8.277	8.509	654			
Share gross cocoa income	321	0.834	0.808	0.901	0.921	289	0.937	0.905	0.920	0.954	596	0.06	0.02	0.06
Total farmsize	339	4.943	3.935	4.957	5.627	333	9.294	8.945	8.894	9.178	654	3.06*	2.58*	2.37*
Total cocoa farm size - both years	339	4.943	3.935	4.957	5.627	339	4.835	4.282	4.974	5.799	654	1.89*	1.37	1.57*
Farm size in production	339	4.208	3.375	4.240	4.900	339	4.410	3.870	4.557	5.310	654	0.90	0.43	0.53
Farm size in production if measured	338	3.104	2.343	2.974	2.816	339	2.080	2.202	3.961	5.172	653	0.15	-0.02	1.16
Age of main farm	313	25.429	21.929	21.850	21.567	264	23.324	20.814	24.169	24.328	562	1.81	3.69	4.27*
Nr of years the oldest plot existed	339	25.094	21.839	21.804	21.521	299	23.696	22.696	24.813	23.953	620	2.26	4.66**	4.25*
Owner of # of farms	339	1.019	0.871	0.865	0.853	339	1.585	1.242	1.243	1.368	654	0.17	0.17	0.36*
Total owned farm size	339	4.387	3.315	3.584	3.794	339	4.363	3.438	4.083	4.947	654	1.56	2.33**	3.06***
Output divided by input (all inputs)						286	3.421	3.067	2.811	4.017	280	0.00	0.00	0.00
Total input costs	339	64307.6	55801.4	66864.9	67819.7	339	72016.0	65558.6	90289.5	79886.0	654	-10458.15	15.43	-16308.08
Costs of inputs (agro-input, hired labour) per ha	316	25415.7	30445.1	25119.7	21848.8	288	30740.6	37002.1	34185.5	27607.6	593	-2258.53	-9359.79	-13016.37
Total non-labour input costs per hectare	331	15364.4	21501.3	15322.3	12656.6	335	7180.8	7773.6	6008.9	5747.7	652	-878.24	-224.66	1460.55
Total costs hired labour in CFA	339	23054.8	15277.2	28616.9	29777.0	339	52745.3	45298.1	70033.1	60228.2	654	-17313.70	-7194.05	-23326.55
Total costs hired labour in CFA per ha	331	7897.6	8326.5	8521.9	7415.8	335	12070.9	13168.2	19151.5	12977.0	652	-4490.82	1081.65	-3933.53

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
Sum of all labour costs in CFA	335	99282.4	92145.7	118094.4	115826.7	332	595270.0	576674.7	788203.5	713817.2	644	22707.13	123416.52	11997.03
Total labour costs CFA per ha	328	33656.2	38738.6	40501.7	32705.8	328	186928.0	197251.9	239452.9	183766.9	652	-4490.82	1081.65	-3933.53
Averaged total price CFA/kg	339	725.0	725.0	725.0	725.0	338	1057.9	1053.6	1053.2	1059.9	654	-16.17	-9.76	1.79
Price cocoa in CFA main season	339	725.0	725.0	725.0	725.0	335	1077.9	1083.9	1074.7	1082.0	651	-4.17	-15.69	-3.64
Price cocoa in CFA low season	339	725.0	725.0	725.0	725.0	335	938.5	913.5	936.1	930.4	651	3.73	13.75	10.40
Annual production kg for both years	321	1683.2	1388.4	2013.7	2535.7	289	1832.5	1538.4	2148.1	2825.3	596	1292.04	1221.55*	1404.14*
Productivity in kg/ha	315	353.788	367.271	499.319	523.122	289	405.242	408.683	459.258	554.959	594	80.34	84.63	170.69
Change in production 2016/2017	335	1.654	1.419	1.463	1.488	335	1.481	1.403	1.393	1.393	648	0.35	0.23	0.22
Reason for change - certification	326	0.080	0.267	0.340	0.333	339	0.038	0.081	0.074	0.184	641	-0.08	-0.08	0.09
Reason for change - spraying	326	0.120	0.150	0.201	0.179	339	0.189	0.371	0.311	0.307	641	-0.15	-0.01	0.03
Reason for change - lack of spraying	326	0.200	0.100	0.076	0.051	339	0.264	0.161	0.095	0.055	641	0.04	-0.08	-0.09
Reason for change - new plantation	326	0.040	0.117	0.118	0.122	339	0.038	0.097	0.074	0.061	641	0.13	0.03	-0.00
Reason for change - replantation	326	0.080	0.067	0.028	0.026	339	0.057	0.065	0.054	0.043	641	-0.09	-0.04	-0.03
Reason for change - new cocoa variety	326	0.000	0.000	0.007	0.038	339	0.000	0.000	0.007	0.055	641	0.00	-0.01	0.02
Reason for change - pesticides	326	0.140	0.150	0.181	0.154	339	0.208	0.274	0.277	0.294	641	0.15	-0.04	0.02
Reason for change - fertiliser	326	0.060	0.050	0.063	0.058	339	0.302	0.258	0.250	0.331	641	0.01	-0.03	0.05
Reason for change - training	326	0.060	0.150	0.271	0.353	339	0.000	0.048	0.061	0.135	641	-0.02	-0.08	-0.03
Reason for change - death/disease	326	0.220	0.167	0.111	0.071	339	0.132	0.145	0.142	0.104	641	-0.03	-0.01	-0.02
Reason for change - ageing farm	326	0.160	0.100	0.111	0.064	339	0.170	0.065	0.122	0.074	641	-0.14	-0.06	-0.04
Reason for change - traditional variety	326	0.000	0.000	0.007	0.013	339	0.038	0.016	0.007	0.000	641	-0.00	-0.00	-0.01
Reason for change - lack of treatment	326	0.140	0.083	0.069	0.058	339	0.170	0.065	0.034	0.018	641	-0.07	-0.15**	-0.14**
Reason for change - lack of fertiliser	326	0.240	0.133	0.090	0.128	339	0.226	0.097	0.155	0.074	641	-0.06	0.02	-0.09
Reason for change - lack of training	326	0.020	0.033	0.021	0.006	339	0.019	0.032	0.007	0.000	641	-0.06	-0.06*	-0.06*
Reason for change - All been eaten	326	0.000	0.017	0.000	0.000	339	0.019	0.000	0.014	0.006	641	-0.09***	-0.05*	-0.05*
Reason for change - Lack of hired labour	326	0.080	0.067	0.028	0.026	339	0.075	0.000	0.047	0.012	641	-0.11	0.03	-0.01
Reason for change - No time	326	0.000	0.000	0.014	0.006	339	0.038	0.000	0.020	0.000	641	-0.11**	-0.11***	-0.12***
Reason for change - farm is far away	326	0.040	0.017	0.021	0.019	339	0.019	0.000	0.014	0.000	641	-0.04	-0.01	-0.02
Reason for change - No money for cultivation	326	0.040	0.033	0.007	0.019	339	0.019	0.000	0.014	0.000	641	-0.10**	-0.06	-0.08**
Reason for change -Disagreement on familiy land	326	0.000	0.017	0.000	0.000	339	0.019	0.000	0.014	0.000	641	-0.06**	-0.05**	-0.06***
Reason for change - Territory not clearly defined	326	0.000	0.000	0.000	0.000	339	0.000	0.016	0.000	0.006	641	-0.00	-0.00	0.01
Reason for change - pest (like swollen foot)	326	0.000	0.033	0.007	0.058	339	0.038	0.016	0.027	0.018	641	-0.06	-0.03	-0.10
Reason for change - good rainfall	326	0.080	0.050	0.035	0.051	339	0.151	0.258	0.277	0.233	641	0.11	0.14	0.07
Reason for change - A lot of rain/high humidity	326	0.040	0.000	0.042	0.064	339	0.038	0.032	0.047	0.031	641	-0.02	-0.06	-0.09
Reason for change - Little rain/low humidity	326	0.220	0.067	0.146	0.192	339	0.132	0.177	0.182	0.172	641	0.44***	0.36**	0.27**
Reason for change - illness farmer	326	0.020	0.000	0.000	0.000	339	0.019	0.016	0.007	0.006	641	-0.06**	-0.06***	-0.05**
Reason for change - No money for hired labour	326	0.000	0.000	0.000	0.000	339	0.000	0.016	0.007	0.000	641	0.04	0.01	-0.00
Reason for change - other	326	0.100	0.083	0.097	0.077	339	0.019	0.048	0.068	0.025	641	0.21**	0.19**	0.12
Reason for change - lot of sun/dryness	326	0.000	0.000	0.000	0.000	339	0.132	0.194	0.257	0.221	641	-0.06	-0.03	-0.05
How many tree species farmer uses	331	1.264	1.293	1.287	1.302	330	1.353	1.328	1.447	1.360	639	0.04	0.05	-0.02
If farmers uses compost	339	0.094	0.065	0.108	0.160	339	0.208	0.129	0.162	0.270	654	-0.07	-0.07	-0.02

