



## **Assessing Progress in Reducing Child Labor in Cocoa Production in Cocoa Growing Areas of Côte d'Ivoire and Ghana**

FINAL REPORT 2018/2019 SURVEY ROUND- DRAFT

Funding for this report was provided by the United States Department of Labor under Cooperative Agreement number IL-28104-15-75-K-17. The statements found in this report do not necessarily reflect the views or policies of United States Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the United States Government.

## FINAL REPORT - DRAFT

Submitted January 2020

Prepared under Cooperative Agreement number: IL-28104-15-75-K-17

**Submitted to:**

U.S. DEPARTMENT OF LABOR / ILAB  
Office of Child Labor, Forced Labor and Human  
Trafficking

**Prepared by:**

Shanto Sadhu  
Kareem Kysia  
Clifford Zinnes  
Ingrid Rojas Arellano  
Letitia Onyango  
Alexandre Monnard  
Sarah Lord

**Submitted by:**

**NORC**  
at the UNIVERSITY of CHICAGO

## Acknowledgment

We would first like to thank the governments of Côte d'Ivoire and Ghana for their continued support and transparency during the life of this project. In Côte d'Ivoire we would like to start by thanking first lady **Madame Dominique Folloroux-Ouattara**. The first lady's dedication to the betterment of children in Côte d'Ivoire is well known and, without her support and commitment, this project would not have been possible. We would also like to thank the government of Ghana, which, as a coordinated team, provided essential inputs into our study at every step in the process. Most notably, we would like to thank the Ministry of Labor and Social Protection, through the consistent support of **Elizabeth "Lizzy" Akanbombire**, by acting as a central hub for the NORC research to turn to for advice and permissions. **Vincent Akomea and Paul Ntim** at COCOBOD who engaged with the research team from the very beginning providing essential insights into cocoa production in Ghana. **Lucy Twumwaah** from the Ghana Statistical Service and her entire team provided data support and local knowledge building up to and throughout the data collection process. **Andy Tagoe** from GAWU was heavily involved in discussing issues pertinent to workers in Ghana and **Kenneth Mamadu** was a key partner on the ground for NORC helping us navigate the cocoa sector in Ghana and providing expert input on changes in the cocoa sector and interventions aimed at child labor.

In Côte d'Ivoire, our thanks go out for the support of the Office of the First Lady and the National Oversight Committee of Actions in the Fight against Child Trafficking, Exploitation and Child Labor (CNS). Most notably, we would like to thank **Madame Patricia Sylvie YAO** who, as the Director of the Cabinet of the First Lady and Executive Director of CNS, was able to provide strong leadership and guidance not only to her staff but to the NORC research team as well. **Dr Martin NGuetia**, the Director of Combating Child Labour (DLTE) of the Ministry of Employment and Social Protection, who chairs the Interministerial Committee to Combat Trafficking, Exploitation and Child Labour (CIM), and **Nadia N'DA**, Chef de Cabinet, provided key input at each step of the process while being supported tirelessly by **Brigitte TRA LOU**. Finally, we wish to thank **Amany Konan** and **Tessy Winkelman**. Mr. Konan is a strong advocate for the rights of children and an expert on Ivorian legislation dealing with child labor and his guidance throughout the research process was much appreciated. Ms. Winkelman was a diligent advocate for the perspective and needs of the Ivorian stakeholders.

We would also like to thank the World Cocoa Foundation (WCF) through **Tim McCoy** and **Susan Smith** who both made themselves (and through them a large cross-section of the international chocolate and cocoa industry) available to the NORC team from the very beginning of the process. The **International Labour Organization**, **UNICEF**, and **Fairtrade International** were also key contributors to our understanding of labor related issues around cocoa production in Ghana and Côte d'Ivoire. We also recognize the hard work and dedication of the entire team at the **Bureau of International Labor Affairs** of the U.S. Department of labor who funded this study and provided methodological oversight throughout the process.

Most importantly, we would like to recognize the contributions of the entire research team from NORC and our local partner Kantar Public as this project was designed, fielded, and completed. This includes **Stephen Cohen**, **Ruth Essuman**, **Jonathan Addie**, **Everest Konan**, **Cristian Ilie**, **Audra Grant**, **Erika Keaveney**, **Ernst Adjei**, **Samantha Downey**, **Ridhi Sahai**, **Alex Rigaux**, **Russell Owen**, **May Noureddine**, **Alain Otarola**, **Phoebe Bui**, and **multiple support staff, programmers** and most importantly **the enumerators** over four years in the Ghana, Côte d'Ivoire, and the United States.

Finally, we thank the children, farmers, teachers, and other research participants in Côte d'Ivoire and Ghana for their valuable time in taking part in this study. This study was supported by hundreds of key people throughout the process.

## Executive Summary

This study compares data collected from agricultural households in the cocoa growing area of Côte d'Ivoire and Ghana during the main cocoa harvest seasons in 2008/09, 2013/14 and 2018/19.<sup>1</sup> The surveys were carried out under the Harkin-Engel Protocol<sup>2</sup> with funding from the United States Department of Labor Bureau of International Labor Affairs.

The main objective of this study is to assess the prevalence of, and measure changes in, estimates of working children, children in child labor, and children in hazardous work in the cocoa growing areas of Côte d'Ivoire and Ghana between 2008/09 and 2018/19. A secondary objective of the study is to assess interventions implemented between 2008/09 and 2018/19, providing stakeholders and policy makers with information on the efficacy of programming during that time period.

The research presented in this report relates to all households involved in agriculture in the cocoa growing regions of Ghana and Côte d'Ivoire, focusing on children ages 5-17. The main research question uses hazardous child labor (HCL) as a proxy for assessing the worst forms of child labor (WFCL) in cocoa production. This study does not report on other WFCL such as forced child labor or labor trafficking. The methods needed to conduct a rigorous study of forced child labor are different than the methods used for analysis of child labor across the survey rounds and beyond the scope of the current project.<sup>3</sup>

It is also important to note the main statistics presented here are aggregate estimates combining the data from Côte d'Ivoire and Ghana under a common definitional framework. Where possible, we also present country specific statistics using both common definitions (aggregated between the two countries) and local definitions (developed from the national legislation of each country).

Below we start with a brief description of the survey methodology followed by the main findings of the report on changes in the prevalence of child labor and hazardous child labor.

### **Methodology**

NORC conducted a sectorally representative survey during the 2018/19 cocoa harvest season in cocoa growing areas of Côte d'Ivoire and Ghana in order to develop population estimates for the prevalence of working children, child labor and hazardous child labor in those regions.

A detailed description of the sampling approach adopted by NORC is provided in Annex 9.1. In brief, NORC used a multi-stage stratified cluster sampling technique with an aim of replicating the sampling frame used in the 2008/09 and 2013/14 rounds of the survey. In this approach the primary sampling unit (PSU) was the census enumeration areas (EAs) in the cocoa growing areas of Côte d'Ivoire and Ghana and the secondary sampling units (SSUs) were the agricultural households.<sup>4</sup>

---

<sup>1</sup> Please see Section 3.3.2 for a description of the types of comparisons allowed by the data

<sup>2</sup> An international agreement aimed at ending the worst forms of child labor (according to the International Labour Organization's (ILO) Convention 182) and forced labor (according to ILO Convention 29) in West African cocoa production.

<sup>3</sup> Forced child labor is, by definition, an illicit activity with a vulnerable and hard-to-reach population. Probability based research methods would need to account for that from the outset and focus on areas where vulnerability would be highest (for example, encampments and forest land).

<sup>4</sup> It is important to note that the sampling frame of the survey did not include areas that were not within the borders of the existing Census enumeration areas (such as encampments or newly established forestland).

In the multi-stage cluster sampling approach, EAs were stratified into high/medium/low cocoa production areas.<sup>5</sup> Following stratification, 40 EAs from high cocoa production stratum, 25 EAs from medium cocoa production stratum and 10 EAs from low cocoa production stratum were randomly sampled from each country. Following EA stratification and sampling, we conducted a complete listing of all households living in these selected EAs and then randomly selected a number of agricultural households with children (5-17) as the target for the survey.

Data collection took place during the 2018/19 main cocoa harvest season. The field period in Ghana lasted from November 23, 2018 to January 27, 2019 and in Côte d'Ivoire from February 9, 2019 to March 7, 2019. Data collection timing was purposive to match the timing of the previous rounds of surveys undertaken during the main harvest season in both countries.<sup>6</sup>

We present the study findings below starting with a summary of key findings on the prevalence of child labor and hazardous child labor among agricultural households in the cocoa growing areas.<sup>7</sup> We then present more detailed findings from the survey and findings from the assessment of effectiveness of interventions implemented by the key stakeholders in the cocoa growing areas of Côte d'Ivoire and Ghana.

### **Select Key Findings: Prevalence of Child Labor in the Cocoa Growing Areas in Côte d'Ivoire and Ghana**

The main findings from this report indicate that the prevalence rate of children in child labor (proportion of children age 5-17 in child labor) in cocoa production in agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana increased between the 2008/09 and 2018/19 survey rounds (from 31% in 2008/09 to 44% in 2018/19) as did the prevalence rate of children involved in hazardous child labor in the cocoa sector between 2008/09 and 2018/19 (from 30% in 2008/09 to 41% in 2018/19).

Over the same ten year time period, cocoa production across Côte d'Ivoire and Ghana, as measured as estimated tons of cocoa produced increased from 1.89 million tons in 2008/09 to over 3 million tons in 2018/19.<sup>8</sup> The global price of cocoa over the same time period increased from \$2,263 USD/ton to \$2,626 USD/ton. The increase in production and price may explain this study's findings of the increased proportion of agricultural households involved in cocoa production from 58% in 2008/09 to 83% in 2018/19 in Côte d'Ivoire and Ghana.

Contextually, the prevalence rate of child labor in cocoa production and hazardous child labor in the cocoa sector increased by a greater extent within areas of low and medium cocoa production where there may not have been as much government, industry, and non-governmental organization (NGO) investment to address child labor. This may indicate that, with an increased importance of cocoa production, and as cocoa farming expands in areas where child labor interventions were not very extensive, child labor rates saw significant increases.

While the prevalence of hazardous child labor in cocoa production among children in all agricultural households increased between the 2008/09 and 2018/19 survey rounds, comparison of data on cocoa growing households between the 2013/14 and 2018/19 rounds paints a different picture. During this time period (2013/14 – 2018/19) the data shows that the prevalence rate of children's exposure to hazardous work in cocoa production remained stable although production during this period increased 14% in aggregate across Côte d'Ivoire and Ghana. This may indicate the success of increased

---

<sup>5</sup> Please refer to Annex 9.1 for a description of the range used for high, medium and low stratum in each country.

<sup>6</sup> A detailed description of the methodological issues related to data quality and comparability with the previous rounds encountered as part of this study can be found in Section 3.3 and in Annex 9.2 of this report.

<sup>7</sup> Please refer to Section 3.2 for a more detailed description of the sample characteristics.

<sup>8</sup> According to the estimates reported by the International Cocoa Organization (ICCO)

interventions and a heightened priority given to reducing child labor in the cocoa sector of Côte d'Ivoire and Ghana by national, international, and the international chocolate and cocoa industry (Industry) stakeholders in recent years.

Although hazardous child labor remained stable overall between 2013/14 and 2018/19 among the cocoa growing households in Côte d'Ivoire and Ghana, it is important to note that use of agro-chemical products increased significantly between 2013/14 and 2018/19 in both Côte d'Ivoire and Ghana among cocoa growing households: overall the usage of pesticides and herbicides (percentage of household reported using the input) increased by over 20 percentage points and fertilizer usage increased by 8 percentage points between 2013/14 and 2018/19.

Below we present both primary and secondary key findings on child labor within Côte d'Ivoire and Ghana. We present the findings related to all agricultural households generally, followed by findings on cocoa growing households specifically.

### **Children's Involvement in Agriculture and Education (both cocoa and non-cocoa agriculture)<sup>9</sup>**

- Approximately 3.83 million children (80% of all children in agricultural households in the cocoa growing areas of Côte d'Ivoire and Ghana) were economically active<sup>10</sup> in 2018/19, performing any type of work (both agriculture and non-agriculture activities regardless of the child labor status of an individual) within the twelve month reference period before the survey. In each country, more than three-fourths of all children in agricultural households in the cocoa growing areas were economically active in 2018/19.
- Approximately 2.86 million or 59% of all children in agricultural households in the cocoa-growing areas across Côte d'Ivoire and Ghana were involved in child labor in agriculture (including cocoa and non-cocoa agriculture) in 2018/19.
- Between 2008/09 and 2018/19, in the cocoa growing areas of Côte d'Ivoire and Ghana, school attendance among children 5-17 years old increased significantly. In Côte d'Ivoire school attendance among children in agricultural households in cocoa growing areas increased by 23 percentage points (from 58% in 2008/09 to 81% in 2018/19) and school attendance among Ghanaian children in cocoa growing areas increased from 89 percent to 96 percent between 2008/09 and 2018/19. The school attendance data suggests that reforms in both countries and a greater push for education has led to significant gains in levels of school attendance among children in agricultural households in the cocoa growing areas.

### **All Agricultural Households: Children's Involvement in Cocoa Production, Child Labor, and Hazardous Child Labor in the Cocoa Sector (2008/09 – 2018/19)**

- The proportion of children in agricultural households economically active in the last twelve months in cocoa production (regardless of their child labor status) increased from 32% in 2008/09 to 47% in 2018/19 with approximately 2.26 million children currently engaged in cocoa production across Côte d'Ivoire and Ghana. This increase may in part be driven by the increase in cocoa production over the same time period.
- Between 2008/09 and 2018/19 the proportion of children engaged in hazardous child labor in cocoa production increased by 11 percentage points in aggregate across Côte d'Ivoire and Ghana. Approximately 1.99 million children (41% of children in agricultural households) were exposed to at least one component of hazardous child labor in cocoa production under the

---

<sup>9</sup> Please see Section 4.2 for a graphical representation of the different populations of interest used for this study.

<sup>10</sup> Economically active population comprises all persons of either sex who furnish the supply of labour for the production of economic goods and services during a specified time-reference period as defined by the United Nations System of National Accounts.

common definition. Thus, the target of the Declaration and Framework to reduce the worst forms of child labor in the cocoa sector by 70 percent between 2008/09 and 2018/19 was not met.

- Between 2008/09 and 2018/19, in the cocoa growing areas of Côte d'Ivoire and Ghana, the proportion of children in agricultural households engaged in child labor in cocoa production increased from 31% in 2008/09 to 44% in 2018/19. In aggregate, approximately 2.1 million children engaged in child labor in cocoa production in the cocoa growing areas of Côte d'Ivoire and Ghana.
- In Côte d'Ivoire, the proportion of children aged 15-17 (allowed to undertake regular work as per the ILO framework) who were working in cocoa production more than the ILO recommended maximum hours per week for regular work (42 hours) decreased from 11 percent to 6 percent between 2008/09 and 2018/19. Average hours worked per week in cocoa production by children in this age group in Cote d'Ivoire also significantly dropped by approximately 4 hours in the week prior to the survey.
- In Ghana, similar improvements were seen within the 12-14 age group. The proportion of children in the 12-14 age group who were working in cocoa production more than the ILO recommended maximum hours per week (13 hours) decreased from 22 percent to 10 percent between 2008/09 and 2018/19 and average hours worked per week in cocoa production also dropped from 8 to 6 hours.
- In 2018/19, the five most common activities children in cocoa growing areas were involved in over the course of 12 months were:
  - Gathering and heaping cocoa pods (done by 42%)
  - Breaking cocoa pods and fermentation (done by 26%)
  - Drying cocoa beans (done by 23%)
  - Weeding (done by 21%) and;
  - Carting fermented cocoa beans (done by 20%).
- In aggregate, a higher proportion of children engaged in child labor in cocoa production across all age groups (5-11 years, 12-14 years, and 15-17 years) attended school in 2018/19 compared to 2008/09. School attendance among children in child labor in cocoa production increased from 80% to 94% in the 5-11 age group, from 81% to 93% in the 12-14 age group and from 63% to 79% in the 15-17 age group.
- Comparison of the six types of hazardous work in the cocoa sector considered in this study indicate:
  - Use of sharp tools was the most commonly performed hazardous activities in cocoa agriculture (with exposure rate of 35% in 2018/19)
  - Carrying heavy loads, exposure to agro-chemicals, and land clearing activities were also common source of hazardous work with exposure rates of 28%, 24% and 18% respectively in 2018/19.
  - Exposure to agro-chemicals has become pervasive between 2008/09 and 2018/19 as the proportion of children exposed to agro-chemicals increased by approximately five times between 2008/09 and 2018/19, from 5% to 24%. This increase is aligned with the findings that there was a significant increase in agro-chemical use among cocoa growing households during this period.
- Exposure to hazardous work in cocoa production was greater among the male children. In 2018/19, 61 percent of children engaged in hazardous child labor were male while 39 percent were female and this proportion was stable between 2008/09 and 2018/19.

- In Côte d'Ivoire and Ghana, the most common injuries for children working in cocoa agriculture were wounds/cuts, muscle/back/other pains, and skin itchiness or scratches with most children reporting wounds and cuts.

### **Cocoa Growing Households: Children's Involvement in Cocoa Production, Child Labor, and Hazardous Child Labor (2013/14 – 2018/19)**

- In 2018/19, a higher proportion of children in cocoa growing households were economically active in cocoa production within the last 12 months compared to 2013/14. On the other hand, involvement based on current activity status (within the last 7 days) for children in cocoa households decreased 6 percentage points between 2013/14 and 2018/19.
- The proportion of children in cocoa growing households engaged in child labor in cocoa production increased from 44% to 46% between 2013/14 and 2018/19 in aggregate.
- The proportion of children in cocoa growing households in hazardous child labor in cocoa production did not change between 2013/14 and 2018/19 which remained stable at 42% in 2018/19 in spite of an increase in cocoa production by 14% during this period. This may indicate the increased importance of confronting child labor by stakeholders coming from the findings of the 2013/14 survey round.
- Among different categories of hazardous work, land clearing, use of sharp tools, exposure to agro-chemicals and night work all increased between 2013/14 and 2018/19. The most prominent change occurred in exposure to agro-chemicals which increased by 15 percentage points (from 10% in 2013/14 to 25% in 2018/19), followed by marginal increases in land clearing (by 6 percentage points) and sharp tool use (by 4 percentage points).
- Increased exposure to agro-chemical products, with no statistically significant increase in overall exposure to any hazardous work, probably indicates that those who were exposed to hazardous work experienced increased exposure to multiple hazards rather than just one hazard.

### **Analytic Findings: Importance of cocoa agriculture, increased production and usage of agro-chemical products**

- Children shifted away from other agricultural activities to cocoa production, potentially due to the increasing importance of cocoa farming. In the cocoa growing areas of Côte d'Ivoire and Ghana, there was a 10-percentage point decrease (from 29% to 20%) in the proportion of children involved in agriculture work outside of the cocoa sector between the survey rounds.
- An analysis of child labor by cocoa production stratum reveals important insights into how child labor manifests within the study areas. The prevalence of child labor saw marginal increases in the high production stratum (by 4 percentage points), while it increased substantially in the medium and low production strata (by 14 and 25 percentage points respectively). There was a similar trend in the change in prevalence of hazardous child labor within production stratum during the same period. This may indicate the importance of focusing intervention efforts at areas where cocoa production has not been as historically high.
  - These findings suggest that as high production areas have become increasingly saturated, cocoa production activities have permeated other areas where the infrastructure is weak and awareness related to child labor and hazardous work is limited. Additionally, interventions targeting child labor over the past ten years (2008 - 2018) have likely focused on the high production areas where prevalence is more widespread and the perceived need for such interventions is greatest. Thus, it seems that the shift in production that led to expansion to new, less saturated areas, may have resulted in increased child labor and exposure to hazardous work in cocoa production.
- Self-reported data from head of the household survey indicate an overall increasing trend in expenditure (per ton of cocoa produced) on fertilizer, pesticide, and herbicide between 2013/14

and 2018/19. In Côte d'Ivoire, there were statistically significant increases in expenditure on pesticides (from USD 237 to USD 1,784 per ton of cocoa) and herbicides (from USD 232 to USD 2,626 per ton of cocoa). In Ghana, there was a statistically significant increase in expenditure on herbicides (from USD 1,288 to USD 1,994). This increase in usage of agro-chemical products suggests a greater involvement of children in handling agro-chemical products and consequently increased exposure to agro-chemical related hazards among children.

### **Assessment Findings**

The above descriptive statistics provide a rich overview of the prevalence of child labor and hazardous child labor in the cocoa sector in Côte d'Ivoire and Ghana in 2018/19 and how they compare to the situation in previous survey rounds. The second major objective of this study was to assess the role of interventions implemented by key stakeholders in confronting the issues of child labor and hazardous child labor in the cocoa sector. Our assessment of effectiveness of various interventions focuses on understanding how different types of interventions were effective in addressing child labor issues in general, and hazardous child labor in particular, in the two countries. NORC employed a suite of quantitative and qualitative analytic tools to generate robust conclusions.<sup>11</sup>

#### Educational and Vocational Training Activities

- There was no statistically significant difference in child labor and hazardous child labor among the households that received educational material support (such as uniforms, school bags, textbooks, pens, pencils). This indicates that the educational material support programs were probably not strong enough to generate a large enough difference in child labor and hazardous child labor rates that could be detected by the given design.
- School-based interventions, including school construction, feeding programs, and infrastructure improvement facilitated increased school attendance in Côte d'Ivoire and Ghana. In many communities, parents reported taking their children to the farm because could not afford to enroll them in school, or pay for costs for school materials. Parents residing in communities where the nearest school was too far also reported having no choice but to take their children with them to work. The improved accessibility and affordability of schools allowed children who would otherwise be working during school hours to enroll, and spend less time working. Administrative and infrastructural improvements also promoted feelings of safety, and improved teacher-student interactions.
- Vocational training programs enabled youth to explore post-education opportunities in their own communities. Vocational training programs were most impactful for girls, as they provided a foundation for future income generation.

#### Livelihood Services

- The prevalence of child labor was lower among the households in Côte d'Ivoire that received livelihood services (such as agricultural training, microfinance, and market access) compared to the households that did not receive such services; no such impact of livelihood services was detected on children's exposure to hazardous child labor in cocoa production.<sup>12</sup>
- Families who received livelihood support spoke of improved cocoa yields, improved access to credit, and improved financial outcomes leading from those interventions. Livelihood support also facilitated off-season income generation and improved financial outcomes allowed

---

<sup>11</sup> Please see Section 7 and Annex 9.8 for a description of the assessment methodology.

<sup>12</sup> Given the relatively small sample size of households that received livelihood services in Ghana, the model was estimated only for Côte d'Ivoire.

households to reinvest in their farms and hire farm labor. Caregivers who hired farm laborers reported engaging their children in farm work less often.

#### Occupational Safety and Health (OSH)

- Youth in Ghana who received Occupational Safety and Health (OSH) training and/or training on using appropriate safety equipment at work from formal sources were more likely to use safety tools/protective gear while working in agriculture.<sup>13</sup>
  - However, the analysis was unable to detect any effect of formal OSH training treatment on the likelihood of exposure to hazardous child labor among youth.
- Findings from qualitative analysis indicated that occupational safety and health interventions resonated among youth, especially when their caregivers received similar training. Youth report that these interventions have helped them understand the importance of keeping themselves safe and that, when possible, they have modified their practices accordingly.

#### Awareness-raising campaigns

- Awareness-raising campaigns have improved community-level knowledge and attitudes around child labor. However, campaigns have had limited effect on changing child labor practices. Community members felt community-level child labor monitoring and child protection committees are well-positioned to engage community members in awareness efforts that result in behavioral change.

#### Cross cutting themes

- Community members believed interventions that promoted improved livelihoods, income generation, and school enrollment had high potential for reducing the extent to which parents engaged their children in cocoa work.
- Interventions that engaged community members in their design and implementation were also considered more effective, while those that took more of a top-down approach were less effective.
- In both countries, school-based interventions were reported to be very successful, especially when coupled with community mobilization, and deep engagement with caregivers, teachers, and community leaders.
- Interventions that promote alternative income generation and school enrollment were perceived as most sustainable. Implementers encouraged beneficiary and community ownership of intervention activities to facilitate sustainability. Working groups, national action plans, and coordinated activities also hold significant potential for facilitating current and future sustainability, provided these groups focus on activity coordination and resource mobilization.

While this study found an increase in prevalence for both child labor and hazardous child labor between 2008/09 and 2018/19 in the target countries, the assessment of interventions indicates that stakeholders' attempt to address child labor in cocoa production by implementing different types of intervention achieved a varying degree of success. After controlling for the covariates that typically influence children's exposure to child labor and hazardous child labor, households in communities that received multiple types of interventions (as opposed to any one intervention) had lower prevalence of

---

<sup>13</sup> Given the relatively small sample size of households that received OSH training from formal sources in Côte d'Ivoire, the analysis was conducted only for Ghana.

hazardous child labor in cocoa production. This suggests the importance of addressing child labor in cocoa production with multiple interrelated interventions<sup>14</sup>.

## **Conclusion**

In conclusion, this report makes a strong case for understanding child labor and hazardous child labor in cocoa production as a complex problem requiring multiple complementary solutions. Survey findings show an increase in both child labor and hazardous child labor in cocoa production in the cocoa growing areas of Côte d'Ivoire and Ghana between 2008/09 and 2018/19 while cocoa production increased significantly over the same time period. We also find child labor and hazardous child labor rates in cocoa production stabilizing within areas with historically high cocoa production while increasing in medium and low production areas. The increased prevalence of child labor and hazardous child labor rates in the medium and low cocoa production areas underscores the importance of investing in child labor interventions within medium and low production areas. This is further supported by findings looking at the 2013/14 to 2018/19 time period which show child labor and hazardous child labor rates within the cocoa growing households stabilizing even in the face of increased cocoa production.

The findings also indicate that outcomes become highly effective when a suite of interventions targeting livelihoods, education, awareness, and community monitoring, coming from multiple sources such as national legislation, NGO programming, Industry based policies and programming, and International government support, come together to confront child labor issues.

Throughout, the findings suggest the importance of continued investments focused on child labor in cocoa production using a holistic system-based approach. Such an approach would consider various push factors such as limited access to education and poverty in relation to pull factors such as an increase in the global price of cocoa and farming subsidies (for example free or reduced agricultural inputs) and how those factors relate to, for example, production stratum, educational opportunities, and hazardous child labor. Although the Harkin-Engel Protocol is coming to an end, the success of the protocol in bringing together government, international, and industry stakeholders to address the issue of child labor and hazardous child labor in the cocoa sector can serve as a model for continued engagement by all stakeholders.

---

<sup>14</sup> It is important to note that lack of detection of impact does not mean lack of an effect, only that the design of the intervention and the amount of data collected did not permit a level of statistical precision sufficient to detect an effect, given its size. More detailed discussions on the caveats and limitations of the quantitative analysis adopted in the study can be found in Annex 9.10.

# Assessing Progress in Reducing Child Labor in Cocoa Growing Areas of Côte d’Ivoire and Ghana

## Final Report 2008/2009 – 2018/2019

### Table of Contents

<b>1. Foreword .....</b>	<b>23</b>
<b>2. Study Objectives .....</b>	<b>26</b>
2.1. Measuring the Progress Toward Achieving the Goals and Targets of the Declaration and Framework .....	26
2.2. Assessment of Effectiveness of Interventions Funded Toward Achieving Goals and Targets of the Declaration and Framework.....	27
2.3. Definitions: Working Children, Child Labor and Hazardous Child Labor based on Common and Local Definitions .....	27
2.3.1. Working Children (Children in Employment) .....	27
2.3.2. Children in Child Labor .....	28
2.3.3. Children in Hazardous Child Labor: Common Definition .....	28
2.3.4. Children in Hazardous Child Labor: National Definitions.....	29
<b>3. Methodology .....</b>	<b>30</b>
3.1. Sampling Methodology and Implementation of the 2018/19 Survey Round.....	30
3.1.1. Sampling Approach and Stratification .....	30
3.1.2. Types and number of interviews completed .....	31
3.1.3. Implementation of 2018/19 Survey Round.....	31
3.2. Description of Sample .....	32
3.2.1. Comparison of Sample Sizes between 2008/09 and 2018/19 Round of Survey .....	32
3.2.2. Respondent Characteristics.....	33
3.2.3. Area of Land Under Cultivation .....	34
3.3. Limitations and Methodological Consideration: Coverage of Data and Comparison of Data Across Rounds .....	34
3.3.1. 2013/14 Data Quality Issues .....	34
3.3.2. 2008/09 and 2018/19 Comparability Issues with Population Estimate of Counts.....	35
<b>4. Main Findings.....</b>	<b>36</b>
4.1. Understanding Contextual Factors.....	36
4.1.1. Cocoa Production and Cocoa Price.....	36

4.1.2.	Significance of Cocoa Production among Agricultural Household .....	38
4.1.3.	Use of Agro-Chemical Products.....	40
4.1.4.	Trend in School Attendance .....	41
4.2.	Main Findings: All Agricultural Households .....	42
4.2.1.	Children’s Engagement in any Economic Activities.....	42
4.2.2.	Estimate of Working Children in Agriculture .....	44
4.2.3.	Estimate of Child Labor in Agriculture .....	46
4.2.4.	Estimate of Working Children, and Average Hours of Work Among Children Working in Cocoa Production.....	47
4.2.5.	Estimate of Child Labor and Hazardous Child Labor in Cocoa Production.....	53
4.2.6.	Injuries Suffered while Working in Agriculture in the Past 12 Months and Health Consequences for Children .....	63
4.2.7.	Children’s Engagement in Non-Cocoa Agriculture and Non-Agricultural Sector .....	68
4.3.	Main Findings: Cocoa Growing Households (2013/2014 and 2018/2019).....	69
4.3.1.	Cocoa Growing Households: Estimate of Working Children.....	70
4.3.2.	Cocoa Growing Households: Estimate of Child Labor and Hazardous Child Labor .....	71
4.4.	School Attendance among Children in All Agricultural Households .....	76
4.5.	School Attendance among Children Working in Agriculture .....	77
4.6.	School Attendance among Children in Child Labor and Hazardous Child Labor.....	78
4.7.	Basic Literacy and Numeracy among Children Working in Cocoa Production.....	80
4.8.	Estimate of Children’s Work Interfering with Education among Children Working in Cocoa Production.....	82
<b>5.</b>	<b>Analytic Insights: Role of Production Stratum, Agro-chemical Use &amp; Household Demographics.....</b>	<b>84</b>
5.1.	Child Labor and Hazardous Work in Cocoa Production by Production Stratum.....	84
5.2.	Expenditure on Agro-Chemical per ton of Cocoa Produced.....	87
5.3.	Household Composition: Distribution of Children in Households .....	88
<b>6.</b>	<b>Findings Based on Country Specific Definition of Hazardous Work (2018/19 Survey Round) .....</b>	<b>89</b>
6.1.	Estimate of Children Engaged in Child Labor, and Hazardous Work in Cocoa Production in Côte d’Ivoire based on Ivoirian Legislation .....	89
6.2.	Estimate of Children Engaged in Child Labor, and Hazardous Work in Cocoa Production in Ghana based on Ghanaian Legislation.....	90
<b>7.</b>	<b>Part II: Assessment of the Effects of Interventions on Child Labor .....</b>	<b>92</b>

7.1.	Objectives .....	92
7.2.	Methodological Approaches .....	92
7.2.1.	General Quantitative Approach .....	92
7.2.2.	General Qualitative Approach .....	92
7.3.	Research Questions, Analysis and Findings .....	93
7.3.1.	Impact of Education and Vocational Training and Child Labor in the Cocoa Sector. ....	93
7.3.2.	Impact of Livelihood Services .....	101
7.3.3.	Impact of Occupational Safety and Health training interventions .....	104
7.3.4.	Awareness-raising efforts on Awareness of Children, Parents, Community leaders and on Attitudes towards Child Labor .....	107
7.3.5.	Effectiveness of interventions and Themes emerged relating to Challenges, Good Practices, and Lessons Learned .....	110
7.3.6.	Overall Sustainability of Interventions .....	113
7.3.7.	Impact of Funded Interventions on the Prevalence of Child Labor and Hazardous Child Labor in Cocoa Production .....	115
7.4.	<b>Caveats and limitations</b> .....	118
7.4.1.	Limitations of Quantitative Analyses .....	118
7.4.2.	Limitations of Qualitative Analyses: .....	118
<b>8.</b>	<b>Conclusions and Recommendations for Future Research .....</b>	<b>118</b>
<b>9.</b>	<b>Report Annexes .....</b>	<b>123</b>
9.1.	Annex I: Detailed Survey Methodology and Implementation in the 2018/19 Round .....	123
9.1.1.	Sampling design .....	123
9.1.2.	Survey methodology .....	125
9.1.3.	Design of survey instruments .....	128
9.1.4.	Training .....	130
9.1.5.	Pilot .....	131
9.1.6.	Data collection .....	132
9.1.7.	Generating the Weights .....	132
9.2.	Annex II: Notes on Comparability of Data and Population Estimates across 2008/09, 2013/2014 and 2018/19 Survey Rounds .....	133
9.2.1.	Incomplete documentation and implication on comparison of population estimates between the survey rounds .....	134
9.2.2.	Missing data to link the child respondents to their respective households in 2008/09 survey round and its implication on comparison of prevalence estimates .....	135

<b>9.2.3.</b>	Errors made in survey administration in Côte d’Ivoire during 2013/14 survey round and implication on comparison of population estimates between the 2013/14 and 2018/19 survey rounds.	136
<b>9.3.</b>	Annex III: Common Definition and Local Definitions of Child Labor & Hazardous Child Labor	137
<b>9.3.1.</b>	Common definition.....	137
<b>9.3.2.</b>	Côte d’Ivoire.....	138
<b>9.3.3.</b>	Ghana.....	139
<b>9.4.</b>	Annex IV: Supplementary Tables I.....	140
<b>9.4.1.</b>	Survey respondents.....	140
<b>9.4.2.</b>	Descriptive analysis.....	142
<b>9.5.</b>	Annex V: Supplementary tables II.....	159
<b>9.5.1.</b>	Comparison of exposure to Hazardous Work indicators using 7 days vs. 12 months reference periods for 2018/19.....	159
<b>9.5.2.</b>	Frequency of exposure to Hazardous Work in 2018/19 over the 12 months reference periods	162
<b>9.6.</b>	Annex VI: Additional Insights from 2018/19 Round of Survey.....	166
<b>9.7.</b>	Annex VII: Supplement I: Quantitative Analysis of Assessment of Effectiveness of Interventions	171
<b>9.7.1.</b>	Literature survey.....	171
<b>9.7.2.</b>	Modelling Child Labor and Hazardous Child Labor.....	174
<b>9.8.</b>	Annex VIII: Supplement II: Quantitative Analysis of Assessment of Effectiveness of Interventions.....	175
<b>9.8.1.</b>	Education Material Assistance and Child Labor in the Cocoa Sector.....	175
<b>9.8.2.</b>	Livelihood Support and Child Labor in the Cocoa Sector.....	182
<b>9.8.3.</b>	Occupational Safety and Health Training and Hazardous Child Labor in the Cocoa Sector	186
<b>9.8.4.</b>	Impact of Multiple Interventions and Child Labor in the Cocoa Sector.....	191
<b>9.9.</b>	Annex IX: Qualitative Methodology and Supplemental Analysis.....	199
<b>9.9.1.</b>	General Qualitative Approach.....	199
<b>9.9.2.</b>	Analysis.....	201
<b>9.10.</b>	Annex X: Caveats and limitations of Quantitative Analysis.....	204
<b>9.11.</b>	Annex XI: Definitions of the Child Labor Intervention Categories.....	206
<b>9.11.1.</b>	Education.....	206
<b>9.11.2.</b>	Vocational Training.....	207
<b>9.11.3.</b>	Sensitization/awareness raising program.....	207

<b>9.11.4.</b>	Occupational Safety and Health program for youth of legal working age.....	207
<b>9.11.5.</b>	Capacity building including community, regional, and national level initiatives. ....	207
<b>9.11.6.</b>	National, Community-based and/or supply-chain based monitoring and remediation systems/Child Protection and Child Labor Monitoring and Remediation Systems.....	208
<b>9.11.7.</b>	Community Action Plans and Community Development Plans .....	208
<b>9.11.8.</b>	Promotion of sustainable livelihood for vulnerable households .....	208
<b>9.11.9.</b>	Labor saving practices.....	209
<b>9.11.10.</b>	Improving access to existing public services for families vulnerable to child labor .....	209
<b>9.11.11.</b>	Gender and Women’s Empowerment .....	209
<b>9.11.12.</b>	Research.....	209
<b>9.11.13.</b>	Material Assistance.....	209
<b>9.11.14.</b>	Enforcement of anti-child labor regulations .....	209
<b>9.11.15.</b>	Compliance initiatives (Code of conduct/certification) .....	209

## Table of Figures

Figure 1: Child Labor Common Definition.....	29
Figure 2: Measurement Framework on Child Labor in Cocoa Growing Areas.....	42
Figure 3: Research Questions and Analyses.....	93
Figure 4: Range used for Stratification of Department/Districts: 2018/19 Round of Survey .....	124
Figure 5: KII Interviews: 2018/19 Survey Round .....	126
Figure 6: Ghana FGD Communities.....	127
Figure 7: Côte d’Ivoire FGD Communities.....	127

## Table of Tables

Table 1: Distribution of Sample*: Agricultural Households, Cocoa Growing Households and Non-Cocoa Growing Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19.....	32
Table 2: Comparison of Sample Sizes by Survey Type, All Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09 and 2018/19 .....	33
Table 3: Respondent Characteristics: Head of Household, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19 .....	33
Table 4: Respondent Characteristics: Children 5-17 Years, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19 .....	33
Table 5: Comparisons for population count and prevalence rate.....	35
Table 6: Estimate of Cocoa Produced and Price Per Ton Cocoa, in Côte d’Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	37
Table 7: Estimates of Agricultural Households, Cocoa Growing Households and Non-Cocoa Growing Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	39
Table 8: Estimates of Change in Household Use of Agro-Chemicals in the Last 12 Months in Cocoa Households, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	40
Table 9: School Attendance for All Children, All Agricultural Households, Côte d’Ivoire and Ghana, 2008/09 and 2018/19 .....	41
Table 10: Estimates of Change in Children Working in the Last 12 Months and in the Last 7 Days, All Agricultural Households, 5-17 Years, in Côte d’Ivoire and Ghana, 2008/09 and 2018/19 .....	43
Table 11: Estimates of Children Working in Agriculture in the Last 12 Months and the Last 7 Days, All Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	45
Table 12: Estimates of Change in Children Working in Agriculture, and in Children Engaged in Child Labor in the Last 12 Months, All Agricultural Households, 5-17 Years, in Côte d’Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	46
Table 13: Estimates of Children in Cocoa Production in the Last 12 Months and in the Last 7 Days, All Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	48
Table 14: Working Hours and Minimum Age, Children Working in Cocoa Production, All Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09 and 2018/19 .....	50
Table 15: Child Work Involved in Cocoa Production, All Children 5-17 Years Working in Cocoa Production, All Agricultural Households, in Côte d’Ivoire and Ghana, 2008/09 and 2018/19 .....	52
Table 16: Estimates of Change in Children Working in Cocoa Production, Children Engaged in Child Labor in Cocoa Production, and Children Engaged in Hazardous Work in the Cocoa Sector in the Last 12	

