Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte D'Ivoire – Policy Brief[1]

Background

In light of current initiatives to boost yields and cocoa supply, there have been concerns that the higher pressure to enhance yields may push smallholders to use more family labour, and possibly more child labour (CL), or involve a greater proportion of children in hazardous child labour (HL).

The International Cocoa Initiative (ICI) commissioned a research study to examine the impact of public and private investments in raising cocoa farmers' productivity on the risk of child labour and on the labour market in Ghana and Côte d'Ivoire.

This study attempts to fill in this knowledge gap by using a mixed-methods analytical framework applied to data purposely collected. The research focuses on examining the relationships between yields, land size, labour use, labour demand and children's working categories[2] in this regard.

Methods

This research was led by international experts and conducted in collaboration with national research teams. It involved a comprehensive fieldwork exercise in each country that combined the collection of quantitative and qualitative data. The fieldwork in Ghana was carried out in November and December 2014 in the Ashanti (four districts and four villages) and Western North (two districts and

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[2] Children's working categories are defined as follows for the purpose of this study:

Children's work days – this refers to the overall contribution of children to household labour for cocoa farming and does not distinguish between the various sub-categories of children's work: permissible work, child labour (non-hazardous) or hazardous child labour. **Child labour (non-hazardous)** – this refers to non-permissible work for children due to it interfering with their mental/social/personal development and schooling, but it does not include children engaged in hazardous child labour. **Hazardous child labour** – this refers to children who are engaged in hazardous activities

For further information on how children's working categories were developed, see p.68 and p.124 of the main report.

15 villages) regions. In Côte d'Ivoire, the fieldwork was conducted between December 2014 and January 2015, in 26 villages from Abengourou, Soubré, Buyo, Divo and Daloa (district level administrative units). The selection of regions, districts, and villages in each country was driven by the objective to include areas broadly representative of the country's cocoa sector - encompassing communities with different productive potential and varying levels of intervention by industry stakeholders; each with the intention to re-visit farmers for whom baseline data was available.[3]

Two surveys were administered in each country: one to cocoa farm managers and one to children aged 10 to 17 living in farmer households. The Ghana quantitative sample included 917 cocoa farm managers and 423 children aged 10 to 17. The Côte d'Ivoire quantitative sample included 904 cocoa farm managers and 330 children, also aged 10 to 17.

Qualitative data was collected through separate Focus Group Discussions (FGDs), with community leaders, male cocoa farm managers, women with children working on cocoa farms (some of them cocoa farm managers), and young male cocoa labourers. It also included a drawing exercise with boys and girls living in cocoa-farming households aged 10-14. Qualitative data collection took place in 14 villages in Ghana and 12 villages in Côte d'Ivoire.

Key findings

Labour Supply and Demand for Cocoa Farming

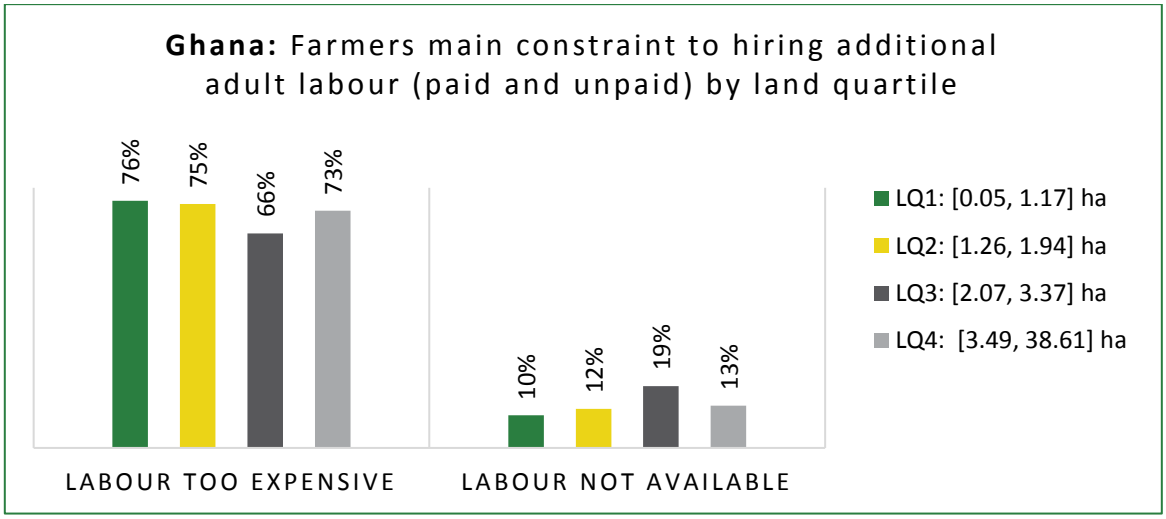
One of the main challenges that cocoa farm managers face is access to adequate and affordable sources of labour to carry out cocoa farming tasks. The research in both countries confirms that household labour remains a vital input for cocoa production, counting as a major component of total labour use. In Côte d'Ivoire, most of the household work on cocoa is carried out by adult men, while children's work days provide a marginal component of household labour (around 5% of total household labour days used). In Ghana, on the other hand, household women's work on cocoa is the most frequently used type of family labour (39%), and children's work days represents roughly one-third of total household labour used on cocoa farms (32%).