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
Dummy not planted shadetrees because enough	339	0.245	0.097	0.216	0.184	339	0.132	0.097	0.142	0.135	654	-0.04	-0.06	-0.06
Reason for selling to company - Price	336	0.208	0.333	0.336	0.317	336	0.132	0.197	0.295	0.222	651	-0.09	-0.02	-0.10
Reason for selling to company - Credit	336	0.125	0.000	0.053	0.087	337	0.038	0.033	0.068	0.135	651	0.17	0.17*	0.20**
Reason for selling to company - Inputs	336	0.083	0.061	0.153	0.168	320	0.000	0.037	0.022	0.088	636	0.08	-0.02	0.03
Reason for selling to company - Training	336	0.375	0.242	0.336	0.354	333	0.038	0.000	0.118	0.199	648	0.01	0.07	0.12
Reason for selling to company - Other service	336	0.000	0.000	0.092	0.062	333	0.019	0.000	0.007	0.062	648	0.00	-0.09	0.00
Reason for selling to company - I owe them money	336	0.000	0.000	0.000	0.000	289	0.000	0.000	0.000	0.000	604	0.00	0.00	0.00
Reason for selling to company - other	336	0.042	0.061	0.137	0.168	333	0.019	0.000	0.028	0.062	648	-0.08	-0.10	-0.11
Reason for selling to company - they pay cash	0	.	.	.	.	333	0.057	0.033	0.049	0.093	323	0.00	0.00	0.00
Reason for selling to company - I don't know	336	0.458	0.515	0.351	0.323	333	0.698	0.738	0.549	0.472	648	0.04	-0.02	-0.01
# Reasons for selling to company farmer mentions	336	0.833	0.697	1.107	1.155	338	0.302	0.279	0.578	0.853	652	0.10	0.01	0.18
If better access to input market since last year?	339	0.377	0.339	0.507	0.601	332	0.538	0.377	0.621	0.559	648	-0.07	0.02	-0.13
If money would you buy agro-inputs	338	0.453	0.459	0.503	0.595	338	0.528	0.403	0.662	0.586	652	-0.17	0.01	-0.18
Gross income both years from main farm	321	1133985	1004153	1339941	1689081	285	1542862	1247055	1764208	2392005	592	768905.00	830138.74	1076521.11**
Gross income both years from cocoa prod	321	1156170	1005528	1459435	1839212	289	1928133	1600219	2261230	2985451	596	734702.53	833830.32	1169593.02*
Cash net income both years from main farm	321	1068948	947756	1272700	1620089	285	1461296	1172337	1667883	2309828	592	773822.24	835393.98	1099812.72**
Net income cocoa income-input costs calculated	315	1095884	966178	1375741	1756960	289	1798935	1450454	2114150	2852767	594	683692.54	868707.18	1229056.79*
Total income from other sources than cocoa	337	384741	545079	176178	192628	336	182057	157058	207457	147537	649	-470251.85**	-170369.79	-297443.88
Total gross income cocoa and other sources	325	1525784	1535259	1641905	2014546	294	2095978	1753755	2459360	3135902	603	235818.95	560288.53	835510.06
Cocoa profitability = net income per ha	314	238736	239902	344920	394565	284	457695	406153	461598	604278	588	30130.49	43743.37	150123.77
Cash net income per hh member in USD per day	315	1	1	1	1	289	1	1	2	2	594	0.15	0.48	0.68
Net cash income per family labour day	291	44959	46591	59281	79560	281	21987	15902	22395	48725	562	-2941.65	-2349.09	8980.34
# Of income sources farmer has (incl cocoa)	339	1.717	1.613	1.507	1.497	339	2.151	2.145	2.318	2.104	654	0.31	0.69**	0.45*
# Of other income sources farmer has	339	0.717	0.613	0.507	0.497	339	1.151	1.145	1.318	1.104	654	0.31	0.69**	0.45*
Price premium received per kg	203	49.545	42.941	46.386	44.684	213	32.500	35.714	38.086	38.520	405	13.11*	11.11**	13.81**
Spending cocoa income social	336	2.849	2.710	2.716	2.838	339	2.679	2.774	2.804	2.816	651	0.33	0.35**	0.20
Spending cocoa income on agriculture	336	1.208	0.984	1.327	1.161	339	1.189	1.548	1.615	1.620	651	0.98**	0.28	0.51
Count var livelihood: out of 9 categories	339	1.981	2.855	4.216	4.810	339	1.981	2.355	4.081	4.957	654	0.69	2.08***	2.58***
Count score of implementation q94-96	337	0.566	0.426	0.750	0.714	339	0.245	0.274	0.401	0.479	652	0.13	-0.20	-0.08
Did you get visit from (child) labour inspection?	332	0.115	0.117	0.248	0.285	331	0.077	0.081	0.393	0.446	639	0.17	0.30*	0.32*
Child labour days summed	193	1.691	17.505	12.339	13.540	83	62.200	46.063	67.366	42.579	267	9.91	27.88	4.38
When farmer says child does hazardous activities	339	0.151	0.258	0.223	0.258	339	0.094	0.161	0.243	0.104	654	-0.04	0.13	-0.06
Knows minimum age is 18 for child to work	339	0.028	0.040	0.041	0.071	339	0.255	0.234	0.456	0.543	654	-0.19	-0.01	0.06
Satisfaction on improvement education children?	329	0.147	0.488	0.667	0.763	338	-0.245	-0.344	0.324	0.466	643	-0.09	0.70**	0.74**
Perception improvement of education kids	116	0.000	0.500	0.278	0.298	339	0.642	0.645	0.757	0.816	440	-0.47	-0.06	-0.06
If farmer uses muffler for protection	336	0.245	0.131	0.212	0.258	338	0.434	0.311	0.527	0.426	650	0.15	0.23	0.04
If farmer uses boots for protection	310	0.750	0.500	0.620	0.685	338	0.830	0.754	0.831	0.833	624	0.36*	0.24	0.14
If farmer uses hat for protection	314	0.154	0.119	0.219	0.217	338	0.434	0.377	0.500	0.537	628	-0.07	0.05	0.06
If farmer uses jumpsuit for protection	314	0.019	0.068	0.066	0.125	338	0.321	0.295	0.252	0.383	628	-0.20	-0.21	-0.13
If farmer uses eyeglasses for protection	314	0.038	0.068	0.095	0.171	338	0.226	0.230	0.378	0.302	628	0.09	0.07	-0.09

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
If farmer uses trenchcoat for protection	313	0.019	0.034	0.103	0.151	338	0.226	0.262	0.426	0.364	627	0.05	0.01	-0.12
If farmer uses gloves for protection	313	0.058	0.068	0.169	0.158	337	0.302	0.230	0.347	0.340	626	-0.13	-0.25	-0.27*
Count uses if in possession q37	336	1.264	0.951	1.404	1.650	338	2.774	2.459	3.257	3.185	650	0.15	0.13	-0.35
Score 0-1 for use of protective clothing	336	0.181	0.136	0.201	0.236	338	0.396	0.351	0.465	0.455	650	0.02	0.02	-0.05
(Dis)satisfaction on service q62a_1	38	0.800	-0.167	-0.600	-0.214	277	1.000	0.400	0.717	0.925	300	0.42	1.10**	0.80
(Dis)satisfaction on service q62a_2	146	0.857	0.059	0.417	0.284	168	1.000	0.111	0.682	0.835	298	-0.13	0.10	0.33
(Dis)satisfaction on service q62a_3	45	0.667	-0.222	-0.063	0.095	287	0.778	0.737	0.822	0.890	320	0.51	0.42	0.25
(Dis)satisfaction on service q62a_4	251	0.733	0.517	0.577	0.597	93	-1.000	-1.000	0.538	0.641	327	-1.71***	-0.06	0.00
(Dis)satisfaction on service q62a_5	173	0.786	0.409	0.422	0.691	101	-1.000	-0.600	0.429	0.758	265	0.60	1.74**	1.75**
(Dis)satisfaction on service q62a_6	155	0.769	0.455	0.382	0.649	151	1.000	-0.429	0.326	0.769	294	-1.25	-0.48	-0.32
(Dis)satisfaction on service q62a_7	133	0.667	0.263	0.446	0.473	197	.	0.111	0.732	0.846	317	-0.80**	-0.05	0.00
(Dis)satisfaction on service q62a_8	266	0.250	0.370	0.189	0.236	134	.	0.000	0.778	0.870	384	-1.22*	0.09	0.00
(Dis)satisfaction on service q62a_9	191	0.438	0.300	0.200	0.253	159	.	.	0.786	0.860	337	0.00	0.06	0.00
(Dis)satisfaction on service q62a_10	119	0.455	0.000	0.296	0.261	234	.	0.500	0.678	0.889	340	-0.40	-0.12	0.00
(Dis)satisfaction on service q62a_11	223	0.333	0.250	0.323	0.253	166	.	.	0.582	0.776	378	0.00	-0.18	0.00
(Dis)satisfaction on service q62a_12	291	0.263	0.286	0.142	0.179	33	.	.	0.600	0.786	313	0.00	-0.18	0.00
(Dis)satisfaction on service q62a_13	292	0.563	0.321	0.246	0.281	35	.	1.000	0.000	0.846	316	0.13	-0.84**	0.00
(Dis)satisfaction on service q62a_14	275	0.737	0.393	0.404	0.566	41	.	.	0.111	0.818	305	0.00	-0.86***	0.00
(Dis)satisfaction on service q62a_15	251	0.529	0.462	0.400	0.559	91	1.000	-1.000	0.030	0.678	328	-1.82***	-0.50***	0.00
(Dis)satisfaction on service q62a_16	118	0.429	0.000	0.216	0.426	221	1.000	0.059	0.443	0.800	326	-0.79	-0.52	-0.42
(Dis)satisfaction on service q62a_17	100	0.429	0.000	0.333	0.444	244	1.000	0.563	0.906	0.922	333	-0.12	-0.04	-0.18
(Dis)satisfaction on service q62a_18	186	0.364	-0.105	0.042	0.011	2	.	.	1.000	1.000	180	0.00	0.54	0.00
Service: Access to training	319	0.250	0.375	0.080	0.092	325	0.118	0.556	0.854	0.988	622	0.37***	0.89***	1.01***
Service: Information on input prices	322	0.333	0.548	0.476	0.432	325	0.059	0.333	0.496	0.605	625	0.06	0.29	0.44**
Service: Sell my cocoa	322	0.150	0.290	0.127	0.135	324	0.529	0.704	0.890	0.963	624	0.06	0.37***	0.42***
Service: Market information on sales	320	0.750	0.935	0.776	0.768	324	0.059	0.148	0.206	0.395	622	-0.02	0.21	0.43***
Service: info internal inspections	320	0.700	0.710	0.516	0.519	321	0.000	0.154	0.279	0.416	619	0.16	0.41**	0.58***
Service: info external inspections	321	0.650	0.710	0.440	0.474	323	0.059	0.231	0.360	0.654	622	0.02	0.40**	0.67***
Service: Information ANADER services	321	0.450	0.613	0.448	0.353	323	0.000	0.308	0.544	0.765	622	0.09	0.59***	0.92***
Service: Access to fertilisers	320	1.000	0.871	0.848	0.794	324	0.000	0.037	0.199	0.679	622	0.17	0.35**	0.89***
Service: Access to nurseries/pods	320	0.800	0.645	0.650	0.532	325	0.000	0.000	0.328	0.772	623	0.07	0.43**	0.98***
Service: Access to pesticides	321	0.524	0.419	0.435	0.295	324	0.000	0.111	0.662	0.951	623	0.30	0.80***	1.24***
Service: Access to credits	318	0.947	0.667	0.744	0.643	325	0.000	0.000	0.423	0.728	621	0.23	0.58***	1.01***
Service: Insurance systems	312	0.950	0.933	0.926	0.927	322	0.000	0.000	0.037	0.175	612	0.03	0.09	0.24**
Service: Assistance relations pisteurs	315	0.800	0.966	0.952	0.908	322	0.000	0.037	0.052	0.167	616	-0.08	-0.09	0.08
Service: Assistance with other service providers	314	0.950	0.966	0.879	0.849	322	0.000	0.000	0.060	0.222	615	-0.03	0.08	0.30**
Service: Commercial activities	312	0.850	0.897	0.813	0.781	322	0.059	0.222	0.254	0.377	613	0.15	0.31*	0.47***
Service: Payment on time by the buyer	312	0.350	0.448	0.415	0.358	317	0.353	0.615	0.712	0.717	608	0.22	0.25	0.32*
Service: Get a good price	308	0.350	0.429	0.347	0.302	324	0.412	0.593	0.794	0.790	611	0.33	0.43**	0.45***
Service: other	200	1.000	0.950	0.922	0.920	323	0.000	0.000	0.007	0.006	503	0.07	0.08	0.08