Months, 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19.....	54
Table 17: Estimates of Percentages of all Children Exposed to Hazardous Work Activities in the Cocoa Sector, 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19* .....	57
Table 18: Estimates of Exposure of Children Working in Cocoa Production, 5-17 Years, to Multiple Types of Hazardous Work, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19.....	60
Table 19: Injuries Experienced by Children While Working in Agriculture, Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19.....	65
Table 20: Injuries Experienced by Children While Working in Agriculture by Exposure to Hazardous Work, Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19 .....	67
Table 21: Health Consequences from Injuries Experienced While Working in Agriculture, Children 5-17 Years Working in Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19..	68
Table 22: Estimates of Change in Children Working in Agriculture Other than the Cocoa Sector, in Non-Agricultural Sector, 5-17 Years, All Agricultural Households, in the Last 12 Months, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	69
Table 23: Estimates of Children in Cocoa Households Working in Cocoa Production in the Last 12 Months and in the Last 7 Days, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19 .....	70
Table 24: Estimates of Change in Children in Cocoa Household, 5-17 Years, Working in Cocoa Production, Children Engaged in Child Labor in Cocoa Production, and Children Engaged in Hazardous Work in the Cocoa Sector in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19 .....	72
Table 25: Estimates of Change in Children in Cocoa Households, 5-17 Years, Exposed to Various Types of Hazardous Work Activities in the Cocoa Sector, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19* .....	73
Table 26: Disaggregation of Exposure to Agro-Chemicals, Children in Cocoa Households Working Cocoa Production in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19 .....	75
Table 27: School Attendance for Children in the Last 12 Months, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	76
Table 28: School Attendance for Children Working in Cocoa Production in the Last 12 Months, All Agricultural Households, by Age Group and Gender, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19.....	77
Table 29: Children Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work in Cocoa Production, All Agricultural Households, By School Attendance, 5-17 Years, in Côte d'Ivoire and Ghana, 2008-09 and 2018-19.....	79
Table 30: Basic Literacy and Numeracy for Children Working in Cocoa Production, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19.....	82
Table 31: Estimates of Children Working in Cocoa Production Not Attending School, and Work Interferes with Schooling, 6-14 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	83
Table 32: Estimates of Change in Children Engaged in Child Labor and Exposure to Hazardous Labor of Children Working in Cocoa Production in Areas with High, Medium and Low Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, in 2008/09 and 2018/19 .....	86
Table 33: Estimates of Change in Cocoa Households' Use of Agro-Chemical Products Expenditure Per Ton of Cocoa in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19 .....	88

Table 34: Estimates of Average Number of Children, 5-17 Years, All Agricultural Households, by Age Group, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19 .....	88
Table 35: Estimates of Change in Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the Côte d'Ivoire Country Definition, in Côte d'Ivoire, 2008/09, 2013/14 and 2018/19* .....	90
Table 36: Estimates of Change in Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the Ghana Country Definition, in Ghana, 2008/09, 2013/14 and 2018/19* .....	91
Table 37: Prevalence of Children Engaged in Child Labor and Hazardous Child Labor by Country Definitions, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19 .....	91
Table 38: Number of EAs per Stratum .....	132
Table 39: 2018/19 Household and child-level weights.....	133
Table 40: Types and Numbers of Interviews Completed, by Region, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19 .....	140
Table 41: Household Head and Child Survey Response Rates, Côte d'Ivoire and Ghana, All Agricultural Households, 2018/19.....	140
Table 42: Place of Birth and Nationality of Survey Respondents: Children, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19.....	141
Table 43: Household Land Under Cultivation and Under Cocoa Cultivation, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19 .....	141
Table 44: Selected Characteristics (Age Group, Gender) of Children Engaged in Child Labor in Agriculture, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .	142
Table 45: Selected Characteristics (Age Group, School Attendance) of Children Engaged in Child Labor in Agriculture, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19 .....	142
Table 46: Prevalence of Child Labor By School Attendance, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19 .....	142
Table 47: Working Hours and Minimum Age, Children Working in Cocoa Production, By Gender, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19 .....	143
Table 48: Estimates of Change Children, 12-17, Engaged in Light Work and Regular Work in the Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19.	144
Table 49: Child Work Involved in Cocoa Production, All Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008-09 and 2018-19.....	145
Table 50: Children Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work in Cocoa Production, All Agricultural Households, 5-17 Years, by Sex and Age group in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	146
Table 51: Estimates of Percentages of Children Exposed to Hazardous Work* Activities in the Cocoa Sector, 5-17 Years, All Agricultural Households, by Age Group in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	147
Table 52: Estimates of Percentages of Children Exposed to Hazardous Work* Activities in the Cocoa Sector, 5-17 Years, By Gender, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	148
Table 53: Disaggregation of Exposure to Agro-Chemicals, Children Working in Cocoa Production in the Last 12 Months, All Agricultural Households, by Age Group and by Gender, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19 .....	149

Table 54: Prevalence of Children Engaged Child Labor and Hazardous Child Labor in All Agricultural Households and Cocoa Households, 5-17 Years, in Côte d’Ivoire and Ghana, 2018/19 .....	150
Table 55: Working Hours and Minimum Age, Children in Cocoa Households Working in Cocoa Production, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	151
Table 56: Working Hours and Minimum Age, Children in Cocoa Households, Working in Cocoa Production, By Gender, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	152
Table 57: Children in Cocoa Households, Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work* in Cocoa Production, 5-17 Years, by Sex and Age group in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	153
Table 58: Estimates of Percentages of all Children in Cocoa Households, 5-17 Years, By Age Group, Exposed to Hazardous Work* Activities in the Cocoa Sector, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	154
Table 59: Estimates of Percentages of all Children in Cocoa Households, 5-17 Years, By Gender, Exposed to Hazardous Work* Activities in the Cocoa Sector, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19* .....	155
Table 60: Estimates of Exposure of Children Working in Cocoa Production in Cocoa Households, 5-17 Years, to Hazardous Work, by Count, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	156
Table 61: Disaggregation of Exposure to Agro-Chemicals, Children in Cocoa Households Working in Cocoa Production in the Last 12 Months, by Age Group and Gender, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	157
Table 62: Children in Cocoa Households, Children Engaged in Child Labor and Hazardous Work in Cocoa Production, by School Attendance, 5-17 Years, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19 .....	159
Table 63: Estimates of Change in Children Engaged in Child Labor and Exposure to Hazardous Labor of Children Working in Cocoa Production By the 7 Day and 12 Month Definitions, in Côte d’Ivoire and Ghana, in 2018/19 .....	160
Table 64: Prevalence of Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the 7 Day and 12 Month Definitions, in Côte d’Ivoire and Ghana, 2018/19* .....	161
Table 65: Prevalence of Children, 5-17 Years, Exposed to Land Clearing Components by Frequency*, in Côte d’Ivoire and Ghana, 2018/19 .....	162
Table 66: Prevalence of Children, 5-17 Years, Exposed to Heavy Loads Components by Frequency, in Côte d’Ivoire and Ghana, 2018/19 .....	163
Table 67: Prevalence of Children, 5-17 Years, Exposed to Agrochemicals Components by Frequency*, in Côte d’Ivoire and Ghana, 2018/19 .....	164
Table 68: Prevalence of Children, 5-17 Years, Exposed to Sharp Tools Components by Frequency*, in Côte d’Ivoire and Ghana, 2018/19 .....	165
Table 69: Estimate of Proportion of Children Engaged in Child Labor and Exposure to Hazardous Child Labor by Parent and Household Characteristics, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19 .....	167
Table 70: Estimate of Proportion of Child Labor and Exposure to Hazardous Child Labor by Community Characteristics, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19 .....	169
Table 71: Estimate of Proportion of Child Labor and Exposure to Hazardous Child Labor by Child, School Characteristics, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19 .....	170
Table 72: Ghana Entropy Balancing: Differences in covariates affecting selection before and after balancing .....	177

Table 73: RQ2 Ghana, Probit Regression and OLS Regression: Education Material Assistance and Child Labor and Hazardous Child Labor .....	178
Table 74: Côte d’Ivoire Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing .....	180
Table 75: Côte d’Ivoire, Probit Regression and OLS Regression: Education Material Assistance and Child Labor and Hazardous Child Labor .....	181
Table 76: Côte d’Ivoire Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing .....	184
Table 77: Côte d’Ivoire, Probit regression: Livelihood Service Support and Child Labor and Hazardous Child Labor .....	185
Table 78: Ghana Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing .....	188
Table 79: Participation in Occupational Safety and Health Training and Likelihood of Exposure to Hazardous Labor .....	189
Table 80: Distribution of communities in Côte d’Ivoire by treatment combination .....	192
Table 81: Distribution of communities in Ghana by treatment combination .....	192
Table 82: Matching Balance Check: Covariates before and after Propensity Score Matching in Cote d’Ivoire .....	195
Table 83: Impact of Multiple Treatment on Child Labor and Hazardous Child Labor in Probit Regression in Cote d’Ivoire .....	196
Table 84: Impact of Multiple Treatment on Child Labor and Hazardous Child Labor in OLS Regression in Cote d’Ivoire .....	198

**Acronyms**

CL	Child labor
CLCCG	Child Labor Cocoa Coordinating Group
CSOs	Civil Society Organizations
EA	Enumeration Area
GSS	Ghana Statistical Service
HCL	Hazardous child labor
ICCO	International Cocoa Organization
ICI	International Cocoa Initiative
ILAB	Bureau of International Affairs, U.S. Department of Labor
ILO	International Labour Organization
INS	Insitut National de la Statistique de Côte d'Ivoire
NGOs	Non-governmental organizations
NORC	NORC at the University of Chicago
OCFT	Office of Child Labor, Forced Labor and Human Trafficking
PSU	Primary Sampling Unit
SSU	Secondary Sampling Unit
WCF	World Cocoa Foundation
WFCL	Worst forms of child labor
USDOL	United States Department of Labor

## 1. Foreword

In 2001, in response to evidence of children working under dangerous conditions in the West African cocoa sector, representatives from the International Chocolate and Cocoa Industry (Industry) signed the Harkin-Engel Protocol (Protocol), which included commitments to publicly acknowledge child labor in the cocoa sector, form an advisory group to provide guidance on appropriate remedies, and establish a joint foundation to provide interventions to address child labor directly. The Governments of Cote d'Ivoire, Ghana, and the U.S. Department of Labor (DOL) began working alongside Industry in 2002 to address child labor in cocoa – mostly through technical assistance projects. These efforts expanded in September 2010, when the Governments of Côte d'Ivoire and Ghana, DOL, and Industry joined as partners to sign the Declaration and the accompanying Framework.

In the signing of the Declaration and Framework, these partners committed to take action to reduce child labor and the worst forms of child labor in cocoa production and to the goal of achieving a 70 percent reduction in the worst forms of child labor in the cocoa sectors of the two countries in the aggregate by 2020. The Child Labor Cocoa Coordinating Group (CLCCG) was established to coordinate efforts among the partners working under the Declaration and Framework.

The Framework lays out five goals to support implementation of the Declaration and further the aims of the original Protocol:

1. Removal of children from the worst forms of child labor, including hazardous labor, in cocoa growing areas and provision of appropriate remediation services, including education or vocational training; or in the case of children/youth of legal working age, removal of workplace hazards and other steps necessary to bring labor conditions into conformity with national laws and international labor standards;
2. Prevention of children's involvement in the worst forms of child labor, including through increased access to schooling and vocational training and improvement in the quality and relevance of education;
3. Promotion of sustainable livelihoods for the households of children in cocoa growing areas;
4. Establishment and implementation of community-based child labor monitoring systems (CLMS) in cocoa growing areas, linked to the provision of remediation for children identified as engaged in the worst forms of child labor; and
5. Continuation of nationally representative child labor surveys, recurring at least every 5 years. These surveys will provide comparable data for ongoing assessment of child labor prevalence in cocoa growing areas and a commitment to make publicly available the related survey methodologies, all raw data, and reports based on the findings of such surveys.

As such, surveys were carried out by Tulane University during the 2008/2009 and 2013/2014 harvest seasons in Côte d'Ivoire and Ghana. In 2016, NORC at the University of Chicago (NORC) was awarded a four year cooperative agreement by the U.S. Department of Labor's Bureau of International Labor Affairs<sup>15</sup> (ILAB) to conduct the *2018/2019 Assessing Progress in Reducing Child Labor in Cocoa Production in Cocoa Growing Areas of Côte d'Ivoire and Ghana survey*.

NORC has spent the last four years working closely with ILAB, the governments of Côte d'Ivoire and Ghana, the International Cocoa and Chocolate Industry represented by the World Cocoa Foundation

---

<sup>15</sup> ILAB leads DOL's efforts to ensure that workers around the world are treated fairly and are able to share in the benefits of the global economy. ILAB's mission is to advance workers' rights and livelihoods, particularly for the world's most vulnerable workers. ILAB's Office of Child Labor, Forced Labor and Human Trafficking (OCFT) conducts and funds research, develops strategic partnerships, and funds an international technical cooperation program to eliminate child labor and the worst forms of child labor, forced labor, and human trafficking.

(WCF), Civil Society Organizations (CSOs, as well as multiple international organizations with an interest in child labor, such as UNICEF and the International Labour Organization (ILO). This report is the outcome of that collaborative effort to accurately measure and report on the issue of child labor in Ghana and Côte d'Ivoire.

There are several important considerations any reader of this report needs to be aware of. First, it is important to stress the difference between child labor in general and forced labor (or forced child labor/child slavery). **Child Labor** is defined by ILO Conventions 138 on the Minimum Age for Admission to Employment and 182 on the Worst Forms of Child Labor.<sup>16</sup> It includes employment below the minimum age as established in national legislation, hazardous unpaid household services, and the worst forms of child labor. **Forced Labor** is defined by ILO Convention 29 as all work or service exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily (for children under menace of penalty the idea of “voluntariness” becomes moot and is not applicable). This research focuses on child labor and not forced child labor/child slavery. Although the issue of forced child labor in cocoa production is important and deserves attention, the sampling frames and research methodology required for addressing the forced child labor issue is very different than the methodology adopted for the current scope of our research on assessing hazardous child labor in cocoa production which was determined at the onset of this research in 2008/09.<sup>17</sup> As such, and also to remain consistent with previous rounds of the survey, this report will only speak to the issue of child labor in cocoa production in Côte d'Ivoire and Ghana and will use hazardous child labor (HCL) as a proxy for WFCL.

Second, the research team believes child labor is a *complex problem*<sup>18</sup> and needs to be approached from multiple, sometimes competing, perspectives and which may have multiple possible solutions. Our work in assessing the progress made from 2010 – 2020 has made the complex nature of the problem apparent and evidence laid out in this report supports the need to take an ecosystem approach to the issue of child labor in which multiple overlapping solutions and interventions are needed in order to address the complex issue at hand.

The next point requires taking a step back and viewing the cocoa sector from a broader vantage point. Cocoa production accounts for 10% of the gross domestic product (GDP) of Côte d'Ivoire and 7% of the GDP of Ghana. Fluctuations in the cocoa sector not only have an impact on the lives of children but also on the lives of millions of cocoa farmers and the economies of both Côte d'Ivoire and Ghana (thus impacting the populations of those countries regardless of their relationship to cocoa production).

In addition, the targets set in the Harkin-Engel Protocol focus on a reduction in the rate of hazardous child labor which requires a total withdrawal of children from all types of hazardous activities related to cocoa production. That one metric may not be sufficient to document the progress made in fighting child labor, and the worst forms of child labor, in cocoa production in Côte d'Ivoire and Ghana. For example, if an intervention reduces exposure to one of the six components of hazardous work (defined in Section 2 of this report), it would not be reflected in the overall measured rate of hazardous child labor unless the child is involved in *only* that particular hazard. In essence, the targets may overshadow

---

<sup>16</sup> Article 3(a) of Convention 182 includes forced or compulsory labor as an unconditional WFCL.

<sup>17</sup> Forced child labor is, by definition, an illicit activity with a vulnerable and hard-to-reach population. Probability based research methods would need to account for that from the outset and focus on areas where vulnerability would be highest (for example, encampments and forest land).

<sup>18</sup> Ritchey, Tom (2011). *Wicked problems – Social messes: Decision support modelling with morphological analysis*. Berlin: Springer. ISBN 978-3-642-19653-9.

Growing a Global Issue Base: An Issue-based Approach to Policy Deliberation Jeff Conklin CogNexus Institute, Napa, CA

what is actual working on-the-ground to reduce child labor and improve the lives of children within the cocoa sector.

This report hopes to provide a broader perspective by not only presenting the overall numbers of children involved in child labor in the cocoa sector but also the interrelated factors driving this issue, where and how interventions are effectively impacting child labor and the worst forms of child labor, and how governments, CSOs, non-governmental organizations (NGOs), and the International Cocoa and Chocolate Industry have confronted the issue. There are success stories in this report that the international community can learn from and which should be given the same attention as the overall rates of child labor from 2010 – 2020. Although a 70% reduction in hazardous child labor across Côte d’Ivoire and Ghana was not achieved, this should not overshadow the actual progress made in confronting this important issue.

Finally, it is important to stress the difference between aggregate and individual country statistics presented throughout the report. This report presents aggregate statistics (combining the data from cocoa growing areas of Côte d’Ivoire and Ghana) using the common definition of hazardous work per the Harkin-Engel Protocol. The data from each country is weighted using the method described in Section 3 to be able to create aggregate population estimates. Individual country statistics are estimated using the common definitions of hazardous work as well as the country specific definitions of hazardous work that will be described in more detail in Sections 2.3.3 and 2.3.4

This report begins with Section 2 which goes into more detail on the objectives of the report in order to orient readers on what this report will and will not contain. Following the objectives, we define for the reader the key technical terms used throughout the report such as child labor, hazardous child labor (as a proxy of worst forms of child labor) and working children. We introduce the common definition of child labor and hazardous child labor used for estimating the aggregate statistics, and local definitions based on national legislations used for individual country statistics.

Section 3 begins with a short description of the 2018/19 survey round and description of the samples in both countries before moving on to key contextual factors needed to frame our ultimate discussion of child labor metrics. Chapter 3 then finishes with a detailed analysis and presentation of the progress made towards achieving the goals and targets from the Harkin-Engel Protocol. Readers should keep in mind that our analysis is based on the *correlations* we observe in the data and, as such, *causation* should not be inferred.

Section 4 of the report focuses on school attendance and education metrics and their relationship to child labor in both countries.

Section 5 presents the research teams analysis of the strong patterns coming out of the data and possible important correlations we’ve identified.

Section 6 presents findings based on local legislative definitions of child labor and is useful for Ghanaian and Ivorian stakeholders to understand how child labor looks using national legislation as a base.

Section 7 begins our qualitative and quantitative analysis and assessment of the effects of projects implemented from 2010 – 2020 to impact child labor rates in Côte d’Ivoire and Ghana. This section presents several research questions developed from the goals of the Frameworks and our findings in relation to them.

Section 8 presents the main conclusions of this study and discusses the scope of future research based on the learnings from the study. The research team hopes this report is not the end of collaboration between key stakeholders but rather the start of a continuing relationship aimed at improving the lives of children in West Africa.

## 2. Study Objectives

This study had three overarching goals. Those goals defined the work around which this report is built and the parameters of the analysis. In short, the three goals were:

1. **Goal 1:** Conduct a sectorally-representative survey during the 2018/2019 harvest season, which covers the previous 12-month reference period, to develop population estimates for the prevalence of working children, child labor, and the worst forms of child labor (using hazardous labor as a proxy) in agriculture, including the cocoa sector, in the cocoa growing areas of Côte d'Ivoire and Ghana, and then use those estimates to measure percent changes in the prevalence in the worst forms of child labor compared to data collected in these same areas in 2008/09 and 2018/19.
2. **Goal 2:** Assess the relative effectiveness of projects contributing to reduced child labor and the worst forms of child labor in Côte d'Ivoire and Ghana, and progress toward achievement of the goals and targets of the Declaration and Framework. The assessment also seeks to address a set of major research questions on the efficacy of funded interventions which were developed between USDOL and NORC.
3. **Goal 3:** Produce a detailed, interactive mapping that identifies geographic areas and communities that received interventions to address child labor and the worst forms of child labor in the cocoa sector, catalogues interventions by organization and sector, and aligns this information with key demographic and socio-economic indicators, such as income, education, and poverty levels, to serve as an analytical tool for the CLCCG and additional relevant stakeholders.

Essentially this task lead to an interactive data visualization tool showing interventions as well as data from the three data collection periods (2008/09, 2013/14, 2018/19) and is not directly a part of this report but can be found online at [XXXXXX](#). Thus, this report will be focusing on the first two objectives as described below.

### 2.1. Measuring the Progress Toward Achieving the Goals and Targets of the Declaration and Framework

One of the main objectives of this report is to use the data from the three survey rounds to assess how the main outcome indicators of interest – the prevalence of children in child labor and the prevalence of children in hazardous work in the cocoa sector<sup>19</sup> – changed between 2008/09 and 2018/19. Towards that objective, NORC conducted a survey during the 2018/19 harvest season to develop population estimates for the prevalence of working children, child labor, and hazardous child labor (as a proxy of the worst forms of child labor) in agricultural households, in the cocoa growing areas of Côte d'Ivoire and Ghana. The main data collection efforts across Ghana and Côte d'Ivoire, and the subsequent analysis of child labor rates are presented in Chapter 4 of this report. The primary research questions associated with the data collection and analysis included:

- What is the population of economically active children in cocoa growing areas during the 2018/19 harvest seasons?
- What is the population of children in cocoa growing areas in each country in 2018/19 disaggregated by employment status (i.e., working, non-working)
- What is the population of children working in agriculture in cocoa-growing areas disaggregated by the sector of engagement (i.e., cocoa sector, and agriculture other than cocoa sector)
- What is the population of children working in sectors other than agriculture?

---

<sup>19</sup> Cocoa sector is defined as the cocoa growing areas of Côte d'Ivoire and Ghana

- How many children were working, were engaged in child labor, and were engaged in the worst forms of child labor (using hazardous labor as a proxy) in the cocoa sector during the 2018/19 harvest seasons?
- What is the percentage change in the proportion of children that were working, were engaged in child labor, and were performing hazardous work in cocoa growing areas between the 2008/19 and 2018/19 main harvest seasons?

## 2.2. Assessment of Effectiveness of Interventions Funded Toward Achieving Goals and Targets of the Declaration and Framework

The second main objective of this report is to assess the relative effectiveness of various interventions funded by the members of the CLCCG and other stakeholders. Under this objective, we address specific research questions (see Section 7.3 for a list of the research questions) with the aim of understanding how different types of interventions were effective in addressing child labor issues.

It is important to note that our analysis does not assess the effectiveness of individual interventions or implementers. Given both the disparate types and overall number of interventions conducted between 2008/09 and 2018/19, it is impossible to assess the effectiveness of each one due to data limitations. Rather we assess effectiveness of different categories of interventions (such as education related interventions, livelihoods programs, and occupational safety and health interventions, to name a few).

## 2.3. Definitions: Working Children, Child Labor and Hazardous Child Labor based on Common and Local Definitions

This section presents the definitions of working children (children in employment), child labor, and hazardous child labor used throughout the report. Data on working children, child labor, and hazardous child labor were collected using both a twelve-month and seven-day reference period to allow for comparisons of the estimates based on two reference periods commonly reported for measuring children's engagement in work and to understand children's activities during the peak harvest season versus throughout the year. While data were collected for both reference periods, in most instances, **data analysis focuses on the twelve-month reference period** to remain consistent with previous survey rounds and also to address the seasonality of various tasks performed in cocoa agriculture.

For generating aggregate estimates on hazardous work performed by children in cocoa agriculture in cocoa growing areas of Côte d'Ivoire and Ghana, we use a common definition that focuses on the "common ground" between the Ghanaian and the Ivorian definitions within a broader ILO framework.<sup>20</sup>

Additionally, we present estimates of child labor and hazardous child labor based on Ivorian and Ghanaian country specific definitions using individual country national legislations as the base for defining child labor and hazardous child labor. This country specific analysis based on the 2018/19 survey round is helpful for Ghanaian and Ivorian stakeholders to address national programs around child labor and is found in Chapter 6 of this report.

### 2.3.1. Working Children (Children in Employment)

Working children, as per an ILO and ICLS framework<sup>21</sup>, are defined as children (5 – 17 years old) who have worked at least one hour during the reference period in any economic activity, either paid or

---

<sup>20</sup> The common definition was developed by Tulane University. For more details, please consult the study report: Survey Research on Child Labor in West African Cocoa Growing Areas, Final Report, 2013-14, Tulane University.

<sup>21</sup> International Labour Organization (ILO), Report III: Child Labour Statistics, 18th International Conference of Labour Statisticians, Geneva, (November 24 – December 2008).

unpaid. The research team then further differentiated within this broad category to account for; agricultural work, cocoa work, and non-agricultural work. It is important to note that, the definition of working children does not include children performing household chores within their own households.

### **2.3.2. Children in Child Labor**

The definition of child labor is also based on an ILO and ICLS framework.<sup>22</sup> For the purpose of this report, children engaged in child labor is defined as (a) children working below minimum age (if they are under 12), (b) children exceeding the number of working hours allowable for their age group based on the ILO Convention 138 on the Minimum Age on Admission to Employment<sup>23</sup> (if they are between 12-17), (c) children performing hazardous work<sup>24</sup> in the cocoa growing areas of Côte d'Ivoire and Ghana. **The worst forms of child labor other than hazardous work and hazardous unpaid household services are not included in this measure.**

### **2.3.3. Children in Hazardous Child Labor: Common Definition**

As a proxy for the WFCL, hazardous child labor is constructed, using the common definition, from six subcategories and a child is determined to have participated in hazardous work if they have been exposed to at least one subcategory of the common definition as described below.

1. Land clearing
2. Carrying heavy loads
3. Using agro-chemicals
4. Using sharp tools
5. Long working hours
6. Night work

Land clearing: A child is exposed to a land clearing related hazard if the child engages in clearing of land, felling and chopping of trees, or burning within the reference period.

Heavy loads: A child is exposed a heavy load related hazard if the child carries a heavy load of wood and other loads while working in agriculture within the reference period. The definition of “heavy” is based on the child’s own perception on whether the load carried was heavy or not.<sup>25</sup>

Agro-chemicals: A child is exposed to agro-chemicals if the child is engaged in spraying, carrying water for spraying, or working with agro-chemicals during the reference period.

A child is considered to be engaged in spraying if the child:

- Was involved in spraying of pesticides or insecticides
- Was present or worked in the vicinity of a farm during pesticide spraying, or
- Reentered a sprayed farm within less than 12 hours of spraying.

Working with agro-chemicals includes a child having been involved in handling agro-chemical products such as purchase, transport, storage, mixing, loading, washing of containers and spraying machine, and/or disposal.

---

<sup>22</sup> International Labour Organization (ILO), Report of the Conference, 18th International Conference of Labour Statisticians, (2008).

<sup>23</sup> International Labour Organization (ILO), Convention 138 Concerning Minimum Age for Admission to Employment, (June 26, 1973).

<sup>24</sup> Based on ILO Convention 182, Article 3(d) and Recommendation 190.

<sup>25</sup> It is the research teams’ view that this is the most valid way to measure “heavy loads” without necessitating the use of scales and diary-based data collection methods.

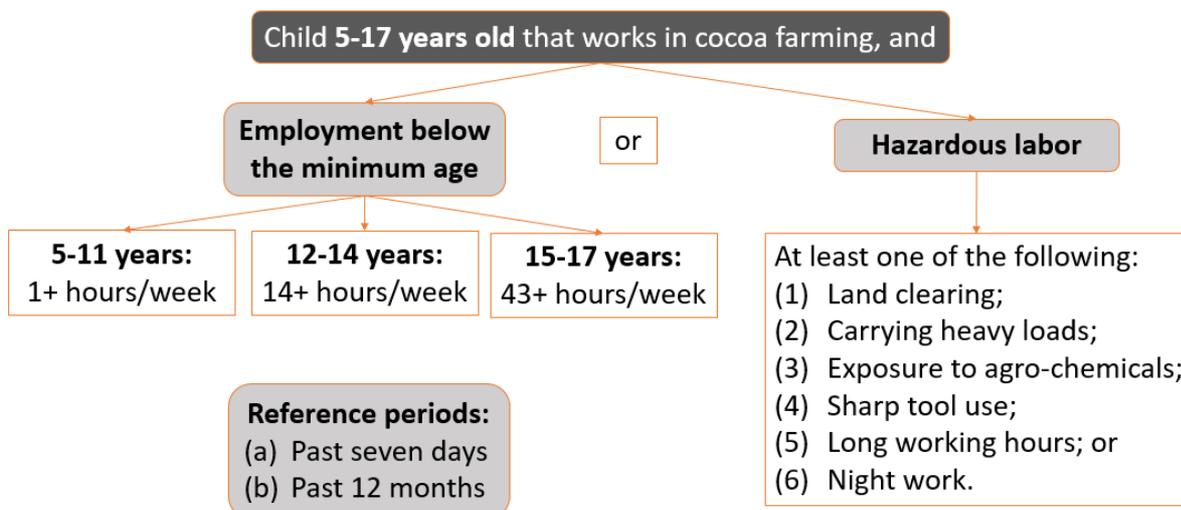
**Use of sharp tools:** A child is exposed to sharp tool use if the child uses machetes/long cutlasses for weeding, handling motorized equipment or machines, knapsack sprayer and/or chainsaw, harvesting with a machete or sickle, harvesting overhead cocoa pods with a harvesting hook, or breaking cocoa pods with a knife or a sharp object/tool during the reference period.

**Long working hours:** A child is exposed to long working hours if a child works 43 hours or more during the reference period. Note, long working hours only applies to children 12-17.

**Night work:** A child is exposed to night work if a child goes to or returns from the farm alone, or working on the farm between 6.00 p.m. and 6.00 a.m.<sup>26</sup>

Figure 1: Child Labor Common Definition below is a graphical representation of the components of child labor.

Figure 1: Child Labor Common Definition



### 2.3.4. Children in Hazardous Child Labor: National Definitions

The national level definitions are used to provide more detail on the metrics that the local governments find most important. The Ghanaian definition of hazardous work is broken into ten subcategories and the Ivorian definition of hazardous work is broken into seven subcategories based on country specific legislation. Children are considered exposed to hazardous work if they are exposed to at least one subcategory of country specific definition. A detailed description of country specific hazardous child labor definitions can be found in Annex 9.3.

#### 2.3.4.1. Ghanaian National Legislation (Local Definition) and Sub-Categories of Hazardous Work

The Ghanaian definition of hazardous child labor consists of ten sub-categories

1. Working full time and not attending school
2. Withdrawing from school during cocoa season to do farm work
3. Land clearing
4. Carrying heavy loads
5. Spraying and agrochemicals
6. Use of sharp tools

<sup>26</sup> According to the 18<sup>th</sup> ICLS, a child is considered to be working at night if the work schedule includes hours of work defined as night work prohibited for children under national definition, where it exists. In the case of children, the period of time spent commuting unaccompanied between work and home should be considered as part of the work schedule.

7. Climbing trees
8. Night work
9. Working in isolation
10. Working without protective clothing

A child is considered exposed to hazardous work if they were exposed to at least one subcategory during the reference period. A complete crosswalk for the definitions of child labor can be found in Annex III.

#### 2.3.4.2. Ivorian National Legislation (Local Definition) and Sub-Categories of Hazardous Work

1. Inadequate rest
2. Land clearing
3. Charcoal production
4. Carrying heavy loads
5. Use of agrochemicals
6. Use of sharp tools
7. Night work (between 7 p.m. to 7 a.m.) or work during school/business hours

A child is considered exposed to hazardous work if they were exposed to at least one subcategory during the reference period. The Cote D'Ivoire definition differs from international norms because if a child is 16 or 17 years old and has received appropriate training relating to use of hazardous materials in agriculture, they are not considered to have been exposed to hazardous work. A complete crosswalk for the definitions of child labor can be found in Annex 9.3.

### 3. Methodology

In order to develop population estimates for the prevalence of working children, child labor and hazardous child labor in the cocoa growing areas of Côte d'Ivoire and Ghana, and use those estimates to measure changes in child labor prevalence between 2008/09 and 2018/19, NORC undertook a sectorally representative survey during the 2018/19 cocoa harvest season in cocoa growing areas of Côte d'Ivoire and Ghana. The following sections briefly describe the activities and methodology undertaken during the 2018/19 round of data collection.

#### 3.1. Sampling Methodology and Implementation of the 2018/19 Survey Round

##### 3.1.1. Sampling Approach and Stratification<sup>27</sup>

In brief, NORC used a multi-stage stratified cluster sampling technique. In this approach the primary sampling unit (PSU) was the census Enumeration Areas (EAs) in the cocoa producing areas of Côte d'Ivoire and Ghana and the secondary sampling unit (SSU) was the agricultural households. The first step was identifying a given number of Enumeration Areas (EAs) from which the SSUs (households) were selected. NORC formally requested the assistance of the Ghana Statistical Service (GSS) and the Institut National de la Statistique de Côte d'Ivoire (INS) to select the EAs based on a defined sampling plan designed to keep the survey frames as similar as possible across rounds. In the first stage, NORC stratified the cocoa-growing districts of Ghana and departments of Côte d'Ivoire into high, medium, and low cocoa production strata based on the most recent available cocoa production data.<sup>28</sup> Using the district/department level production data, the rural EAs in each of the districts/departments were classified into high, medium and low production strata by GSS in Ghana and INS in Côte d'Ivoire.

---

<sup>27</sup> Please note that our sampling approach did not include encampments (unless directly under an EA administrative classification) or protected forest lands.

<sup>28</sup> The data on recent production provided by COCOBOD in Ghana and the Coffee-Cocoa Council in Côte d'Ivoire.

In the second sampling stage, drawing from the list of all EA stratified into high/medium/low cocoa production, GSS and INS randomly drew a total of 150 EAs respectively, specifically drawing:

- 80 EA from high cocoa production stratum
- 50 EA from medium cocoa production stratum
- 20 EA from low cocoa production stratum

Next, half of each stratum of EAs was randomly assigned to target EAs and the other half kept as the replacement EAs. The final target sample for each country consisted of:

- 40 EAs from high cocoa production stratum
- 25 EAs from medium cocoa production stratum
- 10 EAs from low cocoa production stratum.

A detailed description of the sampling approach adopted by NORC is provided in Annex 9.1.

### 3.1.2. Types and number of interviews completed

The research team administered six survey instruments during the 2018/19 data collection round;

1. Household roster
2. Household head
3. Child
4. Community
5. Cocoa Shed
6. School<sup>29</sup>

#### ★ Methods

There were 2,824 roster surveys, 2,809 household head surveys, 5,552 child surveys, 158 community surveys, 372 cocoa shed surveys, and 260 school surveys administered across Ghana and Côte d'Ivoire.

### 3.1.3. The number of total child and household head interviews completed by region for Côte d'Ivoire and Ghana in the 2018/19 survey round can be found in

Table 40 in Annex 9.4.2. There were 2,809 child and 1,314 household head interviews completed in Ghana spread across six regions. For Côte d'Ivoire there were 2,734 child and 1,495 household head interviews completed across fifteen regions. Overall there were 2,824 roster surveys, 2,809 household head surveys, 5,552 child surveys, 158 community surveys, 372 cocoa shed surveys, and 260 school surveys administered across Ghana and Côte d'Ivoire. Additional information on the number of surveys completed by country and comparisons to the 2008/09 round can be found in Section 3.2.

### 3.1.4. Implementation of 2018/19 Survey Round

Once enumeration areas (the PSUs) were identified, NORC conducted a complete household listing of each EA for 2018/19. Only households identified as agricultural households during the listing were included in the sample (both cocoa growing households and other agricultural households). There were 8,858 total households and 6,399 eligible households listed in Côte d'Ivoire across 75 EAs and 9,200 total households and 3,969 eligible households in Ghana across 75 EAs. After the listing exercise, agricultural households (the SSUs) with at least one eligible child aged 5-17 were randomly selected in each EA. In Côte d'Ivoire 25 agricultural households (of which 5 were replacements) and in Ghana 23 agricultural households (of which 5 were replacements) were randomly drawn for data collection.

<sup>29</sup> Please see Annex 9.1 for a complete description of each survey instrument

Table 1 below shows the listing data for all eligible households in our sample and reflects the importance of cocoa agriculture in Côte d'Ivoire and Ghana. Looking at the percentage of agricultural households that grew cocoa, in Côte d'Ivoire approximately 7,500 out of 8,900 households (85%) grew cocoa, and similarly in Ghana approximately 8,000 out of 9,200 households (87%) grew cocoa during the 2018/19 survey round. Overall, cocoa is a key part of agriculture in the cocoa growing areas of both countries as can be seen from the fact that a predominant majority (more than 85 percent) of agricultural households grow cocoa.

**★ Quantitative Insight**

Cocoa is a key part of agriculture in the cocoa growing areas of both countries as can be seen from the fact that a predominant majority (more than 85 percent) of agricultural households grow cocoa.

*Table 1: Distribution of Sample\*: Agricultural Households, Cocoa Growing Households and Non-Cocoa Growing Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19*

	Total	Côte d'Ivoire	Ghana
All agricultural households	18,058	8,858	9,200
Number of cocoa growing households	15,530	7,547	7,983
Percentage of cocoa growing households	86%	85%	87%
Number of non-cocoa growing agricultural households	2,528	1,311	1,217
Percentage of non-cocoa growing agricultural households	14%	15%	13%

Source: NORC sample 2018/2019, strata 1-3

\*Only households with children were surveyed, which dropped the eligible households for Ghana to 6,125 and Côte d'Ivoire to 6,399

Data collection took place in Ghana from November 23<sup>rd</sup>, 2018 to January 27<sup>th</sup>, 2019 and for Côte d'Ivoire from February 9<sup>th</sup>, 2019 to March 7<sup>th</sup>, 2019. Data collection timing was purposive and conducted during the main harvest season in both countries. The household roster was first administered to each sampled household to determine which children would be eligible for interviews and to identify the household head. A household was complete once there was a household roster survey, household head survey, and a child survey for each eligible child. Table 41 in Annex 9.4.2 details the household head and child survey response rates by household roster survey. Overall, at least 99% of the sampled households had a household head survey and over 90% have at least one child survey for Côte d'Ivoire and Ghana.