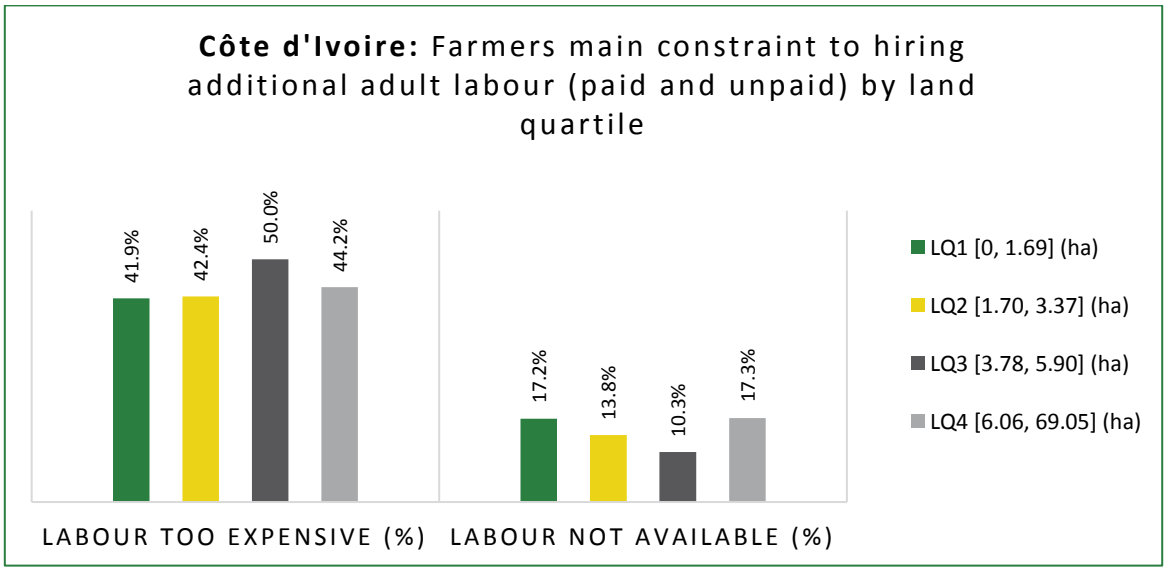
Qualitative and quantitative data suggest that hiring labour is expensive in both countries. In Ghana, the average daily wage is almost GhC20 (US$ 5), nearly three times higher than the 2014 national minimum daily wage at GhC7 (US$ 1.75). In Côte d'Ivoire, average daily wages hover between 2,000 and 3,000 F CFA (US$4 to 6), which is just above the national minimum agricultural daily wage, at 2,000 F CFA. The high cost of paid labour in both countries is exacerbated by the shortage of young labourers for cocoa, as youth have either other aspirations than working on cocoa, would rather work as paid labourers on other farms rather than for free on their own household's cocoa farms, or prefer to work on other non-cocoa livelihoods. In Côte d'Ivoire, this constraint is relatively less stringent in areas that receive a substantial influx of migrant workers from other parts of the country or even neighbouring

[3] The original intention was to conduct an impact evaluation with the data. In Ghana, even though it was possible to revisit some of the targeted farmers for this exercise, there were significant and irreconcilable differences in the reported size of land between baseline and end-line, making impossible a meaningful comparison in the panel data the research attempted to collate. For Côte d'Ivoire, only 204 farmers could be tracked from the previous 2010 survey, due to a high attrition rate and potentially also due to the population movements following the crisis. Moreover, only 24 farmers were found to be part of the programme both in 2010 and 2014, which meant that it was also not possible to conduct any panel level data analysis for Côte d'Ivoire.

countries, although migration flows are volatile and dependent on the economic and political conditions of the regions and countries of origin.