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
Number of input related services	339	0.377	0.500	0.770	0.847	339	0.019	0.210	0.845	0.988	654	0.28**	0.86***	0.97***
Total sum of 17 services - q62	325	0.606	0.647	0.575	0.533	325	0.098	0.237	0.419	0.610	628	0.12	0.35***	0.59***
I feel represented by the coop managers	138	1.545	1.217	1.286	1.233	324	0.733	0.724	0.750	0.906	446	0.12	0.16	0.36
I feel I have an influence on	172	1.385	1.346	1.339	1.247	324	0.533	0.586	0.765	0.950	477	-0.19	0.17	0.44*
Q65_1 perception farmer	320	0.444	0.433	0.279	0.331	326	0.406	0.435	0.651	0.807	624	0.06	0.34**	0.46***
Q65_2 perception farmer	321	0.500	0.452	0.353	0.375	328	0.219	0.306	0.569	0.758	626	0.16	0.46***	0.64***
Q65_3 perception farmer	321	0.222	0.242	0.182	0.099	328	0.406	0.468	0.754	0.845	626	-0.02	0.31**	0.48***
Q65_4 perception farmer score	321	0.222	0.306	0.225	0.194	327	0.433	0.468	0.623	0.730	625	-0.12	0.10	0.23
Mean score if coop well-managed (score_q65_1-4)	322	0.347	0.355	0.260	0.249	328	0.359	0.419	0.647	0.785	627	0.03	0.31**	0.46***
Improvement coop? - No	339	0.094	0.161	0.223	0.276	337	0.211	0.286	0.194	0.202	653	-0.02	-0.10	-0.13
Improvement coop? - Training of managers	339	0.170	0.097	0.149	0.184	337	0.000	0.086	0.223	0.178	653	0.33**	0.51***	0.44***
Improvement coop? - Bookkeeping	339	0.189	0.097	0.189	0.196	336	0.263	0.257	0.428	0.319	652	0.11	0.26	0.14
Improvement coop? - Transparency price	339	0.189	0.177	0.318	0.331	337	0.263	0.314	0.439	0.307	653	0.00	0.24	0.12
Improvement coop? - Transparency premium	339	0.075	0.129	0.128	0.166	337	0.105	0.171	0.252	0.209	653	-0.09	0.10	0.02
Improvement coop? - Negotiate a higher price	339	0.000	0.000	0.000	0.018	337	0.053	0.114	0.165	0.129	653	0.09	0.12	0.05
Improvement coop? - Other	339	0.157	0.161	0.304	0.301	337	0.316	0.229	0.129	0.337	653	-0.11	-0.29*	-0.04
Children to continue in cocoa farming	215	0.292	0.324	0.307	0.308	321	0.521	0.441	0.442	0.465	515	-0.33	-0.33	-0.29
Contine cocoa farming and/or diversify	334	0.725	0.689	0.750	0.744	314	0.674	0.847	0.737	0.861	624	0.28	0.12	0.27*
Where get seedlings/cocoa pods from	338	0.156	0.153	0.302	0.369	339	0.099	0.177	0.316	0.532	653	0.18	0.13	0.29*
Scaled score for implement_q71	336	0.910	0.935	0.954	0.964	339	0.910	0.940	0.965	0.980	651	0.01	0.07**	0.07**
Scaled score for implement_q72	336	0.477	0.568	0.510	0.461	339	0.425	0.584	0.567	0.625	651	-0.03	-0.11	0.03
Scaled score for implement_q76	337	0.085	0.185	0.248	0.295	339	0.071	0.202	0.334	0.413	652	0.14	0.22	0.30*
Scaled score for implement_q77	338	0.864	0.782	0.786	0.756	339	0.949	0.921	0.947	0.882	653	-0.10	-0.01	-0.06
Mean score of q71, q72, q76, q77	337	0.584	0.618	0.624	0.618	339	0.589	0.661	0.703	0.725	652	0.00	0.04	0.09
Scaled score for implement_q73	334	0.113	0.097	0.082	0.113	338	0.245	0.339	0.216	0.228	648	0.06	-0.04	-0.04
Scaled score for implement_q74	314	0.306	0.220	0.333	0.329	339	0.415	0.484	0.453	0.534	631	0.26	0.20	0.32*
Scaled score for implement_q75	337	0.382	0.415	0.658	0.647	338	0.325	0.323	0.507	0.472	651	0.14	0.06	0.02
Mean implementation score of q73,74,75	336	0.268	0.245	0.355	0.364	339	0.329	0.382	0.391	0.413	651	0.14	0.07	0.09
Scaled score of implementation q78	337	0.662	0.755	0.791	0.839	339	0.713	0.624	0.772	0.812	652	-0.17	-0.05	-0.02
Scaled score of implementation q79	338	0.464	0.439	0.745	0.752	338	0.670	0.698	0.768	0.804	652	0.02	-0.21	-0.14
Scaled score of implementation q80	337	0.842	0.902	0.775	0.773	338	0.796	0.818	0.821	0.742	651	-0.11	0.08	-0.00
Mean score of post harvest practice q78-80	337	0.656	0.699	0.770	0.790	337	0.726	0.713	0.788	0.785	650	-0.08	-0.06	-0.06
If farmer has 12 or more shade trees per ha	339	0.264	0.129	0.297	0.288	339	0.151	0.113	0.277	0.294	654	-0.06	0.06	0.06
If farmer plants shade trees every 2,8-4 metres	156	0.000	0.100	0.042	0.056	203	0.040	0.129	0.102	0.174	344	-0.15	0.04	0.09
If farmer has planted shadetrees previous 2 years	335	0.038	0.098	0.224	0.261	338	0.113	0.148	0.279	0.389	649	0.03	0.07	0.13
Scaled score of implementation q88	333	0.935	0.939	0.946	0.935	338	0.992	0.993	0.989	0.978	647	0.05	-0.01	0.00
Scaled score of implementation q89	333	0.143	0.098	0.140	0.175	338	0.174	0.105	0.280	0.225	647	0.12	0.22*	0.09
Scaled score of implementation q90	335	0.717	0.726	0.830	0.806	339	0.849	0.887	0.878	0.877	650	0.04	-0.07	-0.04
Scaled score of implementation q93	336	0.670	0.667	0.813	0.819	339	0.751	0.713	0.822	0.846	651	0.00	-0.04	-0.01
Mean score of implementation q88-91, 93	337	0.604	0.616	0.687	0.711	339	0.706	0.684	0.770	0.745	652	0.07	0.08	0.03

indicator	2013					2017					dif in dif* (comapred to group 1)			
	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 1 n=53	group 2 n=62	group 3 n=148	group 4 n=163	n overall	group 2	group 3	group 4
If hired labour, have contract regarding the work?	331	0.510	0.328	0.486	0.497	339	0.208	0.210	0.327	0.344	646	0.10	-0.05	-0.07
Do you have declaration CNPS for hired labour?	329	0.000	0.000	0.021	0.000	337	0.000	0.016	0.000	0.012	642	0.04	-0.02	0.01
Know labour rights (hours working etc)?	334	0.075	0.098	0.253	0.225	337	0.038	0.048	0.075	0.124	647	0.04	-0.10	0.01
Farmer knows minimum age is 18 for child to work	339	0.028	0.040	0.041	0.071	339	0.255	0.234	0.456	0.543	654	-0.19	-0.01	0.06
Did you get visit from (child) labour inspection?	332	0.115	0.117	0.248	0.285	331	0.077	0.081	0.393	0.446	639	0.17	0.30*	0.32*
Scaled score for knowledge q100	338	0.861	0.910	0.948	0.955	339	0.994	0.994	0.986	0.988	653	-0.03	-0.10**	-0.10**
Scaled score for knowledge q101	338	0.794	0.824	0.937	0.973	337	0.971	0.966	0.990	0.994	651	0.01	0.04	0.03
Scaled score for knowledge q102	338	0.739	0.751	0.920	0.907	326	0.939	0.945	0.940	0.940	640	0.03	-0.08	-0.05
Scaled score for knowledge q103	336	0.561	0.571	0.709	0.858	331	0.790	0.848	0.890	0.928	644	-0.02	-0.03	-0.10
Scaled score for knowledge q104	333	0.709	0.747	0.730	0.715	336	0.947	0.938	0.906	0.933	645	-0.18	-0.12	-0.05
Scaled score for knowledge q105	337	0.419	0.500	0.706	0.669	329	0.670	0.629	0.713	0.807	644	-0.23	-0.21*	-0.08
Scaled score for knowledge q108	335	0.363	0.400	0.484	0.463	337	0.278	0.306	0.317	0.354	649	0.03	-0.00	0.07
Scaled score for knowledge q109	338	0.879	0.892	0.930	0.950	332	0.965	0.966	0.963	0.965	647	-0.06**	-0.04*	-0.06**
Mean scores of knowledge q100-104, 109	338	0.710	0.743	0.841	0.861	339	0.895	0.898	0.914	0.936	653	-0.07	-0.08**	-0.06
Scaled score for knowledge question q111	335	0.367	0.394	0.477	0.493	337	0.348	0.372	0.374	0.421	648	0.05	0.09	0.13

Appendix 4 Regression tables and analyses

Advanced regression analysis were used to test the robustness of these results taking into account the limited differences in farmer, household and farm characteristics (See Table 4.4) and agro-ecological zone. This helps to build the counterfactual in combination with qualitative data to explain observed differences, or lack thereof. These analyses provide insight into other factors influencing the indicators. The analyses comparing UTZ with non-UTZ farmers, and UTZ farmers compared for service intensity are shown in:

- A simple model for 2013 data (t-test and with critical variables to explore initial differences).
- A simple model for 2017 data (t-test and with critical variables to explore endline differences).
- A 'difference in difference' model with critical variables to explore changes over time.
- A 'difference in difference' model with critical variables to explore changes over time including years certified.
- A 'fixed effect model' at household level as a means to control for omitted variable bias.

Table A4.1 Regression analysis farm size and certification status

```
. regress farmsizeinprod utz if utz!=. & year==1
```

Source	SS	df	MS		
Model	23.6166822	1	23.6166822	Number of obs	= 418
Residual	6869.117	416	16.5123005	F(1, 416)	= 1.43
				Prob > F	= 0.2324
Total	6892.73368	417	16.5293374	R-squared	= 0.0034
				Adj R-squared	= 0.0010
				Root MSE	= 4.0635

farmsizein~d	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
utz	.6071335	.5076665	1.20	0.232	-.3907779	1.605045
_cons	4.266076	.4571832	9.33	0.000	3.367399	5.164753

Correlation farm size with age (of farmer in 2017): not significant (r=0.0249)

- No significant difference between farm size (in production) in 2017, UTZ/no UTZ (and same for 2013)
- No correlation farm size with age of farmer
- There is correlation between farm size & the age of main farm: sign, r =0.187
- This means for every year the main farm exists longer, average size of tt cocoa farm increases (by 0.06 HA, see last results for 2017 year, similar for year 2013)

Table A4.2 Regression analysis farm size and farm age

```
. regress farmsizeinprod age_17 if utz!=. & year==1
```

Source	SS	df	MS	Number of obs	=	423
Model	4.26865125	1	4.26865125	F(1, 421)	=	0.26
Residual	6902.05152	421	16.3944217	Prob > F	=	0.6101
				R-squared	=	0.0006
Total	6906.32017	422	16.3656876	Adj R-squared	=	-0.0018
				Root MSE	=	4.049

farmsizein~d	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age_17	.0087456	.0171392	0.51	0.610	-.0249435	.0424346
_cons	4.300231	.8861549	4.85	0.000	2.558392	6.04207

Correlation farm size with age of main farm (in 2017) significant (r =0.187). For every year the main farm exists more, 0.06 HA is added to average size of cocoa farm and similar in 2013.