The community, cocoa shed, and school interviews were all conducted at the EA level. The EA level surveys were then linked to the households from the same EA to provide additional information on the communities those households were a part of. Additional information on data collection and survey implementation can be found in Annex 9.4.2.

## 3.2. Description of Sample

### 3.2.1. Comparison of Sample Sizes between 2008/09 and 2018/19 Round of Survey

Below we present a comparison of sample sizes between the baseline and endline survey rounds. The 2008/09 and 2018/19 survey rounds each had five of the same surveys administered (roster, household head child, community, and cocoa shed) with the school survey being added in the 2018/19 survey round. A target of 1,500 households in Côte d'Ivoire and 1,300 households in Ghana was set to obtain at least 2,300 child surveys per country for the 2018/19 round (see Annex 9.4.2 for additional information on the sample size calculations). Data collection in 2018/19 ended with 1,507 completed households in Côte d'Ivoire and 1,317 completed households in Ghana resulting in 2,743 and 2,809 completed child

surveys respectively. The comparisons of sample size by survey type can be found in Table 2 below where the number of surveys increased between rounds for each type of survey.

Table 2: Comparison of Sample Sizes by Survey Type, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

	Total		Côte d'Ivoire		Ghana	
	2008/09	2018/19	2008/09	2018/19	2008/09	2018/19
Household Roster	1,656	2,824	806	1,507	850	1,317
Head of Household	1,638	2,809	803	1,495	835	1,314
Child	4,443	5,552	2,165	2,743	2,278	2,809
Community	82	140	40	73	42	67
Cocoa Shed	61	372	32	168	29	204
School	N/A	260	N/A	158	N/A	102

Source: Survey 2008/09 and 2018/2019, strata 1-3

### 3.2.2. Respondent Characteristics

Table 3 shows a breakdown of the household head characteristics in Côte d'Ivoire and Ghana and Table 4 shows the characteristics of the child respondents).<sup>30</sup>

Table 3: Respondent Characteristics: Head of Household, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

			Côte d'Ivoire	Ghana
Average Age (years)			46.5	48.2
Median age (years)			45.0	46.0
Gender	Male	Number	1,235	900
		Percent	91%	76%
	Female	Number	121	292
		Percent	9%	24%

Source: NORC Head of Household survey 2018/2019, strata 1-3

Table 4: Respondent Characteristics: Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

			Côte d'Ivoire	Ghana
Average Age (years)			10.2	10.5
Median age (years)			10.0	10.0
Gender	Male	Number	1,425	1,478
		Percent	52%	53%
	Female	Number	1,309	1,331
		Percent	48%	47%

Source: NORC Child survey 2018/2019, strata 1-3

The median age of child respondents in Côte d'Ivoire and Ghana was 10 years. On average, both countries had an almost equal proportion of male and female child respondents.

#### 3.2.2.1. Nationality of the Child Respondents

Examining the nationality and birthplace of children sheds light on how much immigration is present in the cocoa growing areas of each country. Table 42 in Annex 9.4.2 shows birthplace and current nationality of children in the 2018/19 survey round. The majority of child respondents were natural-born citizens in their respective countries (Ghana and Côte d'Ivoire). However, Côte d'Ivoire does have

<sup>30</sup> Note that these are self-reported head-of-household and most likely suffers from gender bias in reporting.

some children born outside of Côte d'Ivoire and of another nationalities, mostly representing immigration from Burkina Faso and Mali.

### **3.2.3. Area of Land Under Cultivation**

Given that the sample consists of agricultural households and most of these households were cocoa growing households, we present the data of land under cultivation and land under cultivation for cocoa farming in Table 43 in Annex 9.4.2. The average size of land under cultivation in Côte d'Ivoire was 7.1 acres and 8.4 acres in Ghana. The average area under cocoa cultivation in Côte d'Ivoire was 3.6 acres and 6.7 acres in Ghana. The difference in area of land under cultivation indicates that the average agricultural household in Ghana operated on much larger plot size for cocoa cultivation.

### **3.3. Limitations and Methodological Consideration: Coverage of Data and Comparison of Data Across Rounds**

Before moving on to the comparison of study rounds, there are a few important methodological considerations the reader should understand. The first issue deals with the comparison of 2013/14 data to 2018/19 data. The second consideration deals with the comparison of 2008/09 data with 2018/19 data.

To start, there was incomplete documentation on the exact methods used in previous survey rounds and NORC was unable to recover data required for an exact replication of the sampling frame used in the earlier rounds. This lack of information made it challenging at times to design the 2018/19 survey to allow for precise comparisons across rounds. NORC approached this issue by striking a balance between precision and comparability, allowing for comparability on key metrics while improving upon the sampling frame construction with an aim of increasing the precision of the 2018/19 estimates. This balance allows stakeholders to use 2018/19 data as a strong base with more precise estimates moving forward while also allowing for comparisons across study rounds.

#### **3.3.1. 2013/14 Data Quality Issues<sup>31</sup>**

Due to an error in survey implementation during the 2013/14 data collection round, the survey collected data only from cocoa growing households in Côte d'Ivoire (omitting the non-cocoa growing agricultural households from the sample).

This error was discovered after data collection was complete, and, in an attempt to correct the error, a different sampling method was adopted for selecting non-cocoa households to be surveyed as part of the 2013/14 data collection round. 15 clusters (from 60 clusters that were part of the 2013/14 data collection round) were sampled to supplement the sample of non-cocoa agricultural households. The sampling method selected 11 purposive sampled clusters and 4 randomly selected clusters (rather than 15 randomly selected clusters). This raises a concern regarding the reliability of such a sampling method and potential bias involved in generating population estimates where a high proportion of sampled clusters were purposively selected.

In addition, the survey of non-cocoa households was conducted one year after the main survey was done in 2013/14 cocoa harvest season). This affects the comparability of data from the cocoa growing households and non-cocoa agricultural households.

Based on analyses of 2013/14 data, we concluded that the sampling of non-cocoa households and weighting schema used for the clusters selected for the supplemental sample potentially introduced bias

---

<sup>31</sup> NORC was not involved in the 2008/09 or 2013/14 data collection rounds and these issues were discovered in an attempt by NORC to recreate the statistics found in the earlier reports

and that the estimate of child labor was not of the most accurate population estimate of child labor in cocoa in agricultural households in the cocoa growing areas.

As such, and to err on the side of caution, the data collected on non-cocoa growing households from 2013/14 was not used and this report avoids making any direct comparisons between 2013/14 and 2018/19 survey rounds in terms of **non-cocoa growing households**. We still present this information to the reader as reference, but do not make any claims about the statistical relationship of non-cocoa growing households between 2013/14 and 2018/19. These issues did not impact the estimates of cocoa growing households between rounds, which is presented throughout the report.

A detailed explanation of the issues in the 2013/14 round can be found in Annex 9.2.

### **3.3.2. 2008/09 and 2018/19 Comparability Issues with Population Estimate of Counts**

The 2008/09 and 2013/14 rounds used regions as the primary stratification level and the 2018/19 round used districts/departments (which are geographically smaller and could be assigned to a stratification level more precisely than the larger area).

Although this means the 2018/19 population estimates are more precise than those used previously, it also means the sampling frames were not exactly identical (one started at the regional level and the other at the district/department level) and thus population total estimates are not fully comparable. However, there is no evidence based upon expert review of both datasets that the underlying distribution of child labor characteristics are different. For the purposes of the report and analysis, this means we cannot make claims in terms of changes found in population counts across rounds. We present the information as a reference to the reader but do not indicate any confidence in the difference in counts between rounds. It is important to stress here the difference between counts and prevalence/ratios. The data quality issues in the 2008/09 round did not impact our ability to validly compare the prevalence rates (ratios) across the 2008/09 and 2018/19 rounds (described in more detail below and in Annex 9.2).

A second issue with the comparability of data from the 2008/09 round is due to the lack of documentation of the 2008/09 survey round. Although NORC received the data from 2008/09, the “key” linking individual children to their respective cocoa growing households was not available in the data. As a result, it was not possible for NORC to generate the child labor estimates for cocoa growing and non-cocoa growing households. What this means for the report is that we are unable to compare cocoa growing households in terms of child labor from 2008/09–2018/19.

*Table 5: Comparisons for population count and prevalence rate*

	All agricultural Households		Cocoa growing Households	
	Population count	Prevalence Rate	Population count	Prevalence Rate
<b>Survey Round</b>	<b>Comparison to be done</b>			
2008/09-2018/19	No	Yes	No	No
2013/14-2018/19	No	No	No	Yes

Table 5 above indicates that we can compare the estimates of prevalence rate for all agricultural households (cocoa and non-cocoa growing households combined) between 2008/09 and 2018/19. However, we are not able to differentiate between the cocoa and non-cocoa growing households in the 2008/09 data and hence, not able to make a comparison of cocoa growing households between 2008/09 and 2018/19.

The issue is inversed for the comparison of 2013/14 data to 2018/19 data. For the 2013/14 to 2018/19 comparison, we are able to compare the estimates of prevalence rate for only cocoa growing

households between 2013/14 and 2018/19 and not for all agricultural households. However, we are not able to compare the estimate of population counts between 2018/19 and 2008/09 and between 2018/19 and 2013/14 round.

We are able to compare the estimates of prevalence rates between 2008/09 and 2018/19 for all agricultural households, and between 2013/14 and 2018/19 for cocoa growing households. However, our numbers can differ to those previously published by Tulane. The difference is mainly due to two factors: (i) Tulane did not consider all children working in cocoa farming as children working in agriculture, but NORC does; and (ii) Tulane did not include knives as a subcategory of sharp tools, but NORC includes it in its calculation of sharp tool use.

A detailed explanation of comparability issues between the 2008/09 and 2018/19 rounds can be found in Annex 9.2.

## 4. Main Findings

### 4.1. Understanding Contextual Factors

Before presenting the comparison of main outcome variables of interest, the prevalence of child labor and the prevalence of children's exposure to hazardous work, it is important consider some key contextual factors that the research team believes are useful for a better understanding of the observed changes in the prevalence of child labor and hazardous child labor, keeping in mind that correlation does not indicate causation

#### 4.1.1. Cocoa Production and Cocoa Price

According to the International Cocoa Organization (ICCO) production figures, the assessment took place during a period of notable cocoa industry expansion, as overall cocoa production and cocoa price increased significantly over the course of the assessment period from 2008/09 to 2018/19 (Table 6). It should be noted that while ICCO provides cocoa production figures separately for Ghana and Côte d'Ivoire, cocoa price figures are not available at the country-level and are thus presented overall.

Cocoa production, as measured as estimated tons of cocoa produced, increased 62 percent during the ten-year evaluation period in Ghana and Côte d'Ivoire, from 1.89 million tons in 2008/09 to over 3 million tons in 2018/19. The increase was more pronounced in Côte d'Ivoire where cocoa production increased 76 percent from 1.22 million to 2.15 million tons, versus a 36 percent increase from 662,400 to 900,000 tons in Ghana. In Ghana, estimated production in terms of tons of cocoa produced reached a peak in the 2013/14 round and then decreased slightly (approximately 2.5%) by 2018/19.

During this period of cocoa expansion, ICCO figures also show a more modest but still significant 16 percent increase in cocoa price from \$2,263 USD/ton to \$2,626 USD/ton in the global market. According to ICCO, price per ton of cocoa jumped 26 percent after 2008/09 to peak in 2013/14 before deflating slightly by 2018/19. These changes in production over time and upward trend in cocoa price are important to understand the findings related to child labor as part of this study.

Table 6: Estimate of Cocoa Produced and Price Per Ton Cocoa, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

ICCO estimates:		Total			Côte d'Ivoire			Ghana		
		2008/09	2018/19	2013/14	2008/09	2018/19	2013/14	2008/09	2018/19	2013/14
Tons of Cocoa	Number*	1,885,600	3,050,000	2,670,000	1,223,200	2,150,000	1,750,000	662,400	900,000	920,000
	Percent change^	62		N/A	76		N/A	36		N/A
Price of Cocoa (USD/ton)*		2,263	2,626	2,819	N/A	N/A	N/A	N/A	N/A	N/A

Source: ICCO (cocoa production figures)

^Calculated by dividing the difference between the 2008/09 and 2014 figures by the base (2008/09) figure

\*ICCO estimates for January 2009, 2014 and 2019, not available at the country level

#### **4.1.2. Significance of Cocoa Production among Agricultural Household**

Given the increase in production mentioned above, it is useful to explore whether increased production led to changes in the importance of cocoa farming in agriculture and whether cocoa cultivation has expanded among new agricultural households over time.

##### **★ Quantitative Insight**

Estimates of cocoa growing households as a proportion of all agricultural households experienced a large statistically significant increase between 2008/09 and 2018/19, from 58 percent to 83 percent.

To explore changes in the estimates and growth in cocoa and non-cocoa agricultural households between the survey periods in cocoa growing areas of Côte d'Ivoire and Ghana we present Table 7. In 2018/19, there were approximately 2 million agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana, and a majority

of these were cocoa growing households (83%). Estimates of cocoa growing households as a proportion of all agricultural households experienced a large and statistically significant increase between 2008/09 and 2018/19, from 58 percent to 83 percent, mirroring the increases in production. This increase in the share of cocoa growing households indicates that a majority of the agricultural households were growing cocoa in 2018/19 and that perhaps a significant number of new farmers started cultivating cocoa during the past ten years most likely contributing to the increase in production over the same time period.

Table 7: Estimates of Agricultural Households, Cocoa Growing Households and Non-Cocoa Growing Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

	Total				Côte d'Ivoire				Ghana			
	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14
All agricultural households	2,045,291	1,959,212	N/A	2,944,382	1,243,751	1,128,990	N/A	1,871,281	801,540	830,222	N/A	1,073,101
Number of cocoa growing households	1,179,434	1,623,270	N/A	2,127,056	649,788	899,635	N/A	1,423,175	529,646	723,635	N/A	703,881
Percentage of cocoa growing households	58%	83%	***	72%	52%	80%	***	76%	66%	87%	***	66%
Number of non-cocoa growing agricultural households	865,857	335,942	N/A	817,326	593,963	229,355	N/A	448,106	271,894	106,587	N/A	369,220
Percentage of non-cocoa growing agricultural households	42%	17%	***	28%	48%	20%	***	24%	34%	13%	***	34%

Source: Head of Household survey, 2008/09, 2013/14, and 2018/2019, strata 1-3

<sup>^</sup>Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

At the country level, the change in estimates of cocoa and non-cocoa growing households as a proportion of agricultural households emulated the same trend as the overall trend discussed above. A significantly greater proportion of households in Côte d’Ivoire and Ghana were cocoa growing households in 2018/19 than 2008/09.

**4.1.3. Use of Agro-Chemical Products**

Given that cocoa production has increased by approximately 70% in aggregate across Côte d’Ivoire and Ghana, it is expected that there would be increased usage of agro-chemical products among the cocoa households. Given that, it is useful to consider how the change in use of agro-chemical products over time may have influenced the likelihood of children’s exposure to agro-chemicals and, hence, exposure to hazardous work. For this purpose, we compared the data from the 2013/14 round with the 2018/19 round of data in terms of agro-chemical use.

**Qualitative Insight**

Qualitative findings indicate that households are using more agro-chemicals in their cocoa production practices. Households in Ghana reported that government-subsidized inputs and mass spraying efforts resulted in more consistent agrochemical use on farms. Households in Cote d’Ivoire and Ghana reported that good agricultural practices training significantly changed their cocoa production practices, as they were encouraged to use agrochemicals to maximize yield and manage diseases and pests.

In the survey, household heads of cocoa-growing and non-cocoa-growing households were asked to self-

**Quantitative Insight**

The likelihood of agro-chemical use increased among the cocoa growing households. This lends further evidence to the claim that agro-chemical use and increased cocoa production are related.

report on usage of agro-chemicals including fertilizers, pesticides, and herbicides. Data reported in Table 8 shows that agro-chemical usage increased significantly between 2013/14 and 2018/19 in both Ghana and Côte d’Ivoire among the cocoa growing households. This lends further evidence to the hypothesis that agro-

chemical use and increased cocoa production are related.

Table 8: Estimates of Change in Household Use of Agro-Chemicals in the Last 12 Months in Cocoa Households, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19

Percentage of households using	Cocoa Growing Households								
	Total			Côte d’Ivoire			Ghana		
	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
Fertilizer(s)	24%	32%	***	17%	30%	***	32%	34%	
Pesticide(s)	52%	73%	***	41%	68%	***	66%	81%	***
Herbicide(s)	44%	68%	***	39%	65%	***	51%	73%	***

Source: Head of Household survey, 2013/14 and 2018/19, weighted, strata 1-3  
<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Among cocoa growing households in both countries between 2013/14 and 2018/19, there was a statistically significant increase in proportion of all groups using each agro-chemical except for fertilizer in Ghana (Table 8). Usage of pesticide and herbicide (percentage of household reported using the input) each saw increases of over 20 percentage points overall, with over 25 percentage points each in Côte d’Ivoire in just five years. Fertilizer usage increased less, by 13 percentage points in Côte d’Ivoire and 2 percentage points in Ghana, though as mentioned the increase in Ghana is not statistically significant.

The data reported Table 8 clearly indicates that more of cocoa producing households are using agro-chemical products, especially pesticides and herbicides. Given that increased usage of agro-chemical by

the household makes children’s exposure to agro-chemicals more likely, this will have implications on the child labor and hazardous child labor rates described in Section 4.2.

**4.1.4. Trend in School Attendance**

One notable survey finding was a significant improvement in school attendance estimates in both countries between 2008/09 to 2018/19 (Table 9). These increases were seen for both sexes and across each age bracket but were especially notable in Côte d’Ivoire.

Table 9: School Attendance for All Children, All Agricultural Households, Côte d’Ivoire and Ghana, 2008/09 and 2018/19

Children attending school in the last 12 months	Côte d’Ivoire			Ghana		
	2008/09	2018/19	Sig of diff^	2008/09	2018/19	Sig of diff^
Children	58%	81%	***	89%	96%	***
<b>Sex</b>						
Boys 5-17 years	61%	83%	***	90%	95%	***
Girls 5-17 years	53%	79%	***	89%	96%	***
<b>Age Group</b>						
Children 5-11 years	60%	81%	***	89%	97%	e***
Children 12-14 years	68%	88%	***	93%	98%	***
Children 15-17 years	39%	68%	***	85%	88%	

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3  
^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Côte d’Ivoire, overall school attendance among children 5-17 years increased 23 percentage points as school attendance for children in each sex and age category experienced highly statistically significant increases of at least 20 percentage-points.

In Ghana, school attendance increased a more modest but still statistically significant 7 percentage-points, with highly significant increases of at least 5 percentage-points in every age and gender group except for children 15-17 years. Groups with larger than average increases include younger children 5-11 years (8 percentage point increase) and girls 5-17 years (7 percentage point increase).

The improvement in school attendance may indicate that there has been improvements in access to schools and/or improvement in school infrastructure, both of which can help fight child labor and exposure to hazardous work. Ghanaian education reforms around pre-k and kindergarten education are most likely the direct cause of the increases seen in the 5 – 11 age groups.<sup>32</sup> According to the Ghanaian Constitution and the Education Act, primary education is free and compulsory from kindergarten through junior high school. Additionally, the government extended free education through high school in 2017. In recent years, Ivorian education reforms include making school attendance compulsory for all children aged 6-16 years and significant increases in education spending.

**★ Qualitative Insight**

Qualitative findings attribute increases in school attendance to government-and NGO-sponsored school reforms, including new school construction, school materials provision, and school rehabilitation. Teachers, children, and their caregivers report that due to these changes, children attend school more consistently.

<sup>32</sup> [https://www.earlychildhoodworkforce.org/sites/default/files/resources/Brief-Ghana\\_0.pdf](https://www.earlychildhoodworkforce.org/sites/default/files/resources/Brief-Ghana_0.pdf)

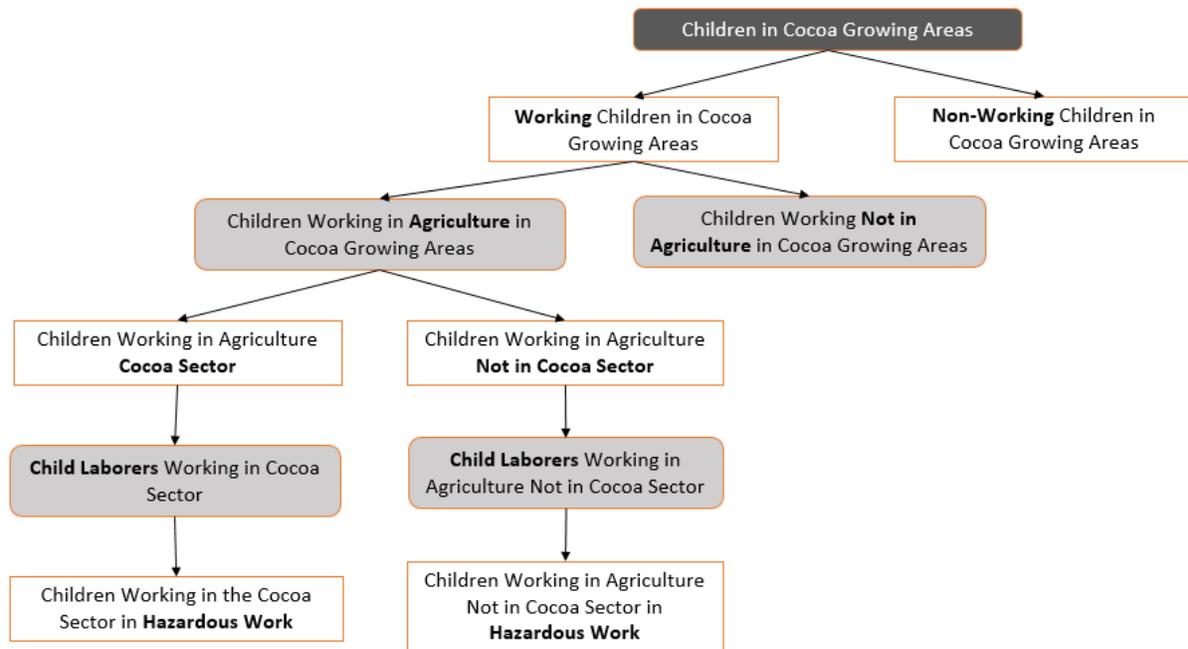
## 4.2. Main Findings: All Agricultural Households

In the following section we present the main findings from the Assessing Progress in Reducing Child Labor in Cocoa Production in Cocoa Growing Areas of Côte d’Ivoire and Ghana study. The analysis begins from the highest level looking at children in all agricultural households and moves down towards more focused analysis on only those children involved in cocoa production.

d methods used to address them.

Figure 3 below outlines each level of analysis found in this section and can help orient readers on the analytic framework used for this study.

Figure 2: Measurement Framework on Child Labor in Cocoa Growing Areas



### 4.2.1. Children’s Engagement in any Economic Activities

In order to understand how children’s engagement in economic activities changed between the 2008/09 and 2018/19 study rounds, we present the estimate of children who worked for at least one hour during the reference period in **any** economic activity,<sup>33</sup> either paid or unpaid. We construct the estimate of their engagement based on **usual activity status** (reference period of last twelve months) and **current activity status** (reference period of last seven days).<sup>34</sup>

<sup>33</sup> Note that this includes both cocoa and non-cocoa activities as well as non-agricultural activities.

<sup>34</sup> Please see the 18<sup>th</sup> ICLS for use of these terminologies: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms\\_099577.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_099577.pdf)

Table 10: Estimates of Change in Children Working in the Last 12 Months and in the Last 7 Days, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Children Working in Cocoa Growing Areas	Last 12 Months				Last 7 Days			
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2008/09	2018/19	Diff (pp)*	Sig of diff^
<b>Total</b>								
Number	3,761,280	3,828,916	N/A	N/A	2,953,441	3,234,908	N/A	N/A
% of all children	66%	80%	14%	***	52%	67%	16%	***
<b>Côte d'Ivoire</b>								
Number	2,070,166	2,160,789	N/A	N/A	1,412,636	1,774,434	N/A	N/A
% of all Ivoirian children	58%	77%	19%	***	40%	63%	23%	***
<b>Ghana</b>								
Number	1,691,114	1,668,127	N/A	N/A	1,540,805	1,460,474	N/A	N/A
% of all Ghanaian children	78%	83%	5%	***	71%	73%	2%	

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table shows that approximately 3.83 million children were economically active in 2018/19 in Ghana and Côte d'Ivoire, performing any type of work in the twelve-month reference period before the survey. This was more than three-fourths of all children in the cocoa growing areas of both countries.

Overall, from 2008/09 to 2018/19, there has been a 14 percentage point increase (from 66% to 80%) in the proportion of children who were usually working in cocoa growing areas in the last twelve months. During 2008/09, 58 percent and 78 percent of children were economically active in Côte d'Ivoire and Ghana respectively. The proportion of children working in the last twelve months in Côte d'Ivoire increased by 19 percentage points, while it increased in Ghana by 5 percentage points, between 2008/09 and 2018/19.

In aggregate, the proportion of children who were working in cocoa growing areas in the last seven days is lower than those working in cocoa growing areas in the last twelve months, indicating the seasonal nature of working in cocoa growing areas.

**★ Analytic Insight**

In aggregate, the proportion of children who were working in cocoa growing areas in the last seven days is lower than those working in cocoa growing areas in the last twelve months, indicating the seasonal nature of working in cocoa growing areas.

Between 2008/09 and 2018/19, the proportion of children working in cocoa growing areas in the last seven days increased by 16 percentage points (from 52% to 65%) in aggregate. There was a significant increase in the proportion of children currently active from 2008/09 to 2018/19 in Côte

d'Ivoire, increasing 23 percentage points (from 40% to 63%). There was no statistically significant change in the proportion of Ghanaian children currently active during the same period.

**4.2.2. Estimate of Working Children in Agriculture**

Next, we explore children's engagement in agriculture in cocoa growing areas in Côte d'Ivoire and Ghana including both cocoa and other non-cocoa agriculture. The following table presents their usual engagement (in the last 12 months) and current engagement (in the last 7 days) in agriculture.

Table 11 shows that the proportion of children working in agriculture (both cocoa and non-cocoa agriculture) in the last twelve months increased by 6 percentage points, while the proportion of children working in agriculture in the last seven days decreased by 6 percentage points in aggregate between 2008/09 and 2018/19. In Côte d'Ivoire there was a 9 percentage point increase (from 54% to 63%) in children working in agriculture in the last twelve months. In Ghana, there was no significant change in children working in agriculture in the last twelve months between the 2008/09 and 2018/19 rounds.

Consistent with the trends in children working in cocoa growing areas discussed earlier, the proportion of children working in agriculture in cocoa growing areas in the last twelve months was much higher in Ghana (73% in 2008/09 and 72% in 2018/19) than in Côte d'Ivoire (54% in 2008/09 and 63% in 2018/19). The trend in children engagement indicates that, while children's usual engagement in Ghana remained stable between 2008/09 and 2018/19, a higher proportion of children were engaged in agriculture in Côte d'Ivoire during the 2018/19 round.

The estimate of current engagement shows that while in 2018/19 a higher proportion of children worked in economic activities in general (Table 10), a smaller proportion of children were engaged in agriculture in 2018/19 compared to 2008/09. This indicates that increased engagement in non-agricultural activities contributed to the increase in economically active (or working) children. While there was no change in the proportion of Ivoirian children working in agriculture in cocoa growing areas in the last seven days, there was a 17 percentage-point decrease in the proportion of Ghanaian children working in agriculture in cocoa growing areas in the last seven days.

Table 11: Estimates of Children Working in Agriculture in the Last 12 Months and the Last 7 Days, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children Working in Agriculture in Cocoa Growing Areas	Last 12 Months					Last 7 Days				
	2008/09	2018/19	Diff (pp) *	Sig of diff ^	2013/14	2008/09	2018/19	Diff (pp) *	Sig of diff ^	2013/14
<b>Total</b>										
Number	3,489,779	3,205,572	N/A	N/A	3,670,140	2,739,756	2,004,785	N/A	N/A	2,724,832
% of all children	61%	67%	6%	***	61%	48%	42%	-6%	***	46%
<b>Côte d'Ivoire</b>										
Number	1,916,120	1,769,853	N/A	N/A	2,098,214	1,412,636	1,117,314	N/A	N/A	1,795,973
% of all Ivoirian children	54%	63%	9%	***	56%	40%	40%	0%		48%
<b>Ghana</b>										
Number	1,573,659	1,435,719	N/A	N/A	1,571,926	1,327,120	887,471	N/A	N/A	928,859
% of all Ghanaian children	73%	72%	-1%		70%	61%	44%	-17%	***	42%

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 11 shows that the proportion of children working in agriculture (both cocoa and non-cocoa agriculture) in the last twelve months increased by 6 percentage points, while the proportion of children working in agriculture in the last seven days decreased by 6 percentage points in aggregate between 2008/09 and 2018/19. In Côte d'Ivoire there was a 9 percentage point increase (from 54% to 63%) in children working in agriculture in the last twelve months. In Ghana, there was no significant change in children working in agriculture in the last twelve months between the 2008/09 and 2018/19 rounds.

Consistent with the trends in children working in cocoa growing areas discussed earlier, the proportion of children working in agriculture in cocoa growing areas in the last twelve months was much higher in Ghana (73% in 2008/09 and 72% in 2018/19) than in Côte d'Ivoire (54% in 2008/09 and 63% in 2018/19). The trend in children engagement indicates that, while children's usual engagement in Ghana remained stable between 2008/09 and 2018/19, a higher proportion of children were engaged in agriculture in Côte d'Ivoire during the 2018/19 round.

The estimate of current engagement shows that while in 2018/19 a higher proportion of children worked in economic activities in general (Table 10), a smaller proportion of children were engaged in agriculture in 2018/19 compared to 2008/09. This indicates that increased engagement in non-agricultural activities contributed to the increase in economically active (or working) children. While there was no change in the proportion of Ivoirian children working in agriculture in cocoa growing areas in the last seven days, there was a 17 percentage-point decrease in the proportion of Ghanaian children working in agriculture in cocoa growing areas in the last seven days.

### 4.2.3. Estimate of Child Labor in Agriculture

To get a deeper understanding of the nature of work undertaken by children in agriculture in the cocoa growing areas of Côte d'Ivoire and Ghana, we compare the data on children's engagement in child labor in agriculture. Respondents were asked to report their working hours and engagement in different types of activities in agriculture, including hazardous activities. Using the estimates of working hours and responses of children relating to their exposure to activities that are considered hazardous, we generated estimates of children's engagement in child labor in agriculture.

Table 12: Estimates of Change in Children Working in Agriculture, and in Children Engaged in Child Labor in the Last 12 Months, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children in Cocoa Growing Areas		Children Working in Agriculture				Children Engaged in Child Labor in Agriculture			
		Number	Percent	Diff. (pp)*	Sig of diff^	Number	Percent	Diff. (pp)*	Sig of diff^
Total	2008/09	3,489,779	61%	6%	***	3,323,887	58%	1%	
	2018/19	3,205,572	67%			2,856,001	59%		
	2013/14	3,670,140	61%	N/A	N/A	3,377,272	57%	N/A	N/A
Côte d'Ivoire	2008/09	1,916,120	54%	9%	***	1,854,879	52%	4%	**
	2018/19	1,769,853	63%			1,577,825	56%		
	2013/14	2,098,214	56%	N/A	N/A	1,876,120	50%	N/A	N/A
Ghana	2008/09	1,573,659	73%	-1%		1,469,008	68%	-4%	**
	2018/19	1,435,719	72%			1,278,176	64%		
	2013/14	1,571,926	70%	N/A	N/A	1,501,152	67%	N/A	N/A

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table above presents the estimate of children engaged in child labor in agriculture in the past twelve months. In Ghana and Côte d'Ivoire, children working in agriculture in the last twelve months increased by 6 percentage points between 2008/09 and 2018/19. Children engaged in child labor in agriculture in cocoa growing areas increased by 4 percentage points in Côte d'Ivoire and decreased by 4 percentage points in Ghana between 2008/09 to 2018/19.

More information on the breakdown of how children's engagement in child labor evolved over time and varies by sex and across age group can be found in Table 44 of Annex 9.4.2. The data indicates that in cocoa growing areas of Côte d'Ivoire and Ghana, a higher percentage of boys were engaged in child labor in agriculture than girls (57% versus 43% in 2018/19). There was no change in the proportion of boys and girls who were engaged in child labor between 2008/09 and 2018/19.

The exposure to child labor decreased among the older age group (15-17 years) in aggregate in both Côte d'Ivoire and Ghana. On the other hand, exposure increased among the 5-11 years group in aggregate in Côte d'Ivoire and Ghana and increased among the 12-14 years group in aggregate in Côte d'Ivoire.

In order to reduce child labor, various stakeholders including the governments of Côte d'Ivoire and Ghana, the international cocoa industry and other multilateral organizations focused on improving access to education as well improving quality of education. Table 45 in Annex 9.4.2 presents school

attendance of children engaged in child labor in agriculture by age group to understand whether there was any improvement in school attendance among the children engaged in child labor in agriculture.

Data presented in Table 45 in Annex 9.4.2 indicates that there was a sharp increase in school attendance among children engaged in child labor between 2008/09 and 2018/19. School attendance increased by approximately twenty percentage points for each age group in aggregate, which was mostly driven by improvements achieved in Côte d’Ivoire. Ghana started with high school attendance rates and experienced marginal improvements (in the range of 3 to 6 percentage points).

In Côte d’Ivoire and Ghana, the proportion of children not attending school across all three age groups decreased between the two survey periods. The decrease in proportion was much larger among Ivorian children, for instance, among the 5-11 years group the proportion of children engaged in child labor and not attending school decreased from 34 percent to 11 percent, while in Ghana it decreased from 8 percent to 2 percent.

Also, to explore whether the prevalence of child labor is lower among those attending school, we present comparison of prevalence of child labor by school attended in Annex 9.4.2. The data presented in Table 46 in Annex

**★ Quantitative Insight**

There was a much higher prevalence of child labor among children in agricultural households who were not attending school (64%) than among children in agricultural households who were attending school (49%).

9.4.2 shows that there was a much

**★ Quantitative Insight**

In cocoa growing areas of Côte d’Ivoire and Ghana, a higher percentage of boys were engaged in child labor in agriculture than girls.

higher prevalence of child labor among children in agricultural households who were not attending school (64%) than among children in agricultural households who were attending school (49%) in cocoa producing areas of Côte d’Ivoire and Ghana in 2018/19. The age-group disaggregation indicates that this trend was mostly driven by the difference within the

5-11 years age group where the child labor prevalence rate was 24 percentage points higher among those not attending school compared to the children that were attending school. A similar trend was found among the older age groups (12-14 and 15-17 years), however, the differences were not statistically significant.

**4.2.4. Estimate of Working Children, and Average Hours of Work Among Children Working in Cocoa Production**

One of the main objectives of this report is to measure the progress made in reducing child labor and hazardous child labor in cocoa production. So we now present data on children’s engagement in cocoa production related activities.

**4.2.4.1. Estimate of Working Children in Cocoa Production**

The child respondents who worked in agriculture were asked whether they were engaged in cocoa production related activities in the twelve-month period before the surveys were undertaken in the main cocoa harvest season in both countries. Using the responses of children relating to engagement in cocoa production, we generated estimates of children’s engagement in child labor and in hazardous work in cocoa production related activities. Table 13 present how children’s engagement with cocoa production changed between 2008/09 and 2018/19 reporting both children’s usual (in the last twelve months) and current (in the last seven days) engagement in cocoa production.

Table 13: Estimates of Children in Cocoa Production in the Last 12 Months and in the Last 7 Days, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children Working in Cocoa Production	Last 12 Months					Last 7 Days				
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14
<b>Total</b>										
Number	1,817,463	2,255,765	N/A	N/A	2,260,075	1,172,970	1,035,094	N/A	N/A	1,410,304
% of all children	32%	47%	15%	***	38%	21%	22%	1%		24%
<b>Côte d'Ivoire</b>										
Number	820,106	1,084,306	N/A	N/A	1,302,677	479,921	463,722	N/A	N/A	1,119,206
% of all Ivoirian children	23%	39%	15%	***	35%	14%	16%	3%	***	30%
<b>Ghana</b>										
Number	997,357	1,171,459	N/A	N/A	957,398	693,049	571,372	N/A	N/A	291,098
% of all Ghanaian children	46%	59%	12%	***	43%	32%	29%	-3%	**	13%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

There has been a substantial increase in the proportion of children engaged in cocoa production using a twelve-month reference period. In aggregate, the proportion of children in agricultural households usually active (in the last twelve month) in cocoa production increased significantly, by 15 percentage points between 2008/09 and 2018/19.

★ **Quantitative Insight**

The proportion of children in agricultural households usually active (in the last twelve months) in cocoa production increased significantly, by 15 percentage points between 2008/09 and 2018/19.

In Côte d’Ivoire, children’s engagement in cocoa production in the last twelve months increased from 23 percent to 39 percent while in Ghana it increased from 46 percent to 59 percent. It is important to note again that the current study

focused on a 12 month recall period in order to remain consistent with previous rounds as well as to capture the seasonal aspects of labor in cocoa production. This will naturally lead to higher rates of child labor than using a 7-day reference period which would not capture labor associated with land preparation, land maintenance, and post-harvesting activities. For a description of such activities related to cocoa production, see Table 15.

While a larger proportion of children in agricultural households were usually active in cocoa production in 2018/19, there was not any notable change in the proportion of children who were currently active (in the seven days reference period before the survey during the harvest season) in cocoa production.

Overall, in cocoa growing areas of Côte d’Ivoire and Ghana, the proportion of children currently active in cocoa production increased marginally between 2008/09 and 2018/19 (from 21% to 22%). The breakdown by country indicates that there was a marginal increase (by 3 percentage points) in the proportion of Ivoirian children engaged in cocoa production and a similar decrease in Ghanaian children engaged in cocoa production during the same time period.

Thus, these trends indicate that while more children were engaged in cocoa production related activities throughout the year, there was not much change in children’s engagement during the main cocoa harvest season between 2008/09 and 2018/19. This finding probably indicates greater involvement of children in land preparation, planting and maintenance activities over the entire cocoa season. This could also be due to the possibility that as production expands and new farms start, children participate more in the pre-harvest activities. In Section 5 we look closely at the role of new cocoa farms and the level of cocoa production which supports these claims.