The constraints identified above operate differently for men and women cocoa farmers. Partly, this is due to their differing ability to draw on household labour and/or to hire workers. For instance, **women farmers sampled in Côte d'Ivoire, the majority of whom were widowed or divorced, received very limited help from household members (much less than their male counterparts) and therefore their share of hired labour days in the total amount of labour use is significantly higher than the share of hired labour used by men cocoa farmers. In Ghana, women cocoa farmers described the high costs of paid labour and the shortage of youth labour from within the household as a major problem, more so than what was reported by men cocoa farmers.** Women cocoa farmers in Ghana were found to use significantly more work days from children under the age of 15 than men farmers. The graphs below show the main constraints reported by sampled farmers in each country to hiring additional adult labour. The data disaggregated by land quartile indicates that financial affordability of labour is reported to be a greater problem than the availability of adult labourers.





Labour Use and Yields[4] by Land Size

All measures of labour are expressed in terms of "labour days/work days", by multiplying the number of days worked by each individual in the crop year preceding the survey (end September 2013 to early October 2014) in any given task, and then aggregating data over all cocoa-farming tasks by type of labour (men, women, children in the household, and different types of hired labour). This definition also applies to "children's work days".

In both Ghana and Côte d'Ivoire, fewer labour days (both household and hired) are used per hectare as land size increases, therefore suggesting a potential labour constraint for farmers with larger landholdings.

At the top land quartile (≥3.49 ha) in Ghana, household labour per hectare over the 2013/14 crop year (including children's work days) is on average 17 person-days compared to the 109 average household labour days observed at the bottom land quartile (≤1.70 ha). Furthermore, the number of daily waged labour-days per hectare in the top land quartile are less than a third of those employed in the bottom land quartile.

Similarly, in Côte d'Ivoire, household labour days per hectare (including children's work days) measure on average 11 person-days per hectare in the top land quartile (>5.9 ha), which represents less than one-fourth of the 48 person-days reported by farmers in the bottom land quartile (≤1.70 ha). The amount of hired labour days per hectare in the top land quartile is less than half of what is used by farmers in the bottom land quartile.

Labour productivity increases at higher land quartiles. However, a comparison of yields by land quartile suggests that the increase in labour productivity does not fully compensate for the decline in labour use.

In Ghana, farmers in the top land quartile have lower yields (418 kg/ha) than farmers in the bottom land quartile (579 kg/ha). This is also the case in Côte d'Ivoire, where famers in the top land quartile report lower yields (242 kg/ha) than farmers in the lowest land quartile (333 kg/ha). This suggests that labour constraints are translating into sub-optimal production, and this is in turn reflected in profitability margins. Evidence from both countries indicates that cocoa gross margins (a proxy measure of cocoa income used in the research study) decrease as land size increases. This is most likely to result from a positive correlation between the cost of inputs per hectare and cocoa landholdings size, with farmers with larger landholdings earning lower gross margins per hectare.

One other factor for the lower yields in the top land quartile may be as a result of the age of the cocoa trees. Cocoa trees are often older on larger farms than those on smaller farms, and evidence suggests that cocoa yields begin to decline from 25 years onwards. This seems to be more applicable to Côte d'Ivoire, where the average age of the cocoa trees was 26 years in the top land quartile, as compared to 19 years in the bottom land quartile. In Ghana, the average age of the cocoa trees was 20 years among farmers in the top land quartile and 17 years among farmers in the bottom land quartile.

[4] Yields refer to the quantity of cocoa produced (kg) per hectare. Land productivity is also used as an alternative term to yields.

Labour Demand by Yield Levels

Farmers surveyed in both countries were divided into three groups; 1. low yield farmers (producing between 100 and 250 kg/ha in Côte d'Ivoire and up to 400 kg/ha in Ghana); 2. medium yield farmers (producing between 251-600 kg/ha in Cote d'Ivoire, and between 401 and 850 kg/ha in Ghana); and 3. high yield farmers (producing between 601 and 2500 kg/ha in Cote d'Ivoire, and between 851 and 2000 kg/ha in Ghana). More than 80% of farmers in both countries were found to be in the low and medium yield groups.