Table A4.3 Regression analysis farm size in production and certification status

```
. regress farmsizeinprod yearsplot1 if utz!=. & year==1
```

Source	SS	df	MS	Number of obs	=	324
Model	153.523339	1	153.523339	F(1, 322)	=	11.72
Residual	4219.08452	322	13.102747	Prob > F	=	0.0007
				R-squared	=	0.0351
Total	4372.60786	323	13.5374856	Adj R-squared	=	0.0321
				Root MSE	=	3.6198

farmsizein~d	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
yearsplot1	.0620493	.0181272	3.42	0.001	.0263866	.097712
_cons	3.271071	.4747164	6.89	0.000	2.337134	4.205009

Appendix 5 Indicators

Table A5.1 Indicators

Outcome	Indicators	Question numbers 2013 questionnaire	Question numbers questionnaire
1.Farmer Characteristics	1.0 Name, telephone, age	6, 7, 8	8,9
	1.2 Gender	3	4
	1.4 Length time certified	16g, 40	15g, 26
	1.5 participation in other certification programmes, length time	16h, i, j, 21, 40a	15h, i, j, 26a
	1.9 Number of people in household	14	12
	1.10 Number & type of training & support interventions	44	30
	1.11 Farm tenure/ownership sharecropping/worker status	12, 13, 15, 16a	11, 13, 14, 15a
	1.12 farm size (measured or not?)	15, 16b, c	14, 15b, b1, c
	1.13 % contribution of cocoa to household income)	16, 17, 50	15, 16, 34
	1.14 Other sources of income	50	34
	1.15 Number of years cocoa farming	16e	15e
	1.16 Number of cocoa trees on all farms	16d	15d
	1.17 Location (village/region)	4, 5	5, 6, 7
	1.18 Member of a cooperative(s)	9	10
2.Farm efficiency	Input/output ratio (agronomic/economic)	29, 30	15, 16, 20, 21
	2.1Tree density in practice (vs. prescribed)	82	63
	2.2 Use of (trained) spraying team with a manager competent on dosages	COOP	
	2.3 Total farm size (cocoa & non cocoa)	15, 16a, b, c	13, 14, 15a, b, c, 16
3, Increased productivity	3.1 Yield per hectare	15, 16d, 77, 69, 70	
	3.2 Annual production (last year's harvest)	16	15
	3.3 Production and practice change since certification/participation in UTZ program	17 18, 19, 20, 26, 70 100,101, 102, 103, 104, 109	16(a), 17, 18, 19, 51, 76, 77, 78, 79, 80, 83
	3.4 Inputs used on cocoa production, seedling distribution, planting and maintenance and input access	33, 34	33 35
	3.5 Proportion (%) sold to certified buyer(s)		
	3.6 Influence climatic factors or other external factors (Political, economic, social..)	26a	19a
4. Quality meets market demand	4.3 Post-harvest practices	78, 79, 80	59, 60, 61
5. Increased profitability and long-term viability of farmers & groups	5.1 Income (price, Frequency of payment, Part of the premium directly to farmer in cash)	16, 17, 50	15, 16, 34
	5.2 Record keeping/Use of records and other information (e.g. provided by group/ICS) for decision making	62	42 4, 5, 6, 46, 81
	5.3 Knowledge: Is market information used for/in decision making?	(Coop manager questionnaire)	
	5.4 What and how is premium distributed (individual and group level)	41, 42	27, 28
	5.5 How is cocoa income spent/invested?	51, 58	35, 40

Outcome	Indicators	Question numbers 2013 questionnaire	Question numbers questionnaire
6. Improved livelihoods	6.1 Perceptions of livelihoods access to healthcare or presence of medical staff or number of clinics health checks or first aid training access to inputs pesticide sprayers access to markets, credits / banks, other products (seeds etc) access to decisionmaking groups (Coops, Associations, etc..)	59	41
	6.2 Perceived changes in needs (income, food, water, status, health, education, other)	q60	
7. Respect for labour rights	7.3 Knowledge of national laws on wages, hours worked	94, 95, 96, 29a 4	70, 71, 72, 20
	7.4 Contacts with local community representative for labour rights	98	72_end
8. Respect for labour rights (child llabour)	8.1 Activities of children on cocoa farm (labour)	29f,g	20f, g
	8.2 Knowledge: activities on cocoa farm that can be executed by children	44, 46, 97, 111	73, 84
	8.3 Extent of farmer's satisfaction on children's education (if improvement)	55, 59	38, 41_7
9. Healthy and safe living and working conditions	9.3 Use of protective clothing	37, 108	25, 82
	9.4 Impact of community development/social projects	(Focus group, Company questionnaire)	
10. Maintained & improved quality of water and soil	10.1 Implementation of practices (pruning, mulching, fertiliser use etc.)	71, 72, 76, 77	52, 53, 57, 58
	10.2 Use of inputs: agrochemicals, quality and type	73, 74, 75	54, 55, 56
11. Effective waste management & reduction	11.1 Implementation: if waste & how agrochemicals & leftovers handled?	88, 89, 90, 91, 93,	65, 66, 67, 68, 69
	11.2 Is compost used?	31, 32	22
12. Protection restoration of natural habitats & biodiversity	12.1 Number of shade trees on cocoa farm	81, 82, 83	62, 63, 64
14.Stable producer groups providing better & reliable services	14.7 Perception transparency of ICS	105	81
	14.9 Does group facilitate access to inputs?	20, 33, 34, 62	18, 24, 23, 42
	14.10 Does the group facilitate sales?	35, 62	42
	14.11 (Sustainability of the group) perception of existence after certification		
	14.12 Extent price/market information provided to farmers	62	42
	14.13 Member of other groups and sales to other groups/traiteurs, why?	9, 20	10, 18
	14.14 Selling beans to others (traitants, buyers)? (loyalty)	18,18a,19,20	17, 18
	14.15 (Likert) Perception if group well-managed/ financially healthy?	66	46
	14.16 proportion payment to farmers on time	62	42
	14.17 Perception of communication with members	62	42, 45
	14.18 Perception level of capacities	62	42
	14.19 Perception level of bargaining power with companies/Companys/traitants	59, 62, 66, 18, 20	42, 18
	14.20 Perception effect of training, support and interventions		
15. Sustainable practices rewarded by the market	15.1 Better price / premium	41, 42.	27, 28
	15.2 Long-term buying commitments		
	15.3 More potential buyers		
	15.5 Receive additional inputs, or external support? From who? Level & type of services, inputs/support	21	
	15.6 Do you want your children to become cocoa farmers?	67	47
	15.7 Do you plan to continue cocoa farming/intensify/diversify? (5 yr timescale)	68	49

Table A5.2 Indicator measurement

Indicators	Indicator measurement
Gross income from cocoa	Yearly production of all cocoa farms multiplied by the average price per kg for cocoa paid to farmers in each season.
Labour costs of cocoa production	All reported hours spent on cocoa production activities multiplied by the price of labour (2000 CFA per day). Family labour costs are calculated using the same price as for hired labour. Not included are costs and time spent by farmers on training, communal 'shared' labour gangs, as lead farmers, on internal management systems and on auditing. Farmers indicating zero labour costs were not included in the calculations.
Input costs of cocoa production	Number of times a product is applied multiplied by unit multiplied by price per unit of input (fertilisers and crop protection products such as fungicide and pesticide). Time (opportunity costs) to become UTZ certified and investing in PPE has not been taken into account in cost calculations
Total cocoa production costs	Labour + input costs. Not included are costs of equipment and personal protective equipment, costs (in kind) of spraying gangs or communal 'shared' labour. Time (opportunity costs) to become UTZ certified and investing in PPE have not been taken into account in cost calculations.
Net income from cocoa	Yearly production of cocoa from the main farm, minus total production costs for the main farm. This does not take into account the costs of farmers own labour or family labour and is not inflation adjusted. Inflation in the period 03/2014 to 03/2017 was on average 1%[19]. Production costs are not extrapolated from main farm to the other farms, but as other farm area is very limited, we expect minimal differences.
Cocoa production efficiency	Average economic efficiency ratio of output to inputs, calculated as gross income divided by total agronomic production costs.
Productivity	Yield per tree per hectare. Based on farmers reports of their farm size. In 2012 only 30% of farmers had measured their farm size, the remaining 70% were estimates. On average farmers over-estimated their farm size by a factor of 7%.
Rate of knowledge of Good Agricultural Practices (cocoa)	Farmers were asked 12 multiple choice questions on GAP. Correctly answered questions correspond to the requirements of the UTZ Code of Conduct. The more correct answers a farmer, the higher the score for the individual question. For each question a score was derived on a scale between 1 and 10. The overall knowledge score was measured as an average of all scores for the individual scores.
Income and expenditure	To analyse how farmers spent their cocoa-related income, two broad categories 'economic' and 'social' were determined. Four categories of agricultural expenditures were defined: purchasing inputs and equipment for cocoa; purchasing inputs and equipment for other crops; paying hired labour for cocoa; and paying hired labour for other crops. The maximum score farmers can get is 4. Social expenditures cover three categories: food, medicine and school fees, with a maximum score of 3.
Rate of implementation of GAP (cocoa)	Farmers were asked 24 multiple choice questions on GAP. Correctly answered questions correspond to the requirements of the UTZ Code of Conduct. The answers were scored according to the correctness of the answer. For each farmer and each question a score was given on a scale between 1 and 10. The overall score for the implementation of GAP was measured as an average of all the individual scores.
Satisfaction with livelihood	Farmer perception, 5-point Likert scale
Changes in needs (income, food, water, health, education, other)	Farmer perception based on open questions with qualitative answers possible.
Satisfaction with cooperative services	Farmer perception, 3-point Likert scale
Satisfaction with company's programmes	Farmer perception, 3-point Likert scale and open question

[19] https://tradingeconomics.com/ivory-coast/inflation-cpi

Appendix 6 Overview of knowledge and implementation scores

Table A6.1 Overview of knowledge and implementation scores

Indicator	Variables	Non-UTZ	UTZ	Total						Statistical test results				
Knowledge and practice (implementation)		Mean	Mean	Mean	Median	Sd	Max	Min	N	DIFF utz-noutz	Signif - ttest	Signif - OLS CVs	Dif-In-Dif	YearCert	FE
Post-harvest practice	posth practice 2013	0.661	0.773	0.752	0.9	0.229	1	0	418	0.11	0.101***	0.101***			
	posth practice 2017	0.718	0.778	0.768	0.9	0.215	0.967	0	418	0.06	0.047*	0.037			
	posth practice 2017-2013	0.057	0.005	0.016	0	0.271	0.933	-0.667	418	-0.05	-0.054	-0.064*	-0.048	-0.173***	-0.054
Use protective equipment	use clothing 2013	0.173	0.212	0.204	0.143	0.259	1	0	418	0.04	0.038	0.017			
	use clothing 2017	0.35	0.458	0.436	0.286	0.333	1	0	418	0.11	0.108***	0.133***			
	use clothing 2017-2013	0.177	0.246	0.232	0.143	0.405	1	-1	418	0.07	0.069	0.117**	0.069		0.069
Know protective clothing	know clothing 2013	0.304	0.481	0.446	0.5	0.266	1	0	415	0.18	0.177***	0.161***			
	know clothing 2017	0.277	0.335	0.323	0.25	0.171	1	0	415	0.06	0.058***	0.057**			
	know clothing 2017-2013	-0.027	-0.146	-0.122	0	0.3	0.75	-1	415	-0.12	-0.119***	-0.104***	-0.116***		-0.119***
7.1 labour rights knowledge	know labour rights 2013	0.506	0.706	0.669	1	0.726	2	0	414	0.20	0.200**	0.188*			
	know labour rights 2017	0.195	0.436	0.391	0	0.616	3	0	414	0.24	0.241***	0.285***			
	labour rights 2017-2013	-0.312	-0.27	-0.278	0	0.901	2	-2	414	0.04	0.042	0.097	0.056	-0.196	0.056
8.2 knowledge child labour	child labour rights 2013	0.298	0.492	0.455	0.375	0.279	1	0	412	0.19	0.194***	0.208***			
	child labour rights 2017	0.373	0.396	0.391	0.273	0.294	1	0	412	0.02	0.023	-0.017			
	child labour rights 2017-2013		0.075	-0.097	-0.064	-0.065	0.398	1	-0.988	412	-0.17	-0.172***	-0.225***	-0.166***	-0.371**
11.1 effective waste management	practice agro-waste 2013	0.557	0.704	0.676	0.75	0.168	1	0.04	415	0.15	0.147***	0.152***			
	practice agro-waste 2017	0.7	0.748	0.739	0.75	0.148	1	0.25	415	0.05	0.048***	0.046**			
	practice 2017-2013	0.143	0.044	0.063	0.05	0.212	0.71	-0.5	415	-0.10	-0.099***	-0.106***	-0.106***	0.167**	-0.106***

Appendix 7 Farmer questionnaire 2017

QUESTIONNAIRE Planteur

Présentation au répondant : Veuillez-vous présenter au répondant en précisant ces différents points