**4.2.4.2. Average Hours Worked by Children in Cocoa Production**

In the earlier discussion we saw that in 2018/19, overall, a significantly higher proportion of children were working in cocoa production compared to 2008/09 (Table 14). However, an important consideration to determine whether the nature of their work constitutes child labor or hazardous child labor is the number of hours worked per week. According to ILO guidelines<sup>35</sup>, children under the age of twelve should not be engaged in any work, and older children may only work in non-hazardous activities for a specified number of working hours per week depending on their age. Therefore, it is useful to explore the data on hours worked by children in different age groups.

Table 14 presents the data on average hours worked by children by age-group. While presenting this table, for each age group, we also present the percentage of children that exceeded the maximum hours of work allowed by ILO guidelines – a violation that would classify children in a given age group as child labor.

<sup>35</sup> International Labour Organization (ILO), Convention 138 Concerning Minimum Age for Admission to Employment, (26 June 1973).

Table 14: Working Hours and Minimum Age, Children Working in Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Number and percentage of children in agricultural households		Total			Côte d'Ivoire			Ghana		
		2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>
5-11 years	Total number of children	3,518,838	2,996,777	N/A	2,308,927	1,806,539	N/A	1,209,911	1,190,238	N/A
	# Working 1 hour or more per week	1,314,832	1,178,769	0	764,727	678,026	0	550,105	500,743	0
	% Working 1 hour or more per week	37%	39%		33%	38%	**	45%	42%	
	Average # of hours worked	3.7	4.2	**	3.5	4.5	***	4.0	3.6	
12-14 years	Total number of children	1,168,088	1,102,057	N/A	643,059	626,995	N/A	525,029	475,062	N/A
	# Working 14 hour or more per week	293,301	222,133	0	179,221	174,711	0	114,080	47,422	0
	% Working 14 hour or more per week	25%	20%	**	28%	28%		22%	10%	***
	Average # of hours worked	9.0	8.1		9.9	9.8		7.9	5.8	***
15-17 years	Total number of children	1,024,401	700,340	N/A	598,463	367,860	N/A	425,938	332,480	N/A
	# Working 43 hour or more per week	75,234	33,481	0	63,270	22,111	0	11,964	11,370	0
	% Working 43 hour or more per week	7%	5%	*	11%	6%	*	3%	3%	
	Average # of hours worked	13.7	10.8	***	16.1	11.9	***	10.3	9.5	

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

According to ILO standards, children under the age of 12 years, or the minimum age of light work<sup>36</sup>, should not be engaged in any work activities. Consequently, any children in that age group who worked for at least one hour during the reference period would be considered as child labor. Between 2008/09 and 2018/19, the proportion of children in agricultural households in the 5-11 year age group working one hour or more per week increased by 5 percentage points in Côte d’Ivoire. Simultaneously, the average number of hours worked in the week prior to the survey by children in the 5-11 year age group (who worked at least one hour) also increased significantly, from 3.5 hours to 4.5 hours. In Ghana, in 2018/19, 42% of children in agricultural households within the 5-11 year age group were working one hour or more per week. However, there was no statistically significant difference in the proportion of working children between 2008/09 and 2018/19 in Ghana. On average children in this group worked 3.6 hours in the week prior to the survey.

Based on ILO standards, children in the 12-14 years age group can undertake up to 13 hours of non-

★ **Quantitative Insight**

In Côte d’Ivoire, the proportion of children in the 15-17 age group who were working more than the ILO recommended maximum hours per week decreased from 11 percent to 6 percent between 2008/09 and 2018/19. Average hours worked per week also significantly dropped by approximately 4 hours in the week prior to the survey.

hazardous activities weekly which is considered *light work*. In Côte d’Ivoire, there was no change in the proportion of children in agricultural households in the 12-14 years age group who worked 14 hours or more per week, which remained constant at 28 percent. There was also no significant difference in the average number of hours worked per week. In Ghana, on the other hand, there was a significant drop in the

proportion of children in agricultural households in the 12-14 year age group who exceeded ILO’s recommended weekly working hours, from 22 percent in 2008/09 to 10 percent in 2018/19, indicating that those who are working in cocoa production in this age group are mostly undertaking light work. The average number of hours worked per week decreased significantly for children in the 12-14 age group from 7.9 hours to 5.8 hours in the week prior to the survey.

Children belonging to the 15-17 years age group can undertake regular work and can engage in up to 42 hours of non-hazardous work weekly, per ILO standards. In Côte d’Ivoire, the proportion of children in the 15-17 age group who were working more than the ILO recommended maximum hours per week decreased from 11 percent to 6 percent. Average hours worked per week also significantly dropped from 16.1 hours to 11.9 hours in the week prior to the survey. During 2008/09 and 2018/19, there was no change in the proportion of children in this age group working 43 hours or more per week in Ghana, remaining constant at 3 percent of children in agricultural households in the 15-17 year age group. Consequently, there was no significant change in the average number of hours worked per week among the 15-17 year age group in Ghana.

Detailed gender differences on average hours worked can be found in Table 47 in Annex 9.4.2. In Côte d’Ivoire, following the overall trend, a smaller proportion of male children in the 15-17 years age group worked more than ILO recommended standard hours and worked for lesser average number of hours. There were no statistically significant changes in the proportion of Ivorian female children working in cocoa production across all age groups. However, females in the 5-11 years age group worked more hours on average (from 3.9 to 4.7 hours) while females in the 15-17 years group worked less on average

<sup>36</sup> According to Article 7 of ILO Convention No. 138, national laws or regulations may permit the work of persons as from 13 years of age (or 12 years in countries that have specified the general minimum working age of 14 years) in light work which is: (a) not likely to be harmful to their health or development; and (b) not such as to prejudice their attendance at school, their participation in vocational orientation or training programs approved by the competent authority, or their capacity to benefit from the instruction received.

(from 15.3 to 10.8 hours). In Ghana, smaller proportion of male children in the 5-11 years and 12-14 years age group worked in cocoa production in 2018/19, while among females, the decrease in the proportion of children working in cocoa production was noted only among children in 12-14 years age group, who also worked for lesser number of hours in 2018/19 compared to 2008/09.

Data presented in Table 48 in Annex 9.4.2 shows the trends in the proportion of children aged 12-14 years engaged in less than 14 hours of non-hazardous light work and children of legal age group (15-17 years) engaged in less than 43 hours of non-hazardous regular work in cocoa production between 2008/09 and 2018/19. Overall, there were statistically significant increases in the proportion of children engaged in light work in both countries. However, there was no statistically significant change in the proportion of children engaged in regular work.

#### 4.2.4.3. Activities Performed by Children in Cocoa Production

Next, we present estimates of various work activities in cocoa production that children would likely be involved in for Côte d'Ivoire and Ghana to gain insights on whether there was more/less involvement in certain types of work in different phases of cocoa agriculture. The activities cover pre-harvest, harvest, and post-harvest activities that are broadly classified in six categories: land preparation (land clearing, felling and chopping, burning, and stumping); planting (preparing seedlings, planting seedlings, and sowing at stake); farm maintenance (weeding, working with insecticides/herbicides/fungicides/other chemicals, and carrying water for spraying), cocoa harvest activities (plucking, gathering, or breaking cocoa pods), and post-harvest activities (carting fermented cocoa beans, drying cocoa beans, and carting dry cocoa beans to shed).

Table 15: Child Work Involved in Cocoa Production, All Children 5-17 Years Working in Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Percentage of children	Total			Côte d'Ivoire			Ghana		
	2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>
Land preparation activities in cocoa production	12%	19%	***	15%	22%	***	8%	15%	***
Planting activities in cocoa production	6%	14%	***	6%	11%	***	5%	18%	***
Farm maintenance activities in cocoa production	18%	27%	***	11%	21%	***	29%	36%	***
Harvest activities in cocoa production	26%	45%	***	18%	39%	***	38%	55%	***
Post-harvest activities in cocoa production	15%	30%	***	12%	28%	***	19%	34%	***

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 15 shows that there has been a significant increase in involvement of children in Côte d'Ivoire and Ghana in pre-harvest, harvest, and post-harvest activities in cocoa production between 2008/09 and 2018/19. The largest change in children involvement was in harvest activities – such as, plucking, gathering, heaping, and breaking cocoa pods – which increased 19 percentage points (from 26% to 45%) between 2008/09 and 2018/19 in aggregate. Similar trend was found both countries.

Table 49 in Annex 9.4.2 presents the breakdown of different activities under each of the six groups of activities reported in Table 15. Among various types of activities done by children in 2018/19, the five

most common activities children were involved in were gathering and heaping cocoa pods, breaking cocoa pods and fermentation, drying cocoa beans, weeding, and carting fermented cocoa beans.

Although children involvement in farm maintenance activities was primarily in weeding, the *proportion* of children involved in weeding significantly decreased in both countries between 2008/09 and 2018/19. In 2018/19, carrying water for spraying became the second most prevalent farm maintenance activity among children working in cocoa production. This, in part, can be explained by the increase use of agro-chemicals discussed in Section 4.1.3. However, the research team must also stress that earlier findings of very limited child involvement in agro-chemical use may be related to an issue in survey administration in previous rounds.

 **Quantitative Insight**

In 2018/19, the five most common cocoa production activities children were involved in are; gathering and heaping cocoa pods, breaking cocoa pods and fermentation, drying cocoa beans, weeding, and carting fermented cocoa beans.

Harvest activities consistently involved a large proportion of children in Côte d'Ivoire and Ghana. Between 2008/09 and 2018/19, there was a significant increase in the proportion of children engaged in gathering and heaping cocoa pods (from 16 percent to 35 percent in Côte d'Ivoire and 33 percent to 52 percent in Ghana), while children's involvement in breaking cocoa pods remained stable over the period. Among the post-harvest activities, there was significant increase in children engagement in carting fermented beans (from 9% to 18% in Côte d'Ivoire and 14% to 25% in Ghana) and drying cocoa beans, (from 9% to 22% in Côte d'Ivoire and 13% to 24% in Ghana).

**4.2.5. Estimate of Child Labor and Hazardous Child Labor in Cocoa Production**

Next, we present the data on children's engagement in child labor and in hazardous work in cocoa production - the primary outcomes of interest of this report.

Children who violated maximum allowable working hours (specific to each age group) and/or who were exposed to any of the six different types of hazardous activities in cocoa production would be considered as child labor in cocoa production. The data presented in Table 16 compares the prevalence rates of child labor and exposure to hazardous work in cocoa production between 2008/09 and 2018/19 round of survey for children in agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana.

Table 16: Estimates of Change in Children Working in Cocoa Production, Children Engaged in Child Labor in Cocoa Production, and Children Engaged in Hazardous Work in the Cocoa Sector in the Last 12 Months, 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children in all agricultural households		All children		Children Working in Cocoa Production			Children Engaged in Child Labor in Cocoa Production				Children Engaged in Hazardous Work in Cocoa Production			
		Number	Number	Percent	Diff (pp)*	Sig of diff^	Number	Percent	Diff (pp)*	Sig of diff^	Number	Percent	Diff (pp)*	Sig of diff^
Total	2008/09	5,711,327	1,817,463	32%	15%	***	1,764,856	31%	13%	***	1,736,487	30%	11%	***
	2018/19	4,811,029	2,255,765	47%			2,100,477	44%			1,994,276	41%		
	2013/14	5,968,371	2,260,075	38%	N/A	N/A	2,121,715	36%	N/A	N/A	2,031,979	34%	N/A	N/A
Côte d'Ivoire	2008/09	3,550,449	820,106	23%	15%	***	817,079	23%	14%	***	805,482	23%	13%	***
	2018/19	2,813,249	1,084,306	39%			1,029,256	37%			991,870	35%		
	2013/14	3,732,247	1,302,677	35%	N/A	N/A	1,203,172	32%	N/A	N/A	1,153,384	31%	N/A	N/A
Ghana	2008/09	2,160,878	997,357	46%	12%	***	947,777	44%	10%	***	931,005	43%	7%	***
	2018/19	1,997,780	1,171,459	59%			1,071,221	54%			1,002,406	50%		
	2013/14	2,236,124	957,398	43%	N/A	N/A	918,543	41%	N/A	N/A	878,595	39%	N/A	N/A

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

During the 2018/19 cocoa harvest season, approximately 2.26 million children were engaged in cocoa production in cocoa growing areas of Côte d’Ivoire and Ghana.

 **Quantitative Insight**

Between 2008/09 and 2018/19, the proportion of children in agricultural households engaged in child labor in cocoa production increased by 13 percentage points

44 percent of all children in the agricultural households in cocoa growing areas (approximately 2.1 million children) were engaged as child labor in cocoa production in 2018/19. Between 2008/09 and 2018/19, the proportion of children in agricultural households

engaged in child labor in cocoa production increased by 13 percentage points (from 31% in 2008/09 to 44% in 2018/19).

Between 2008/09 and 2018/19, there was a 15 percentage point increase in the proportion of Ivorian children in agricultural households who were legally working in cocoa production (39%). The proportion of children engaged in *child labor* in cocoa production increased by 14 percentage points between 2008/09 and 2018/19. In 2018/19, 37 percent of Ivorian children in agricultural households (approximately 1.03 million children) were engaged in child labor in cocoa production.

In Ghana, 59 percent of children in agricultural households were legally working in cocoa production which increased by 12 percentage points from between 2008/09 and 2018/19. Among the children in agricultural households who worked in cocoa production 54 percent (approximately 1.07 million children) were engaged in child labor in 2018/19, an increase of 10 percentage points between 2008/09 and 2018/19.

Between 2008/09 and 2018/19, in the cocoa growing areas of Côte d’Ivoire and Ghana, the proportion of children engaged in hazardous work in cocoa production increased by 11 percentage points, with 41 percent of children (approximately 1.99 million) in agricultural households exposed to any of the six types of hazardous work in cocoa production in the last twelve month in aggregate between the two countries.

In Côte d’Ivoire, the proportion of children engaged in hazardous work in cocoa production increased by 13 percentage points (up from 22% in 2008/09 to 35% in 2018/19) with approximately 1 million children exposed to hazardous work in cocoa production.

In Ghana, the proportion of children engaged in hazardous work in cocoa production increased by 7 percentage points between 2008/09 and 2018/19 with 50 percent of children (approximately 1 million children) engaged in hazardous work in cocoa production in 2018/19.

Thus, in both countries, children’s exposure to hazardous work in cocoa production increased between the 2008/09 and 2018/19 survey rounds conducted during the main cocoa harvest season.

Data reported in Table 50 in Annex 9.4.2 presents the changes in children engaged in child labor and in hazardous work in cocoa production in Côte d’Ivoire and Ghana, disaggregated by gender and age group. In both countries, there was no significant change in the gender-disaggregated proportion of children engaged in child labor and hazardous work. Overall, there were predominantly more male children engaged in child labor and hazardous child labor, in 2018/19 61 percent of children engaged in hazardous child labor were male while 39 percent were female.

 **Quantitative Insight**

In 2018/19, 61 percent of children engaged in hazardous child labor were male while 39 percent were female.

On the other hand, there were some significant changes in the age-disaggregated proportion of children engaged in child labor or in hazardous work in Côte d'Ivoire but no statistically significant change in Ghana. For example, in Côte d'Ivoire, the proportion of children engaged in child labor belonging to the 12-14 year age group increased 5 percentage points, while the proportion of children engaged in child labor in the 15-17 year age group significantly decreased 6 percentage points. Similarly, hazardous child labor prevalence increased 6 percentage points in the middle age group and decreased 5 percentage points in the oldest age group in Côte d'Ivoire.

 **Quantitative Insight**

Comparison of data indicates that there was an increase in children's exposure to hazardous work in cocoa production between 2008/09 and 2018/19 and thus, the targets of the Declaration and Framework of reduction of hazardous child labor by 70 percent between 2008/09 and 2018/19 within agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana were not met.

Comparison of data indicates that **there was an increase in children's exposure to the worst forms of child labor<sup>37</sup> in cocoa production between 2008/09 and 2018/19** and thus, the targets of the *Declaration and Framework* of reduction of hazardous child labor by 70 percent

between 2008/09 and 2018/19 within agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana were not met.

4.2.5.1. Children's Engagement in the Components of Hazardous Labor in Cocoa Production

Comparison of 2008/09 and 2018/19 data shows that the prevalence rate of children's exposure to hazardous work in cocoa production increased by 11 percentage points between 2008/09 and 2018/19. This change in exposure to hazardous work can be better understood by investigating the changes in the six different types of hazards related to cocoa agriculture. Table 17 presents the data on exposure to each of the six different types of hazards related to cocoa production among all children in agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana.

---

<sup>37</sup> Note that we used for hazardous child labor as a proxy for WFCL per the Harkin-Engel Protocol.

Table 17: Estimates of Percentages of all Children Exposed to Hazardous Work Activities in the Cocoa Sector, 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19\*

Percentage of children in agricultural households exposed to:	Total					Côte d'Ivoire					Ghana				
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14
Number of children in agricultural households	5,711,327	4,811,029	N/A	N/A	5,968,371	3,550,449	2,813,249	N/A	N/A	3,732,247	2,160,878	1,997,780	N/A	N/A	2,236,124
<b>Hazardous Work Activities</b>															
Land clearing in cocoa (V1)	12%	18%	6%	***	10%	15%	21%	6%	***	15%	7%	14%	6%	***	1%
Heavy loads in cocoa (V2)	23%	28%	5%	***	24%	18%	25%	7%	***	20%	32%	32%	0%		32%
Agro-chemicals in cocoa (V3)	5%	24%	19%	***	8%	4%	19%	15%	***	5%	7%	32%	25%	***	14%
Sharp tools in cocoa (V4)	28%	35%	7%	***	27%	21%	29%	9%	***	25%	39%	43%	4%	**	30%
Long working hours in cocoa (V5)	1%	1%	0%		1%	1%	1%	0%		1%	0%	0%	0%		0%
Night work in cocoa (V6)	0%	2%	2%	***	1%	1%	2%	2%	***	1%	0%	3%	2%	***	0%
Exposed to one or more variables in cocoa work	30%	41%	11%	***	34%	23%	35%	13%	***	31%	43%	50%	7%	***	39%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report.

\*\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In 2018/19, 41 percent of children in agricultural households were exposed to at least one of the six hazardous activities involved in cocoa production, up 11 percentage points from the corresponding estimate from 2008/09. Comparison of data indicates increased exposure to five of the six hazard types that are prominent in cocoa agriculture. Overall, use of sharp tools was the most commonly performed hazardous activities in cocoa agriculture (with exposure rate of 35% in 2018/19 and 28% in 2008/09), followed by carrying heavy loads, exposure to agro-chemicals, and land clearing activities. A very small proportion of children were exposed to long working hours or night work in cocoa production in both periods.

Comparison of data shows that among these components, exposure to agro-chemicals has become pervasive between 2008/09 and 2018/19 as the proportion of children exposed to agro-chemicals increased by approximately five times between 2008/09 and 2018/19, from 5% to 24%. As described in Section 4.1.3 there was a significant increase in agro-chemical use among cocoa growing households during this period.

### ★ Quantitative Insight

Overall, use of sharp tools was the most commonly performed hazardous activities in cocoa agriculture followed by carrying heavy loads, exposure to agro-chemical, and land clearing activities. A very small proportion of children were exposed to long working hours or night work in cocoa production in both periods.

### ★ Quantitative Insight

Data indicates that consistent with the overall trend, the most commonly performed hazardous activities in Côte d'Ivoire were using sharp tools, followed by carrying heavy loads, land clearing, and exposure to agro-chemicals

Exposure to land clearing, sharp tool use and carrying heavy loads increased during the same period as well, but by a much smaller extent - approximately between 5 to 7 percentage points. This indicates among the six hazardous activity categories, exposure to agro-chemicals increased by the greatest extent.

Disaggregation of data by country using the common definitions indicates that consistent with the overall trend, the most commonly performed hazardous activities in Côte d'Ivoire were using sharp tools (29% in 2018/19 and 21% in 2008/09), followed by carrying heavy loads (25% in 2018/19 and 18% in 2008/09), land clearing (21% in 2018/19 and 15% in 2008/09), and exposure to agro-chemicals (19% in 2018/19 and 4% in 2008/09). Among the six different categories of hazard, the increase in exposure to agro-chemicals was most prominent.

### ★ Quantitative Insight

In Ghana, use of sharp tools, exposure to agro-chemicals and carrying heavy loads were the most prominent sources of exposure to hazardous work. The trends in exposure indicate that similar to Côte d'Ivoire, among various categories of hazardous activities, exposure to agro-chemical increased by the greatest extent.

In Ghana, similar to the overall trend, use of sharp tools (43% in 2018/19 and 39% in 2008/09), exposure to agro-chemicals (32% in 2018/19 and 7% in 2008/09) and carrying heavy loads (32% in both 2018/19 and 2008/09) were the most prominent sources of exposure to hazardous work. The trends in exposure indicate

that like Côte d'Ivoire, among various categories of hazardous activities, exposure to agro-chemical increased by the greatest extent (by more than six times) – an increase from 5 percent to 24 percent.

Comparison of the trends in exposure to various types of hazardous activities in cocoa production indicates that in both countries, agro-chemical has become a substantial source of exposure to hazardous activities over the past 10 years, while use of sharp tools, exposure to land clearing, and carrying heavy loads remain persistent source of hazardous work in cocoa growing areas of Côte d'Ivoire and Ghana.

Data presented in Table 51 **Error! Reference source not found.** and Table 52 **Error! Reference source not found.** in Annex 9.4.2 shows the changes in children's exposure to each of the six different types of

hazards related to cocoa agriculture disaggregated by age groups and gender in Côte d'Ivoire and Ghana. Earlier we saw that the most prominent change in exposure to either of the hazardous activities was in exposure to agro-chemicals. There were significantly large increases in the proportion of children exposed to agro-chemicals among the 12-14 years and 15-17 years age group and smaller increases in the 5-11 years age group between 2008/09 and 2018/19.

Sex disaggregation shows that there was a much larger increase in agro-chemical exposure among boys than girls between the survey periods. Additionally, in both periods, there was a consistently higher proportion of boys exposed to any of the 6 hazardous activities compared to girls. For instance, in 2018/19, close to half of the proportion of boys in agricultural households were using sharp tools versus a quarter of the proportion of girls in these households.

Additionally, 25 percent of boys were engaged in land clearing activities versus 10 percent of girls, and 32 percent of boys were carrying heavy loads versus 24 percent of girls. Consequently, in 2018/19, approximately half of the boys in agricultural households (49%) were exposed to one or more of the six hazardous activities compared to 34% of girls. This indicates that boys, while less active in cocoa production, were more vulnerable to hazardous work when they were involved in cocoa production.

#### 4.2.5.2. Children's Exposure to Multiple Hazardous Activities Related to Cocoa Production

In addition to the estimate of children exposed to any of the six different hazardous activities, it is also important to compare the incidence of facing multiple hazards, since children may be involved in more than one hazardous activity. Focusing only on the rate of exposure to any hazardous activities provides an incomplete picture of the realities on-the-ground. For this purpose, given that the hazards considered here are specific to cocoa production, we present the data on how exposure to multiple hazards changed between 2008/09 and 2018/19 among children working in cocoa production in Table 18.

Between 2008/09 to 2018/19, there was a marginal decrease in the exposure to *any* hazardous activities among children working in cocoa production. The proportion of children exposed to any hazardous activities decreased from 98 percent in 2008/09 to 92 percent in 2018/19 in Côte d'Ivoire and from 94 percent to 85 percent in Ghana during the same period.

Table 18: Estimates of Exposure of Children Working in Cocoa Production, 5-17 Years, to Multiple Types of Hazardous Work, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Percent of children exposed to different types of hazardous work	Total				Côte d'Ivoire				Ghana			
	2008/09*	2018/19*	Sig of diff^	2013/14	2008/09*	2018/19*	Sig of diff^	2013/14	2008/09*	2018/19*	Sig of diff^	2013/14
Not exposed to any hazard	4%	12%	***	10%	2%	8%	***	11%	6%	15%	***	8%
1 type of hazard	20%	18%	*	26%	11%	17%	***	25%	26%	19%	***	28%
2 types of hazard	39%	25%	***	36%	33%	22%	***	34%	43%	27%	***	40%
3 types of hazard	29%	24%	***	23%	40%	24%	***	23%	22%	24%		22%
4 types of hazard	6%	18%	***	4%	12%	25%	***	6%	3%	13%	***	2%
5 types of hazard	1%	3%	***	1%	2%	4%	***	1%	0%	2%	***	0%
6 types of hazard	0%	0%		0%	0%	0%		0%				

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The data in Table 18 indicates that children working in cocoa production were vulnerable to being exposed to multiple types of hazardous activities in Côte d'Ivoire and Ghana, as approximately 75 percent of all children working in cocoa production were exposed to more than one hazardous activity in 2018/19 in Côte d'Ivoire while in Ghana, approximately 64 percent of all children working in cocoa production were exposed to more than one hazardous activities in 2018/19.

Although the 2018/19 figures demonstrate the importance of considering multiple hazards, there was a significant decrease in this risk between survey rounds. The proportion children working in cocoa production exposed to multiple hazards decreased from 87 percent in 2008/09 to 75 percent in 2018/19 in Côte d'Ivoire while in Ghana it decreased from 69 percent in 2008/09 to 66 percent in 2018/19. In Ghana, 66 percent of children were exposed to multiple hazardous activities in 2018/19, which was about the same as the corresponding 2008/09 estimate.

However, the proportion of children engaged in four or more hazardous activities doubled in Côte

#### **Quantitative Insight**

Although the proportion of children working in cocoa production who were engaged in multiple hazardous activities decreased, those who were engaged in hazardous activities were engaged in a greater number of hazardous activities in 2018/19.

d'Ivoire (from 14% in 2008/09 to 29% in 2018/19) and increased by five times in Ghana (from 3% in 2008/09 to 15% in 2018/19). Thus, the data indicate that while lesser proportion of children working in cocoa production were engaged in multiple hazardous activities, those who were engaged in hazardous activities were undertaking a greater number of hazardous

activities in 2018/19 as compared to 2008/09.

#### 4.2.5.3. Children's Exposure to Various Components of Agro-Chemical Products

As reported in the Section 4.2.5.1, among the six hazardous activities related to cocoa agriculture, exposure to agro-chemicals recorded a steep increase in both countries between 2008/09 and 2018/19, it is important to understand the trend in children's exposure to the sub-components that constitute agro-chemical related hazards. Table 19 reports data on children's exposure to five sub-components of agro-chemical related hazards.

Table 19: Disaggregation of Exposure to Agro-Chemicals, Children Working in Cocoa Production in the Last 12 Months, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Number and percentage of children working in cocoa exposed to V3 (agro-chemicals)		Total				Côte d'Ivoire				Ghana			
		2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14
<b>Number exposed to V3 (agro-chemicals)</b>	Number	269,966	1,158,800	N/A	486,498	124,564	528,085	N/A	169,558	145,402	630,715	N/A	316,940
	Percent	15%	51%	***	22%	15%	49%	***	13%	15%	54%	***	33%
Spraying pesticides or insecticides	Number	28,101	179,462	N/A	82,215	11,852	92,954	N/A	51,308	16,249	86,508	N/A	30,907
	Percent	2%	8%	***	4%	1%	9%	***	4%	2%	7%	***	3%
Being present or working in the vicinity of farm during pesticide spraying	Number	68,061	553,758	N/A	165,598	5,045	257,677	N/A	59,432	63,016	296,081	N/A	106,166
	Percent	4%	25%	***	7%	1%	24%	***	5%	6%	25%	***	11%
Reentering a sprayed farm within less than 12 hours of spraying	Number	39,782	248,180	N/A	58,046	2,018	129,085	N/A	42,778	37,764	119,095	N/A	15,268
	Percent	2%	11%	***	3%	0%	12%	***	3%	4%	10%	***	2%
Carrying water for spraying	Number	204,060	806,935	N/A	321,950	103,380	331,105	N/A	87,333	100,680	475,830	N/A	234,617
	Percent	11%	36%	***	14%	13%	31%	***	7%	10%	41%	***	25%
Having been involved in working with agrochemicals*	Number	22,602	377,284	N/A	50,812	7,565	175,855	N/A	37,763	15,037	201,429	N/A	13,049
	Percent	1%	17%	***	2%	1%	16%	***	3%	2%	17%	***	1%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Such as purchasing, transport, storage, mixing, loading, spraying/applying, washing of containers and spraying machine, and/or disposal

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Comparison of trend in exposure related to different sub-components among children working in cocoa production indicate that between 2008/09 and 2018/19 there has been a significant increase in exposure to spraying pesticides/insecticides (by 6 percentage points), working in the vicinity of a farm during pesticide spraying (by 21 percentage points), re-entering a sprayed farm within less than twelve hours of spraying (by 9 percentage points), carrying water for spraying (by 25 percentage points), and working with agrochemicals (by 16 percentage points) in aggregate.

Disaggregation of data by country shows there was a similar trend in changes in exposure to the various sub-components of agro-chemicals exposure in both countries. The most prominent increase was in the proportion of children who were present or working in the vicinity of farm during pesticide spraying and carrying water for spraying.

Table 53 in Annex 9.4.2 shows breakdowns for exposure to agro-chemical hazards by age group and sex. In Côte d'Ivoire, there was a decrease in exposure to agro-chemical hazards for children in the 5-11 age group, an increase for children in the 12-14 age group, and no statistically significant difference for the 15-17 age group. There are no statistically significant differences in agro-chemical exposure by sex in Ghana or Côte d'Ivoire or by age group in Ghana. This shows that overall increases in exposure to agro-chemical hazards was mainly driven by the 12-14 age group in Côte d'Ivoire.

#### **4.2.6. Injuries Suffered while Working in Agriculture in the Past 12 Months and Health Consequences for Children**

As mentioned before in this report, child labor rates are only one factor to consider when trying to understand the lives of children in cocoa production. The following section focuses on injuries and health consequences among children working in agriculture writ large, as well as children specifically working in cocoa production in Côte d'Ivoire and Ghana for the 2018/19 survey round.<sup>38</sup>

Children working in agriculture are susceptible to various kinds of injuries and it is important to not only reduce child labor but also reduce injuries associated with child labor. As part of our child survey, children were asked to report whether they suffered injuries while working in agriculture and whether they suffered specific types of injuries. Below we document the common injuries children face while doing agricultural work and the resulting health consequences. .

---

<sup>38</sup> Due to methodological limitations that restrict comparability of data related to injuries, comparison of data with previous rounds of survey are not possible.

Table 19 presents a comparison of injuries suffered by children while working in agriculture from cocoa growing households (as percentage of working children in agriculture) with those working in agriculture from non-cocoa growing households.

Table 19: Injuries Experienced by Children While Working in Agriculture, Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

Percentage of children working in agriculture	Total				Côte d'Ivoire				Ghana			
	Cocoa Households	Non-Cocoa Households	Diff (pp)*	Sig of diff^	Cocoa Households	Non-Cocoa Households	Diff (pp)*	Sig of diff^	Cocoa Households	Non-Cocoa Households	Diff (pp)*	Sig of diff^
<b>Number of children</b>	2,767,189	437,555	N/A	N/A	1,463,806	306,047	N/A	N/A	1,303,383	131,508	N/A	N/A
<b>Type of injury</b>												
Wounds/cuts	81%	87%	-6%	*	85%	91%	-6%	*	77%	75%	2%	
Back pains	21%	14%	7%	**	16%	7%	8%	***	27%	31%	-4%	
Muscle pains	21%	14%	7%	**	18%	12%	6%		24%	19%	6%	
Skin itchininess/scratches	17%	11%	6%	*	17%	9%	8%	**	16%	16%	1%	
Other pains	13%	11%	2%		9%	9%	0%		17%	15%	2%	
Other	10%	11%	-1%		10%	11%	-1%		9%	10%	-1%	
Burns	4%	2%	3%	**	4%	1%	3%	**	5%	3%	2%	
Snake bites	2%	4%	-2%		2%	4%	-2%		1%	4%	-3%	
Broken bones	1%	0%	1%	***	1%	0%	1%	***	2%	0%	2%	***

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Calculated as the difference between children in cocoa and non-cocoa in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

In Côte d’Ivoire and Ghana, the most common injuries for children working in agriculture were wounds/cuts, muscle/back/other pains, and skin itchiness or scratches. Among these injuries, wounds and cuts were most common in agriculture in general as a majority of the children working in cocoa and non-cocoa agriculture sustained wounds/cuts.

In Côte d’Ivoire, children working in cocoa production were more likely to suffer back pains, muscle

 **Qualitative Insight**

Qualitative data reflect these findings, although children reported working in other forms of agriculture, they most often reported injuries specific to cocoa production. In some instances, children stated preference for other agricultural activities because they were not as physically intensive.

pains, burns, skin itchiness or scratches than those working in other non-cocoa agriculture as a higher proportion of children working in cocoa production reported these injuries compared to their counterparts working in non-cocoa agriculture. Children’s exposure to hazardous work reported in 4.2.5 indicated that large proportion of children in cocoa agriculture carry heavy loads, undertake land clearing, and are

exposed to agro-chemical products. Although speculative, the injuries reported by children seem to be reflecting the consequences of these hazards related to cocoa agriculture.

In Ghana, both children of cocoa growing households and non-cocoa agricultural households reported similar types of injuries and there was no statistically significant difference in incidence of sustaining injuries between children from cocoa and non-cocoa households, except for higher incidence of broken bones among children from cocoa households.

Given the danger involved in hazardous work, it is expected that the children engaged in hazardous work are more vulnerable to injuries than those who are not exposed to hazardous work. Table 20 presents the data on injuries by children’s exposure to hazardous work which supports this expectation.

Table 20: Injuries Experienced by Children While Working in Agriculture by Exposure to Hazardous Work, Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

Percentage of children working in agriculture	Total				Côte d'Ivoire				Ghana			
	Engaged in Hazardous Work	Engaged in Non-Hazardous Work	Diff (pp)*	Sig of diff^	Engaged in Hazardous Work	Engaged in Non-Hazardous Work	Diff (pp)*	Sig of diff^	Engaged in Hazardous Work	Engaged in Non-Hazardous Work	Diff (pp)*	Sig of diff^
<b>Number of children</b>	2,626,482	579,090	N/A	N/A	1,451,319	318,534	N/A	N/A	1,175,163	260,556	N/A	N/A
<b>Type of injury</b>												
Wounds/cuts	82%	75%	8%		86%	92%	-6%		78%	55%	23%	**
Back pains	21%	6%	14%	***	15%	5%	10%	**	28%	8%	20%	***
Muscle pains	21%	5%	16%	***	17%	5%	12%	***	25%	5%	20%	***
Skin itchiness/scratches	17%	4%	12%	***	16%	6%	10%	*	17%	2%	15%	***
Other pains	12%	12%	0%		9%	10%	-1%		17%	15%	2%	
Other	10%	15%	-5%		11%	7%	3%		8%	24%	-16%	**
Burns	4%	1%	3%	**	4%	0%	4%	***	5%	3%	2%	
Snake bites	2%	1%	1%		2%	2%	0%		2%	0%	2%	***
Broken bones	1%	1%	0%		1%	2%	-1%		2%	0%	2%	***

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Calculated as the difference between children engaged in hazardous work and non-hazardous work in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Overall, in both countries, injuries such as back/muscle pains, burns, and skin itchiness or scratches were more common among children working in agriculture engaged in hazardous work than their counterparts engaged in non-hazardous work in 2018/19. However, exposure to wounds or cuts were common even among children engaged in non-hazardous work.

In Côte d’Ivoire, there were significant differences in experiencing back pains, muscle pains, burns, and skin itchiness or scratches between children engaged in hazardous work and those engaged in non-hazardous work. Ivoirian children engaged in hazardous work were approximately three times as likely to sustain back/muscle pains and skin itchiness/scratches compared to those engaged in non-hazardous work. In Ghana, these differences were more pronounced as the difference in proportions between the children working in cocoa and non-cocoa agriculture were greater than in Côte d’Ivoire.

These significant difference in experiencing back/muscle pains and skin itchiness/scratches among the children exposed to hazardous work clearly indicates that they are more vulnerable to work related injuries and need assistance and proper care to mitigate these risks.

Finally, we examine the resulting health consequences of injuries suffered. Children were asked to report what consequences they faced after experiencing an injury while working.

*Table 21: Health Consequences from Injuries Experienced While Working in Agriculture, Children 5-17 Years Working in Cocoa Production, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19*

Percentage of children working in agriculture	Total	Côte d’Ivoire	Ghana
<b>Population of children working in agriculture</b>	2,255,765	1,084,306	1,171,459
<b>Consequences</b>			
Felt very sick or tired	42%	43%	41%
Was in very bad pain	35%	27%	42%
Other	19%	4%	33%
Had to receive treatment at a health center	16%	19%	14%
Did not feel well for a long time	14%	20%	8%
Had to receive treatment at a hospital	12%	14%	10%
Could not continue working	11%	13%	9%
Could not go to school	7%	12%	2%

Source: NORC Child survey 2018/19, weighted, strata 1-3

Data reported in Table 21 indicate that facing injuries while undertaking agricultural work activities has several health consequences for the more than 1 million children working in agriculture in each country. In 2018/19, the commonly reported consequences were experiencing tiredness and feeling sick or being in very bad pain. In Côte d’Ivoire, 43 percent of children working in agriculture felt sick or tired due to injuries sustained while working in agriculture compared to 41 percent in Ghana. Additionally, 27 percent of Ivoirian children and 42 percent of Ghanaian children working in agriculture experienced bad pain as a result of injuries sustained while working. In Côte d’Ivoire, close to 1 in 5 children did not feel well for a long time and had to receive treatment at a health center. Moreover, sustaining injuries while working led to 12 percent of children not being able to go to school and 13 percent of children not being able to continue working.

#### **4.2.7. Children’s Engagement in Non-Cocoa Agriculture and Non-Agricultural Sector**

As the proportion of children working in the cocoa sector has increased between 2008/09 and 2018/19, it would be insightful to look at changes in children’s involvement in sectors apart from the cocoa sector in agriculture and non-agricultural sectors in Côte d’Ivoire and Ghana. Table 22 presents the data on children’s engagement in non-cocoa agriculture and in non-farm activities.