The research study investigated patterns of labour use per unit of land across the three categories of farmers (see table below). In Ghana, total labour days and children's work days (with no differentiation between hazardous or non-hazardous tasks) nearly doubles between low yield and high yield range farmers, although the proportion of each type of labour used is roughly the same across all three yield categories in Ghana. Children's work days represents about a third (33%) of total household labour days in each yield group. In Côte d'Ivoire, total hired labour use also almost doubles from low to high yield farmers, but the increase in household labour use per hectare is much less pronounced than in Ghana (about 40% more household labour is used amongst high yield range farmers in comparison to the low yield range farmers). The proportion of children's work days within the total household labour use also remains fairly constant, except for a marginal increase, from 5% at the low yield range level to 7% at the high yield range level.

Labour Use by Yield Levels and by Country

Indicator	**Low yields ≤ 400**	**Medium yields > 400 ≤ 850**	**High yields > 850 ≤ 2000**
	Ghana		
Sample size	454 (51%)	278 (31%)	161 (18%)
HH days/ha	38	33	76
of which % child days/ha	*31%*	*34%*	*32%*
Hired labour days/ha	48	55	102
Indicator	**Low yields ≤ 250**	**Medium yields > 250 ≤ 600**	**High yields > 600 ≤ 2500**
	Cote d'Ivoire		
Sample size	285 (41%)	303 (44%)	107 (15%)
HH days/ha	26	34	35
of which % child days/ha	*4.95%*	*5.38%*	*6.65%*
Hired labour days/ha	10	14	18

Note: The interval values for yield groups for Côte d'Ivoire are discontinuous

Overall, high yield farmers use more of all types of labour as compared to low and medium yield farmers. The largest share of work days spent by children on farms is spent on pod-plucking, pod heaping, pod-breaking and carrying water for spraying.

Increased Yields, Children's Work Days, Child Labour (non-hazardous) and Hazardous Child Labour

Labour demand models were used to measure the effect of increasing yields on the demand for children's work days. **Increasing yields in Ghana was found to increase children's work days** (not categorised by hazardous or non-hazardous activities), however this was not the case for Côte d'Ivoire.

When examining the mean differences in the number of work days spent by children on hazardous tasks between low and high yield farmers, **in Ghana, children aged 15-17 spent more child work days applying chemicals/plant protection products on high yield farms as compared to low yield farms, and the difference was found to be statistically significant (although the number of children's work days for this age group is very low across yield levels).** On the other hand, no statistically significant difference was found in the use of children's work days on hazardous tasks between high yield and low yield farmers in Côte d'Ivoire.

Regression analyses were used to better understand the relationship between yields, child labour and hazardous child labour and showed that **the link between higher yields and the associated risk of a higher incidence of child labour (non-hazardous) and hazardous child labour was found to be weak. This suggests that there is no indication in either country that increasing yields increases the overall likelihood of child labour (non-hazardous) and hazardous child labour.**

Further information on which factors increase the child labour and hazardous child labour risk results are discussed below.

Yields, Child Labour (non-hazardous) and Hazardous Child Labour by Programme Participation

Given the international importance of cocoa production in Côte d'Ivoire and Ghana, a large number of private and public initiatives have been rolled out to promote and sustain yield increases. To explore whether these programmes have had the intended effect on yields, and whether this in turn has put pressure on cocoa-farming households' use of child labour (non-hazardous) or hazardous child labour, each country case study compares the characteristics of farmers who participate in selected programmes to those who do not. In addition, the study has also examined the differences in yields and child labour (non-hazardous) and hazardous child labour rates for farmers exposed and not exposed to child labour awareness-raising campaigns[5].

There are noticeable differences between the two country samples. **While in Côte d'Ivoire, farmers who participate in either a public or private programme to increase yields have significantly higher yields than non-programme participants, programme participants in Ghana did not have statistically significant higher yields relative to non-programme participants.**

Furthermore, in **Côte d'Ivoire, participants in either type of programme were found to have a statistically significant lower incidence of child labour (non-hazardous)** than non-participants **– but no statistically significant difference in incidence of hazardous child labour.**

[5] In Ghana, production records were reported by farmers, checked with passbooks where possible and data was triangulated with the official district level cocoa production and yield data. In Côte d'Ivoire, production records were reported by farmers and also triangulated with regional and district data to identify possible outliers.

In **Ghana, farmers with larger landholdings** (i.e. those managing between 3.5 and 39 hectares) **who benefitted from a child labour/worst forms of child labour awareness campaign were found to employ significantly more child labour (non-hazardous)** than their counterparts. Similarly, **farmers with large landholdings participating in private investment programmes to raise yields in Ghana were found to use significantly more hazardous child labour** relative to non-programme participants.