- *Vous présentez par votre nom*
- *Vous travaillez pour l'ONG ALP et l'Université Wageningen en Hollande*
- *Le sujet de cette étude de recherche est la production du cacao et les conditions de vie du répondant et de sa famille (ou de son ménage)*
- *L'entretien prendra environ 1 heures de temps.*
- *Les chercheurs (enquêteurs) garderont les réponses du répondant confidentielles. Leurs noms ne seront utilisés nulle part. Ses informations ne seront pas divulguer à la coopérative, à l'exportateur ni aux institutions du gouvernement.*
- *Leur participation est volontaire. Le répondant n'est pas obligé de répondre aux questions et peut arrêter l'entretien à tout moment.*
- *Demander si le répondant à des questions sur tout ce que vous venez d'expliquer.*
- *Est-ce que tout ce j'ai expliqué à propos de l'entretien est clair ?*

Instructions aux enquêteurs

1. *Toutes les questions doivent être posées et répondues. Veuillez tout vérifier avant de quitter l'interlocuteur.*
2. *Si le répondant ne connait (ou oublie) pas la réponse, écrire -777*
3. *Si le répondant ne veut pas répondre, écrire -888.*
4. *Si la question ne s'applique pas au répondant, écrire -999.*
5. *Et si la réponse est « 0 », écrire « 0 », telles que les « questions relatives aux coûts ».*
6. *Assurez-vous que le répondant se sente libre de répondre, prévenez tout bruit et toute interférence.*
7. *Si l'on pose la question « l'année dernière » cette campagne (2016/2017) cela concerne la traite de la* ***dernier année*** ***(petite traite avril 2016 à aout 2016 grande traite septembre 2016 à mars 2017)***

Information générale			
Date de l'enquête (j-m-a)	...../...../.....		
Temps de début	.....	Temps de la fin:	.....
Nom de l'enquêteur	.....	Numéro de 'enquête :	. .....
Contrôle ALP :	Nom de coopérative	Numéro de coopérative	

Questions pour sélectionner les répondent		
1. Avez-vous vendu du cacao le dernier année (2017/2016 & 2016/2016) ?	0. Non*	1. Oui
2. Etes-vous toujours activement engagé dans la production du cacao ?* ***Le répondant doit être une personne (sur votre liste) qui est activement impliqué dans la culture du cacao notamment dans les prises de décisions de l'exploitation de la plantation.***	0. Non*	1. Oui
3. ***Si non : quelle est ce que la raison pourquoi a-t-il a arrêté avec le cacao ?***		

Si la réponse à l'une des deux questions ci-haut est Non, arrêtez gentiment l'entretien et passez au prochain planteur sur votre liste.

Premièrement, je voudrais poser des questions relatives à vous-même et à votre ménage

A. Ménage	
4. Sexe	0. Masculin 1. Féminin
5. Région* (***l'enquêteur - cochez à partir de la liste)***	..... (ecrire Code)
6. Département(***l'enquêteur - cochez à partir de la liste)***	..... (ecrire Code)
7. Communauté / Village (***l'enquêteur - cochez à partir de la liste)***	..... (ecrire Code)
8. Quel est votre nom ? ***(l'enquêteur - vérifie avec la liste de contrôle)***	..... Si l'orthographie pas bien, faites le correction : .....
9. Quel est votre numéro de téléphone ?	.....

10. Etes-vous toujours membre d'une ou plusieurs coopérative (s) de cacao ?

0 Non
1 Oui

2.Nom du coopérative /pisteur	*C*hangements du nom de coopérative / pisteur ou du orthographie	3.Depuis quand ? (année)
1a	1b	1c
2a	2b	2c
3a	3b	3c
4a	4b	4c

(Vérifier orthographie/abréviation avec les liste !!)

****(attention pour les changements de nom du coopérative ! si le nom a changé mettre nouvelle/ ancien)***

11. Quelle est votre statut par rapport à la plantation ?

0. Créateur
1. Héritier
2. Gestionnaire
3. Autres (Propriétaire : native de village)
4. Propriétaire (pas native du village)

12. Combien de personnes vous avez a votre charge* ?
«à votre charge dit que les personnes qui habitent régulièrement dans votre maison et qui partagent le repas ensemble »

0. Ici a cette ménage.....

1. et ailleurs (autres locations) .....

B: PRODUCTION DE CACAO

13. Combien de champs de cacao vous et/ou les membres de votre ménage est responsable ?

..... (nombre)

Superficie ..... (En hectare)

14. Quelle est la superficie de tous votre plantations (cacao et tous les autres cultures, aussi les jachère) ?

Superficie .....(En hectare)

B: PRODUCTION DE CACAO

15. Pouvez-vous fournir des données au sujet de chacun des champs de cacao sur lesquels vous travaillez individuellement? **Commencez par le champ qui produit le plus. Enumérez vos plantations svp. L'année dernier (Avril 2016 à aout 2016 et Septembre 2016 à mars 2017*)***

Champ de cacao	Votre statuts lieux pour les champ différents (*peut être différente pour différents champs)*	Superficie totale des champs	Mesurée ? (GPS)	Surface en production	Nombre des arbres de cacao	Date de création	La production de l'année passée par champ[20]	Nombre de HA certifie par UTZ ?	Nombre de HA certifie par Rainforest Alliance ?	Nombre de HA certifié par Fairtrade (FLO) ?	Nombre de HA certifié
	0. Propriétaire : *1. Abusan (partage en 3)* *2. Abunun (partage en 2)* *3. Prise en garantie* 4. *Gestionnaire* 5. *Autre……..*	*En HA*	Oui 1 Non 0				*Kg*[21]	*Depuis ……mois ……Année*	*Depuis ……mois ……Année*	*Depuis ……mois ……Année*	*Ha*
1	1a	1b	1b1	1c	1d	1e	1f	1g	1h	1i	1j
2	2a	2b	2b1	2c	2d	2e	2f	2g	2h	2i	2j
3	3a	3b	3b1	3c	3d	3e	3f	3g	3h	3i	3j
4	4a	4b	4b1	4c	4d	4e	4f	4g	4h	4i	4j
5	5a	5b	5b1	5c	5d	5e	5f	5g	5h	5i	5j
Totale *S'il ne sait pas par champ*											

[20] Demandez à voir le carnet / reçu : leur production (rendement), et leur vente
[21] NB: Si les répondeurs donnent les informations en Sac, calculer l'équivalence en kg.

16. Les prix : quelles étaient les prix / kg ce dernière année a qui avez-vous vendu votre cacao ? ***demande à voir leur carnet de vente***

SAISON	**petite traite avril 2016 à aout 201**	**Grande trait sept 2016 à mars 2017**
Prix et kg vendu	*Prix par kg*	*Prix par kg*
Coopérative	1a	1b
Pisteurs	2a	2b
Traitant	3a	3b
Autres (*Spécifier*)	4a	4b
Perte	5a	5b

16a Qui a acheté votre cacao l'année dernière ? (***Réponses multiples sont possibles)***

	Spécifier Nom	16b Pourquoi préférez-vous vendre à cette acheteur (s) ? ***Multiples réponses sont possibles*** 0. Le prix est bon 1. Il paie cash 2. Il transport mon cacao 3. Il me donne/accepte crédit 4. Autres (*Spécifier*)
0. Votre Coopérative	0a	0b
1. Pisteur	1a	1b
2. Autre coopérative	2a	2b
3. Traitant ……..	3a	3b
4. Autres……	4a	4b

17. A quel entreprise(s) a votre coopérative et / ou pisteur et / ou commerçant a vendu l'année dernier?

	Entreprise	**Dernier année (2017/2016)**
		(1= le plus préféré, 2 le prochain, 3 etc)
1.	Cargill	
2.	Armajaro	
3.	Barry Callebaut	
4.	Natra	
5.	Zamacom(Ecom/Ecom sim)	
6.	Olam	
7.	CocafIvoire (Noble)	
8.	ADM *	
9.	Ludwig	
10.	CEMOI	

11. Nestle	
12. Mars	
13. Hedwig	
14. GGT	
15. Touton	
16. Autres……*Spécifier*	
17. Je ne sais pas/pas de préférence	
18. Pisteur ……(*Spécifier*)	
19. Transmar	
20. Traitant	
21. SAFCACAO	
22. SIFCACOOP	
23. Audre cooperative (*Specifier)*	

**ADM a fuse avec Olam*

18. Pourquoi votre coopérative / pisteur a choisi particulièrement ces exportateurs ? (***Réponses multiples sont possibles*****)**
    0. Prix
    1. ils donnent des crédits
    2. ils fournissent des intrants (gratuit / en crédit)
    3. ils donnent des formations
    4. ils fournissent autres services (*Spécifier* ……
    5. Je leur dois de l'argent
    6. Autres ……
    7. Il paie cash
    8. Je ne sais pas

C: EFFICACITE ET PRODUCTIVITE

19. Y a-t-il eu un changement dans la production (en kilo) de la année passe (avril 2016 à mars 2017) comparé à la production de l'année d'avant (avril 2015 à mars 2016)?
    1. en haut
    2. en bas
    3. la même
    -777. Je ne sais pas

19a. Cela est au cause du quoi ? ***<u>Enquêteur : Ne lire à pas la liste au-dessus haute voix</u>. (Réponses multiples sont possibles)***

1. Certification
2. Pulvérisation
3. Mangue de pulvérisation
4. Nouvelle plantation
5. Replantation
6. Nouvelle variété de cacao (cacao 18 mois = Mercedes, Ghana, français)
7. Pesticides
8. Engrais
9. Formation
10. Mortalité / Maladies
11. Vieillissement de la plantation
12. Ancienne variété (Pas de nouvelle variété de cacao (cacao 18 mois = Mercedes, Ghana, français)
13. Manque de traitement (Pesticides / fongicides)
14. Manque d'Engrais
15. Manque de Formation
16. Le basfonds a tout bouffé
17. Manque de main d'œuvre
18. Je n'ai pas de temps
19. le champ est éloigné (ça prend beaucoup de temps pour y aller)
20. Pas d'argent pour le cultiver (investissement)
21. Terre familial sur laquelle il y a encore des désaccords (propriété non définie)
22. Terre dont la propriété n'est pas clairement définie (propriété non définie)
23. Il existe une maladie (swollen shoot etc.)
24. Bonne pluviométrie
25. La pluie (Beaucoup trop/trop humide)
26. La pluie (trop peu)
27. Maladie du planteur
28. Pas de argent pour payer main d'ouvré
29. Autres (mentionnez)……
30. Trop de soleil /sécheresse

D. COUT DE PRODUCTION DU CACAO

20. Combien de temps (*nombre de jours complets*) par an passez-vous personnellement et / ou les autres à accomplir les activités suivantes au niveau de votre PRINCIPAL champ? Si vous avez plus d'un champ, vos réponses doivent concerner votre champ PRINCIPAL. ***Enquêter : remplir la table !***

Activités	**0. Temps de vous-même (jours)**	**1 Temps de main d'œuvre (*rémunérée*) (jours)**	**2. Cout de main d'œuvre (<u>par jour</u>) pour l'activité**	**2. Cout de main d'œuvre (<u>par hectare</u>) pour 'activité <u>(calculée si besoin)</u>**	**Abusan Numéro de jours *couts sont**	**3. Temps de enfants membres du ménage (< 15 ans) (jours)**	**3a. Temps de enfants du ménage (15 -18 ans) (jours)**	**4. Temps de autres membre adulte du ménage (18 ans et +) (jours)**	**5. Avez-vous changé le temps que vous passez sur les activités depuis la dernière année?**
									0 = Non, même volume de temps; *1= Oui, plus de temps que 2 ans auparavant;* *2= Oui, moins de temps que 2 ans auparavant* *-777 = Je ne sais pas.*
Préparation de la terre[22]	1a	1b	1c	1d	1e	1f	1g	1h	1i
Désherbage / nettoyage	2a	2b	2c	2d	2e	2f	2g	2h	2i
Elagage / la taille	3a	3b	3c	3d	3e	3f	3g	3h	3i
Application d'engrais	4a	4b	4c	4d	4e	4f	4g	4h	4i
Lutte contre les insectes (traitement phyto)	5a	5b	5c	5d	5e	5f	5g	5h	5i
Lutte contre les maladies (pourriture brune etc.)& transport d'leau	6a	6b	6c	6d	6e	6f	6g	6h	6i
Transport fèves fraiche au village	7a	7b	7c	7d	7e	7f	7g	7h	7i
Récolte	8a	8b	8c	8d	8e	8f	8g	8h	8i
Cabossage	9a	9b	9c	9d	9e	9f	9g	9h	9i
Fermentation (combien de jours)	10a	10b	10c	10d	10e	10f	10g	10h	10i
Séchage (temps de séchage)	11a	11b	11c	11d	11e	11f	11g	11h	11i
Triage	12a	12b	12c	12d	12e	12f	12g	12h	12i
Transport chez la coopérative[23]	13a	13b	13c	13d	13e	13f	13g	13h	13i

[22] La préparation de la terre consiste à défricher et brulée un ***nouveau champ*** et à planter de ***nouveaux plants de cacao***, inclusif transport du plants au champ.