Table 22: Estimates of Change in Children Working in Agriculture Other than the Cocoa Sector, in Non-Agricultural Sector, 5-17 Years, All Agricultural Households, in the Last 12 Months, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children working in		Agriculture other than the cocoa sector				Sectors other than agriculture			
		Number	Percent	Diff. (pp)*	Sig of diff.^	Number	Percent	Diff. (pp)*	Sig of diff.^
Total	2008/09	1,672,012	29%	-10	***	271,445	5%	8	***
	2018/19	949,807	20%			623,344	13%		
	2013/14	1,410,065	24%	N/A	N/A	618,755	10%	N/A	N/A
Côte d'Ivoire	2008/09	1,095,710	31%	-7	***	153,989	4%	10	***
	2018/19	685,547	24%			390,936	14%		
	2013/14	795,537	21%	N/A	N/A	301,018	8%	N/A	N/A
Ghana	2008/09	576,302	27%	-13	***	117,456	5%	6	***
	2018/19	264,260	13%			232,408	12%		
	2013/14	614,528	27%	N/A	N/A	317,737	14%	N/A	N/A

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Overall, in the cocoa growing areas of Côte d'Ivoire and Ghana, there was a 10 percentage point decrease (from 29% to 20%) in the proportion of children involved in agriculture work outside of the cocoa sector between the survey rounds. This indicates that, given the increasing importance of cocoa farming, children shifted away from other agricultural activities to cocoa production (keeping in mind that correlation does not mean causation). In Côte d'Ivoire, 24% of children engaged in agriculture work outside the cocoa sector in 2018/19, down 7 percentage points from the 2008/09 estimate. In Ghana, 13 percent of children engaged in agriculture work outside the cocoa sector in 2018/19, down 13 percentage points from the 2008/09 estimate.

While looking at the choice between farm and non-farm activities, the data indicates that between the same periods, children involvement in non-agricultural sectors increase of 8 percentage points. In Côte d'Ivoire, there was a 10 percentage-point increase while in Ghana there was a 6 percentage-point increase in the proportion of children working in non-agricultural sectors. This is consistent with the general trend of shrinking of agricultural sector as a whole and expansion of opportunities outside agriculture such as mining, fishing and service sectors.<sup>39,40</sup>

### ★ Quantitative Insight

There was a 10 percentage point decrease (from 29% to 20%) in the proportion of children involved in agriculture work outside of the cocoa sector between the survey rounds. This indicates that, given the increasing importance of cocoa farming, children shifted away from other agricultural activities to cocoa production.

#### 4.3. Main Findings: Cocoa Growing Households (2013/2014 and 2018/2019)

In this section we explore changes in children engagement in cocoa production activities, child labor, and hazardous child labor for the subpopulation of children from cocoa growing households working in cocoa production. For this purpose, we use data from the 2013/14 survey round and compare it with data from the 2018/19 round. While NORC was able to use 2008/09 data for a comparison of all agricultural households as seen in Section 4.2, due to the methodological issues with the 2008/09 data, it was not feasible for NORC to use that data for comparison of cocoa growing households as described

<sup>39</sup> <http://www.fao.org/3/a-i4337e.pdf>

<sup>40</sup> [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms\\_624872.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_624872.pdf)

in detail in Section 3.3 and Annex 9.2. However, based on available documentation about the 2013/14 survey round, NORC concluded that there was no such methodological issues with the data collected from the sub-population of cocoa growing households. Consequently, based on discussions with the stakeholders and given the importance of comparing cocoa growing households across rounds, it was decided that we will use the data from the cocoa growing household of 2013/14 for the comparison of progress made among this sub-population of agricultural households.

It is important to note that cocoa households constitute about 86 % of the survey sample in 2018/19 and 76% of the sample in 2013/14. So while the comparison of 2013/14 data on all agricultural households with the 2018/19 data is incomplete, it still provides the status of progress of most of the agricultural households in the cocoa growing areas of Ghana and Côte d’Ivoire.

However, it is useful to note that the comparison of cocoa and non-cocoa households of 2018/19 survey round reported in Table 54 in Annex 9.4.2 indicates that the proportion of children engaged in child labor and children engaged in hazardous child labor are greater among the non-cocoa households compared to the cocoa households. This may indicate that the children from non-cocoa growing households were engaged as hired child labor working on other farms and were more likely to be exposed to hazardous work in cocoa production.

#### 4.3.1. Cocoa Growing Households: Estimate of Working Children

Table 23 presents estimates of children in cocoa households in cocoa production based on usual and current activity status.

Table 23: Estimates of Children in Cocoa Households Working in Cocoa Production in the Last 12 Months and in the Last 7 Days, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19

Children Working in Cocoa Production	Last 12 Months				Last 7 Days			
	2013/14	2018/19	Diff (pp)*	Sig of diff^	2013/14	2018/19	Diff (pp)*	Sig of diff^
<b>Total</b>								
Number	2,165,921	2,290,115	N/A	N/A	1,352,640	1,053,519	N/A	N/A
% of all children	47%	50%	3	**	29%	23%	-6	***
<b>Côte d’Ivoire</b>								
Number	1,280,991	1,143,394	N/A	N/A	1,075,671	484,857	N/A	N/A
% of all Ivoirian children	41%	41%	0		34%	17%	-17	***
<b>Ghana</b>								
Number	884,930	1,146,721	N/A	N/A	276,969	568,662	N/A	N/A
% of all Ghanaian children	60%	64%	4	**	19%	32%	13	***

Source: Child survey 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2013/14 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Overall, a higher proportion of children in cocoa growing households were usually active in 2018/19 in cocoa production compared to 2013/14 – a trend similar to the trend found among all agricultural households between 2008/09 and 2018/19. On the other hand, involvement based on current activity status (reference period past 7 days) for children in cocoa households decreased 6 percentage points between 2013/14 and 2018/19.

In Côte d’Ivoire, there was no significant change in the proportion of children in cocoa households usually working in cocoa growing areas in the last twelve months, while in Ghana it increased by 4 percentage points. The proportion of children in cocoa households reporting work in cocoa production in the last twelve months was much higher than those working in the last seven days. In Côte d’Ivoire,

there was a 17 percentage-point decrease in the proportion of children working in the last seven days, while in Ghana there was a 13 percentage-point increase.

Table 55 in Annex 9.4.2 shows the working hours and minimum age for children in cocoa households disaggregated by age group and data in Table 56 in Annex 9.4.2 shows the working hours and minimum age for children in cocoa households disaggregated by sex. These tables reveal that the increase in the proportion of children in the 5-11 years age group who were working one or more hours in the reference week was driven by increased work by female children, as there was an increase of 15

**★ Quantitative Insight**

A higher proportion of children in cocoa growing households were usually active in 2018/19 in cocoa production compared to 2013/14 – a trend similar to the trend found among all agricultural households between 2008/09 and 2018/19. On the other hand, involvement based on current activity status (reference period past 7 days) for children in cocoa households decreased 6 percentage points between 2013/14 and 2018/19.

percentage points in the proportion of female children in the 5-11 years age group who were working more than the ILO recommended standard hours. At the same time, average number of hours worked by female children in this age group more than doubled (increased from 2.4 hours to 4.9 hours) during this period. In Ghana, there was not much difference in trends of change in the proportion who were working more than the ILO recommended

standard hours, and average number of hours between the male and female children.

**4.3.2. Cocoa Growing Households: Estimate of Child Labor and Hazardous Child Labor**

Next, we present the prevalence rates of child labor and exposure to hazardous work in cocoa production between 2013/14 and 2018/19 for children in cocoa households in Côte d'Ivoire and Ghana in Table 24.

Table 24: Estimates of Change in Children in Cocoa Household, 5-17 Years, Working in Cocoa Production, Children Engaged in Child Labor in Cocoa Production, and Children Engaged in Hazardous Work in the Cocoa Sector in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Children in all agricultural households		All children	Children Working in Cocoa Production				Children Engaged in Child Labor in Cocoa Production				Children Engaged in Hazardous Work in Cocoa Production			
		Number	Number	Percent	Diff (pp)*	Sig of diff^	Number	Percent	Diff (pp)*	Sig of diff^	Number	Percent	Diff (pp)*	Sig of diff^
Total	2013/14	4,516,798	2,116,056	47%	3	**	1,982,400	44%	3	*	1,893,023	42%	2	
	2018/19	4,104,866	2,156,413	50%			2,007,582	46%			1,904,721	44%		
Côte d'Ivoire	2013/14	3,037,129	1,233,679	41%	0		1,134,533	37%	1		1,085,104	36%	2	
	2018/19	2,312,109	1,018,737	41%			964,392	39%			929,518	37%		
Ghana	2013/14	1,479,669	882,377	60%	4	**	847,867	57%	1		807,919	55%	0	
	2018/19	1,792,757	1,137,676	64%			1,043,190	58%			975,203	55%		

Source: Child survey 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2013/14 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**★ Quantitative Insight**

The prevalence rates of hazardous child labor in cocoa production did not change between 2013/14 and 2018/19 among the cocoa growing households.

The data presented in Table 25 indicates that in cocoa growing areas of Côte d’Ivoire and Ghana, between 2013/14 and 2018/19, while there was only a marginal increase (3 percentage-point) in the proportion of children

working in cocoa production and children engaged in child labor, there was no statistically significant change in the proportion of children engaged in hazardous work. When the data was disaggregated by country, it shows there was no statistically significant change in the proportion of children engaged in child labor and in hazardous work in either country. These findings may reflect stakeholders increased interest in reducing child labor and hazardous child labor following the 2013/14 data collection round.

Data presented in Table 57 in Annex 9.4.2 shows the changes in children in cocoa households engaged in child labor and in hazardous child labor in Côte d’Ivoire and Ghana, disaggregated by sex and age group. Comparison of data by sex indicates that in Côte d’Ivoire a larger proportion of female children were engaged in child labor and in hazardous child labor, while a smaller proportion of male children were engaged in child labor and in hazardous child labor.

Additionally, there were some significant changes in the age-disaggregated proportion of children engaged in child labor or in hazardous child labor in Côte d’Ivoire. The proportion of children belonging to the youngest age group and engaged in child labor and in hazardous child labor increased by respectively 6 and 7 percentage points between 2013/14 and 2018/19. The proportion of children belonging to the oldest age group (15-17) and engaged in child labor and in hazardous child labor decreased by respectively 5 and 6 percentage points. There was no such difference in Ghana.

**4.3.2.1. Children’s Engagement in the Components of Hazardous Work in Cocoa Production**

Comparison of 2013/14 and 2018/19 data show that the prevalence rate of exposure to hazardous work in cocoa agriculture did not change between 2013/14 and 2018/19. However, it is still important to explore whether there were any changes in exposure to any type of hazard related to cocoa agriculture among the children engaged in cocoa production in the cocoa growing households. Table 25 presents the data on exposure to each of the six different types of hazards related to cocoa agriculture among children in cocoa households in cocoa growing areas of Côte d’Ivoire and Ghana.

*Table 25: Estimates of Change in Children in Cocoa Households, 5-17 Years, Exposed to Various Types of Hazardous Work Activities in the Cocoa Sector, in Côte d’Ivoire and Ghana, 2013/14 and 2018/19\**

Percentage of children in cocoa growing households exposed to:	Total			Côte d’Ivoire			Ghana		
	2013/14	2018/19	Sig of diff ^	2013/14	2018/19	Sig of diff ^	2013/14	2018/19	Sig of diff ^
Number of children 5-17 years	4,516,798	4,104,866	N/A	3,037,129	2,312,109	N/A	1,479,669	1,792,757	N/A
<b>Hazardous Work Activities</b>									
Land clearing (V1)	12%	18%	***	17%	21%	**	1%	15%	***
Heavy loads (V2)	30%	30%		24%	26%		44%	35%	***
Agro-chemicals (V3)	10%	25%	***	5%	18%	***	20%	34%	***
Sharp tools (V4)	33%	37%	***	28%	31%		42%	46%	**
Long working hours (V5)	1%	1%		1%	1%		1%	0%	
Night work (V6)	1%	2%	***	1%	2%	**	0%	3%	***
Exposed to one or more variables in cocoa work	42%	44%		36%	37%		55%	55%	

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3  
^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Data presented in Table 25 indicates that overall, the most prominent change is in exposure to agro-

### ★ Quantitative Insight

The most prominent change in hazardous child labor is in exposure to agro-chemicals which increased by 15 percentage points, followed by marginal increases in land clearing and sharp tool use.

chemicals which increased by 15 percentage points (from 10% to 25% in 2018/19), followed by marginal increases in land clearing (by 6 percentage points) and sharp tool use (by 4 percentage points) in the cocoa growing areas of Côte d'Ivoire and Ghana. However, there are some interesting differences at the country

level. Following the overall trend, there were significant increases in exposure to agro-chemicals in both countries (by approximately 14 percentage points), while exposure to land clearing increased by larger extent in Ghana (by 14 percentage points against 4 percentage point increase in Côte d'Ivoire). Also, in Ghana, among cocoa growing households, children's exposure to carrying heavy loads fell by 9 percentage points between 2013/14 and 2018/19.

Data presented in Table 58 in Annex 9.4.2 shows the changes in exposure to each of the six different types of hazards related to cocoa agriculture among children in cocoa households disaggregated by age groups and gender in both countries. Prominent changes across age groups were observed in exposure to agro-chemicals, land clearing, and night work. The largest increase in the proportion of children exposed to agro-chemicals or night work between 2013/14 and 2018/19 was among the 15-17 age group. Additionally, exposure to sharp tools in cocoa significantly increased among children in the 5-11 years and 12-14 years age group.

Sex disaggregation reported in Table 59 in Annex 9.4.2 indicates only marginal differences in the trend in change in exposure between male and female children with the proportion of girls exposed to agro-chemicals, land clearing, and night work being marginally greater than the increases in the proportion of boys exposed to either of these between the survey rounds. Additionally, in both rounds, there was a consistently higher proportion of girls exposed to 5 of the 6 hazardous activities compared to boys.

Table 60 in Annex 9.4.2 shows data on incidence of multiple hazards among children in cocoa households. Between 2013/14 to 2018/19, there were increases in the exposure to four or more hazardous activities and decreases in exposure to either two or one hazardous activity in both Côte d'Ivoire and Ghana. The proportion of children exposed to any hazardous activities increased from 86 percent in 2013/14 to 92 percent in 2018/19 in Côte d'Ivoire and marginally decreased from 87 percent to 86 percent in Ghana during the same period.

#### 4.3.2.2. Exposure to Various Components of Agro-Chemical Use

Table 26 shows that among children in cocoa households working in cocoa production, exposure to agro-chemicals increased significantly in both countries between 2013/14 and 2018/19. Additionally, the table presents the data on exposure to agro-chemicals broken down into different sub-components for children in cocoa households between 2013/14 and 2018/19.

Table 26: Disaggregation of Exposure to Agro-Chemicals, Children in Cocoa Households Working Cocoa Production in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Number and percentage of children in cocoa households working in cocoa exposed to V3		Total			Côte d'Ivoire			Ghana		
		2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
<b>Children exposed to V3 (agro-chemicals)</b>	Number	464,820	1,113,436	N/A	164,300	495,499	N/A	300,520	617,937	N/A
	Percent	22%	50%	***	14%	45%	***	34%	54%	***
Spraying pesticides or insecticides	Number	75,605	170,299	N/A	48,672	87,955	N/A	26,933	82,344	N/A
	Percent	4%	8%	***	4%	9%	***	3%	7%	***
Being present or working in the vicinity of farm during pesticide spraying	Number	149,769	524,333	N/A	58,395	235,089	N/A	91,374	289,244	N/A
	Percent	7%	23%	***	5%	21%	***	10%	25%	***
Reentering a sprayed farm within less than 12 hours of spraying	Number	56,142	232,866	N/A	40,874	114,599	N/A	15,268	118,267	N/A
	Percent	3%	10%	***	3%	11%	***	2%	10%	***
Carrying water for spraying	Number	310,058	783,887	N/A	85,016	315,542	N/A	225,042	468,345	N/A
	Percent	15%	34%	***	7%	28%	***	26%	41%	***
Having been involved in working with agrochemicals <sup>s*</sup>	Number	48,176	364,515	N/A	35,127	166,934	N/A	13,049	197,581	N/A
	Percent	2%	17%	***	3%	16%	***	1%	17%	***

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Such as purchasing, transport, storage, mixing, loading, spraying/applying, washing of containers and spraying machine, and/or disposal

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Data in Table 26 indicates that similar to the trend in agricultural households described in Section 4.2.5.3, exposure to each of the sub-components of hazard related to agro-chemical exposure increased for children working in cocoa production in cocoa households. Similar to the case of all agricultural household, among the sub-components, proportion of children carrying water for spraying increased by largest extent (by 19 percentage points) in cocoa growing areas of Côte d'Ivoire and Ghana, followed by being present or working in the vicinity of farm during pesticide spraying and being involved in working with agrochemicals.

At the country level, there was a similar trend in changes in exposure to the various sub-components of agro-chemicals exposure in both countries.

Table 61 in Annex 9.4.2 shows the age group and sex disaggregation of exposure to agro-chemicals and its sub-components for children in cocoa households. Between 2013/14 and 2018/19, there were significant increases in exposure to spraying pesticides or insecticides, working in the vicinity of farm during pesticide spraying, re-entering a sprayed farm within less than twelve hours of spraying, and working with agro-chemicals among children in the 5-11 age group. Across all sub-components of agro-

chemicals exposure, there were statistically significant decreases in exposure among males and statistically significant increases in exposure among females.

While the comparison of trends in exposure to hazardous work indicated that overall exposure to hazardous work in cocoa production did not increase between 2013/14 and 2018/19, disaggregation of exposure to the six sub-components of hazardous work indicated that there were increased exposure to some of the sub-components such as exposure to agro-chemical use, land clearing, and sharp tool use. Additionally, further disaggregation of exposure to agro-chemical to sub-components indicated that for children who were exposed to agro-chemicals, incidence of exposure to each of sub-components increased between 2013/14 and 2018/19. Thus, the findings presented in this section suggest that while there was no increase in the proportion of children engaged in hazardous work, those who were exposed, were more vulnerable to increasing incidence rates of exposure to individual hazards.

#### 4.4. School Attendance among Children in All Agricultural Households

In the previous sections, we present findings from changes in school attendance, measures of literacy, and numeracy for children from agricultural households between the two survey periods.

Access to education has been a priority for the Governments of Côte d'Ivoire and Ghana, and references to a child's school attendance are included in both countries' hazardous activities frameworks. Therefore, it is important to get a sense of the progress that has been made in this area. Table 27 reports school attendance by sex and age group.

Table 27: School Attendance for Children in the Last 12 Months, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Number and percentage of all children attending school in the last 12 months		Côte d'Ivoire				Ghana			
		2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14
Children 5-17 years	Number	3,974,648	4,196,900	N/A	4,608,846	2,043,972	2,283,522	N/A	2,497,333
	Percent	70%	87%	***	77%	58%	81%	***	67%
<b>Sex</b>									
Boys 5-17 years	Number	2,216,491	2,229,564	N/A	2,537,465	1,166,649	1,211,974	N/A	1,418,909
	Percent	72%	88%	***	79%	61%	83%	***	69%
Girls 5-17 years	Number	1,758,157	1,967,336	N/A	2,071,382	877,323	1,071,548	N/A	1,078,424
	Percent	67%	86%	***	75%	53%	79%	***	64%
<b>Age Group</b>									
Children 5-11 years	Number	2,454,114	2,626,079	N/A	2,819,476	1,374,127	1,471,999	N/A	1,620,049
	Percent	70%	88%	***	77%	60%	81%	***	68%
Children 12-14 years	Number	926,524	1,020,815	N/A	1,213,472	439,389	554,345	N/A	662,013
	Percent	79%	93%	***	87%	68%	88%	***	80%
Children 15-17 years	Number	594,009	542,073	N/A	575,898	230,456	249,245	N/A	215,271
	Percent	58%	77%	***	62%	39%	68%	***	42%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted data, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Between 2008/09 and 2018/19, school attendance among children between 5-17 years significantly increased in Côte d'Ivoire and Ghana. Following a 17 percentage-point increase in Côte d'Ivoire, in 2018/19, 87 percent of Ivorian children were attending school in the last twelve months. On the other

hand, school attendance among Ghanaian children increased from 58 percent to 81 percent between the two survey periods.

Gains in attendance were seen across both boys and girls. School attendance also increased across all age groups between 2008/09 and 2018/19. In Côte d'Ivoire, the greatest gains in school attendance were seen in the 15-17 years age group within which the proportion of children attending school increased from 58 percent to 77 percent. In Ghana, greatest gains in school attendance were seen in the 5-11 years age group within which the proportion of children attending school increased from 60 percent to 81 percent.

The school attendance data indicates that reform in both countries and a greater push for education has led to significant gains in levels of school attendance among children in agricultural households.

#### 4.5. School Attendance among Children Working in Agriculture

Working in agriculture could be obstacles to school attendance and children's ability to learn. If work related engagements prevent children from attending school, it is considered a form of hazardous work by the Governments of Côte d'Ivoire and Ghana. Table 28 presents the trend in school attendance for children working in cocoa production in the cocoa producing areas of Côte d'Ivoire and Ghana.

Table 28: School Attendance for Children Working in Cocoa Production in the Last 12 Months, All Agricultural Households, by Age Group and Gender, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Number and percent of children working in cocoa production attending school in the last 12 months		Côte d'Ivoire				Ghana			
		2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14
Children 5-17 years	Number	481,655	917,947	N/A	920,411	906,635	1,123,531	N/A	917,939
	Percent	59%	85%	***	67%	91%	96%	***	94%
<b>Sex</b>									
Boys 5-17 years	Number	865,563	1,228,513	0	1,168,933	324,285	579,390	N/A	637,025
	Percent	79%	91%	***	81%	65%	86%	***	72%
Girls 5-17 years	Number	522,727	812,965	0	669,417	157,370	338,557	N/A	283,386
	Percent	72%	90%	***	81%	49%	82%	***	69%
<b>Age Group</b>									
Children 5-11 years	Number	660,889	1,018,095	0	848,167	258,477	469,351	N/A	451,573
	Percent	80%	94%	***	88%	67%	89%	***	81%
Children 12-14 years	Number	440,218	657,280	0	629,382	150,796	306,253	N/A	334,687
	Percent	82%	93%	***	87%	67%	88%	***	79%
Children 15-17 years	Number	287,183	365,398	0	360,801	72,382	141,638	N/A	134,151
	Percent	63%	79%	***	63%	34%	68%	***	42%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted data, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Consistent with the overall trends in school attendance for children in agricultural households discussed earlier, there were significant increases in school attendance across the board among children working in cocoa production. School attendance among girls increased more than that among boys in Côte d'Ivoire (by 18 percentage points among girls against 12 percentage among boys). In both countries the greatest gains in school attendance were seen in the 15-17 years age group, by 16 percentage points in Côte d'Ivoire and 34 percentage points in Ghana.

#### **4.6. School Attendance among Children in Child Labor and Hazardous Child Labor**

Next, we explored whether there was any improvement in school attendance among the children engaged in child labor and hazardous child labor in cocoa production.

Table 29 presents data on school attendance for children engaged in child labor and hazardous labor in cocoa production by age group.

Table 29: Children Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work in Cocoa Production, All Agricultural Households, By School Attendance, 5-17 Years, in Côte d'Ivoire and Ghana, 2008-09 and 2018-19

Age Group: Attending School	Children Engaged in Child Labor in Cocoa Production											
	Total				Côte d'Ivoire				Ghana			
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2008/09	2018/19	Diff (pp)*	Sig of diff^	2008/09	2018/19	Diff (pp)*	Sig of diff^
5-11 Years	80%	94%	14%	***	67%	89%	22%	***	91%	98%	7%	***
12-14 Years	81%	93%	12%	***	67%	89%	22%	***	92%	98%	6%	***
15-17 Years	63%	79%	16%	***	34%	68%	34%	***	88%	88%	0%	
Age Group: Attending School	Children Engaged in Hazardous Work in Cocoa Production											
	Total				Côte d'Ivoire				Ghana			
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2008/09	2018/19	Diff (pp)*	Sig of diff^	2008/09	2018/19	Diff (pp)*	Sig of diff^
5-11 Years	80%	94%	14%	***	67%	89%	22%	***	91%	98%	7%	***
12-14 Years	81%	93%	12%	***	67%	89%	22%	***	92%	98%	6%	***
15-17 Years	63%	79%	16%	***	34%	68%	34%	***	88%	88%	0%	

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

In aggregate, a higher proportion of children engaged in child labor in cocoa production across all age groups (5-11 years, 12-14 years, and 15-17 years) attended school in 2018/19 compared to 2008/09.

Overall, among children engaged in child labor in cocoa production in the youngest age group (5-11 years), there was a 14 percentage points increase in the proportion attending school between 2008/09 to 2018/19. In Côte d'Ivoire, the proportion of children engaged in child labor and attending school increased from 67 percent to 89 percent between 2008/09 and 2018/19, while in Ghana it increased from 91 percent to 98 percent during the same period.

School attendance among children age 12-14 experienced a statistically significant increase of 12 percentage points between 2008/09 and 2018/19 in aggregate. In Côte d'Ivoire, 89 percent of children engaged in child labor attended school while 11 percent of children did not attend school in 2018/19. During the same period, 98 percent of Ghanaian children in child labor attended school and 2 percent did not attend school.

Between the survey periods, school attendance among children engaged in child labor in the oldest age group (15-17 years) increased 16 percentage points, entirely driven by gains in Côte d'Ivoire. School attendance among Ivoirian children engaged in child labor in the oldest age group doubled between 2008/09 and 2018/19. In Ghana, there was no change between the same periods.

The trends in school attendance across age groups for children engaged in hazardous work emulated the trends for children engaged in child labor, the magnitude of change was also the same. There were highly statistically significant increases in school attendance among children engaged in hazardous work attending school across the youngest age group (14 percentage points), middle age group (12 percentage points), and oldest age group (16 percentage points) between 2008/09 to 2018/19. Changes were primarily driven by improvements in school attendance in Côte d'Ivoire.

Table 62 in Annex 9.4.2 presents data on school attendance for children in cocoa households engaged in child labor and hazardous labor in cocoa production by age group which demonstrated similar trends as found in the case of all agricultural households described above.

Next, we look at how basic literacy and numeracy have changed amidst increasing levels of school attendance in both countries.

#### Qualitative Insight

Qualitative findings indicate that in many instances, children were engaging in child labor due to their inability to access a nearby school, or their caregivers' inability to manage the costs associated with schooling. Findings indicate that changes in access to schooling have mitigated these barriers and impacted how much time children spend on farms.

#### **4.7. Basic Literacy and Numeracy among Children Working in Cocoa Production**

In order to explore the benefits of school attendance, we present the data on basic literacy and basic numeracy in

Table 30. Measurement of basic literacy involves two dimensions – ability to read a short simple statement and ability to write a short simple statement. Numeracy is measured through the ability to perform simple calculations.

Table 30: Basic Literacy and Numeracy for Children Working in Cocoa Production, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19

Children working in cocoa production, 5-17 years		Côte d'Ivoire			Ghana		
		Cocoa households	Non-cocoa households	Sig of diff <sup>^</sup>	Cocoa households	Non-cocoa households	Sig of diff <sup>^</sup>
Who can read a short simple statement	Number	892,707	212,815	N/A	1,060,149	118,824	N/A
	Percent	43%	39%		59%	59%	
Who can write a short simple statement	Number	1,009,322	259,917	N/A	963,246	117,629	N/A
	Percent	52%	44%	***	58%	54%	
Who can perform simple calculations	Number	1,147,511	289,678	N/A	1,269,078	144,551	N/A
	Percent	58%	50%	***	72%	71%	

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted data, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Overall, we see that in Ghana, there was no statistically significant difference in literacy or numeracy rates between the cocoa and non-cocoa households. On the other hand, in Côte d'Ivoire, a greater proportion of children belonging to cocoa households can write a short simple statement and perform simple calculations compared to the proportion of children belonging to non-cocoa households. There is no statistically significant difference in the ability to read a short simple statement between children working in cocoa production and belonging to cocoa households and those belonging to non-cocoa households across Côte d'Ivoire and Ghana.

#### 4.8. Estimate of Children's Work Interfering with Education among Children Working in Cocoa Production

Working in cocoa production could likely interfere with the education of children enrolled in school. For instance, children engaged in this work might be forced to drop out of school during harvest season, sustain injuries that have negative health consequences that prevent them from attending school, or might be too tired to engage in school-related activities due to fatigue from cocoa production activities.

In order to assess whether involvement in work affected schooling, we also report data on whether children's work interfered with their schooling for children working in cocoa production in the cocoa growing areas of Côte d'Ivoire and Ghana

The schooling of a child, 6-14 years, is considered negatively impacted by work performed in cocoa agriculture, if he or she was within the age range at the time of data collection, worked in cocoa farming during the previous twelve months, and reported either having been withdrawn from school during cocoa season to do farm work; and/or reporting that schooling has been affected by his/her work.

#### ★ Quantitative Insight

In Côte d'Ivoire, exposure to child labor and hazardous child labor were lower in communities where the closest JHS was less than 2 km away and where the closest SHS was less than 5 km away. In Ghana communities where the closest primary school was within 1 km saw lower rates of child labor and hazardous child labor.

Table 31: Estimates of Children Working in Cocoa Production Not Attending School, and Work Interferes with Schooling, 6-14 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children 6-14 years working in cocoa production	Total					Côte d'Ivoire					Ghana				
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14
<b>Not attending school (V7)</b>	200,758	99,180	N/A	N/A	195,139	61,358	17,786	N/A	N/A	13,897	262,116	116,966	N/A	N/A	209,036
Percentage of all children working in cocoa production	25%	11%		***	20%	5%	2%		***	2%	15%	7%		***	12%
<b>Work interfering with schooling (V8)</b>	17,153	56,923	N/A	N/A	45,175	49,774	177,784	N/A	N/A	63,197	66,927	234,707	N/A	N/A	108,372
Percentage of all children working in cocoa production	4%	7%		**	5%	8%	19%		***	9%	6%	13%		***	6%
<b>Exposed to either V7 or V8</b>	217,911	155,001	N/A	N/A	230,527	108,622	192,302	N/A	N/A	77,094	326,533	347,303	N/A	N/A	307,621
Percentage of all children working in cocoa production	28%	18%		***	23%	13%	21%		***	11%	21%	19%			18%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In aggregate, the proportion of children reporting that cocoa work was interfering with schooling increased significantly from 4 percent in 2008/09 to 7 percent in 2018/19.

The proportion of children in agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana whose work interfered with schooling increased from 4 percent to 7 percent in aggregate between 2008/09 and 2018/19. This indicates that the interference of cocoa work on education became more prevalent. In Côte d'Ivoire, the proportion of children reporting that work interfered with schooling increased by 11 percentage points (from 8 percent in 2008/09 to 19 percent in 2018/19), while the proportion of Ghanaian children reporting the same increased by 7 percentage points (from 6 percent to 13 percent between 2008/09 and 2018/19).

## **5. Analytic Insights: Role of Production Stratum, Agro-chemical Use & Household Demographics**

Comparison of 2008/09 and 2018/19 rounds of survey data presented in the previous sections indicate that in the past ten years, there has been a statistically significant increase in the proportion of children engaged in child labor and in hazardous work in cocoa production. There may be several factors influencing those findings on child labor and hazardous work. In this section, we provide additional insights from survey data to understand potential interplay of such factors.

Here we consider the role of the following factors<sup>41</sup>:

1. Increased production and geographic expansion of cocoa production into areas with relatively less production and new areas: We explore how prevalence rate of child labor and exposure to hazardous work changed within different production stratum.
2. Increased usage of agro-chemical products among cocoa growing households
3. Changes in household demographics

### **5.1. Child Labor and Hazardous Work in Cocoa Production by Production Stratum**

Cocoa production is an important part of the agricultural sector of both countries and has increased substantially over the years (by 62% between 2008/09 and 2018/19). As overall production increases, areas with already high cocoa production become saturated and thus cocoa production activities expand to other areas that had historically lower production levels. This expansion of production into new areas and areas with low production could potentially lead to increased engagement of children in cocoa production, especially in the early stages with underdeveloped market, and can lead to increased usage of child labor.

In order to explore whether increase in cocoa production and consequent shift in production to new areas has played any role in affecting child labor and children engaged in hazardous work in cocoa production, we present the prevalence of child labor and children engaged in hazardous work disaggregated by whether the areas are high, medium, or low production strata in

---

<sup>41</sup> Note that these are not an extant list of possible contributing factors but only the most prominent that came out of the research teams analysis of the data.

Table 32.

Table 32: Estimates of Change in Children Engaged in Child Labor and Exposure to Hazardous Labor of Children Working in Cocoa Production in Areas with High, Medium and Low Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, in 2008/09 and 2018/19

Country	Strata	All children			Children Engaged in Child Labor in Cocoa Production				Children Engaged in Hazardous Labor in Cocoa Production*					
		2008/09	2013/14	2018/19	2008/09	2018/19	Diff (pp)**	Sig of diff.^	2013/14	2008/09	2018/19	Diff (pp)**	Sig of diff.^	2013/14
Overall	High	1,705,896	1,773,685	1,600,071	43%	47%	4%	***	34%	42%	45%	3%	**	31%
	Medium	2,897,974	2,832,325	2,122,384	33%	47%	14%	***	36%	33%	44%	11%	***	35%
	Low	1,107,456	1,362,360	1,088,574	6%	31%	25%	***	37%	6%	30%	25%	***	36%
	Total	5,711,327	5,968,371	4,811,029	31%	44%	13%	***	36%	30%	41%	11%	***	34%
Côte d'Ivoire	High	1,376,276	1,330,476	1,022,955	40%	44%	4%	**	28%	39%	43%	4%	*	27%
	Medium	1,173,073	1,145,481	994,004	19%	37%	18%	***	30%	19%	35%	16%	***	29%
	Low	1,001,100	1,256,290	796,290	5%	27%	22%	***	38%	5%	26%	21%	***	37%
	Total	3,550,449	3,732,247	2,813,249	23%	37%	14%	***	32%	23%	35%	13%	***	31%
Ghana	High	329,620	443,209	577,116	56%	53%	-4%	*	52%	55%	50%	-6%	***	46%
	Medium	1,724,901	1,686,844	1,128,380	43%	57%	13%	***	39%	42%	52%	10%	***	38%
	Low	106,356	106,070	292,284	16%	44%	28%	***	25%	16%	42%	26%	***	24%
	Total	2,160,878	2,236,124	1,997,780	44%	54%	10%	***	41%	43%	50%	7%	***	39%

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report.

\*\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Comparison of data by stratum indicates that among the three strata, between 2008/09 and 2018/19, prevalence of child labor and exposure to hazardous work in cocoa production increased by the least amount in the high cocoa production stratum (by 4 and 3 percentage points respectively). On the other hand, there have been substantial increases in prevalence within the low and medium production strata. Between the two survey periods, child labor prevalence increased 14 percentage points (from 33% to 47%), and 25 percentage points (from 6% to 31%) in medium, and low cocoa production areas respectively. There was a similar trend in the change in prevalence of exposure to hazardous work during the same period.

### ★ Analytic Insight

Cocoa production increased by the least amount in the high cocoa production stratum while we observe substantial increases in prevalence within the low and medium production strata. There was a similar trend in the change in prevalence of exposure to hazardous work during the same period.

Changes in prevalence of child labor and exposure to hazardous work within different production strata in Côte d'Ivoire emulated the overall trends. In aggregate, between 2008/09 and 2018/19, child labor prevalence increased 14 percentage points while hazardous child labor prevalence increased 13 percentage points in Côte d'Ivoire.

In Ghana, in high production areas, prevalence of child labor and exposure to hazardous work decreased by 4 and 6 percentage points respectively. However, similar to the trend in Côte d'Ivoire, between the two survey periods, child labor prevalence increased 13 percentage points, and 28 percentage points in medium and low cocoa production areas respectively. Prevalence of exposure to hazardous work during the same period also increased by largest extents in low production areas. The breakdown of child labor prevalence by production stratum and comparison of prevalence rate clearly indicate that while child labor and exposure to hazardous work prevalence rates were relatively stable in the high production stratum, most of the increase in prevalence of child labor between the survey rounds took place in the areas that produce relatively less cocoa.

These findings suggest that as high production areas have become increasingly saturated, cocoa production activities have permeated other areas where the infrastructure is still weak and awareness related to child labor and hazardous work is limited. Additionally, interventions targeting child labor over the past ten years (2008 -2018) have likely focused on the high production areas where prevalence is more widespread and the perceived need for such interventions is greatest. Thus, it seems that shift in production that led to expansion to less saturated and new areas might have resulted in increased child labor and exposure to hazardous work in cocoa production.

## 5.2. Expenditure on Agro-Chemical per ton of Cocoa Produced

Comparison of the trends in exposure to various types of hazardous activities in cocoa production reported in Section 4.2.5.1 revealed that exposure to agro-chemical products has become a prominent source of exposure to hazardous activities in cocoa production over the past 10 years which increased from 5 percent of children in agricultural households in both countries in 2008/09 to 24 percent in 2018/19. Also, data reported in Section 4.3.2.1 showed that a substantially larger proportion of cocoa growing households were using agro-chemical products in agriculture. While a larger proportion of cocoa growing household were using agro-chemical products, the intensity of use can play an important role in influencing exposure to hazardous activities.

In order to explore this relationship we present the data on how average expenditures on agro-chemical products (as a proxy for amount of usage) among cocoa growing household changed during 2013/14 and 2018/19 period in Table 33. The data reported here is the expenditure per ton of cocoa produced

for households that reported using respective agro-chemical component and adjusted for inflation (reported in constant dollar value).

Table 33: Estimates of Change in Cocoa Households' Use of Agro-Chemical Products Expenditure Per Ton of Cocoa in the Last 12 Months, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

USD/Ton of Cocoa	Total			Côte d'Ivoire			Ghana		
	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
Fertilizer(s)	2,298	4,870		659	5,629		3,630	3,723	
Pesticide(s)	1,214	2,417		237	1,784	**	2,110	3,258	
Herbicide(s)	718	2,355	***	232	2,626	***	1,288	1,994	*

Source: Head of household survey 2013/14 and 2018/19, weighted data, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The per-ton expenditure on fertilizer, pesticide, and herbicide per ton of cocoa showed an overall increasing trend between 2013/14 and 2018/19. In Côte d'Ivoire, there were statistically significant increases in expenditure on pesticides (from USD 237 to USD 1,784 per ton of cocoa) and herbicides (from USD 232 to USD 2,626 per ton of cocoa). In Ghana, there was a statistically significant increase in expenditure on herbicides (from USD 1,288 to USD 1,994).

The analysis presented here indicates that increase in cocoa production has led to both an increased usage and significantly greater intensity of use of agro-chemical products in Côte d'Ivoire and Ghana. Given the large proportion of children engaged in cocoa growing activities, it is likely that this increased usage of agro-chemical products in cocoa production led to increased exposure to agro-chemicals related hazards among children in cocoa growing areas of Côte d'Ivoire and Ghana.