These findings need to be interpreted cautiously; they do not imply that participation in these programmes leads farmers to have low/high yields or use more/less child labour (non-hazardous) or hazardous child labour. The order of *causation* could be reversed, i.e. it may be possible that farmers in Ghana using more child labour/hazardous child labour are more likely to join such programmes and that farmers using less CL/HL are more likely to join such programmes in Côte d'Ivoire. Establishing this important causal relationship would require further research and the use of impact evaluation methods. Yield-enhancing programmes may also unintentionally target, or voluntarily attract farmers who are naturally more inclined to be aware of child labour issues or those who have a greater tendency to use child labour (non-hazardous) or hazardous child labour.

Factors associated with the Child Labour (non-hazardous) and Hazardous Child Labour Risk

In each country case study, regression analysis was used on a combined farmer-child dataset to identify which farmer and child-specific characteristics are more likely to be associated with the risk of child labour (non-hazardous) and hazardous child labour. These risk factors are illustrated in the boxes below. Increasing yields was not found to increase the hazardous and child labour (non-hazardous) risk.

Child Labour (Non-Hazardous) in Ghana is most likely to occur among:

- Male Farmers
- Medium yield farmers (relative to low yield farmers)
- Farmers owning less land holdings
- Farmers hiring more labour

Hazardous Child Labour in Ghana is most likely to occur among:

- Women farmers
- Farmers who have not been exposed or have been less exposed to WFCL awareness raising campaigns
- Older farmers
- Farmers that own multiple owned land holdings for cocoa production
- During the peak harvest season
- Boys more than girls
- Low yield farmers (relative to high yield farmers)
- Older children

Child Labour (Non-Hazardous) in Côte d'Ivoire is most likely to occur among:

- Farmers with no/less formal education
- During the peak harvest season

Hazardous Child Labour in Côte d'Ivoire is more likely to occur among:

- Children who have not been born in the village - a child born in the village is 23% less likely to be involved in hazardous child labour than a child born elsewhere
- Lower yield range farmers (relative to medium yield farmers)
- Older children (14-17) - (nearly 20% of children aged 14-17 are engaged in hazardous child labour compared to 5% aged 12-13 and 13% aged 5-11)

Recommendations for Policies and interventions

This study found that in both Ghana and Côte d'Ivoire there is no significant effect of higher yields on the risk of a higher incidence of child and hazardous child labour. This is an important finding, which, together with a number of other findings that emerged from the research, warrant the recommendations reported below.

Increasing yields in Ghana is found to increase children's work days (not categorised by permissible and non-permissible work), however this is not statistically significant in Côte d'Ivoire. When categorising children's work by hazardous tasks, in Ghana, children aged 15-17 years spent more child work days applying chemicals/plant protection products on high yield farms as compared to children in the same age group living in low yield farmers' households. This result was statistically significant (although the number of children's work days for this age group is very low across yield levels). Household labour remains central to smallholder cocoa production, and children are expected to take part in some capacity on the family farm, especially when alternatives are lacking. The quantitative and qualitative findings also indicate an important gender dimension of labour use, with women farmers facing greater difficulties in accessing adult household and casual labour relative to men farmers.

The research also shows that although labour supply is available in cocoa communities, the high cost of waged labour (more so in Ghana, where the daily wage is nearly three times higher than the national minimum wage) represents a major affordability barrier, which prevents cash strapped farmers from hiring the optimal amount of paid labour.

When comparing farmers that have benefitted from programmes to either enhance cocoa productivity or reduce child labour, programme participants in Côte d'Ivoire were found to have statistically significant higher yields and lower incidences of child labour than non-programme participants. This was not the case in Ghana. While these findings are not suggestive of causal effects of programmes on child labour outcomes, they do suggest the existence of specific labour constraints for farmers who participate in programmes to increase yields and reduce child labour in Ghana.

Labour Market Interventions

The following action points were identified on the basis of the research findings.

Firstly, at the community level, communal and shared labour arrangements can be organised to meet the labour demand of high productivity farmers and address the labour constraints faced by women cocoa farm managers.