[23] Transport faite par la coopérative égale à 0

21. Quels types[24] d'intrants avez-vous utilisé l'année dernier 2016/2017, combien (litres / sacs etc.) et quels sont les coûts ? ***(Enquêteurs: Si rien n'est n'a été utilisé, REMPLISSEZ N/A dans la première colonne et ne mettez rien plus. Si le nom est inconnu, mettez -777 au niveau du nom et mettez le nombre et le prix)***

Intrants	**Unité**	**Matière de unité**		**Quantité**	**Combien de fois ceci est utilisé**	**Prix par types d'intrants l'an passé**
	à spécifier ! boite = 1 sac = 2 containeur = 3 sachet = 4	***kg =1 ; litre = 2***	***Combien de litre/kg par unité en b***	***Combién d'unités ?***	***Nombre***	***Prix Unitaire (En CFA)***
Matériels végétales						
Plants	1a	1b	1c	1d	1e	1f
Cabosse	2a	2b	2c	2d	2e	2f
Fèves	3a	3b	3c	3d	3e	3f
Autre (à *Spécifier*)	4a	4b	4c	4d	4e	4f
Type de pesticide						
Akate Master	5a	5b	5c	5d	5e	5f
Actara	6a	6b	6c	6d	6e	6F
Pyrethrum 0.6	7a	7b	7c	7d	7e	7f
Confidor	8a	8b	8c	8d	8e	8f
Autre, préciser....	9a	9b	9c	9d	9e	9f
Autre, préciser.....	10a	10b	10c	10d	10e	10f
Type d'herbicide / Désherbant						
Round up	11a	11b	11c	11d	11e	11f
Gramoxone	12a	12b	12c	12d	12e	12f
Condemn	13a	13b	13c	13d	13e	13F
Autre, préciser....	14a	14b	14c	14d	14e	14f
Autre, préciser.....	15a	15b	15c	15d	15e	15f
Type de Fongicide						
Ridomil Gold	16a	16b	16c	16d	16e	16f
Funguran-OH	17a	17b	17c	17d	17e	17f
Kocide 2000	18a	18b	18c	18d	18e	18f
Nordox 75 WG	19a	19b	19c	19d	19e	19f
Champion	20a	20b	20c	20d	20e	20f
Autre, préciser....	21a	21b	21c	21d	21e	21f

[24] S'il s'agit des planteurs certifient, ils doivent répondre que c'est la coopérative qui s'en occupe

Autre, préciser.....	22a	22b	22c	22d	22e	22f
Type d'engrais						
AsaaseWura	23a	23b	23c	23d	23e	23f
Cocofeed	24a	24b	24c	24d	24e	24f
Sidalco	25a	25b	25c	25d	25e	25f
Organic	26a	26b	26c	26d	26e	26f
NITRABOR	27a	27b	27c	27d	27e	27f
SUPERCAO	28a	28b	28c	28d	28e	28f
HYPERSACO	29a	29b	29c	29d	29e	29f
Autre: veuillez préciser	30a	30b	30c	30d	30e	30f
Autre: veuillez préciser	31a	31b	31c	31d	31e	31f

22. Utilisez-vous les déchets de cacao ?
    0. Non
    1. Comme fourrage
    2. Comme compost
    3. Autres utilisation (mentionnez)……

23. Quand tu as l'argent, pouvez-vous acheter les intrants lorsque vous en avez besoin?
    0 Non
    1. Oui, à temps
    2. Autres…..
    -999 Pas applicable
    -777. Ne sais pas

24. Est-ce que il y a une amélioration dans l'accès aux marche des intrants le dernier année?
    0. Non
    1. Oui
    2. Autres……..
    -777. Ne sais pas

25. Quel genre des équipements de protection, avez-vous ou votre main d'œuvre a utilisé pour la culture du cacao l'an passé?
(**Enquêteur: Laissez les commencer, s'ils ne peuvent pas vous donner tous les équipements, demandez alors le reste de la liste.).**

Equipment de protection	**Avez-vous cela?**	**Utilisez-vous cela?**	**Utiliser par votre main de ouvre**	**Pour quoi vous utiliser maintenant ?**
	0 = Non ***1 = Oui***	***0 = Non*** ***1 = Oui***	***0 = Non*** ***1 = Oui***	*1. protection* *2. après apprendre pendant formation* *2. besoin pour la certification* *2. j'ai vu mon voisin utiliser* *3. Equipment donné par coopérative* *4. Equipment donné par exportateur* *5. Equipment donné par un autre* *6. Autre raison (à Spécifier….*
Cache-nez	1a	1b	1c	1d
Bottes	2a	2b	2c	2d
Chapeau	3a	3b	3c	3d
Salopette	4a	4b	4c	4d
Lunettes	5a	5b	5c	5d
Imperméable	6a	6b	6c	6d
Gants	7a	7b	7c	7d
Autres	8a	8b	8c	8d

E: CERTIFICATION

Nous voudrions savoir si vous participez à un programme de certification et ce que vous en pensez

26. Vous êtes certifiée par UTZ?

0 Non, ↣ ***Si non ales a 26a***

1 Oui ↣ Allez à 27 ***(Enquêter a vérifié si c'est un producteur contrôle !)***

Si oui, quand avez-vous été certifié par UTZ? Année __ mois_____

26a. Mais avant vous étiez certifie et maintenant vous avez arrêt ?

0 non

1 Oui, Si oui……, pour quoi ?

0. trop cher
1. ma coopérative n'est toujours pas certifie
2. Autre certification (lesquelles ?
   - 2.1 Rainforest Alliance
   - 2.2. Biologique
   - 2.3. Fairtrade
3. Autres raisons (à *Spécifier*)…….

27. Avez-vous reçu des primes pour le cacao UTZ ou ristourne que vous avez produit la dernière année ?

0. Non
1. Oui
2. Pas actuellement
3. Pas encore

-777 Je ne sais pas

28. Si oui, ou pas encore, combien **par kg**? comme prime

0. …….francs par Kg
1. Autre montant (globale)…….

-777 Je ne sais pas

29. Est-ce que vous ou un membre de votre ménage a participé à une formation/ateliers les dernière année? (***Enquêteur: les formations sont les évènements éducatifs ; par exemple, la formation personnelle, la formation du groupe, les ateliers, les démonstration, la formation assurée par ANADER.)***

0. Non -> allez à 32
1. Oui -> allez à 30

30. Si vous avez suivi une formation ce dernier année quel étaient les thèmes ? Et cela a pris combien de temps? ***(Enquêteur: la formation peut être individuelle, en groupe, des ateliers, et les démonstrations les visites faites par ANADER, les exportateurs etc.)***

Thèmes ***lire les thèmes !***	**Avez-vous participé à la formation sur ce thème?**	**Qui a assuré la formation?**	**Nombre de séances de formation des dernière année?**	**Nombre de heures par formation**	**Niveau de appréciation**
	0 = Non ***1 = Oui*** ***-777= Je ne sais pas***	***Voir code***	***FREQUENCE /Nombre (S'ils disent qu'ils ont reçu formation toutes les 2 semaines, calculez le nombre vous-mêmes)***	***Demande et calculée le nombre de heures totale***	***1 = Non satisfait*** ***2 = Neutre*** ***3 = Satisfait*** ***-777 = Je ne sais pas***
Champ école (*tous les sujets en-dessous ensemble*)	a1	a2	a3	a4	a5
Groupe d'apprentissage	b1	b2	b3	b4	b5
Gestion de coopératives	c1	c2	c3	c4	c4
Bonne pratique agricole (Production de cacao, Ex. taille, la récolte sanitaire, nettoyage manuel)	d1	d2	d3	d4	d5
Santé et sécurité (Ex. SIDA, sécurisée des produits chimiques, économie domestiques)	e1	e2	e3	e4	e5
Gestion documentaire (Ex. sauvegarde des données, prise de décisions économiques)	f1	f2	f3	f4	f5
Application des produits chimiques (Ex. quantité appropriée et type de produits chimiques à utiliser dans les activités champêtres)	g1	g2	g3	g4	g5
Bonne pratique social (Travailles des enfants, main d'ouvré)	h1	h2	h3	h4	h5
Protection de l'Environnement (ex. Ne pas défricher à proximité des rivières, Sauvageons, feux de brousse, pollution de l'eau, la lutte contre l'érosion des sols, forets classe)	i1	i2	i3	i4	i5
Economique (diversification des revenus, autres cultures……)	j1	j2	j3	j4	j5
Autres *Spécifier*	k1	k2	k3	k4	k5

CODE

1 UTZ
2 Rainforest Alliance
3 Fair trade
4 Commerce Equitable
5 Délégué de planteur (paysan relais)
6 Traitant
7 Anader
8 Fournisseur d'intrants
9 Personne locale/Voisin
10 Cabinet
9 ne sais pas
10 Cargill
11 Armajaro
12 Barry Callebaut
13 Natra
14 Zamacom/Ecom/ECOMSIM
15 Olam
16 CocafIvoire (Noble)
*17 ADM **
18 Ludwig
19 CEMOI
20 Nestle
21 Mars
22 Hedwig
23 GGT
24 Touton
25 Transmar
26 SAFCACAO
27 SIFCACOOP
28 Autre.. à Spécifier……

31. Après avoir reçu la formation, avez-vous formé les autres?

0. Non
1. Oui, ma femme
2. Oui, mes enfants
3. Oui, les ouvriers
4. Oui, autres planteurs
5. Oui, autres (mentionnez)……..

Partie F: Impact sur la rentabilité et les moyens d'existence

32. Que pensez-vous sont les avantages la certification ? **(*Réponses multiples sont possibles*)**

0 Il reçut Les primes
1 Il apprend les bonnes pratiques agricoles
2 le reçu formation
3 amélioration de mon savoir cacao culture
4 augmentation du volume/productivité
5 je ne sais pas
6 Autres, *à Spécifier*

32a Que pensez-vous sont les désavantages de la certification ?

1. Cout élevé
2. Beaucoup de travaille
3. Ça prend du temps
4. Je ne sais pas
5. Pas de désavantages
6. Autres, *à Spécifier*

33a. Maintenant je voudrais demander les questions sur les changements dans l'année dernière ?