### 5.3. Household Composition: Distribution of Children in Households

Table 34 shows that between 2008/09 and 2018/19, average household composition by age shifted in each country as the overall number of children aged 5-17 decreased (both overall and across most age categories). In most cases, these differences are highly statistically significant.

Table 34: Estimates of Average Number of Children, 5-17 Years, All Agricultural Households, by Age Group, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Age group	Total				Côte d'Ivoire				Ghana			
	2008/09	2018/19	Diff (pp) <sup>*</sup>	Sig of diff <sup>^</sup>	2008/09	2018/19	Diff (pp) <sup>*</sup>	Sig of diff <sup>^</sup>	2008/09	2018/19	Diff (pp) <sup>*</sup>	Sig of diff <sup>^</sup>
5-11	1.7	1.5	-10	***	1.8	1.6	-11	***	1.5	1.4	-6	*
12-14	0.6	0.5	-1		0.5	0.5	10		0.6	0.6	-14	**
15-17	0.5	0.4	-22	***	0.5	0.3	-30	***	0.5	0.5	-13	**
All	2.7	2.4	-10	***	2.8	2.5	-11	***	2.6	2.4	-9	***

Source: Household roster survey, 2008/09 and 2018/19, weighted, strata 1-3

<sup>\*</sup>Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The average number of children aged 5-17 per household decreased 10 percent from 2.7 to 2.4 per household. Decreases were statistically significant in the aggregate as well as at the country level, though the decrease was slightly larger in Côte d'Ivoire where the total number decreased from 2.8 to 2.5 children per household (11% decrease) than in Ghana where the total decreased from 2.6 to 2.4 children per household (9% decrease).

The group with the largest decrease across rounds were children aged 15-17, which saw a 22 percent decrease from 0.5 per household in 2008/09 to just 0.4 in 2018/19, primarily driven by the highly significant 30 percent decrease between rounds in Côte d'Ivoire. The average number of children aged 5-11 saw a more muted 10 percent decrease overall, with a highly significant 11 percent drop in Côte d'Ivoire compared to a less-significant 6 percent drop in Ghana. Difference in average number of children 12-14 per household is not significant overall but did see a significant 14 percent decrease in Ghana. The only age group to experience an increase between rounds was average number of children 12-14 in Côte d'Ivoire, but this increase is not statistically significant.

Thus, comparison of average number of children in the three age groups clearly indicates that there were fewer children in agricultural households and probably indicates that the average family size has decreased over the 2008/09 and 2018/19 period. This may imply that there is fewer children in the agricultural households in cocoa growing areas of Côte d'Ivoire and Ghana in 2018/19. Given the increase in production, and simultaneous reduction in average number of children in cocoa growing areas, it may indicate there was greater demand for existing child labor, and thus a greater likelihood of children's engagement in child labor.

## **6. Findings Based on Country Specific Definition of Hazardous Work (2018/19 Survey Round)**

In the earlier sections, we've discussed child labor and hazardous child labor prevalence based on the ILO common definition. The Governments of both Côte d'Ivoire and Ghana have made concerted efforts to address child labor and hazardous child labor prevalence, including passing legislation and establishing guidance frameworks that include country-specific definitions of child labor and hazardous child labor.

We first present data on children's exposure to hazardous work activities based on national legislation in Côte d'Ivoire and Ghana. We then present the estimate of the prevalence rate of children's exposure to child labor and exposure to hazardous work based on the national definitions.

### **6.1. Estimate of Children Engaged in Child Labor, and Hazardous Work in Cocoa Production in Côte d'Ivoire based on Ivoirian Legislation**

In Côte d'Ivoire<sup>42</sup>, there are 7 types of hazardous activities that Ivoirian children could likely be exposed to while working in cocoa production. These include – not getting a full rest day, land clearing, charcoal production, carrying heavy loads, exposure to agro-chemicals, using sharp tools, and night work in the Ivoirian legislations.

Table 35 presents the data on exposure to hazardous activities for each of these categories of hazard specified in the Ivoirian legislations.

---

<sup>42</sup> The Ivoirian country definition of what is considered as hazardous work activities is derived from the list of hazardous activities the published by Ministry of Civil Service and Labor in Côte d'Ivoire released a list of dangerous child work in March 2005 and subsequent revisions to the list made in 2012 and the new hazardous work list published on 2nd June 2017 (ARRETE N°2017-017 MEPS/CAB) and a Light Work List (ARRETE N°2017-016 MEPS/CAB du 02 Juin 2017)

Table 35: Estimates of Change in Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the Côte d'Ivoire Country Definition, in Côte d'Ivoire, 2008/09, 2013/14 and 2018/19\*

Percentage of children exposed to:	Côte d'Ivoire
	2018/19
Number of children 5-17 years	2,813,249
<b>Hazardous Work Activities</b>	
No rest day (V1)*	3%
Land clearing (V2)	24%
Charcoal production (V3)	10%
Carrying heavy loads (V4)	8%
Agro-chemicals (V5)	9%
Sharp tools (V6)	25%
Night work (V7)	8%
Exposed to one or more variables	38%

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*All variables for the 12 month reference period, except no rest day is for the 7 day reference period.

In 2018/19, 38 percent of children in Côte d'Ivoire were exposed to at least one of the seven hazardous activities. Approximately one in four children were exposed to using sharp tools (25%) such as, machetes, long cutlasses, axes, chainsaws etc., or land clearing activities. One in ten children were working in charcoal production and likely subject to an unsafe working environment.

## 6.2. Estimate of Children Engaged in Child Labor, and Hazardous Work in Cocoa Production in Ghana based on Ghanaian Legislation

Ghanaian legislation defines ten types of hazardous activities that Ghanaian children could likely be exposed to while working in cocoa production. These include – not attending school, withdrawing from school, land clearing, carrying heavy loads, exposure to agro-chemicals, using sharp tools, climbing trees, night work, working in isolation, and lack of protective clothing. Table 36 presents the data on exposure to hazardous activities for each of these categories of hazard specified in the Ghanaian legislations.

Table 36: Estimates of Change in Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the Ghana Country Definition, in Ghana, 2008/09, 2013/14 and 2018/19\*

Percentage of children exposed to:	Ghana
	2018/19
Number of children 5-17 years	1,997,780
<b>Hazardous Work Activities</b>	
Not attending school (V1)	0%
Withdrawing from school (V2)	9%
Land clearing (V3)	14%
Carrying heavy loads (V4)	11%
Agro-chemicals (V5)	13%
Sharp tools (V6)	50%
Climbing trees (V7)	6%
Night work (V8)	3%
Work in isolation (V9)	5%
No protective clothing (V10)	16%
Exposed to one or more variables	55%

Source: NORC Child survey 2018/19, weighted, strata 1-3

In 2018/19, more than half of children in Ghana (55%) were exposed to at least one of the ten hazardous activities. The most commonly reported hazardous activity was using sharp tools, 50 percent of Ghanaian children reported using sharp tools in 2018/19. Lack of protective clothing (16%), engaging in land clearing activities (22%), exposure to agro-chemicals (13%), and carrying heavy loads (11%) were other commonly reported hazardous activities.

Using the definitions of hazardous activities as specified by each country described above, we present the estimates of prevalence of child labor and hazardous work as per the national definitions. Table 37 presents the estimate of prevalence of child labor and exposure to hazardous activities for in Côte d'Ivoire and Ghana.

Table 37: Prevalence of Children Engaged in Child Labor and Hazardous Child Labor by Country Definitions, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19

Exposure to:		Child Labor	Hazardous Child Labor
Côte d'Ivoire country definition	Number	1,610,308	1,108,654
	Percent	57%	39%
Ghana country definition	Number	1,282,632	1,111,438
	Percent	64%	56%

Source: NORC Child survey 2018/19, weighted, strata 1-3

Estimates of child labor prevalence based on the country-specific definitions align with the estimates based on the common definition reported in 0. In 2018/19, 57 percent and 39 percent of Ivorian children, and 64 percent and 56 percent of Ghanaian children were engaged in child labor and hazardous child labor respectively.

## 7. Part II: Assessment of the Effects of Interventions on Child Labor

### 7.1. Objectives

The second main objective of this report is to undertake an assessment of effectiveness of various interventions funded by the members of the CLCCG and other stakeholders. Under this objective, we address a set of specific research questions in order to understand how different types of interventions were effective in addressing child labor issues and to examine the impact of multiple child labor interventions on the prevalence of child labor and hazardous child labor. Our assessment looks at overall effectiveness of funded interventions and efforts related to the reduction of child labor, in general, and hazardous child labor, in particular, in the two countries.

It is important to note that our analysis does not assess the effectiveness of individual interventions implemented by a particular partner or organization. Given both the disparate types and overall number of interventions conducted between 2008/09 and 2018/19, it is impossible to assess the effectiveness of each one due to data limitations. Rather we assess the effectiveness of different categories of interventions such as education related interventions, livelihoods programs, and occupational safety and health interventions, to name a few.

### 7.2. Methodological Approaches

#### 7.2.1. General Quantitative Approach

To address the research questions identified in the previous section, NORC employed a suite of quantitative analyses to generate robust conclusions. The quantitative analyses are based on statistical modelling techniques. Whenever possible, we employ a set of statistical modelling techniques in an effort to understand attribution by contrasting actual outcomes with those that would have occurred without the intervention (the so called *counterfactual*).<sup>43</sup> These statistical models are discussed in more detail later in the report in Section 7.3 and in Annex 9.8.

It is worth noting that our proposed approach to assessment is not “design-based” (i.e., randomized control trials (RCTs)), but “model-based”<sup>44</sup>. Given both the disparate types and overall number of interventions conducted between 2008/09 and 2018/19, it is not practically feasible to conduct RCTs on the entire set of interventions.<sup>45</sup> The goal of the modelling approach used here is to generate findings that can be causally attributed to the interventions being evaluated.

#### 7.2.2. General Qualitative Approach

The qualitative component of the 2018/19 Child Labor Survey provides context for the quantitative results and a deeper understanding of how various key players understand child labor within the cocoa sector in Ghana and Côte d'Ivoire. This component also provides nuanced perspectives on the topics covered in the surveys, including complex concepts such as night work, heavy loads, and sharp tool use. Qualitative data helped identify factors contributing to observed prevalence rates, changes in

---

<sup>43</sup> The attribution analysis explores if the interventions led to a statistically significant decrease in prevalence rates of child labor and hazardous child labor, over and above the influence of other confounding factors.

<sup>44</sup> The model-based approach use theoretical model to specify the relationship between the outcome variables of interest and set of covariates that influence the outcome and estimate the impact of intervention.

<sup>45</sup> The most commonly used method required either a randomized rollout of interventions into treatment and control location and/or a random assignment of beneficiaries into the treatment and control group.

prevalence rates, and changes in hazardous work trends. The qualitative component was based on focus group discussions with children and caregivers in cocoa growing regions of Ghana and Côte d'Ivoire and key informant interviews (KIIs) with the community leaders, donors, International Chocolate and Cocoa Industry members, government officials, implementers and civil society organizations. A summary of the respondent groups can be found in Annex 9.1.2.2 The detailed methodological approach is available in Annex 9.1.6.1.

### 7.3. Research Questions, Analysis and Findings

In this section we present the key research topics (RTs) addressed in this assessment highlighting the effectiveness of various thematic areas of intervention as well as overall effectiveness and sustainability of interventions implemented by various stakeholders aimed at reducing the prevalence of child labor and hazardous child labor in the cocoa sector. We then provide a brief description of the analyses undertaken to address the RTs and finally presents the assessment findings.

The following figure summarizes the key RTs and methods used to address them.

Figure 3: Research Questions and Analyses

Research Questions		Type of Analysis	
Interventions/Theme	Sub-themes	Quantitative	Qualitative
<b>Impact of education and vocational training</b>	Impact on Children's Attitudes of Education		X
	Impact of education Material Assistance	X	X
	Impact of School construction/infrastructure		X
	Impact of School feeding/school supply programs		X
	Impact of Vocational training		X
<b>Impact of livelihood services</b>	Impact of livelihood services on child labor/hazardous child labor	X	X
	Aspects of livelihood services were most important in deterring child labor		X
	Perception of gains of livelihood services		X
<b>Impact of occupational safety and health training</b>	Use of appropriate safety tool	X	X
	Exposure to hazardous work	X	X
<b>Impact of awareness raising campaigns</b>	Influence on awareness of children, parents, community leaders		X
	Influence on their attitude and behavior		X
<b>Overall effectiveness of interventions</b>	Themes emerged in terms of effectiveness of interventions		X
<b>Overall sustainability of interventions</b>	Strategies of promoting sustainability and intervention sustainability		X
<b>Overall Impact of Interventions on the prevalence of child labor and hazardous child labor</b>	Impact of multiple interventions on child labor/hazardous child labor	X	

#### 7.3.1. Impact of Education and Vocational Training and Child Labor in the Cocoa Sector.

Provision of education and vocational training to children serves as one of the important interventions in reducing CL & HCL. Between 2008/09 and 2018/19, various stakeholders implemented projects focusing on education and vocational training for children in the cocoa sector in Côte d'Ivoire and

Ghana. Thus, assessing effectiveness of education and training interventions on prevalence of CL and HCL in the cocoa sector in Côte d'Ivoire and Ghana becomes an important research question.

#### 7.3.1.1. Children's Attitudes towards Education

To anchor findings on the impact of education programs, this section begins with an analysis of children's attitudes towards education, and their perceptions of the costs and benefits of education.

Children value their education, noting that completing school was a necessary requirement for achieving their future aspirations. Beneficiary and non-beneficiary children said they enjoyed their lessons as well as the social aspects of attending school, including seeing their friends and playing sports.

Yet, beneficiary and non-beneficiary children each reported similar barriers to school attendance. In both Ghana and Cote d'Ivoire, children most often explained that school absences were due to illness and financial difficulties where parents were unable to provide money for lunch, school supplies, or uniforms. Children also cited lack of transportation as a barrier to school attendance, as some had to travel five or more kilometers to the nearest school. In these instances, inclement weather and long distances between home and school made the journey to class difficult.

Beneficiary and non-beneficiary children also said that they occasionally miss school to help their parents, particularly during the cocoa harvest season. In some instances, these absences were anticipated and, in other cases, children explained that after going to the farm in the morning, they would return home too late to be able to get to school on time. As a result, they stayed home to avoid punishment from their teachers. Notably, children who were supporting older caregivers in farm activities (such as grandparents) more often attributed their school absences to work.

During interviews, implementers reported similar trends, noting that the aging population of cocoa farmers was a contributing factor to child labor. Implementers and government officials indicated that in many cases older farmers are physically unable to complete certain tasks and therefore rely on children more heavily.

Children reported engaging in a variety of on-farm and off-farm activities, including weeding, bean transportation, drying cocoa, and applying chemicals. Children indicated that broadly, they enjoyed knowing they were supporting their parents, and working alongside their friends on cocoa farms. Children in Côte d'Ivoire more often reported that working on cocoa farms fulfilled a sense of duty to their families and enabled them to support their caregivers.

Although children enjoyed feeling like they were helping their parents, neither beneficiary nor non-beneficiary children indicated a preference for working on cocoa farms over attending school. In fact, beneficiary and non-beneficiary children preferred to be at school and felt that supporting their caregivers on cocoa farms would also support their schooling:

*You can also take out the cocoa seeds and dry it and when they sell the cocoa they can support your education with the proceeds.* Beneficiary child, Côte d'Ivoire, M

*When I think about the fact that my mother will give me money she gets from harvesting the cocoa for school it makes me happy.* Beneficiary child, Ghana, M

*When I help my mother to pick and gather the cocoa she gives me money for my school fees.* Non-beneficiary child, Ghana, M

Overall, beneficiary and non-beneficiary children in both countries reported similar perspectives on the benefits of education. Children indicated that going to school would enable them to achieve their future goals and allowed them to socialize with their peers.

### 7.3.1.2. Education Material Assistance and Child Labor in the Cocoa Sector

To help families that lack resources to afford children’s education-related materials and supply, stakeholders implemented projects that offered material assistance to families in the cocoa-growing areas of Côte d’Ivoire and Ghana. While the interventions were implemented in both Côte d’Ivoire and Ghana, the coverage of this intervention type was more extensive in Côte d’Ivoire. The material assistance provided included uniforms, school bags, and other scholastic materials such as textbooks, pens, and pencils.

The expectation is that material assistance provided to families will support families that typically can’t afford those items and thus avoid absenteeism and/or reduce their dependence on child labor to pay for them. To examine the effectiveness of such interventions, we used quantitative analysis to explore whether the households that received educational material support (such as school supplies, text books, and uniforms) were less likely to have children engaged in child labor and in hazardous child labor in cocoa production than the households that did not receive such support.

The quantitative analysis used a model-based approach to assess how provision of material support affected the likelihood of children’s engagement in child labor and hazardous child labor as well as rates of child labor and hazardous child labor in a family, after controlling for other observable influences in a regression framework. Based on a theoretical model of the household (HH) decision-making process, we first identify factors that might influence households’ decision to engage children in child labor in cocoa production. Then we estimate whether, after controlling for such factors, households that received material support are less likely to engage children as child labor and in hazardous child labor in cocoa production.

The self-reported data show that in Côte d’Ivoire 605 households (44%) had at least one child who received benefits and in Ghana 164 households (14%) with at least one child that received material assistance related to education.

Please refer to Annex 9.8.1 for a detailed description of the quantitative methodology and data sources used for addressing this research question.

#### Findings from Quantitative Analysis

The detailed statistical model using for testing whether the households that received educational material assistance were less likely to have child labor and children engaged in hazardous child labor in cocoa production is reported in Annex 9.8.1.

The model was estimated for Côte d’Ivoire and Ghana separately and reported in Tables 29 and 31 in Annex 9.8.1. Regression results presented in the second and third columns in Tables 29 and 31 in Annex VI indicate that the likelihood of children’s engagement in child labor and in hazardous child labor in cocoa production among households that received educational material support were *not* statistically different from the households that did not receive such benefits in each country.

Similarly, results presented in the last two columns in Tables 29 and 31 in Annex 9.8.1 indicate there was no statistically significant difference in the prevalence rate of child labor and hazardous child labor in cocoa production between the beneficiary and the non-beneficiary groups in each country.

In sum, our analysis was not able to detect any statistically significant difference in child labor and hazardous child labor among the households that received educational material support, even at a modest level of significance (10%). This indicates that the educational material support programs were probably not strong enough to generate a large enough difference in child labor and hazardous child labor rates that could be detected by the given design. A second possibility is that educational support

programs are not effective when implemented by themselves. Given the complex nature of child labor it may be the case that no one intervention will lead to significant decreases in child labor and/or hazardous child labor and a system approach, addressing multiple factors within a community, is needed to see significant impacts. Hence, it is important to understand the potential methodological reasons for these observed “null effects”. Please refer to Annex 9.10 for a detailed discussion caveats and limitations of the quantitative analysis.

### 7.3.1.3. Impact of School-Based Interventions

Quantitative data indicate there was significant increase in children’s school attendance in both countries. Qualitative findings indicate that improved access to schooling, improved infrastructure, and the provision of school materials contributed to increases in children’s school attendance. Children residing in school-based intervention communities reported significant changes, including infrastructural and administrative improvements to their schools, new school building construction, school building rehabilitation, the addition of new classrooms or grade levels, and electricity.

#### 7.3.1.3.1. School Construction and Infrastructure Improvement

In communities where school building construction took place, children said they noticed a significant reduction in the time and effort previously required to get to school. For some children the nearest school was in a neighboring community several kilometers away. As such, traveling to and from school was arduous, especially during inclement weather. Students also indicated that travel distances to and from school sometimes prohibited their attendance, particularly when they knew they would be late. In other communities that were sites for school construction, children reported that before their new schools were built, classes were conducted outdoors, with makeshift blackboards. Children said that the new school buildings made them more motivated to attend class, and less likely to miss school when it was raining.

Among teachers and caregivers in beneficiary communities, improved physical access to schools for children additionally contributed to positive outcomes in children’s school attendance. Prior to school construction initiatives, many children lacked access to nearby schools. Consequently, caregivers could not leave their children at home, and would take them instead to the farm. With the construction of schools more proximate to their homes, children reported going to school instead of staying home or going to the farm due to school distances.

Teachers in beneficiary and non-beneficiary communities indicated that children who had difficulty accessing nearby schools were at higher risk of engaging in child labor. However, teachers also made specific distinctions between socializing work and accompaniment, reporting that in some cases, children accompanied their parents because they did not have anywhere else to go, but were not necessarily working.

*Since the parent himself must go to the field. If there is class, the child stays in school, he knows that his child is safe with the masters. But if he leaves him alone in the village, he does not know what his child is doing behind him. So, to be able to have an eye on their child, they prefer to go with them to the field. Like that, they are all together. They have time to watch over them. So, I do not think it's in any other sense that parents do it. The parents would not necessarily want his child to become a farmer tomorrow. Primary School Teacher, Côte d'Ivoire*

Aside from new school building construction, other reported infrastructural improvements include the addition of fences, washrooms, electricity, water pumps, and boreholes. The improvements brought a

sense of safety to the children and enhanced their ability to focus during class. New construction also eliminated burdensome school chores. As one student explained:

*We used to fetch water at a longer distance but now, we have water in our school, and hence we are able to access water.* Beneficiary Child, Ghana, F

There were gendered differences in perceived benefits from school infrastructure improvements. Only girls reported that latrine construction or improvement made them feel safer. Girls were also more likely to report that prior to the availability of water on school grounds, they, rather than boys, were responsible for fetching water for their schools. These activities caused girls to miss some lessons in school and made it difficult to catch up.

In communities without school rehabilitation programs, caregivers in Ghana and Côte d'Ivoire expressed concern about their children's safety in schools needing infrastructure improvements.

#### 7.3.1.3.2. School Feeding Programs & School Supply Provision

Focus group results also indicate children see significant gains in the area of administrative improvements in their schools. Among these, children reported the most significant gains from school feeding programs and canteens. Prior to the school feeding programs, children would sometimes go without meals during the day as their caregivers could not afford to send them with money for food. The lack of money for school lunch also discouraged children from going to school to avoid going hungry and/or watching others eat.

Teachers also found school feeding programs to be helpful in improving school attendance and changing caregiver and children's attitudes towards schooling. Teachers indicate that school feeding programs have improved performance, and enabled children to be more engaged in school:

*It has really helped the children because before the school feeding started, the class is always bored after 12pm because the children are hungry. The introduction of the school feeding has helped the children to concentrate for the last lesson after they have eaten. It has also encouraged more children to attend school because most of the children were not coming to school due to their parents not giving them pocket money.* Primary School Teacher, Ghana

*The canteen has helped a lot. It is undeniable that when there is food, it stabilizes the children. So even at noon, when they have eaten here, they don't even find it important to go home. Before, they would go home and did not come back.* Primary School Teacher, Côte d'Ivoire

Teachers who saw a link between school-based interventions and child labor reported that children from vulnerable families were most at risk of engaging in child labor, and most at risk of not attending school. These teachers believe that school feeding programs have enabled these students to access schooling, and therefore, lowered their risk of engaging in child labor. These teachers also explain that caregivers who engage their children in child labor, do so because they could not afford to send their children to school.

*Yes, there have been changes in the parents' attitude, because previously, when a parent could not afford to give the child money for school, the parents will rather ask the child to follow the parent to the farm but things have changed. Now, parents allow their children to come to school without money knowing there is school feeding.* Primary School Teacher, Ghana

In addition to school feeding programs, the provision of school supplies and uniforms was helpful when parents could not afford to provide these. Specifically, caregivers noted the significant impact of uniform provision and school feeding on their children's ability to attend school.

*Some time ago, the government brought free uniforms for the children here. Some of the children were orphans, and they all had a share of the free school uniforms. The children who were once staying home are back to school because of the free school uniform intervention when their friends shared the good news with them. Beneficiary caregiver, Ghana, F*

For a small set of students, it was reported that an increase of teachers in schools (hence a reduction in the teacher to student ratio) led to better relationships with their instructors. Children noticed increased dedication in their teachers and reduced incidences of corporal punishment. These improvements ultimately diminished students' fear of teachers and catalyzed excitement in learning.

In communities where such interventions were not in place, caregivers reported that they believed their children would greatly benefit from canteens. As one caregiver reports:

*There is no canteen at school, where the children can stay there to eat. They have to come back to the house, and their parents are not there to give them food. The distance is very long to go back to school, so sometimes they just stay home. Non-beneficiary caregiver, Côte d'Ivoire, M*

#### 7.3.1.4. Persisting Challenges

While school-based interventions have improved overall attendance, and reduced work-related school absences, teachers report persisting challenges in discouraging caregivers from engaging their children in work. Consistent with children's self-reported absences, teachers disclose that many students are late to school because they spent the morning on cocoa farms. Teachers also indicate a spike in absences during the harvest season and on market days, where children support their families in various tasks and consequently miss school.

Notably, teachers in Ghana and Côte d'Ivoire saw the potential of future collaboration with caregivers as a means of reducing child labor. In communities where school-based interventions took place, teachers noticed improved relationships with caregivers. In some communities, teachers and caregivers were mobilized to raise funds and materials for school infrastructure improvement. This collaboration provided teachers an opportunity to discuss their children's wellbeing and raise concerns about involvement in child labor. Teachers also felt more comfortable visiting children's homes and discussing absences with caregivers. This was most common in communities where teachers reside in the community, and in locales where teachers' quarters were recently constructed within the community. This proximity to families was instrumental to building relationships where teachers could encourage caregivers to send their children to school and have one-on-one conversations about how going to farms before school affects students' performance.

*These initiatives, because for parents, when we meet during PTA meetings; and then they put forward all these things, sometimes we try to educate them and why they should support their wards in education; to go through their education, especially when we were building the KG building. We told them the fundamentals are very important, so they should support it. So most of them came around to help, so I think the attitude is changing. Primary School Teacher, Ghana*

*Here, we specify the worst forms of child labor. We did several training on this subject. With the support of [implementer] we mobilize parents, to make them aware of the fight against child labor and especially the worst forms of child labor. Primary School Teacher, Côte d'Ivoire*

Teachers see an opportunity to build on the strides made by school-based interventions and move conversations on child labor forward within regular school-related meeting with parents.

#### 7.3.1.5. Impact of Vocational Training Programs

Provision of vocational training to children is an important intervention for reducing child labor by helping them gain the skills necessary to get safer alternative employment. During the assessment period, various stakeholders implemented projects focusing on vocational training for children in the cocoa sector. Here we aim at assessing the impact of vocational training interventions on children's engagement in child labor and hazardous child labor in the cocoa sector.

During the research design stage, it was envisaged that this question would be addressed using quantitative analysis. Accordingly, in the 2018/19 child-labor survey, children were asked to report whether they attended vocational or skill training or apprenticeship program outside of their school. The self-reported data show that in Côte d'Ivoire only 24 households (less than 2%) had at least one child who received vocational training and in Ghana only 3 households (less than 1%) had at least one child that received vocational training.<sup>46</sup>

Given the small number of children reporting exposure to vocational training, this research question could not be addressed using quantitative methods and was subsequently dropped during analysis due to insufficient data. However, qualitative analysis was used to gauge the effect of vocational training.

Qualitative findings on exposure to and the impact of vocational training programs are also limited. Despite best efforts to ensure thorough representation of communities that were exposed to vocational training interventions, most respondents did not participate in such programs. However, for the communities that did have vocational training, children and caregivers reported significant gains.

For example, children in Ghana and Côte D'Ivoire who participated in vocational training programs received skills training in sewing, soap making, and agricultural practices. Children over fifteen years old in both countries received training in best practices in cocoa pruning and maintaining other agricultural commodities. Children often cited vocational training as most helpful for improving their understanding of the options available to them for their future careers. This was especially pronounced for children who felt it was unlikely that they would go on to tertiary education.

Among beneficiaries, girls reported more benefits from vocational training than boys. Beneficiary girls stated that they and other girls in their communities found vocational training a valuable resource for learning skills they could use to take care of themselves after they completed school, or when their parents were no longer able to support their education. One girl shared the experience of another in her community:

*She said she wanted to go to school but her father told her he won't get the money to fund her education so she should stay home and when she was staying at home her*

---

<sup>46</sup> Intervention data collected from the CLCCG partners corroborated with the self-reported data. The intervention data demonstrated that vocational training was rarely offered: only 8 communities in Côte d'Ivoire (out of the 75 communities covered in the 2018/19 survey round) had any vocational training intervention implemented by the CLCCG partners, while in Ghana, none of the 75 communities covered in the 2018/19 survey round had any vocational training intervention implemented by the CLCCG partners.

*father didn't mind her. Then the opportunity came, now she feels good and it has changed her life.* Beneficiary child, Ghana, F

Both beneficiary and non-beneficiary children voiced desire for future training. However, there were gendered differences between the types of trainings preferred. While girls sought additional training around sewing, textiles, and hair dressing, boys opted for training around agricultural practices, automobile repair, and motorcycle repair. There were also notable differences by country – boys in Côte d'Ivoire more often expressed a desire for vocational training in cocoa production and other agricultural endeavors than boys in Ghana.

*I would like to learn cocoa culture or how to plant rice or rubber because there is a lot of money in it.* Beneficiary child, Côte d'Ivoire, M

*I would like to be an apprentice to a carpenter and learn how to build things so I can sell them.* Beneficiary child, Ghana, M

Caregivers also see benefits for vocational training programs for their children. Caregivers in both Ghana and Côte d'Ivoire believe that vocational training programs helped their children become more responsible and motivated about school. Caregivers also indicated that vocational training programs enabled youth to explore opportunities within their own communities and reduced the frequency with which children were migrating to larger cities to find work upon finishing their studies. In some communities, parents explained that participation in vocational training programs requires enrollment in school. Therefore, children became more motivated about being in school in order to meet the qualifications for participation. Similar to children's anecdotes, caregivers report that vocational training programs help children understand the possibilities available to them once they are finished with their schooling:

*I think that this training can lead to other open-mindedness. That is, when they do after a training, the child may be able to orient himself. To know what activity he wants to lead himself. Since he will see all that this training can teach him as a profession. And help him to take care of himself. And to fit into the social fabric. So he will have the choice now to decide. Given the training he did, if he decides to continue school, ok. But if he decides to settle down, and do the entrepreneurship, ok.* Beneficiary Caregiver, Côte d'Ivoire, M

In communities where vocational trainings were not present, caregivers felt their children could benefit from participating in such programs. Caregivers' perceived benefits of vocational training participation closely align with reported benefits from communities where they do exist:

*We want the government to establish vocational training centers because we see lots of them going on in other places. If they vocational training, after completing school, they can have other means of employment. So we are asking the government to provide us with a vocational center.* Beneficiary Caregiver, Ghana, M

The majority of teachers interviewed did not have firsthand experience with vocational training programs in their communities, thus this evaluation cannot gauge teacher assessments of this intervention.

Overall, children who participated in education and vocational training programs experienced significant benefits. These benefits addressed key barriers to education, including school distances, and material costs of school attendance. Administrative and infrastructural improvements facilitated more consistent attendance, promoted feelings of safety, and improved teacher-student interactions. Vocational training programs enabled children to explore opportunities for skills acquisition and future income generation.

### **7.3.2. Impact of Livelihood Services**

Provision of livelihood support to vulnerable families can help improve the economic condition of such households and is expected to indirectly affect the prevalence of child labor and hazardous child labor in these families by releasing their resource constraints and, in turn, reducing the need for the household to put children to work. Hence, the theory of change would expect that children's engagement in child labor and in hazardous child labor is lower among the families that received some livelihood services as compared to the families that did not receive such services.

The livelihood assistance offered most commonly included training on good agricultural practices (GAP), microfinance services, and market linkage services. In this section, we use statistical analysis to test whether the households whose members received livelihood assistance were less likely to have child labor and children engaged in hazardous child labor in cocoa production than the households whose members did not receive such assistance.<sup>47</sup>

The self-reported data show that in Côte d'Ivoire 128 households (9%) had at least one member who received livelihood support and in Ghana 70 households (5.8%) with at least one member who received livelihood support.

Please refer to Annex 9.1.6.1 for a detailed description of the quantitative methodology and data sources used for addressing this research question.

#### **7.3.2.1. Findings from Quantitative Analysis**

We used a multivariate regression technique to test whether the households that received livelihood services were less likely to have children engaged in child labor and in hazardous child labor in cocoa production.

Given the relatively small sample size of households that received livelihood services in Ghana, the model was estimated only for Côte d'Ivoire and reported in Table 76 in Annex 9.8.2. All proceeding regressions were pre-conditioned by performing entropy-balanced (matched) sample of comparison households. Regression results are shown in

Table 77 in Annex 9.8.29.6, with estimates of the effect of livelihood services on the likelihood of having at least one child exposed to child labor in cocoa production in the second column and the effect on the likelihood of children's exposure to hazardous child labor in the third column.

The results in Column (1) indicate that the likelihood of having at least one child engaged in child labor among households that received livelihood support was *not* statistically different from the likelihood of having at least one child engaged in child labor among the households that did not receive such benefits. Similarly, the results in Column (2) indicate that there was no statistically significant effect of livelihood support on the likelihood of exposure to hazardous child labor in cocoa production. In other words, the results of both analyses were unable to detect any effect of livelihood service treatment on the likelihood of having at least one child engaged in child labor and in hazardous child labor.

Next, we turn to the effect of the intervention theme on prevalence rates of child exposure to child labor and to hazardous child labor, namely, the proportion of children in an agricultural household exposed to child labor and hazardous child labor. The regression results in the fourth column in

---

<sup>47</sup> For the evaluation design, we ignore selection bias at the community level assuming that the factors affecting selection of a community will be uncorrelated to the outcomes once the community level infrastructure related indicators are included in the attribution equation.

Table 77 in Annex 9.8.2 indicate that in cocoa production the prevalence rate of child labor among the households that received livelihood services was 10-percentage-points lower than the prevalence rate of child labor among the set of comparable (matched) households that did not receive such services. Thus, the results imply that provision of livelihood service led to a lower proportion of child labor in the cocoa growing areas of Côte d'Ivoire. However, the results reported in the last column of

Table 77 of Annex 9.8.2 show that there was no statistically significant effect of livelihood services on the prevalence rates in hazardous child labor.

While our analysis was not able to detect any statistically significant effect (at 10% level of significance) of livelihood services on the likelihood of having at least one child engaged in child labor or in hazardous child labor, our results show that the prevalence of child labor was lower among the households that received livelihood services compared to the households that did not receive such services; no such impact of livelihood services was detected on children's exposure to hazardous child labor in cocoa production. That said, it is important to note some caveats and methodological limitations related to the above evaluation findings. Please refer to Annex 9.10 for a detailed discussion caveats and limitations of the quantitative analysis and some potential explanations for the lack of effect of this intervention on child exposure to hazardous child labor.

#### 7.3.2.2. Findings from Qualitative Analysis

Focus group findings among Ghana and Côte d'Ivoire caregiver households show varying levels of involvement with livelihoods services. Despite attempts to ensure proper representation of communities that received livelihood services, caregivers indicate limited exposure to such services. Caregivers who did receive livelihoods services, however, reported significant outcomes for their household, ranging from improvements in knowledge, practice, and boosts in income, each with implications for the frequency and length of time their children supported them on farms.

Among caregivers who received livelihood services, the majority of their households received assistance in the form of good agricultural practices (GAP) training, material resource provision, support for the creation of savings and loans groups, and training on other agricultural and non-agricultural income-generating activities. Among agricultural income-generating activities, households most often reported receiving training on vegetable production. Within non-agricultural income-generating activities, households reported receiving training on batik-making and soap-making.

Households who received GAP training felt this training was critical to addressing the challenges of income generation from cocoa. Households most often described challenges related to pests and diseases, yields, and crop quality. Despite persisting challenges in cocoa production, households who received GAP training reported increased yield, and reduced expenditures for pest management. Households also reported that GAP training resulted in time and labor-saving practices that were essential to changing their children's engagement on farms. As one caregiver opined:

*Yes, with what they taught us concerning how to plant inline, we were able to do these things easier and faster on our own without engaging the children.* Beneficiary caregiver, Côte d'Ivoire, M

According to caregivers, GAP training also resulted in increased household income from cocoa production, enabling payment for laborers instead of engaging their children. Community leaders also notice that households now have more money to manage expenses for their children.

*Yes, [my child's time in the farm reduced because I was able to hire laborers instead of using the kids, so the children were not going to the farm always. Beneficiary caregiver, Ghana, M*

Furthermore, caregiver households found the provision of material support for cocoa production helpful in increasing their overall income and improving cocoa yield. These include support for mass spraying, fertilizer provision, and farm equipment provision. In some cases, the implementers or institutions providing material support also discouraged households from engaging their children as a condition of receiving support.

*There is this organization called [implementer name]. They helped the men especially by providing them with cutlass, boot etc., so the parent could help himself or herself and stop using the children for farming activities. Beneficiary caregiver, Ghana, M*

Group savings and loans also supported household income generation and access to credit.

*Those who got involved in the savings, we started not long ago. Since we started, we are now 3 months into it, but still, people go for loans for their needs. So, I think we will progress as time goes on. We were only 15 when we started, but because those who took the loan testified to others, we are 30 now. So, I know that we will increase as time goes on and many people too will get involved. Beneficiary caregiver, Ghana, M*

Community leaders, likewise, note that the savings and loan groups are instrumental for easing the financial burdens of households because they replace income that might be otherwise generated from child labor. Leaders notice that many in their communities no longer want to engage their children in work but do not feel that they have a choice. Savings and loans groups, however, help families address these financial challenges and, consequently, the extent to which their children are engaged in child labor.

*If you compare to the previous years, we were doing child labor, because our finances were not stable. The children were doing some works that they were not supposed to do. And now, too, things have really changed we are going forward. Community leader, Côte d'Ivoire*

Lastly, households that received livelihood support find that training in income-generating activities has been impactful for improving financial outcomes. While the majority of focus group respondents did not have income-generating activities outside of cocoa, those who received training, noted changes in overall income, especially during the off-season. Households reported similar benefits from both agricultural and non-agricultural trainings. Community leaders concluded that such support was key to tackling child labor within their communities:

*So, because of that initiative, it helped everyone in the community to get garden eggs and okra. It helped us to get money in our pockets, so when the people get money, they are able to hire people to come and help them with the farm work which means that the children too will be free. Community leader, Ghana*

While households in both Ghana and Côte d'Ivoire see similar benefits from livelihood services, there were variations in gender, and between countries in the types of livelihood services received. Beneficiaries in Ghana more often received material support for cocoa production, including inputs, cocoa pods, and mass spraying. Additionally, women in both Ghana and Côte d'Ivoire more often reported receive training in non-agricultural income-generating activities, including fabric-making, food sale, and soap-making. Male caregivers more often reported receiving GAP training and participating in Village Savings groups.