Secondly, the cocoa sector could also train and equip service providers that operate on a subsidised fee for performing specific cocoa-farming tasks. This could involve specialised work groups for spraying, pruning, and pod breaking, amongst other tasks. It would be particularly important to involve the youth (of an appropriate age for the specific tasks) in these professionalized labour service groups, so as to provide them with some form of employment as well as training and skills, and thus enhance their interest in cocoa farming and increase youth employment. This will also help to ease the demand

for children's work days in specific hazardous tasks since this research has shown high vulnerability to hazardous child labour among older children.

Thirdly, affordable labour-saving technologies, such as more efficient harvesting technologies and techniques, should be further explored by research institutions and cocoa companies, to examine how the labour demand for children's work days among high yield farmers, farmers with large or multiple-landholdings and farmers using child labour (both non-hazardous and hazardous) can be reduced without sacrificing productivity.

Finally, more comprehensive efforts should be undertaken by both the government and private companies to improve the functioning of the rural labour markets, so as to provide a secure and affordable local labour supply for small-holder farmers whilst boosting rural employment opportunities. For instance, the supply of migrant-labour for cocoa-farming in certain regions of Côte d'Ivoire appears to have relaxed the labour constraint for some farmers. The governments/cocoa marketing companies' provision of an organised and trained labour force in Ghana during the peak harvest season could have a similar effect. Other useful interventions to benefit high productivity and farmers with large landholdings could include leveraging information technology, including radio and phone text messages, to increase the sharing or publishing of data on prevailing wage rates for skilled and semi-skilled labour; as well as information on the labour availability at the community and district levels, particularly in communities where there are sometimes shortages of adult labour.

Non-Labour Market Interventions

The study has shed light on a number of other factors that carry a high risk of child labour (non-hazardous) and hazardous child labour in cocoa production. Older children (both countries), boys (Ghana), being born outside of the village (Côte d'Ivoire), the timing of the peak harvest season, as well as the farmer's age, educational level (Côte d'Ivoire) and gender (Ghana) are all characteristics associated with a higher incidence of child labour. The identification of such risk factors should be used to develop specific messages and targeted interventions.

Firstly, improving coverage of existing interventions that increase access to additional income generating activities and access to credit for farmers requiring the additional hired labour (e.g. older farmers, farmers living with disabilities, women farmers) is recommended. Relaxing constraints on the side of labour affordability would also be valuable for low yield farmers who are particularly vulnerable to the high cost of paid labour and who by survey data count 52% of the entire sample in Ghana and 41% in Côte d'Ivoire.

Secondly, improving access to post-primary school education, apprenticeships and vocational training for youth in both countries, coupled with targeted awareness raising on the dangers of hazardous child labour amongst older children, could potentially reduce the hazardous child labour rate observed amongst this age group.

Thirdly, farmer and household characteristics that may increase the risk of children's engagement in child labour (non-hazardous) and hazardous child labour should be considered in the criteria for the targeting of social protection interventions. More specifically, households with a greater risk of children's engagement in child labour (non-hazardous) and hazardous child labour in cocoa-growing

communities should be covered by social protection programmes. In addition, awareness-raising campaigns should be better targeted to those most at risk (older farmers, older children, farmers with lower education levels) and during key child labour risk periods (peak harvest season) in order to increase effectiveness of these campaigns. As a result of the high incidence of older children engaged in hazardous application of plant protection products in Ghana amongst high yield farmers, additional trainings on the dangers and regulations should be delivered to those selling agricultural plant protection products, adult farmers and children aged 14-17 engaged in cocoa farming.

Recommendations for Further Research

One of the initial intentions of this study was to evaluate the impact of selected sustainability programmes in each country by revisiting farmers for which baseline data existed in order to understand the yield changes observed over time for the same set of farmers, assess their measurable effect on farmers' incomes, family labour choices, and in particular, their use of child labour resulting from potential higher yields. This was not possible due to issues with land measurement in Ghana and the inability to locate many of the farmers in Côte d'Ivoire for whom 2010 baseline data was available. As a result of this study, there is now baseline information for farmers participating in yield-enhancing programmes. It is recommended that additional research and an impact evaluation be conducted against this baseline data to further understand the causal effects of programme participation to increase yields, on yields, child labour and hazardous child labour.

Further research into the child labour and hazardous child labour risk for children of sharecroppers in the context of increasing productivity is also recommended. The research study examined the situation of sharecropping to some extent, through the focus group discussions in both countries and the Ghana Living Standards Survey 6 (2013) data. However, due to the focus on cocoa farm managers, the study did not go into detail. This question would require a research focus of its own right to understand whether other labour arrangements exist and are viable at scale to reduce the need for farmers to use child labour and hazardous child labour.