Lire verticalement !	Dans la dernière année, il y avait…..	Les activités de votre coopérative à influencer ce changement ?	Les activités de certification de UTZ à influencer ce changement ? ***Si la coopérative n'est pas certifie- ne demande pas***	Il y a les autres raisons pour le changement ?
	Diminution forte (1) *Diminution (2)* *Pas de changement(3)* *Augmentation (4)* *Augmentation forte (5)* *Ne connait (ou oublie) Pas la réponse (-777)* *Ne s'applique pas (-999)*	*Oui (1)* *Non (0)* *Presque rien (2)* *Un peu (3)* *Beaucoup (4)* *Très forte (5)* *Pas la réponse (-777)* *Ne s'applique pas (-999)*	*Oui (1)* *Non (0)* *Presque rien (2)* *Un peu (3)* *Beaucoup (4)* *Très forte (5)* *Pas la réponse (-777)* *Ne s'applique pas (-999)*	*Oui (1)* ***a spécifier*** *Non (0)* *Presque rien (2)* *Un peu (3)* *Beaucoup (4)* *Très forte (5)* *Pas la réponse (-777)* *Ne s'applique pas (-999)*
Changements dans la productivité ?	a1	a2	a3	a4

Lire verticalement !	Dans la dernière année, il y avait……	Les activités de votre coopérative à influencer ce changement ?	Les activités de certification de UTZ à influencer ce changement ? ***Si la coopérative n'est pas certifie- ne demande pas***	Il y a les autres raisons pour le changement ?
Changements dans les couts d'intrants ?	b1	b2	b3	b4
Changements dans le revenu ?	c1	c2	c3	c4
Changements dans l'accès aux intrants ?	d1	d2	d3	d4
Changements au niveau de prix ?	f1	f2	f3	f4

34. Par ordre d'importance, classez les sources de revenus de votre ménage

Source de revenus	**Classement** ***1= importance plus 2, 3, etc. par source de revenu***	**Revenus (*brut*) de la dernière année (2017/2016)** ***la somme en Francs*** **-888 si il ne veut répondrai pas -999 pas applicable**	**Nombre des hectares de culture** ***Enquêteur : vérifier le même nombre de hectare comme question 11 !***
Culture de cacao	1a	1b	1c
Culture d'hévéa	2a	2b	2c
Culture de café	3a	3b	3c
Palmier à l'huile	4a	4b	4c
Cultures vivrières (plantain, manioc, riz, mais, igname,..)	5a	5b	5c
Cola	6a	6b	6c
Maraicher	7a	7b	7c
Fruitiers (guave, orange, citron, mangue, mandarine etc..)	8a	8b	8c
Autres cultures	9a	9b	9c
Elevage (couchons, vaches, poulets, lapins etc..)	10a	10b	10c
Commerce & vente en détail	11a	11b	11c

Revenus des activités non-agricoles (Rémunération de main d'œuvre, etc.)	12a	12b	12c
Semences/pépiniéristes	13a	13b	13c
Revenus de composte	14a	14b	14c
Revenu de fumier de poulet/bouches de vache	15a	15b	15c
Taxi/camion/ chauffeur	16a	16b	16c
Autres ……	17a	17b	17c

35. Comment avez-vous utilisé le revenu provenant de *votre champ de cacao* l'année dernier (2017/2016)? ***(Réponses multiples sont possibles)*** ***Enumérateur NE lire en haut voix !!***

Nr	**Eléments**	**1 = Oui** **0 = Non**
0	Acheté des intrants/des équipements pour la production de cacao	
1	Acheté des intrants/des équipements pour autres cultures/animaux	
2	Embauché des ouvriers pour la production du cacao	
3	Embauché des ouvriers pour des autres cultures/animaux	
4	Acheté la nourriture	
5	Payé des médicaments pour la famille	
6	Frais scolaires pour les enfants	
7	Investissement dans les affaires	
8	Acheté des téléphones portables	
9	Acheté des articles électroménagers ex. Radio/TV/Solaire	
10	Equiper la maison	
11	Achète moto/ l'eau	
12	Funérailles	
13	Autres ……	

36. Avez-vous eu un crédit (bancaire, ou paiement en avance) pour la année passée pour acheter des équipements, intrants, ou pour les dépenses de votre ménage pour l'année dernier?

    0. Non
    1. Oui

    Si oui, de qui ?

        2. Coopérative
        3. Pisteur ***(à Spécifier***)……
        4. banque/caisse de crédit

5. autre ***(à Spécifier***)……..

37. Avez-vous senti des changements dans vos conditions de vie ou celles des membres de votre famille depuis l'année passée?
    0. Non
    1. Positive
    2. Négative
    3. Je ne sais pas

38. Y a-t-il eu des changements dans l'éducation de vos enfants (écoles construites, nombre d'enseignants, programme d'alphabétisation)
    0. Non
    1. Positive
    2. Négative
    3. Je ne sais pas

39. Y a-t-il eu des changements dans l'accès aux soins de santé au cours de dernière année? (c.-à-d. un centre sanitaire ou un centre médical, des bilans de santé ou formation de base pour les premiers soins)
    0. Non
    1. Positive
    2. Négative
    3. Je ne sais pas

40. Partagez-vous vos revenues du cacao avec les autres?

    0. Non
    1. Oui, si oui…
        2. Femme
        3. enfants
        4. Famille
        5. Gestionnaires
        6. Ouvriers (abusan, annuel etc…)
        7. Autres……

41. Comment appréciez-vous votre niveau de satisfaction (Enumérateur : marque la réponse avec 1)

	Très satisfait	**Satisfait**	**Neutre**	**Pas satisfait**	**Très déçu**	**Je ne veux pas répondre**
1. Vos connaissances sur de bonnes pratiques de production de cacao						
2. Compétences de gestionnaire						
3. Accès aux informations sur les prix des produits agricoles						
4. Le type et le nombre des sources de revenus						

5. L'état de votre maison, accès à l'eau/électricité etc.						
6. La santé de votre famille						
7. L'éducation de vos enfants s'améliore maintenant						
8. Le revenu de votre ménage						

42. Si oui, pouvez-vous citer les services que votre coopérative vous fournit, et dire si vous en êtes satisfait ?***(Enquêteur: Lisez les différentes options)***

Services du groupement de producteurs		**Service donnée par votre groupe**	Niveau de satisfaction
		Oui = 1 non = 0	**1= Satisfait 2= Neutre 3= Pas satisfait 4= Pas de réponse 5= Non applicable**
1	Accès à la formation	**a1**	**b1**
2	Informations sur les prix des intrants	**a2**	**b2**
3	Vendre mon cacao	**a3**	**b3**
4	Informations du marché sur les ventes (ex. pour les autres cultures aussi)	**a4**	**b4**
5	Restitution des informations obtenues des inspections internes (ICS)	**a5**	**b5**
6	Restitution des informations obtenues des inspections externes (audit)	**a6**	**b6**
7	Des informations sur les services ANADER et comment y accéder	**a7**	**b7**
8	Accès aux engrais	**a8**	**b8**
9	Accès aux pépinières / cabosse	**a9**	**b9**
10	Accès aux pesticides	**a10**	**b10**
11	Accès aux crédits	**a11**	**b11**
12	Systèmes d'assurance	**a12**	**b12**
13	Assistance dans mes relations avec les pisteurs (représentation)	**a13**	**b13**
14	Assistance à obtenir autres fournisseurs de services	**a14**	**b14**
15	Activités commerciales	**a15**	**b15**
16	Paiement à temps par l'acheteur	**a16**	**b16**
17	Obtenir un bon prix	**a17**	**b17**
18	Autres……	**a18**	**b18**

43. Quelle est votre perception des autres avantages liés au fait que vous êtes membre d'un Coopérative ? (Plusieurs réponses possible) Ne lire pas aux haut voix !

0 De meilleures relations sociales avec mes collègues planteurs
1 Echanges de connaissances entre membres
2 Certains problèmes communaux sont discutés maintenant lors des rencontres de coopérative
3 Je me réjouis d'être membre de coopérative
4 Il voyage pour le séminaire et les formations
5 Sauvegarde des données
6 Applications des produits phyto
7 Autres …….

44. Quelle est votre perception des autres inconvénients du fait que vous êtes membre d'une coopérative ?
Ne lire pas à la haute voix ! ***(Plusieurs réponses possible***)

0 Ça coûte de l'argent/frais
1 Ça consommé trop de temps
2 Il ne paie pas cash pour cacao
3 On leur cache l'information
4 Autres ……

45. Etes-vous d'accord ou pas d'accord avec les déclarations suivantes au sujet de votre Coopérative?

Déclaration: ***(Lire a haut voix !)***	**Oui (d'accord) = 1** **Non (pas d'accord) = 0** **Neutre (Pas de avis)= 2** **Je ne sais pas = 3**
1 Je me sens représenté par les responsables	1a
2. Je pense que j'ai une influence sur la nomination/élection des responsables	2a
3. S'il arrive qu'un responsable ne joue pas son rôle, il/elle sera remplacé(e)	3a
4 Si je me plains de quelque chose, des mesures sont prises	4a

46. Quelles améliorations souhaitez-vous sur le fonctionnement de coopérative? NE lire pas à haut voix ! (Réponses multiples sont possibles)

0. Néant
1. Former les Gestionnaires
2. Améliorer la Comptabilité
3. Etre transparent des informations sur les prix et les bénéfices
4. Donner des informations sur la façon dont les primes de coopérative sont utilises
5. Négocier un prix plus haut pour mon cacao

6. Autres……..

Partie G: Pratiques durables récompensées par le marché et le futur

47. Allez-vous demander à vos enfants de devenir des planteurs de cacao?
    0. Non,
        a. Si non, quelle profession devront-ils exercer ?

           .....

        b. Et pourquoi?.....
    1. Oui
        a. Si oui, pourquoi ?.....
    2. Ne sais pas

48. Allez-vous demander à vos enfants de devenir des propriétaires d'une plantation de cacao?
    0. Non
    1. Oui
    2. Je ne sais pas

49. Comptez-vous continuer la production du cacao/intensifier/diversifier? (dans les 5 ans à venir ?)
    0. Non, pourquoi ?.....
    1. Oui, pourquoi ?.....
    2. Ne sais pas

Partie H: Mise en œuvre des pratiques de cacao durables dans le champ PRINCIPAL

Ne lisez pas les options pour la personne interrogée. <u>Choisissez une option de réponse par question</u>, à l'exception des questions qui permettent des réponses multiples. Entoure le numéro !