Overall, beneficiaries report receiving livelihood services in the form of GAP training, material support for cocoa production, skills training, and savings and loans groups. These activities facilitated income generation and credit access and supported agricultural expense management. The reduction in financial burden enabled farmers to hire laborers and reduce children's engagement in farm work.

### **7.3.3. Impact of Occupational Safety and Health training interventions**

Provision of training to understand and address issues of occupational safety and health (OSH) related to cocoa production can lead to a transition of youth of legal working age who are engaged in hazardous labor into safe, acceptable work adhering to the national laws and international labor standards. Thus, OSH interventions can play an important role to protect youth workers in the cocoa sector from injuries and other occupational hazards that have important health consequences. It is important to assess whether the OSH interventions influenced the youth workers to use of proper safety equipment or, reduce their exposure to hazardous child labor.

We use statistical analysis to investigate whether the youth beneficiaries who received OSH from formal sources<sup>48</sup> were more likely to work with appropriate safety equipment and or more likely to engage with non-hazardous work as compared to their counterparts who did not receive such training.

Children were asked to report whether they received any training on occupational safety and health and/or training on using appropriate safety equipment at work separately from formal and informal sources. The self-reported data show that in Côte d'Ivoire 16 youth of age 15-17 (4% of all 15-17 year old children) received formal OSH training and in Ghana 156 youth of age 15-17 (31% of all 15-17 year old children) received formal OSH training.

In the child survey, children were asked to report whether they used any protective gear while working in agriculture. The types of protective gear considered include protective boots (Wellington boots, Afro Moses), gloves, protective clothing (overalls, long sleeves, trousers), nose mask or gas mask, helmet, goggles, and other protective wear. Based on the responses, an indicator variable was constructed to specify whether the children reported using any one of the above categories of protective gear while working in agriculture in the past 12 months before the survey. The data indicates that in Ghana, 41% of youth of age 15-17 were using at least one of the listed protective wears.

Please refer to Annex 9.8.3 for a detailed description of the quantitative methodology and data sources used for addressing this research question.

#### **7.3.3.1. Findings from Quantitative Analysis**

As reported above, in Côte d'Ivoire a very small number of youth received OSH training, and thus it was not feasible to conduct statistical analysis with the sample from Côte d'Ivoire. Therefore, the statistical analysis reported below used the data from Ghana only reported by 15-17 year old children.

Comparison of usage of safety tool data between the treatment group (youth who received formal OSH training) and the matched comparison group indicate that 58% of the youth in the treatment group reported using at least one of the seven different types of protective wears, while 41% of the youth from the comparison group reported using protective wear. The difference between the two groups was statistically significant at 1% level of significance. Thus, the results show that the youth in Ghana who received formal OSH training were more likely to use at least some of the safety tools/protective gear while working in agriculture.

---

<sup>48</sup> Formal OSH training was defined as training provided by an employer, NGO, or other organization and delivered in a planned/structured manner.

Finally, we used a multivariate regression technique to test whether the youth who received OSH training were less likely to engage in hazardous child labor in cocoa production. The results from the analysis (shown in

Table 79 in Annex 9.8.3) indicate that after controlling for various covariates that affect children's engagement in hazardous child labor, there was no statistically significant effect of OSH training on the youth's likelihood of exposure to hazardous child labor in cocoa production in Ghana. In other words, the analysis was unable to detect any effect of OSH training treatment on the likelihood of exposure to hazardous child labor among youth.

While our analysis indicates that youth's engagement in hazardous child labor was not affected by their participation in formal OSH training, we offer some potential explanations for the lack of effect of OSH training on youth's exposure to hazardous child labor in Annex 9.8.3.

#### 7.3.3.2. Findings from Qualitative Assessment.

In assessing changes in occupational safety habits among beneficiary youth, focus group results in Ghana and Côte d'Ivoire suggest youth have acquired at least some level of awareness of measures that may protect them from the hazards of cocoa farm activities. Respondents said they learned about using protective gear when working with chemicals, and how to cover themselves adequately for on-farm activities, including wearing goggles, and closed shoes. Importantly, youth express that trainings on safety helped improve their understanding of the importance of safety precautions, and of the potential health consequences of non-adherence to the practices promoted. When asked about changes in their farm activities or activities they were not allowed to do, youth most often said that they were no longer allowed to handle chemicals and when they did, they were only allowed to do so with the correct protective gear.

Changes in occupational safety practices were more often reported by boys than girls in both countries. This correlates with previously noted differences in girls and boys reported on-farm and off-farm activities, as boys reported more chemical use and sharp tool use as part of their on-farm activities. Additionally, changes in occupational safety practices were most often reported by youth who indicated that their caregivers received these training as well. In communities where caregivers received occupational safety training, there were more supporting anecdotes from youth regarding caregiver-led precautions and changes to hazardous labor practices. In cases where caregivers did not receive similar training, youth reported challenges in talking to their caregivers about their desire to implement new occupational safety and health practices.

*They told us our parents should not to give us heavy loads to carry. When I went home and told my father about it, he told me to go and stay with the man who said that so that when I go to the farm with him he will not give me heavy loads to carry. But I told my father it was an education they gave us on health and how to stay strong. Me for instance I get sick often so if you give me heavy loads to carry it make me sick [more often].* Beneficiary youth, Ghana F

In both Ghana and Côte d'Ivoire, a portion of beneficiary youth believe that while their knowledge around occupational health and safety practices has improved, their practices remain the same. In these cases, youth want to adopt changes, but are unable to do so due to the unavailability of protective materials such as boots, masks, and gloves. While there were significant reported changes in chemical use and wearing protective gear when conducting other farming activities, youth did not report changes in sharp tool use.

Both beneficiary and non-beneficiary youth reported wanting more training on how to be safer during farming activities.

*I want to know how to operate the spraying machine so that when my surroundings grow weedy I could spray with weedicides without it coming into contact with my body.*  
Beneficiary youth, Ghana M

Overall, occupational safety and health interventions resonated among youth, especially when their caregivers received similar training. Youth report that these interventions have helped them understand the importance of keeping themselves safe, and that when possible, they have modified their practices accordingly.

#### **7.3.4. Awareness-raising efforts on Awareness of Children, Parents, Community leaders and on Attitudes towards Child Labor**

Although hazardous labor increased in Ghana and Cote d'Ivoire, qualitative findings among beneficiary caregivers offer more nuanced outcomes and dynamics regarding knowledge, attitudes and practices. Beneficiaries in both countries show increases in knowledge around child labor, particularly hazardous labor.

##### **7.3.4.1. Exposure to Child Labor Campaigns**

Adult caregiver beneficiaries in Ghana and Cote d'Ivoire were exposed to child labor awareness campaigns in the form of posters, visits from NGOs and government-affiliated groups, good agricultural practices trainings, and radio ads. Beneficiaries also reported exposure to child labor sensitization efforts during parent teacher association (PTA) meetings and community gatherings. In both countries, adult beneficiaries indicated that awareness raising efforts were also administered through child protection committees that worked closely with community leaders to integrate child labor sensitization into community meetings, and through one-on-one meetings with community members. Caregivers, as a result, learned about the dangers of child labor, especially within hazardous work. These awareness campaigns emphasized the adverse health effects of child labor, appropriate working ages for children, and the potential legal consequences caregivers could face if they subjected their children to child labor.

*They taught us everything. They said that a child who is not up to the age of 18, someone from 5 years – 15 years, if you let that child carry a bag full of farm produce the police can arrest you because it is a form of child labor so when we heard that, I for instance I have not been to school so if my child has been to school and she is telling me this and I have also seen the posters outside then it means I have to be serious with it because the police can arrest me. I then decided that I will not do it for the police to arrest me so I adhere to the advice that the child is giving me so for me I know it has helped me.* Caregiver, Ghana, F

##### **7.3.4.2. Child Labor Attitudes and Practices**

Caregiver beneficiaries in both Ghana and Cote d'Ivoire reported changes in their practices with cocoa labor, particularly, around sharp tool use, carrying heavy loads and chemical use. Caregivers indicated that as a result of these campaigns, they no longer allowed their children to use sharp tools or chemicals or carry heavy loads. Some also indicated that as a result of these campaigns, they no longer allow their younger children to do any type of work. In describing these changes, caregivers used key language from awareness campaigns about hazardous activities and proper working ages. Community leaders in Ghana and Côte d'Ivoire also noticed changes in practices related to child labor, most often around carrying heavy loads, and sharp tool use. Community leaders in some locales say that members of their community no longer engaged their young children in any type of work.

*Before we had the teachings when the child comes back from school, the parents could tell the child to come to the farm after school, even the child's lunch, the child should*

*come and have his or her lunch on the farm and after that you will see the child carrying firewood and some food stuffs but after the teachings I can see that parents who engage in such acts has all stopped doing that.* Community leader, Ghana

Among children (5 to 17 years of age) in both countries, many engaged in both on and off-farm activities, including weeding, extraction, bean transportation, and drying cocoa, focus groups reveal. Those engaged in these activities used machetes, sickles, and fertilizer. Among older children (13 and up), there was more reported use of fertilizers and spraying machines.

Consistent with assessments among caregivers, hazardous practices have changed for children as well, with beneficiary children reporting a difference in their use of sharp tools, chemicals, and carrying heavy loads. When asked to reflect on how these tasks have changed, children of all age groups reported that the use of spraying machines, fertilizers, and other chemicals had changed the most. Caregivers, meanwhile, expressed favorable views of the campaigns, asserting the information educated them on the harmful effects of chemicals on their children's health. Similarly, children reported that they were no longer allowed to use chemicals, because it could result in compromised health or injury.

To measure children's attitudes about child labor, children were asked what they liked and did not like about helping their parents on farms. Children said that many on-farm and off-farm tasks, such as weeding, or carrying cocoa pods are physically painful. Children also cited incidences of animal bites as a reason they did not enjoy working. When asked about what they do like about working, social benefits appear to shape children's views about work, as respondents pointed out the importance of parental validation, working alongside friends, in addition to contributing to supporting their families. In this regard, there were differences by country. Children in Ghana more often quoted the social aspect and parental validation as favorable, while children in Côte d'Ivoire tend to enjoy working because they were fulfilling their familial responsibility.

*We like helping because they suffer for us, and they have to pay for our school. You have to work in the farm to have enough to eat.* Beneficiary child, Côte d'Ivoire, M

Caregivers reported notable differences in their perceptions of child labor campaigns based on the mode of delivery. For instance, caregivers who reported receiving awareness training within good agricultural practices training, interactions with community groups, and trainings from NGOs learned more about the health impacts of child labor and were more receptive to these teachings. These caregivers more often saw attributed changes in their practices to the promotion of good health for their children.

*Well, these awareness campaigns, first there was a community relay, which was formed against the worst forms of child labor. So we were sensitized, and also in training, when we do training, we are told not to use children, that's it! We change because there are diseases that attack children, because the weight that the child bears is more than his own strength. So the child can get sick. But today, these diseases are no longer attacking children, so we are still evolving, really it's good.* Caregiver, Côte d'Ivoire, M

Caregivers who reported more exposure to other information dissemination modes, such as radio ads and child protection committee presentations, learned more about national anti-child labor laws and punitive consequences for engaging their children in child labor. These caregivers more often explained changing their practices to avoid arrest or facing other consequences from local authorities. Notably, caregivers had less favorable perceptions of campaigns that focused on the punitive aspects of child labor engagement, reporting that these laws did not take their economic circumstances or familial dynamics into account.

Community leaders in Ghana and Côte d'Ivoire also saw changes in their own attitudes towards child labor overall, and credit the shift to increased attention and encouragement from government-affiliated groups. Community leaders in both countries engaged in awareness campaigns through community meetings, collaborations with local government authorities, and collaborations with NGOs. Leaders indicate that their involvement in designing awareness campaigns is critical to creating messaging that resonates with community members:

*They placed the posters outside so that if there is a child who has carried a lot of cocoa that has made the neck [bent] If they paste the posters and even someone cannot read and the person sees the picture and sees even a child...saw in the picture that the child falls inside a pit or falls down because of what he or she is carrying. So if the parents or the elders see it, then they say if I make my child work very hard like this, this is what will happen to the child. Community leader, Ghana*

Focus group results reveal dramatic differences in caregiver and youth perceptions of child engagement in farm activities. Importantly, caregivers most often reported that their children worked only on weekends and were not allowed to weed or collect cocoa. By contrast, children reported working weekends, before and after school, and engaging in the activities their caregivers reported they did not allow them to do. Moreover, though caregivers said only their older children (15 and over) were allowed to work, children of all ages revealed they engaged in on-farm and off-farm activities.

*We go to the farm on Saturdays but sometimes my father can tell me not to go to school but rather go and help him in the farm so I go to the farm on Saturdays and any day I don't go to school. We go in the morning and come back in the afternoon around 1:00 to 2:00 pm. Beneficiary child, Ghana, F*

Results suggest that caregivers may underreport child labor, possibly due to several factors. While caregivers were open about the household economic imperatives that necessitate children's work, they were less open about their own children's engagement in child labor. Despite attempts to ensure neutral wording in all questions, caregivers may have opted for more socially favorable responses, or feared punitive consequences. Community leaders also demonstrated similar trends, reporting that there was no child labor in their communities while children in the same communities reported engaging in farm work. Given community leader's roles in awareness campaigns it is possible that community leaders also opted for socially favorable responses that demonstrated progress within their communities. Alternatively, community leaders may have feared consequences for their community's eligibility for future interventions.

Government officials, implementers, and donors reported changes in knowledge and attitudes towards child labor. These stakeholders conveyed that awareness raising efforts have been extremely successful in improving knowledge on child labor. When asked about the most significant recent changes in child labor attitudes, one implementer reports:

*The biggest change is in knowledge and awareness. There are a lot of awareness raising programs and programs that have increased knowledge around child labor. There is a great improvement in farmers' awareness of child labor, and what they should be doing to prevent it. Implementer, dual-country program*

Despite improvements in attitudes and knowledge around child labor, cocoa sector stakeholders conclude that awareness-raising efforts are insufficient for changing practices around child labor. Government officials, donors, and implementers explain that creating broad change within child labor practices would require the implementation of complementary activities. There is a unique opportunity

to build on the gains made through awareness raising efforts that includes continued collaboration between implementers, government stakeholders, and donors.

There was limited evidence that changes in child labor awareness campaigns led to changes in attitudes about education. Both caregiver and child respondents indicated that the majority of school absences were not due to low prioritization of education, but rather, limited resources. However, a few teachers and community leaders in each community reported that child protection committees played an important role in monitoring absences in school and discouraging caregivers from having their kids skip school to help on the farm during peak cocoa season.

Overall, awareness-raising campaigns have significantly improved knowledge on child labor for children, caregivers, community leaders, and teachers. Most notably, children and caregivers in Ghana and Côte d'Ivoire report decreases in children's interactions with chemicals. Although most caregivers and community leaders insisted that awareness raising campaigns have reduced children's engagement in cocoa work, their children still reported regularly engaging in on and off-farm activities. There was limited evidence to suggest that awareness raising campaigns were linked to changes in attitudes about education.

### **7.3.5. Effectiveness of interventions and Themes emerged relating to Challenges, Good Practices, and Lessons Learned**

This section combines perspectives from beneficiaries, implementers, donors, and government officials to illustrate findings related to intervention efficacy.

Several themes emerged related intervention efficacy, best practices, and challenges with implementation.

#### **7.3.5.1. Theme 1: Beneficiary and Community Ownership**

According to beneficiary respondents and implementers, interventions that promoted beneficiary participation in planning and implementation were most effective. This was most evident in school-based interventions, which had the highest levels of success in Ghana and Côte d'Ivoire.

While many school-based interventions received some support from government or NGOs, community leaders, teachers and caregivers were encouraged to mobilize their own funds to make additional contributions to school construction and school rehabilitation. These respondents raised funds for school materials, school furniture, borehole construction, teachers' quarters' construction, and new school construction. Motivated by NGO and government-sponsored improvements to community schools' caregivers and community leaders collaborated with teachers to support their children's schools.

*That is one thing I like about this community. Anytime we want to embark on a project for the school the parents go all out to help the school. Teacher, Ghana*

Community-funded supplements to sponsored interventions facilitated increased impact and efficacy of school-based interventions. In both Ghana and Côte d'Ivoire, school-based interventions were critical to addressing key barriers to school attendance, particularly those related to lack of finances and long distances to school.

Implementers, donors, and government officials have similar perspectives on intervention efficacy. Asked to share their views on the types of interventions that were most effective, they most often cited interventions promoting beneficiary ownership and community mobilization. Implementers and government officials mentioned engaging community leaders, especially in child labor awareness efforts, as most effective. This was most pronounced in the implementation of community-level child

labor monitoring efforts through child protection committees. As one respondent from an implementing organization reports:

*The most impactful interventions is the establishment of Community Child Protection Committees in the communities. We have mentioned that the outsider is only a facilitator and you have no power to sanction the farmer. The farmers understand the issues well when the issue is led by their own community members.* Implementer, dual-country program

Community leaders also reported that child protection committees worked closely with previously established leadership frameworks within the community, including faith leaders and women leaders. Leaders noted that these committees were key to promoting awareness-raising efforts in language that was accessible to community members.

#### 7.3.5.2. Theme 2: Potential of indirect interventions

Community leaders, implementers, donors, and government officials reported that in most cases, factors related to poverty and truancy contributed to high child labor rates. Notably, some of the most effective interventions were those that addressed the root causes of child labor but were not necessarily designed to support child labor prevention only. These included school construction, good agricultural practices training, and road construction between cocoa communities and larger communities.

Respondents noted that while awareness raising efforts have been extremely effective in improving knowledge around child labor, they were less effective in changing actual behaviors. As such, initiatives that addressed barriers to schooling and income generation were more effective. Government officials and implementers reported a variety of strategies used to improve cocoa production outcomes had indirect effects on child labor. For example, the provision of core inputs, good agricultural practices training, and road construction from remote farms to collection centers had significant effects on farmer incomes from cocoa. Input provision allowed farmers to minimize agricultural expenses, while road construction allowed them to minimize transportation expenses for their cocoa. Further, good agricultural practices training helped farmers prevent pests and diseases, maximize their yield, and minimize expenses related to pest and disease management. Respondents from implementing organizations and donor institutions report that in most cases, farmers use their extra income to re-invest in their farms, hire labor, or invest in children's education or wellbeing. Beneficiary caregivers also reported using any extra income to hire day laborers for arduous tasks, engaging their children less often in those tasks.

#### 7.3.5.3. Theme 3: Awareness campaigns

As previously noted, findings from focus group discussions indicate that beneficiary caregivers in Ghana and Côte d'Ivoire have improved their knowledge on child labor issues, especially as they relate to hazardous labor. However, these findings also indicated that changes in practices are still lagging. Although caregivers and community leaders reported community-wide changes in child labor practices, children in the same communities mostly reported changes around hazardous labor, but not around time worked, or ages at which work begins. Caregivers in both countries reported that awareness campaigns did not always account for the financial situation within households. When asked about their perceptions of the campaigns, a small set of caregivers noted that while they understood the objectives of the campaign, they were not in a position to hire laborers for their farms and did not have any choice in using their children as laborers. Community leaders report similar challenges, indicating that caregivers have difficulty changing their practices due to their financial state:

*As I said it's about money, if I have money I won't let my child to go to the farm, but if I don't have money for weeding and can't weed then I will tell the child to help me weed. Because you told me you need a new shoe then you will go if I tell you I will buy you a new shoe when we come.* Community leader, Ghana

In addition to situational barriers to changing practices, teachers and community leaders also referenced a few cases where awareness campaigns have not changed caregiver attitudes towards child labor. In some communities, caregivers maintain that since they provide for their children, they can determine how often their children should work. Although these caregivers were more transparent about the work their children did, beneficiary caregivers did report implementing new practices around occupational safety.

*I do not think the education from [government program] had any impact on the parents. The parents claim they are the ones that feeds their children therefore they could use their children for any work they want.* Primary School Teacher, Ghana

Findings in Ghana and Côte d'Ivoire also suggest that awareness campaigns resonate more with caregivers when messaging is focused on the health implications of engaging children in child labor, rather than punitive measures for parents who engage their children in child labor. Community leaders believe that community members are much more receptive to messaging that is tailored to them and does not demonize caregivers. Child protection committee members (both caregivers and community leaders) used similar approaches. Committee members maintain that confronting caregivers who were engaging their children in child labor or hazardous labor was challenging when caregivers were afraid that committee members would report them to the police. In these instances, caregivers became hostile, or would avoid conversation with committee members. However, when child protection committee members focused their messaging on the collective wellbeing of children in the community, caregivers were much more receptive.

Implementers report similar findings, noting that awareness-raising efforts must be tailored to local audiences and engage community members as champions in order to encourage behavioral change. One implementer explains:

*The awareness has gone far and in almost all the interventions, but I must say that one of the challenges is that, you know it is attitudinal and behavioral change, one's attitude and beliefs cannot be changed in a day. It requires consistent efforts in engaging the farmers. It should be more of a participatory dialogue to help the farmers understand the issues and address it themselves because if the farmers are not addressing the issues themselves, we cannot address it for them.*

Focus group and interview data suggest that future awareness campaigns messaging from child protection committees should focus more on the health effects of child labor, and less on the legal consequences of engaging children in farm work. This may enable caregivers to be more forthcoming about the situations in which they engage their children in farm work, and the challenges they experience in implementing practices promoted by awareness campaigns. Further, future awareness campaigns should actively engage locals in message formation and distribution in order to promote behavioral change.

#### 7.3.5.4. Theme 4: Timeliness of material support

Material support, including input provision, and schooling kits had significant positive impacts on beneficiaries. However, the timeliness of these materials is key to maximizing positive impact. In Ghana, caregivers reported that while input provision and mass spraying significantly supported their farms,

there were instances in which these supports arrived too late to be helpful. Implementers echoed this sentiment, noting that the timeliness of these inputs is key to facilitating real change for farmers:

*Yes, the government provides some of the inputs, some companies also have their inputs in shops but the question is do they come at the right time for the farmers and are the prices okay for the farmers? They have to start applying fertilizers in May but that is the month most farmers do not have money so they rely on the government subsidized or free fertilizers. There is [also] a mass spraying exercise done by the government, where they spray the farms for free but as to whether the numbers are enough to cover the farmers at the right time because if you are spraying certain chemicals, they should be sprayed at the right time.*

In Côte d'Ivoire, caregivers reported that the provision of school supply kits helped ease financial burdens related to schooling, while teachers in Côte d'Ivoire reported that these kits resulted in improved attendance. However, when schooling kits came late, or were incomplete, caregivers noted that it affected their ability to enroll their children, as they did not have all the materials required.

#### 7.3.5.5. Theme 5: Intervention coordination

Community leaders, implementers, and government officials reported that in some communities, there were interventions conducting similar activities that could benefit from improved coordination. These respondents indicate that some NGOs should work more closely with local authorities and one another to mobilize resources, avoid duplication and inefficient deployment of resources, and increase intervention activity reach. Adult beneficiaries in the same communities also reported having participated in similar interventions, with varying levels of success. These respondents indicated that within some communities, there were multiple livelihood initiatives with similar components.

Overall, interventions that engaged community members in their design and implementation were most effective, while those that took more of a top-down approach were less effective. In both countries, school-based interventions reported the most success, especially when coupled with community mobilization, and deep engagement with caregivers, teachers, and community leaders. Future interventions must engage community members early in their design and roll-out. Further, future awareness campaign messaging should avoid focusing heavily on the legal consequences of child labor engagement, and more on the health consequences of engaging children. Community leaders and child protection committees should be deeply engaged in the formation of awareness messaging, and any subsequent monitoring activities.

#### 7.3.6. Overall Sustainability of Interventions

The following section combines perspectives from implementers, donors and government officials to outline strategies used for promoting intervention sustainability, challenges to sustainability, and perceptions of future sustainability.

##### 7.3.6.1. Strategies for promoting sustainability

Implementers, donors, and government officials in Ghana and Côte d'Ivoire identified several strategies for promoting the sustainability of their interventions.

First, respondents recommend that engaging community leaders, including representatives for women and youth early in the design of the intervention helped promote sustainability. Implementers explained

that during the planning stages for new interventions, they worked closely with key community members to ensure that intervention objectives were realistic, and relevant to each community.

Next, respondents recommended promoting sustainability through integrating interventions within existing community structures. Respondents reported that in many communities, they looked to existing structures for leadership and child protection and conducted extensive capacity building efforts within these structures to implement awareness-raising and child protection committees. Implementers explained that creating open and early relationships with government partners at national and regional levels was key to promoting sustainability and gaining early buy-in. Collaboration with government actors ensured that when the intervention was over, government officials at regional and district levels, would be well-positioned to move intervention activities forward. Implementers also assert this strategy was critical to identifying practical ways to integrate intervention activities into community structures. As one implementer reports:

*Critical partnerships were from government. Like I mentioned in the community action plan, usually these stakeholders support it and when they support it, they are able to integrate it into the district medium term development plan or the annual development plan. When they integrate this into the district plan, then, the districts are in the position to support the plans that they have integrated into their own plans.*

Lastly, the creation of national action plans and national committees on child labor are key to promoting intervention sustainability. Many implementers argued that such groups enable those working both directly and indirectly on child labor issues to better coordinate efforts, exchange lessons learned, and collaboratively explore improvements to future programming.

#### 7.3.6.2. Intervention Sustainability

Respondents held a range of perspectives on the types of interventions they believed had the most promise for maintaining outcomes beyond external material assistance. Interviewees share the view that promoting community and beneficiary ownership of intervention activities promotes sustainability of all types of interventions. Donors and implementers report that some interventions, particularly livelihood services, however, need more financial investment to realize the full potential of outcomes, which would therefore, address some of the root causes of child labor. Of all interventions, community leaders, implementers, and government officials agreed that school-based interventions hold the most promise for sustainability, as school-based interventions have rendered consistent and effective community resource mobilization. Stakeholders also believe that schools provide an opportunity for collective conversations and trainings with caregivers on child wellbeing.

Regarding the sustainability of other interventions, implementer assessments are more varied. For example, although awareness campaigns earned praise from caregivers and community leaders, campaigns in and of themselves are unlikely to yield sustainable outcomes, according to implementers as well as government officials. As demonstrated in the previous section, increased awareness on child labor does not readily translate into improved practice. Indeed, habits are slower to change. In order to facilitate awareness that is more sustainable, awareness efforts may be incorporated into other initiatives, such as GAP training, that support farmers.

In some communities, the current and most popular implementer models of livelihood interventions are not sustainable, in the view of local leaders. These community leaders notice while community members have gained new skills, their ability to generate income from those skills is limited, as their potential buyers reside in the community.

*The farmers are still poor because as I was saying the people from [Implementer] taught us to make soap. If all of us are doing the soap who will buy from someone?* Community leader, Ghana

Community members further see challenges in securing the necessary capital to move some livelihood activities forward. In this regard, community leaders suggest more material investment in income-generating activity interventions, and careful consideration of the types of activities that can generate income within the community.

National action plans and steering committees are critical to maintaining and building on the progress made thus far. Donors, implementers, and government officials, alike, assert these committees promote dialogue on effective and ineffective methods of child labor prevention and remediation. Committees also allow implementers to report on innovative approaches to child labor prevention and remediation, and gain buy-in from government stakeholders early.

Implementers report that due to increased investment in child labor remediation from government stakeholders, these committees have resulted in productive dialogue and planning around child labor prevention and remediation, with tangible goals. In both Ghana and Côte d'Ivoire, government stakeholders have drawn from implementer expertise, lessons learned, and monitoring efforts to produce national plans of action for child labor monitoring, prevention, and remediation. In Ghana, Phase II of the National Plan of Action to Eliminate the Worst Forms of Child Labor builds on the insight gained from Phase I, while Côte d'Ivoire the 2018–2020 National Action Plan of the Fight against Trafficking, Exploitation, and Child Labor builds on previous efforts as well.

Implementers and donors indicate that these national plans of action have promising potential for promoting intervention sustainability. Implementers and donors also cited the CLCCG meeting, specifically, as key to sustaining momentum, and international coordination. These platforms provide a unique opportunity for the continued exchange of best practices, collaborative programming, and exploration for new approaches.

Overall, implementer and stakeholder interviews reveal an array of perspectives on sustainability of interventions. Respondents perceived that school-based interventions were most sustainable, while other interventions should aim to address the root causes of child labor in order to be sustainable. Promoting beneficiary and community ownership of intervention activities is considered a useful method for facilitating sustainability. Working groups, national action plans, and coordinated activities hold significant potential for facilitating current and future sustainability. Moving forward, international donors conclude that for many interventions, there is still a lot of experimental work that needs to be done in order to determine what is effective, and to determine which intervention components are most sustainable. Other stakeholders believe that additional community-level and supply-chain monitoring efforts are needed to truly understand the breadth and complexity of child labor issues in each community, and to determine which outcomes are most feasible to sustain.

### **7.3.7. Impact of Funded Interventions on the Prevalence of Child Labor and Hazardous Child Labor in Cocoa Production**

Over the past decade, various stakeholders including the CLCCG partners and other international organizations implemented different types of interventions in Côte d'Ivoire and Ghana with the objective of reducing child labor and children's exposure to hazardous child labor in cocoa production. Significant resources have been spent on various interventions during this period and, thus, it is important to assess whether these interventions were effective in fighting children's engagement in child labor and hazardous child labor in cocoa production.

For the CLCCG partnership, the three main sources for funding over the past decade have been USDOL, the Industry partners, and the local governments in Côte d’Ivoire and Ghana. The USDOL have committed \$24 million through the Bureau of International Labor Affairs (ILAB) toward projects aimed at preventing and reducing child labor since 2010. The Governments of Côte d’Ivoire and Ghana have made significant progress in adopting legislation and implementing programs targeted at reducing child labor in cocoa production. The “National Plan of Action for the Elimination of the Worst Forms of Child Labor (NPA)” in Côte d’Ivoire includes a \$52 million budget for interventions targeted at reducing child labor in cocoa production. Additionally, the “Ghana Child Labor Monitoring System (GCLMS)” in Ghana is working to improve women’s economic empowerment in cocoa growing areas and increase community awareness. The Industry committed \$10 million to reducing child labor between 2010 and 2016 through individual companies implementing their own interventions. The companies have joined together for a larger scale CocoaAction with an estimated value of investment of \$400 million by the Industry between 2015 and 2020.<sup>49</sup>

Comparison of data from 2008/09 and 2018/19 survey rounds presented in Section 3 indicates that both the rate of child labor and the rate of children’s exposure to hazardous child labor increased between 2008/09 and 2018. It is also important to note that during this period there was a substantial increase in cocoa production. Data presented in Section 3 also indicate that cocoa-growing households as a proportion of all agricultural households experienced a large statistically significant change between 2008/09 and 2018/19, increasing from 58 percent to 83 percent. This also suggests that as more agricultural households engaged in cocoa production there was more (not less) child labor employed. Given the interplay of different forces, it is important to assess whether the interventions funded by the stakeholders to reduce child labor and the hazardous child labor in cocoa-growing areas had a statistically significant impact, even if the use of child labor increased over time.

In order to evaluate whether the interventions implemented by various stakeholders has any impact on child labor and hazardous child labor, it is important to recognize that evaluating the impact of any one type of intervention would most likely be methodologically challenging as the impact of the particular program being considered needs to be large enough to detect with the given sample size. So it would be better to rather explore whether there was any impact when multiple types of interventions were implemented by the partners. Keeping that in mind, we evaluate the impact of implementing combinations of interventions on the prevalence of child labor and hazardous child labor by undertaking an attribution analysis. Due to methodological limitations, we addressed this research question using the data from 341 households from 18 matched communities from Côte d’Ivoire. Please refer to Annex 9.8.4 for a detailed description of the quantitative methodology and data sources used for addressing this research question.

#### 7.3.7.1. Findings from Quantitative Analysis

We used a multivariate regression technique to test whether implementation of combinations of interventions in communities had any impact on children’s engagement in child labor and in hazardous child labor in cocoa production. The results from the analysis are summarized below.

**Effect on having at least one child in child labor and hazardous child labor:** Regression results in Table 83 in Annex 9.8.4 provide estimates of the effect of being in a treated community (i.e., receiving some combination of interventions) on the likelihood of a household having at least one child exposed to child labor in cocoa production in Column (1) and Column (2), and on the likelihood of children’s exposure to hazardous child labor in Column (3) and Column (4). For each outcome variable, we tested two

---

<sup>49</sup> Self-reported by the international cocoa industry.

specifications: one with only household characteristics reported in Column (1) and Column (3), and the other specification with household, community, and school characteristics reported in Column (2) and Column (4).

The results in Column (1) and (2) indicate that the households from the treated communities were less likely to have at least one child engaged in child labor from the households from comparison communities where no treatment was offered by the stakeholders. Specifically, when we control for the household, community, and school characteristics in regression, households in the treatment communities were 30 percentage point less likely to have at least one child engaged in child labor than the households from comparison communities.

Similarly, the results in Column (3) and Column (4) indicate that when we also control for the community and school characteristics in the regression, implementation of multiple treatment had a statistically significant impact on the likelihood of having at least one child engaged in hazardous child labor in cocoa production. The estimate of the impact based on the specification that controls for control for the household, community, and school characteristics in regression (Column (4)) indicates that households living in the communities where multiple treatments have been implanted during 2010 and 2018, were, on average, 28 percentage points less likely to have a children exposed to hazardous child labor in cocoa production than the households from communities that did not receive any intervention from the stakeholders during the period.

Thus, these results indicate that the households in communities receiving some combination of interventions were less likely to have children exposed to child labor and hazardous child labor in cocoa production.

**Effect on prevalence rate of child labor and hazardous child labor:** Next, we turn to the effect of receiving some combination of interventions on prevalence of children's exposure to child labor and to hazardous child labor, estimating the effect on the proportion of children in a cocoa-growing household exposed. The regression results presented in Table 84 in Annex 9.8.4 in Column (1) - Column (2) indicate that the prevalence rate of child labor in cocoa production among the households in the communities exposed to some combination of interventions was approximately 15 percentage points lower from the prevalence rates of child labor among the households in the communities that did not receive any intervention. Similarly, results presented in Column (4) shows that the prevalence rate of children's exposure to hazardous child labor was 11 percentage-points lower among the households in treated communities than the prevalence rate of child labor among the households in the comparison communities when we control for the community and school characteristics in the regression.

To sum up, the results of our quasi-experimental analysis indicate that after controlling for the covariates that typically influence children's exposure to child labor and hazardous child labor, households in communities that received multiple types of interventions had a lower likelihood and lower prevalence of child labor and hazardous child labor in cocoa production.

While the analysis presented above demonstrates that prevalence rates of child labor and hazardous child labor were lower in communities that were exposed to multiple intervention, it is important to note that this analysis was based on data from only 18 communities (including the treatment and comparison communities) and the conclusions may not be generalizable for the entire cocoa growing area as a whole. Please refer to Annex 9.10 for a discussion on the caveats and methodological limitations related to the above evaluation findings.

## 7.4. Caveats and limitations

The quantitative and qualitative analyses used to address assessment questions and detect and quantify the impact of different interventions on child labor and hazardous child labor, while being rigorous in nature, have some limitations. It is useful to summarize those limitations to help in interpreting the findings of the quantitative results and qualitative findings.

### 7.4.1. Limitations of Quantitative Analyses

**Model-based approach:** One of the major factors weakening the ability of any assessment methodology to detect impact is that the interventions being assessed were not implemented (geographically or via roll-out) in a way that facilitates assessment. Ideally, groups of communities would have been randomly assigned to receive the interventions (or various combinations of intervention categories). Such an approach was not feasible in this case due to the number and disparate types of interventions under investigation.

Since the interventions did not permit randomizing which villages received the intervention, a model-based approach was used to construct a comparison group from untreated villages. The model-based approach estimates the impact based on “observables” (that is, only on factors that could be and were measurable). Thus, the credibility of the evaluation depends on the degree to which the salient explanatory variables were accounted for by the models’ specifications and the modelling of how the implementers selected beneficiaries. In addition, since this assessment has been undertaken retrospectively, there was no pre-intervention data (baseline data) on beneficiaries to construct a strong counterfactual.

**Sample-size issues:** The observational nature of the assessment sample and the sample sizes of treated and comparison units were entirely dependent on the implementer’s earlier choices of which communities to expose and, often, which households within them to treat. As a result, the study sample size was pre-determined rather than being drawn as a dedicated sample with a pre-specified target sample size of the treated and non-treated households leading to a highly unfavorable distribution of sampling units. That led to an evaluation design with a small sample, leading to low-precision and an inability to detect small impacts with satisfactory precision.

### 7.4.2. Limitations of Qualitative Analyses:

Due to the purposive nature of qualitative sampling, qualitative data collection did not reflect the full array of interventions taking place in beneficiary communities. Despite attempts to ensure that beneficiaries of vocational training programs were well-represented, there were limited findings within the communities selected for data collection. Further, the perspectives represented by donors and government officials reflect only those who were available for interview.

## 8. Conclusions and Recommendations for Future Research

### Overview

This report is the conclusion of four years of research on child labor within the cocoa growing regions of Ghana and Côte d’Ivoire. The study integrates quantitative survey data from three data collection rounds (2008/09, 2014/15, and 2018/19), quantitative implementation data from key stakeholders over a ten year period (2008/09 – 2018/19), and qualitative data from children, caregivers, school teachers, farmers, and key international and national stakeholders. The quantitative survey data are used to present estimates on the prevalence of child labor and hazardous child labor, while both quantitative

and qualitative data are used to assess the effectiveness of different types of interventions on child labor and hazardous child labor in the cocoa growing areas of Côte d'Ivoire and Ghana.

Survey findings indicate that in 2018/19, approximately 2.1 million children (41% of children in agricultural households) were engaged in child labor in cocoa production in cocoa growing areas of Côte d'Ivoire and Ghana. Among them, approximately 1.99 million children (44% of children in agricultural households) were engaged in hazardous child labor in 2018/19.

Over the assessment period (2008/09- 2018/19), the proportion of children engaged in hazardous child labor in agricultural households in the cocoa growing areas of Côte d'Ivoire and Ghana increased 11 percentage points between. Thus the target of the *Declaration and Framework* to reduce the worst forms of child labor in the cocoa sector by 70 percent between 2008/09 and 2018/19 was not met. However, it is worthwhile to consider this finding in the context of the growth in cocoa production, which increased 62 percent during the ten-year assessment period.

Interestingly, comparison of data on cocoa growing households (rather than all agricultural households) between the 2013/14 and 2018/19 rounds indicates that the prevalence rate of children's exposure to hazardous work in cocoa production did not change for this group during this time period although production during this period increased 14% in aggregate across Côte d'Ivoire and Ghana.