Pratiques de production: la production du cacao seulement

50. Avez-vous obtenu des pépinières / Cabosses ces dernière année?
    0. Non
    1. Oui; si oui, où les avez-vous obtenus ?
        2. De mon propre champ
        3. De mes amis/voisins/autres planteurs/membres du groupement de producteurs
        4. Champs semenciers de ANADER / CNRA
        5. De la coopérative
        6. Je ne sais pas
        7. Autre (précisez……)

51. Quel(s) type/types de cacao avez-vous dans votre champ? (Réponses multiples sont possibles)
    1. Cacao Français
    2. Cacao Ghana
    3. Cacao 18 mois (Mercedes)
    4. Cacao Brésil / Amazonia
    5. Je ne sais pas
    6. *Autres (précisez……)*

52. Comment désherbez-vous dans votre champ?
    1. Je ne désherbe pas
    2. Je coupe les mauvaises herbes à la main
    3. Je coupe les mauvaises herbes avec des outils à main
    4. J'arrache les mauvaises herbes en utilisant de l'herbicide/produits chimiques
    5. *Autre (Précisez……)*

53. Combien de fois taillez-vous vos plants de cacao?
    1. Je ne taille pas mes plants de cacao
    2. Je taille mes plants de cacao 1 fois par an
    3. Je taille mes plants de cacao moins d'une fois par 2 ans (pas tous les champs taillez dans une année)
    4. Je taille mes plants de cacao pendant/après les récoltes
    5. Je ne sais pas
    6. *Autres (Précisez……)*

54. Quand appliquez-vous les engrais (chimiques et/ou organiques)?
    1. Je n'applique pas d'engrais sur mon champ de cacao
    2. J'applique les engrais juste avant la saison pluvieuse
    3. J'applique les engrais pendant la saison pluvieuse
    4. J'applique les engrais pendant la saison sèche
    5. J'applique les engrais à d'autres périodes
    6. J'applique les engrais toute l'année
    7. J'applique les engrais 2 fois dans l'année
    8. *Autres (Précisez……)*

55. Combien de fois appliquez-vous les engrais (chimiques ou organiques)?
    1. Moins d'une fois par an
    2. Une fois par an
    3. Deux fois par an sur une même espace
    4. Trois fois par an sur une même espace
    5. Plus de 3 fois par an sur une même espace
    6. pas applique
    7. *Autres (Précisez……)*

56. Conservez-vous des données sur l'utilisation des intrants et la production?
    1. Je ne conserve pas de données
    2. Je conserve des données sur la production/ventes
    3. Je conserve des données sur les intrants
    4. Je conserve des données sur la production/ventes et les intrants
    5. *Autres (Précisez……)*

57. Que faites-vous des cabosses malade ou mortes? ***(Réponses multiples sont possibles)***
    1. Je n'ai pas de Cabosses mortes
    2. Je ne sais pas quand mes Cabosses sont mortes
    3. Je les laisse sur les plants
    4. Je les laisse sur les plants et je les pulvérise
    5. J'enlève les cabosses mortes des plants et je les laisse dans le champ
    6. J'enlève les cabosses mortes des plants et je les brûle dans le champ
    7. J'enlève les cabosses mortes des plants et je les brûle dans un trou
    8. J'enlève les cabosses mortes des plants et je les enterre
    9. J'enlève les cabosses mortes des plants et je les pulvérise avant de les enfouir sous terre
    10. *Autres (Spécifiez……)*

58. Quand récoltez-vous les cabosses du cacao? ***(Réponses multiples sont possibles)***
    1. Je récolte les Cabosses lorsqu'elles sont jaunâtres ou lorsqu'elles tirent vers le vert
    2. Je récolte les Cabosses lorsqu'elles sont jaunes
    3. Je récolte les Cabosses lorsqu'elles sont vertes
    4. *Autres (Spécifiez……)*

59. Comment fermentez-vous les fèves de cacao
    1. J'entasse les fèves au sol et je les couvre avec des feuilles de bananes
    2. J'utilise un panier pour couvrir le cacao
    3. J'utilise une boite à fermentation pour couvrir le cacao
    4. J'entasse les fèves sur le sol et les couvre avec des sachets perforés
    5. J'entasse les fèves sur le sol et les couvre avec sachets non perforés
    6. J'utilise la bâche noire pour faire la fermentation
    7. *Autres (Spécifiez……)*

60. Combien de fois remuez-vous le cacao pendant la fermentation?
    1. Chaque 48 heures (2 jours)
    2. Au-delà de chaque 48 heures
    3. En deçà de chaque 48 heures
    4. Autres *(Spécifiez……)*

61. Comment séchez-vous les fèves de votre cacao?
    1. Sur un tapis de séchage sur le sol
    2. Sur une bâche noir
    3. Sur claie (une plateforme élevée)
    4. Autres…….

62. Combien d'arbres ombrageux (fruitiers / arbres de foret - brousse) avez-vous sur votre champ de cacao par hectare
    1. Je ne sais pas
    2. 12 par hectare
    3. Plus de 12 par hectare
    4. Moins de 12 par hectare
    5. Autres……..

63. Quelle est la distance qui sépare ces arbres ombrageux dans votre champ? (en mètres)
    1. Chaque 2 m
    2. Chaque 4 m
    3. Chaque 10 m
    4. Autres *(Spécifier……)*……..

64. Avez-vous planté des arbres ombrageux au cours des 2 dernières années?
    0. Non
    1. Oui

65. Avez-vous les surplus chimiques ?
    0. Non
    1. Oui
        a. Si oui……..que faites-vous avec le surplus des produits chimiques?
            1. Je pulvérise les terres non traitées avec les produits chimiques
            2. Je jette le restant des produits chimiques dans une rivière/ruisseau
            3. Je les garde
            4. J'en donne à d'autres personnes
            5. Autre……

66. Comment gérez-vous les déchets solides (y compris les boites des produits chimiques) ? ***(Réponses multiples sont possibles)***
    1. Pas de système de gestion des déchets en place
    2. Une fosse pour tous les déchets
    3. Une fosse pour les déchets organiques et une autre pour les autres déchets
    4. Plus de deux fosses en place: les déchets non organiques sont séparés, par exemple des déchets en plastique ou en verre.
    5. Après avoir lavé les boites de produits chimiques, je les amène dans un lieu où les boites sont recueillies
    6. J'enterre les boites des produits chimiques
    7. Je brûle les boites des produits chimiques
    8. Autres……

67. Que faites-vous des déchets issus de la taille de votre champ?
    1. Je ne taille pas mon champ
    2. Je laisse ces déchets de taille dans le champ de cacao
    3. J'en utilise comme paille dans d'autres champs ailleurs
    4. J'en utilise comme carburant
    5. *Autres (Spécifiez……)*

68. Avez-vous été en mesure de réduire l'utilisation des pesticides à travers un meilleur entretien/IPM/utilisation rationnelle de pesticide dans votre champ
    0. Non,
        a. Pourquoi pas ? ……..
    1. Oui
    2. Ne sais pas

69. Où entreposez-vous vos produits chimiques? ***(Réponses multiples sont possibles)***

0. Je n'utilise pas de produits chimiques
1. Rien
2. Je les réutilise
3. Je les enterre
4. Je les renvoie chez l'acheteur
5. Je le garde dans ma maison, dans une chambre/boite/sac fermé(e)
6. Je le garde dans ma maison
7. Je le garde à l'extérieur de la maison
8. Je le garde à l'extérieur de la maison, dans une chambre/boite/sac fermé (e)
9. Je le garde chez la coopérative
10. Autres……

Partie I: Conditions des ouvriers

Enumérateur- si il y na pas les ouvriers, allez a Partie J

70. Si vous employez des ouvriers, est-ce qu'il y a un accord préalable entre vous et la personne que vous employez avant le démarrage des activités ?
    0. Non
    1. Oui

71. Est-ce que votre main ‘œuvre a été déclaré a CNPS ?
    0. Non
    1. Oui

72. Avez-vous connaissance d'une législation sur les rémunérations, heures de travail et autres droits de l'employé ?
    0. Non
    1. Oui
    2. Ne sais pas

73. Connaissez-vous l'âge minimum que les enfants doivent avoir avant de travailler dans un champ de cacao?
    0. Non
    Oui ……..
        1. Moins 15
        2. 16
        3. 17
        4. 18
        5. Plus 18
        6. Plus 20
        7. Ne sais pas

74. Avez-vous reçu les inspections sur le travail des enfants ?
    0. Non
    1. Oui
    2. Ne sais pas

75. Quelqu'un a-t-il déjà été victime d'un accident de travail dans votre champ ou sur son chemin en direction du champ au cours de l'année passée?
    (Impliquant des blessures avec fractures ou nécessitant une suture, ou liés à la pulvérisation/utilisation des produits chimiques)
    0. Non
    1. Oui
    2. Si oui,… quoi…….

Partie J: Connaissance/formation sur la production durable du cacao

Ne lisez pas les réponses. ***Encouragez les agriculteurs à donner les réponses eux-mêmes, mais ne les importunez pas.*** **Sélectionnez l'option donnée en encerclant**

Toutes les questions ci-dessous: ***Réponses multiples sont possibles***

76. Mentionnez tous les avantages liés à l'utilisation des produits phyto (insecticides, pesticides et herbicides et fongicides)?
    1. Très grande productivité
    2. Grand changement au niveau des pépinières qui grandissent
    3. Production précoce
    4. Plusieurs récoltes dans l'année
    5. Plus de tolérance vis-à-vis des insectes nuisibles et des maladies
    6. Autre……
    7. Je ne sais pas

77. Donnez des méthodes recommandées pour lutter contre les mauvaises herbes dans la production du cacao:
    1. Enlever les mauvaises herbes en les brulant
    2. Enlever les mauvaises herbes en utilisant des outils à main
    3. Enlever les mauvaises herbes à la main
    4. Enlever les mauvaises herbes en utilisant des herbicides/produits chimiques
    5. Autres……
    6. Je ne sais pas

78. Donnez les avantages liés au fait de tailler vos plants de cacao;
    1. Maintien des plants de cacao gérables-rend la cueillette plus facile
    2. Rajeunit les plants/augmente la production
    3. Enlève les branches malades, mortes ou nouées
    4. Autres……
    5. Je ne sais pas

79. Donnez les avantages liés au fait d'appliquer les mesures de conservation des sols
    1. Préserve la fertilité du sol
    2. Permet d'Eviter l'érosion
    3. Donne une production accrue
    4. Empêche l'ensablement des points d'eau
    5. Autres……
    6. Je ne sais pas

80. Donnez les avantages liés à l'utilisation des engrais ?
    1. Donne de meilleurs rendements
    2. Donne du cacao de qualité supérieure
    3. Maintient la plante de cacao pendant longtemps
    4. Augmente les éléments nutritifs pour le sol/améliore la fertilité du sol
    5. Ca sauver la plante
    6. Autres……
    7. Je ne sais pas

81. Donnez les avantages liés au fait de conserver les données (documents)?
    1. J'ai des preuves concernant la performance du champ
    2. Je peux prendre des décisions sur la base des données contenues dans le livret
    3. Je connais la quantité de produits chimiques utilisés
    4. Je connais la somme d'argent que j'ai dépensée
    5. Je peux démontrer que je suis crédible et / ou un préteur
    6. Autres……
    7. Je ne sais pas

82. Quels sont les avantages des équipements de protection personnelle?
    1. Permettent que votre peau ne soit pas touchée par les produits chimiques
    2. Vous permettent de ne pas inhaler les produits chimiques
    3. Protègent contre les produits chimiques
    4. Vous permettent d'éviter les maladies
    5. Autres……
    6. Je ne sais pas

83. Pouvez-vous citer des méthodes que vous utilisez pour améliorer le rendement du cacao dans votre champ?
    1. Application des bons engrais au bon moment
    2. Des tours de désherbages réguliers
    3. Lutte contre les insectes nuisibles/maladies
    4. Maintien de la forme de la plante à travers la taille
    5. Récolte à temps
    6. Formation pour ceux qui arrachent les mauvaises herbes
    7. Autres……
    8. Je ne sais pas

84. Quelles sont les travaille des enfants ne doivent pas faire dans les champs ?

1. Porter les charges lourdes (tout poids au-delà de 30% du poids de leur corps)
2. Porter des poids sur une distance de plus de 3 kilomètres
3. Lutter contre les loranthus
4. Application des pesticides
5. Application des engrais
6. Application des engrais pas permette
7. Défrichage des champs
8. Utilisation d'outils non appropriés pour leur âge
9. Travailler au champ pendant les heures de classes école
10. Utiliser la machette
11. Cabosser
12. Transport de cabosse
13. Autres……
14. Je ne sais pas

MERCI BEAUCOUP ! Y a-t-il quelque chose que vous voulez dire ou une question à poser ?*Enquêteur : vérifiez qu'il n'y a pas de question non répondue avant de quitter le planteur. Registre le heure au fin au premier page*

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