In addition, comparisons of the prevalence of child labor and hazardous child labor by cocoa production stratum indicates prevalence rates increased substantially in the medium and low production strata (child labor increased by 14 and 25 percentage points respectively in the medium and low strata) with a marginal increase within the high production stratum (by 4 percentage points). These findings suggest that as cocoa production increased and cocoa farming expanded in historically lower cocoa growing areas, the use of child labor in those areas also expanded.

At the same time, child labor in high production stratum remained stable even in the face of increased production and a corollary increase in the proportion of agricultural households growing cocoa. Intervention data indicate that the penetration of interventions implemented seemed to be fairly low<sup>50</sup>, and that most of the interventions were heavily concentrated in the high production stratum (where the problem of child labor might have been more severe to start with), with some in the medium and almost none in the low production stratum. This may indicate the success of child labor interventions focused on high cocoa producing areas of Côte d'Ivoire and Ghana which may have offset the impact of increased cocoa production on child labor.

These findings, in conjunction with the findings from the assessment of the effectiveness of various interventions paints a fuller picture of the situation around child labor and hazardous child labor in Côte d'Ivoire and Ghana indicates varying degrees of success. Although the research team found some impacts of livelihood interventions on child labor, it was only when multiple interventions were implemented on one area that we find a significant impact on child labor rates.

Qualitatively though, children, schoolteachers, and farmers all felt there was a strong impact of the interventions on behavior. These respondents consistently described the importance of interventions on reducing child labor and hazardous child labor pointing to school-based reforms as most important.

While the quantitative analyses were only able to detect limited impact of interventions, it is important to note that lack of detection of impact does not mean lack of an effect, only that the design of the

---

<sup>50</sup> Implementation data provided by major stakeholders indicate that less than 50% of the randomly selected communities (representative of the cocoa growing areas of Côte d'Ivoire and Ghana) received any type of interventions in the past 10 years.

intervention and the amount of data collected did not permit a level of statistical precision sufficient to detect an effect, given its size.

Overall, this report makes a strong case for understanding child labor and hazardous child labor in cocoa production as a complex problem requiring multiple complementary solutions. Such an approach is often called a systems approach in which it is essential to understand the phenomena as being interrelated with, and dependent on, different facets of the system itself. For example, understanding the relationship between child labor prevalence and increased production and/or the global demand for cocoa. Layering that understanding on top of the role of production stratum and the power of interventions begins to bring the system as a whole into perspective.

Another important takeaway from this report are the successes on the ground in confronting child labor and hazardous child labor by both national and international stakeholders. Although the goals of the Harkin-Engle Protocol were not met, we do see an impact on child labor in areas with high production and multiple interventions. While assessment results suggest that sustained efforts to fight child labor are successful, it is important to understand what types and combinations of interventions that are more effective in reducing child labor and hazardous child labor and how effectiveness may vary under different local conditions. This points to the necessity for further research on this topic.

In terms of hazardous child labor, data suggests that it is essential to understand each component part of hazardous labor (such as land clearing, agro-chemical use, sharp tool use, and carrying heavy loads) in order to focus efforts on the dimensions of hazardous labor most prevalent in a particular area. There is significant debate around the differences between national and international definitions of child labor. However, the issue of hazardous child labor is less contentious, and the component parts of hazardous child labor can directly impact the physical and psychological development of a child. Thus, looking directly at hazardous child labor and especially, at the frequency of exposure to different hazard, rather than a binary categorization of a child as either “in” or “out” of child labor may be a way forward that stakeholders can agree on.

In terms of agro-chemical usage, agricultural households use of agrochemical products increased steadily, and at the same time, children’s exposure to agro-chemical products increased by approximately five times between 2008/09 and 2018/19. Further studies, both quantitative and qualitative, looking specifically at agro-chemical use and its drivers may be warranted.

This, again, points to the importance of a systems approach in which multiple interventions (or single multi-armed interventions) are co-developed to address specific aspects of the system such as raising awareness in conjunction with livelihood services in conjunction with increased access to schools in conjunction with changes in national legislation. These interventions can then be focused on, for example, the component parts of hazardous child labor that are most prevalent within particular areas.

### **Lesson Learned and Future Research**

Beyond the main findings of this report, there are multiple important topics and takeaways that can help guide future research on child labor and hazardous child labor. Below we present several of these takeaways in reference to future research.

### **Stakeholder engagement**

The research team believes that stakeholder engagement can be the single most important factor in a successful child labor data collection project. There is, at times, an atmosphere of distrust among stakeholders when approaching issues such as this one that touch on economies, cultural beliefs, and national legislation. As such, we feel stakeholder engagement, bringing together tripartite partners in a

mutual and equal dialogue, is essential to the process<sup>51</sup>. These engagements should take place at the start of a project, during the design of questionnaires and field plans, and at the end of the project to help structure analysis and the final report. Stakeholders are more open to accepting the results of such projects if they feel a sense of ownership over the process. In addition, stakeholder engagement has the added benefit of improving the research design and implementation, streamlining the data collection permission process, IRB process, and oftentimes provides access to national level administrative and census datasets.

In terms of the current project, the research team consulted with the governments of Côte d'Ivoire and Ghana (including cocoa regulatory institutions, national statistics bureaus, and various ministries in each country), the international cocoa industry through the WCF, international organizations such as the ILO and UNICEF, local and international civil society organizations, and the U.S. Department of Labor. These engagements positively impacted the quality of the data used as part of this study.

### **Common and National Definitions**

The research team agrees with the recommendations made in the 20<sup>th</sup> International Conference of Labour Statisticians Guidelines in reference to using common concepts and definitions in child labor/forced labor data collection projects. Common definitions allow for international benchmarks and discussions around labor issues can then be outlined within a global framework. However, local definitions are at times equally important to ensure ownership and buy-in from local stakeholders. The cost for including two definitions is oftentimes marginal and allows for comparisons based on both local and international definitions as shown in this report. For example, there is significant debate around the international definition of child labor and the role of what stakeholders in Côte d'Ivoire and Ghana call “socializing work” done by children with oversight of their parents and to teach children the necessary skills needed for life on a farm. Although the research team agrees that international definitions are necessary to allow for a global response to child labor issues, future researchers should be aware of this debate and work to address it through including local definitions where possible.

### **Child Labor, Hazardous Child Labor, and the component parts of Hazardous Child Labor**

Based on a deeper understanding of data and issues related to the binary nature of the target outcome of interest, we believe that measuring child labor by itself is insufficient to accurately describe realities on the ground. Child labor and hazardous child labor are dichotomous variables in which children are identified as either in or out of a child labor and/or hazardous child labor situation. For example, an 11-year-old child who works one hour with their parent on the farm is considered identical to an 11-year-old child who spends 40 hours spraying hazardous chemicals. While reducing the exposure to any hazardous work is an important target, it is equally important to consider the implications of children's exposure to specific types of hazard as well as exposure to multiple hazards to identify strategies and programs that can help address them. Nuances such as that are often points of contention between tripartite partners and being able to report on not only child labor but also on the relative impact of the various component parts of child labor and hazardous child labor is essential. Such an analysis also provides policymakers with concrete examples of where exactly interventions need to be targeted to be most effective.

### **Enumerator Training**

---

<sup>51</sup> Such engagement activities are also stressed in the current ICLS guidelines

Enumerator training is an often under considered aspect of high-quality data collection. The current project had 21 days of training across activities and within each country. This included 5 days of listing training, 5 days of supervisor training, and 10 days of enumerator training and piloting. This extensive training, with a core group of supervisors and enumerators, should not be underestimated and led directly to the high data quality used for our analysis.

### **Evaluation based on Randomized Control Trials**

In conducting an assessment of the effectiveness of various interventions in the cocoa sector, it became evident to the research team that a model based approach to identify the impacts of interventions (and combinations of interventions) is challenging given the multitude of factors that influence the prevalence of child labor and hazardous child labor. In order to produce actionable inputs that stakeholders can use to fight child labor in cocoa production, it is useful to underscore the importance of undertaking randomized control trials to detect impact with greater degree of internal validity that can provide more concrete estimate of impact. Similarly, to understand complementarities of different types of interventions, it is important to design and implement randomized control trial studies to unpack the relative effectiveness of each intervention.

### **Final Remarks**

The research team hopes that information in this report can be used by national and international stakeholders to better understand how child labor and hazardous child labor rates have changed between 2008/09 and 2018/19, areas where more attention is needed and how future interventions can be designed and implemented to further improve the lives of children in West Africa. In addition, the strength of the 2018/19 data collection round and integration of both local and international definitions allows this study to be used in the future as a new baseline to measure the progress towards eliminating the worst forms of child labor in the cocoa growing areas of Côte d'Ivoire and Ghana.

The evidence of effectiveness of interventions in reducing child labor highlighted in this study, even if limited to only specific areas and to specific conditions, clearly advocates for the continuation and intensification of the efforts undertaken as part of the Harkin-Engel Protocol. The Protocol brought national and international partners together towards a common goal to address the issue of child labor and it is important to ensure that collaboration and dialogue among stakeholders continues and intensifies to reduce and eliminate child labor in the cocoa sector in Côte d'Ivoire and Ghana.

## 9. Report Annexes

### 9.1. Annex I: Detailed Survey Methodology and Implementation in the 2018/19 Round

#### 9.1.1. Sampling design

The sampling design for the 2018/19 Child Labor Survey in Ghana, and Côte d'Ivoire maximizes the potential for comparability of estimates between the baseline 2008/09 and 2018/19 round to ensure we can make valid inferences of change while also producing current and accurate cross-sectional estimates. In our sampling methodology we try to strike a balance between accuracy in estimation and comparability between rounds.

In order to generate estimates representative of agricultural households in the cocoa producing areas of Ghana and Côte d'Ivoire, NORC collected survey data from 75 clusters from each country in the 2018/19 cocoa harvest season.

##### 9.1.1.1. Sampling Method

Following the method used in the previous rounds of the Child Labor Survey administered by Tulane University and ISSER/ENSEA, NORC employed a **multi-stage stratified cluster sampling method** to select the Census Enumeration Areas (CEAs/clusters/communities) which are the Primary Sampling Units (PSUs) of the 2018/19 data collection.

The sampling frame consists of three steps where, in the first step, we identified a given number of CEAs (communities) as described below. In the second step, once the CEAs were identified, we undertook a complete enumeration of all households (listing) in those areas. Finally, from the list of the households in each CEA, a given number of households were randomly sampled for the 2018/19 survey.

##### 9.1.1.2. Selection of the Census Enumeration Areas

For selecting the CEAs based on a stratified cluster sampling two approaches were considered by the NORC team:

- Preferred approach: CEA stratification based on amount of cocoa produced per CEA.
- Alternative approach: CEA stratification based on amount of cocoa produced at next available higher level of geographic unit above the CEAs.

The NORC team first explored whether it was feasible to use the preferred approach which required current cocoa production data at the CEA level. However, after several rounds of deliberation with the governments of Ghana and Côte d'Ivoire, we realized that the CEA level production data was not available due to lack of current agricultural census data. As a result, NORC decided to adopt the alternative approach of CEA stratification noted above and followed a stratification strategy described below:

- In the first stage:
  - a. Collected data on cocoa production at the district /department level<sup>52</sup> (rather than the CEA level)
  - b. Classified the districts/departments into high/medium/low cocoa production stratum based on the most recent available cocoa production data.

---

<sup>52</sup> Note that in Ghana these are called districts and in Côte d'Ivoire they are called departments

- c. Identified the cocoa growing communities from each of the districts/departments and assigned the identified communities into high/medium/low cocoa production stratum based on the classification of the districts/departments they belong to.
- In the second stage, from the list of all cocoa growing communities classified into high/medium/low cocoa production stratum, used random sampling methods to sample CEAs from each the above three stratum to select a total of 75 CEAs from high, medium and low cocoa production stratum with oversampling of CEAs from the high cocoa production stratum (in this case stratum are districts/departments)
  - Since CEA level data on cocoa production was not available in this approach, GSS/INS used a simple random sampling method to sample the CEAs within the districts/departments.
  - 40 CEAs from high, 25 CEAs from medium and 10 CEAs from low cocoa production stratum were sampled in each country

Figure 4: Range used for Stratification of Department/Districts: 2018/19 Round of Survey

Stratification	Côte d'Ivoire	Ghana
	Department total cocoa production in ton	District total cocoa production in ton
High stratum	More than 40,000 ton	More than 20,000 ton
Medium Stratum	10,000-40,000 ton	8,000-20,000 ton
Low Stratum	Less than 10,000 ton	Less than 8,000 ton

#### 9.1.1.3. Selection of Households from Identified CEAs for Survey

Once the clusters were identified, NORC undertook a fresh household listing exercise in each of the selected CEAs to enumerate the households. After the listing exercise, NORC randomly sampled agricultural households with at least one eligible child aged 5-17 for conducting the main child labor prevalence survey of 2018/19 cocoa harvest season.

The 2018/19 survey was set to collect data from 1500 households in Côte d'Ivoire and 1300 households in Ghana resulting in approximately 2300 children interviewed in each country.<sup>53</sup>

#### 9.1.1.4. Important Considerations

It is important to note that our proposed sampling methodology diverges from the methodology used by Tulane in previous survey rounds. This is mainly due to the fact that the NORC's stratification of CEAs (the PSUs) was based on district/department cocoa production levels, whereas, according to the available documentation, Tulane used the region/district level cocoa production data respectively for Ghana and Côte d'Ivoire<sup>54</sup> to stratify the CEAs. Since our PSU is the CEA, stratifying based on cocoa production at the district/department will lead to improved controls on the sample and more precise estimates. However, our approach of stratification of the PSUs based on district/department cocoa production levels, rather than on region/district levels, would not affect the comparability of national estimates between the rounds, instead, it will improve precision of national estimates by reducing the

<sup>53</sup> The calculation of total number of households to be surveyed is based on the target of surveying at least 2300 children and average number of children per household. The data on average number of children per household in each country is available from the Tulane report for 2008/09 and 2013/14 survey rounds. Based on the experience of previous survey rounds, we expect 20% and 15% reduction in average number of children per household in Côte d'Ivoire and Ghana respectively in the 2018 survey round and calculated total number of household required to survey 2300 children.

<sup>54</sup> Note that Ghanaian 'regions' are equivalent to 'districts' in Côte d'Ivoire

potential sampling error related to stratification of PSUs based on production data at a higher level. Please see Annex 9.2 for a complete explanation of this issue.

### **9.1.2. Survey methodology**

#### **9.1.2.1. Quantitative approach**

The main source of quantitative data was the three rounds of nationally representative surveys of child labor (2008/09, 2013/14 and 2018/19) from Côte d'Ivoire and Ghana. In order to address possible seasonality concerns, the surveys were fielded during the main cocoa harvesting season in both countries and close to the fielding of earlier rounds of the survey as possible.

The 2018/19 survey obtained survey data from 1,507 households in Côte d'Ivoire and 1,317 households in Ghana, resulting in approximately 2,743 child interviews in Côte d'Ivoire and 2,809 in Ghana. We collected survey data from the heads of each sampled household as well as community-level data from local community leaders, schools, and cocoa shed operators to provide additional insights.

#### **9.1.2.2. Qualitative approach**

Qualitative data collection took the form of focus group discussions (FGDs), key informant interviews (KIIs), and fieldwork observation. All focus groups were led by a trained moderator who followed a pre-determined set of questions articulated in a discussion guide. The participants were chosen or recruited based on criteria in a screening questionnaire or by being clustered in a geographic location.

The qualitative component of the 2018/19 Child Labor Survey provided context for quantitative results, as well as a deeper understanding of how various key players understand child labor within the cocoa sector in Ghana and Côte d'Ivoire. This component provided nuanced perspective into the topics covered by quantitative surveys, including contextual understanding of complex concepts such as night work, heavy loads, sharp tool use, and others.

##### **9.1.2.2.1 Key Informant Interviews**

KIIs informed how different key players understand child labor and interventions aimed at reducing child labor. These interviews outlined country-specific complexities that may affect child labor rates, and the efficacy of interventions aimed at reducing child labor and focused on elites, donors, and CSOs/implementers of interventions to reduce child labor. NORC conducted KIIs with the following groups in each country:

- Agricultural extension agents
- Community leaders
- Cocoa growers
- Donors and cocoa industry members
- Government officials
- Implementers (CSOs and NGOs)

For all interviews, NORC engaged cocoa industry members, and implementers in identifying potential respondents. NORC closely collaborated with DOL and Industry members to ensure that all KII questions were relevant, logical, and coherent. NORC also engaged implementers who receive funding outside of DOL and the cocoa industry.

NORC took a snowball sampling approach to KIIs, in which respondents were asked to identify other appropriate KII respondents for the study. NORC also leveraged opportunities at workshops and meetings related to child labor in cocoa and approached potential respondents in this way While KIIs did

not have a fixed sample size, NORC ensured that similar numbers of respondents from each respondent group and each country were interviewed. The following table details the institutions interviewed:

Figure 5: KII Interviews: 2018/19 Survey Round

<b>Institution</b>	<b>Interviewees</b>
Education Information Branch	1
Ghana Education Service	1
Ministry of Employment and Labour Relations	2
COCOBOD	6
Commission on Human Rights and Administrative Justice	1
MOCA	4
Fairtrade Africa	1
ILO	1
Free the Slaves (Ghana)	1
UNICEF Ghana	1
UNICEF Cote d'Ivoire	1
DOL Bureau of International Affairs	3
Fairtrade International	1
International Cocoa Initiative	2
World Cocoa Foundation	1
Action Against Child Exploitation	2

Prior to each interview, we outlined the interview procedure, including purpose and expected duration of the interview. Interviewees were informed that their participation is voluntary, all responses are confidential, and they may choose not to have their interview recorded. Any quotes used in subsequent reports removed all personally identifying information, or any details that would make it clear that any quote likely came from a specific person or entity. All interviews were administered by NORC staff and Kantar senior staff with extensive qualitative experience.

#### 9.1.2.2.2 Focus Group Discussions

Focus groups contextualized the quantitative component of the assessment and outlined the on-the-ground realities for cocoa farmers, including common experiences, perceptions of interventions, and perceptions of education. Group discussions primarily focused on beneficiary cocoa communities but included some non-beneficiary communities to allow for comparison between beneficiary and non-beneficiary communities.

Focus groups were disaggregated by gender to allow gendered differences to emerge. Focus groups with children were disaggregated by both gender and age to allow participants to engage in discussion alongside their peers. Prior to age and gender disaggregation, focus group discussions were broadly separated into the following groups: beneficiary children, non-beneficiary children, beneficiary caregivers, and non-beneficiary caregivers.

In general, FGDs were comprised of roughly 6-10 participants and focus groups with children were on average 45 minutes to an hour in length, while focus groups with adults were one hour to 90 minutes in length.

Sampling

To select communities for focus groups and community-level KIIs, NORC used quantitative survey responses to generate a comprehensive list detailing average responses for key intervention and hazardous labor data. The team closely analyzed surveyed communities along the following parameters:

- Training exposure: % of respondents exposed to occupational safety training, vocational training, awareness training, and livelihood projects
- Reported activities: % of respondents reporting land clearing, agrochemical use, night work, working hours
- Child labor rate: % of children in EA engaged in child labor.

To maximize variances in perspectives, three team members individually selected EAs with varying rates in training exposure, reported activities, and child labor. The team then narrowed the list of communities by focusing on communities with inverse relationships between training exposure and reported activities/child labor rates, and high training exposure and low child labor rates/reported activities, low training exposure and high reported activities/child labor rates. The team also individually selected communities where training exposure rates were high, but child labor and hazardous activity rates were also high, and communities where training exposure was low, but child labor rates and hazardous activity rates were also low. This was an iterative exercise in which after each pass, team members discussed their reasoning for selecting each community. Finally, the team agreed on 15 communities in each country that represented varying rates of child labor and hazardous child labor, and varying levels of intervention of exposure.

Following this exercise, NORC used GPS data and STATA to generate a map of each country that displayed where each selected community was positioned. The purpose of this exercise was to ensure that selected communities were spread across each country and represented an array of interventions. The team worked closely with our local subcontractor to ensure the accuracy of the maps generated and selected the final communities. The following tables outline the communities for focus groups and community-level KIIs in each country:

Figure 6: Ghana FGD Communities

Region	District	Community Name
Central	Assin South	Dossi
Ashanti	Atwima Mponua	Mmawaninha
Ashanti	Ahafo Ano South	Aponaponso
Ashanti	Ahafo Ano South	Essienkyem
Western	Sefwi Wiawso	Kofikrom
Brong Ahafo	Asunafo North	Akorabuokrom (Duase)
Ashanti	Amansie Central	Fenaso No. 3
Central	Asikuma Odooben Brakwa	Baffokrom (Adandan No. 1)

Figure 7: Côte d'Ivoire FGD Communities

Department	Sub-Prefecture	Community Name
Adzopé	Becedi-Brignan	Becedi-Anon
Gueyo	Gueyo	Lakota Carrefour
Lakota	Zego	Goboue
Oumé	Diégonéfla	Goudi
Tiassalé	Morokro	Koyékro

Tiassalé	N'Douci	Badasso (Abeve)
Yamoussoukro	Kossou	Zatta

### 9.1.3. Design of survey instruments

Quantitative questionnaires cover a wide array of subjects aimed at addressing the many factors that contribute to child labor and HCL in the cocoa sector. For each sampled household, all consenting children aged 5-17 were interviewed. In addition, the household head or other knowledgeable household member was interviewed using a household head questionnaire and a household labor roster. Within each sampled CEA, interviews were conducted with all village chiefs, cocoa shed operators, and K-12 public/private school head teachers.

To ensure comparability between data collection rounds, the aforementioned quantitative instruments were modeled upon those used in the 2008/09 and 2013/14 survey rounds. Prior to data collection, all survey instruments were vetted and reviewed through in-country stakeholder workshops which included representatives of host governments as well as industry and NGO partners. In addition, instruments were thoroughly reviewed by our local research teams followed by a field-based pre-test within CEAs that are demographically similar to, but outside of, the sampled communities. Learnings from the workshops, reviews, and pre-test were included to inform the final instrument design and carefully documented. ILAB was involved and provided input at each step in this process.

#### 9.1.3.1. Child Questionnaire

The child questionnaire captures data used to construct all child labor indicators and population estimates and is therefore of central importance to the study. To minimize bias and in accordance with ILO best practices, enumerators were trained to administer the child survey in private after obtaining parental consent to do so. Given the complex subject matter of the survey, enumerators conducted a pre-interview developmental assessment to determine the cognitive capacity of the child to comprehend key concepts and definitions covered in the survey. In cases where the developmental assessment suggests a child will not understand the majority of the survey questions, parents were asked to support the child in the interview (in all cases, enumerators are required to record information on the presence of other persons and the extent to which they influenced the child's responses). Where appropriate, cognitive interviewing techniques are employed with younger children to reduce the risk of suggestibility, confabulation, and source-monitoring error. All child interviewing protocols, tools, and techniques were thoroughly covered in the enumerator training and enumerator manuals. The child questionnaire covers the following topics:

Migration and Movement. Respondents are asked questions about migration patterns, which are often a common component of the agricultural sector. These questions address respondents' countries/towns/communities of origin, identify driving factors for migration, and identify decision-makers about migration.

Work Activities. Respondents are asked general questions about the nature of the work they do. This includes extensive probes on activities that may not be typically perceived as work among respondents, including unpaid household farming or business activities. This module also asks about the types of agricultural tasks performed, such as land clearing, burning, and carrying water for spraying. These questions address the extent to which a given respondent regularly performs these tasks, or only performs them from time to time.

Working Hours. Respondents are asked various questions about the hours they work, including times of day, the length of time in a given day, and the amount of time in a given week. These questions will address the extent to which working hours are typical for that respondent.

Injury and Illness. Respondents are asked to recall the extent to which they have experienced injuries or pain as a result of agricultural work. These may include broken bones, wounds, back pain, muscle pain, and others.

Heavy Loads. Respondents are asked to recall the types of loads they have carried, the circumstances under which they were carried, and the distance they may have carried them. With younger child respondents, NORC will ensure that enumerators ask children to estimate weights or distances using familiar items and locations within the community (versus units of measurement). However, youth aged 14-17 are asked to provide estimations based on distance, weight, and transportation mode. All children are asked to recall the extent to which carrying heavy loads resulted in immediate and/or ongoing physical pain.

Exposure to Environmental Hazards and Other Dangers. Respondents are asked to recall their levels of exposure to environmental hazards and chemicals. This may include the use of pesticides and herbicides, exposure to flames or fumes, and work at dangerous heights. These questions also address whether respondents experienced any health consequences as a result of this exposure, and the severity of any health consequences experienced.

Tools, Equipment, and Machinery. Respondents are asked to recall the types of equipment they normally use when performing agricultural activities. This includes the use of machetes, mist blowers, knives, or animal-drawn tools, and any injuries that may have resulted from the use of such tools. Conversely, respondents are also asked to recall the types of protective equipment they may have used while carrying out these activities. This may include protective boots, masks, and other gear.

Education. This module will assess the extent to which children have received or are receiving education or training. It will include brief a literacy and numeracy assessment as well as capture any reasons for missing school, dropping out, or repeating classes.

Project Activities and Sensitization. As various interventions will be taking place, respondents are asked to recall the extent to which they have benefitted from various project activities and sensitization efforts.

#### 9.1.3.2. Household Roster

The household roster collects basic demographic information on all household members, including sex, age, marital status, education, literacy status, as well as labor status over the past 7 days and 12 months.

#### 9.1.3.3. Household Head Questionnaire

The household head questionnaire is administered to the person(s) determined by the sampled household to be most knowledgeable about household farming practices and income, spending, and borrowing. The household head questionnaire includes modules on household socio-economic status, farming characteristics, migration patterns, use of and opinions on child labor, access to and use of credit (including input financing), participation in community projects, and future risk of agriculture-related injuries.

#### 9.1.3.4. Community Leader Questionnaire

The community leader questionnaire is administered to all village chief(s) within the CEA. In cases where a traditional leader cannot be interviewed, local assemblymen will be interviewed in their place. The community leader questionnaire collects a broad range of community-level indicators including on migration patterns, infrastructure, socio-economic status, governance, trends in cocoa production, project activities, and the incidence of child and forced labor.

#### 9.1.3.5. School Questionnaire

The school questionnaire is administered to head teachers (or their designated proxies) at all public and private schools serving K-12 pupils within the CEA. The school questionnaire collects general information on the school including trained teachers, enrollment figures, and school fees. In addition, the survey collects information on working children as well as head teacher opinions on the extent to which agricultural work influences educational outcomes in the community.

#### 9.1.3.6. Cocoa Shed Questionnaire

The cocoa shed questionnaire is administered to all cocoa shed operators/managers within the CEA. This brief survey collects information on cocoa shed capacity/volume and purchases as well as the extent to which the shed uses child labor and rates of pay for child workers.

### 9.1.4. Training

#### 9.1.4.1. Training of Trainers

To help facilitate the main enumerator training, a training of the trainers (TOT) was conducted for supervisors who were tasked to lead breakout sessions in the main training. The training of the supervisors was conducted from November 1<sup>st</sup>-3<sup>rd</sup>, 2018 for Ghana and January 10-17<sup>th</sup>, 2019 for Côte d'Ivoire. A total of 15 supervisors, 2 regional coordinators, 4 managerial team members from Kantar and 3 facilitators from NORC attended each training.

The training lasted for two days and the topics covered were;

- Cognitive Interview technique (CIT)
- Head of household questionnaire review
- Child questionnaire review
- Roster questionnaire review
- Community leader questionnaire review
- School questionnaire review
- Cocoa shed questionnaire review
- Entry protocols
- Role of trainees during main enumerator training

At the end of training, feedback from supervisors was incorporated into the review of the scripts. Supervisors were better equipped to lead smaller groups during the enumerator training.

#### 9.1.4.2. Enumerator Training

The main training for Ghana was conducted from November 5-14<sup>th</sup> and was conducted from January 18-28<sup>th</sup>, 2019 for Côte d'Ivoire. A total of 113 participants were present for the training in Ghana and 98 participants were present for the training in Côte d'Ivoire.

Training was based on the following;

- Understanding the objectives of the research
- Understanding the questions and its administration requirement
- To be conversant with the field operations, survey methodology and protocols
- To state roles, responsibilities and expectations of interviewers and supervisor's involvement in the survey
- To carry out effective interview, using CAPI (Nfield)

#### Outcomes of Training

*By the end of the training, participants were;*

- Familiar with all the instrument
- Able to administer the assigned instruments for survey with confidence and accuracy
- Able to follow data collection process and plan as expected
- Effective handling of field materials

Training for the household and community teams were run co-currently. The household (head of household, child and the roster tools) were facilitated by NORC while the community questionnaires (school, community leader and cocoa shed) was handled by Kantar.

The topics that were addressed across all teams included;

- Techniques for interviewing young children
- Guidelines for tablets practice
- Child questionnaire guide
- Head of household questionnaire guide
- Community (Cocoa shed, community leader, school) questionnaire guide
- Child protection protocol
- Confidentiality and informed consent
- Interviewing techniques
- Stimulus worksheets
- Child safety referral

#### 6.1.4.2.1 Qualitative Training

NORC conducted back to back trainings in Ghana and Côte d'Ivoire. The qualitative training was four days long, including one day of pilot, and one day of post pilot debrief.

Moderators and note-takers were trained in best practices in focus group moderation, including topics around managing group dynamics, minimizing risk for adult and child respondents, maintaining neutrality throughout the discussion, and maintaining intragroup confidentiality. Moderators were also trained on how to manage child disclosures of abuse and forced labor, including response and reporting to appropriate authorities. Moderators were provided with a risk and response protocol outlining the appropriate procedures of bringing attention to disclosure. Focus group moderation teams were also provided with operative definitions for intervention categories, and a comprehensive list of off-farm and off farm activities. Focus group moderation teams were required to be very familiar with both lists in order to probe effectively and recognize local names for various tools.

During training, moderators held extensive practice rounds and discussions to ensure that the proper local words were being used. Moderators also made considerations for regional variations for the names of key terms, and concepts. Following the pilot, data collection teams made the necessary adjustments to the data collection instruments. These changes maintained the meanings of each question, but were reworded to be more direct, and ensure consistent translation to local languages in the field.

Focus groups and community-level KIIs were recorded, translated, and transcribed into English and French. Transcripts were transmitted through NORC's secure file transfer platform

#### 9.1.5. Pilot

The objective of the pilot was to check the quality of survey material, its consistency and proper interpretation as intended by client and understood by respondents. The pilot was conducted to provide on-field learning experience for trainees and to ensure scripting instructions were properly implemented as well as skip patterns working accurately. Piloting was conducted in Ghana on November 10<sup>th</sup>, 2018

and in Côte d'Ivoire on January 26-27<sup>th</sup>, 2019. The household team screened and scheduled appointments with eligible households and later interviewed household heads and eligible children. The community teams conduct interviews with community leaders, schools' heads, and cocoa shed managers.

#### 9.1.6. Data collection

Data collection for Ghana lasted from November 23<sup>rd</sup>, 2018 to January 27<sup>th</sup>, 2019 and for Côte d'Ivoire from February 9<sup>th</sup>, 2019 to March 7<sup>th</sup>, 2019. Fifteen teams were deployed to field. Each team comprised a supervisor and four household interviewers, and one community interviewer. Each team was accompanied by one quality control officer. The teams were provided vehicles to facilitate their movement across the different communities as the roads leading to most of the localities were in bad shape. In each locality, our teams met the administrative and village authorities to explain the purpose of the study before starting the data collection.

The team (led by the supervisor) debriefed daily before the start of the field. The supervisor contacted households and assigned them to enumerators to conduct interviews after household heads had consented. For each enumeration area, 20 households were screened for eligibility and surveyed. In the evening after the day's work the supervisor synchronizations all tablets and sends a report for the day.

##### 9.1.6.1. Methodology

A list of 23 agricultural households per EA (of which 5 were for replacement) were sampled and provided for the ILAB survey. The Roster gets to the community, observe all the necessary community entry protocols with or without the supervisor. The roster team visited the EA a day earlier to screen the household for eligibility and recruit the head of household and the children (5 to 17) who were available during the stay of the team in the EA.

#### 9.1.7. Generating the Weights

Since the enumeration areas (EAs) were stratified based on the amount of cocoa produced and a number of EAs – see Table 38 – were selected for the sample from each stratum, household and child-level weights were calculated for each stratum as well. This means that each of the three strata has a different weight, and all households or children within the same stratum have the same weight.

Table 38: Number of EAs per Stratum

Stratum	Côte d'Ivoire	Ghana
Stratum 1 (High Cocoa Production)	40	40
Stratum 2 (Medium Cocoa Production)	25	23
Stratum 3 (Low Cocoa Production)	10	10
Total	75	73

- **Household-level Strata Weights**

We obtain the average number of agricultural households per stratum by dividing the total number of listed household that reported being involved in agriculture or farming by the total number of selected EAs (that is, 75 in Côte d'Ivoire and 73 in Ghana). Then, we multiplied the quotient by the total number of EAs in each stratum<sup>55</sup> to get the estimated total number of agricultural households in each stratum.

<sup>55</sup> The total number of EAs in high, medium and low-producing areas was obtained from the National Statistical Offices of each country.

$$\text{Total number of agricultural HHs in stratum} = \frac{\text{Total number of agricultural HHs listed in all selected EAs}}{\text{Total number of selected EAs}} * \text{\# of EAs in stratum}$$

Finally, we divide the total number of agricultural households in each stratum by the total number of households interviewed in the Household Survey from the same stratum. Thus, the strata weights indicate how many households each household from the Household Survey dataset represent when making population projections.

$$\text{Strata Weight} = \frac{\text{Total number of agricultural HHs in stratum}}{\text{Number of HHs interviewed in HH Survey in stratum}}$$

• **Child-level Strata Weights**

We divide the total number of children aged 5-17 listed in the households interviewed by the total number of households interviewed to obtain the average number of children 5-17 per interviewed household in each stratum. We then multiply the resulting number by the total number of agricultural households in each stratum to get the total number of children aged 5-17 in the stratum.

$$\text{Strata Weight} = \frac{\text{\# of children 5-17 in interviewed HHs in stratum}}{\text{\# of HHs interviewed in HH Survey in stratum}} * \frac{\text{\# of agricultural HHs in stratum}}{\text{\# of children interviewed in Child Survey in stratum}}$$

At last, the child-level weights are generated by survey stratum when we divide the total number of children aged 5-17 in each stratum by the number of children interviewed in the stratum. The strata weights account for non-response rates by having the total number of children aged 5-17 in the interviewed households in the numerator and the total number of children interviewed in the Child Survey in the denominator.

Table 39 presents the household and child-level weights generated by NORC.

Table 39: 2018/19 Household and child-level weights

Level	Ghana			Côte d'Ivoire		
	Stratum			Stratum		
	1	2	3	1	2	3
Household-level weight	502	802	1,655	328	1,110	744
Child-level weight	705	1,102	2,090	369	1,265	828

**9.2. Annex II: Notes on Comparability of Data and Population Estimates across 2008/09, 2013/2014 and 2018/19 Survey Rounds**

As part of the statement of work assigned to NORC at the beginning of project was a data quality review task on the data collected during previous rounds of the child labor survey. We began by examining the documentation and data available on the previous survey rounds provided by the previous contractor. During this exploration stage, we examined the documentation and data with the following objectives:

1. Whether appropriate and complete documentation was available for designing the 2018/19 sampling frame that is fully comparable with the sampling frame used in the previous survey rounds in 2008/09 and 2013/14.

2. Whether the datasets contained all variables required to generate the child labor and hazardous work related indicators.
3. Whether all documentations were available to replicate the construction of child labor and hazardous work related indicators from the raw survey data of previous rounds.
4. Whether the formulas and algorithms used to construct the child labor and hazardous work related indicators from the raw survey data were appropriately coded.
5. Whether all documentations were available to replicate the sampling weights of previous survey rounds that were necessary to generate population estimates of child labor and hazardous work related indicators of 2018/19 round from the raw survey data.

The explorations undertaken by NORC identified three sets of issues that have bearing on the comparability of data and population estimates across the previous survey rounds (2008/09, 2013/14) and the 2018/19 round undertaken by NORC as described below:

- A. Incomplete documentations on construction of sampling frame used by the previous contractor for 2008/09, 2013/14 survey rounds
- B. Missing data to link the child respondents to their respective households for 2008/09 survey round, and
- C. Errors made in survey administration in Côte d'Ivoire during 2013/14 survey round and the process used for correction of the implementation errors.

#### **9.2.1. Incomplete documentation and implication on comparison of population estimates between the survey rounds**

In designing the 2018/19 sampling methodology NORC's mandate was to ensure comparability between rounds as well as design a more robust baseline for future studies. After examining the available documentation on how the sampling frame was constructed in the previous rounds, it became evident that there was not enough information available on the exact methods used in construction of sampling frames in the previous survey rounds. NORC brought this issue to the notice of USDOL and after repeated discussions with the institutions that were involved in designing the sampling frame of the past survey rounds<sup>56</sup>, NORC reached the conclusion that it was not feasible to recover the required information and that essential data needed for an exact replication of the sampling frame used in the earlier rounds was missing.

This lack of information made it challenging at times to design the 2018/19 survey to allow for precise comparisons across rounds. NORC approached this issue by striking a balance between precision and comparability, allowing for comparability on key metrics while improving upon the sampling frame construction with an aim of increasing the precision of the 2018/19 estimates.

The 2008/09 and 2013/14 survey rounds used regions as the stratification level and NORC used districts/departments<sup>57</sup> in 2018/19 (which are geographically smaller and can be assigned to a stratification level more precisely than the larger area). Although this means the population estimates generated from the 2018/19 survey round are more precise than those used previously, it also means the sampling frames were not exactly identical (one started at the regional level and the other at the district/department level) and thus population total estimates are not fully comparable as explained below:

---

<sup>56</sup> Includes Tulane University, Ghana Statistical Service (GSS), the Insitut National de la Statistique de Côte d'Ivoire (INS), École Nationale de Statistique et d'Économie Appliquée (ENSEA) in Côte d'Ivoire and the Institute of Statistical, Social And Economic Research (ISSER) in Ghana.

<sup>57</sup> In Ghana the next stratification level are named "districts" and in Côte d'Ivoire they are labeled "departments."

Population estimates of the total number of children is computed by multiplying the average population of children in each stratum by the total number of enumeration areas (EAs) in each stratum (which would be the sum of the EAs in the regions for the 2008/09 survey round, while it would be the sum of all EAs in the cocoa producing districts with a cocoa producing region). It is important to note that not all of the districts in a region would be cocoa producing, and thus, the regional population totals derived from EAs selected to represent regions will naturally be higher than those derived from EAs selected to represent districts since the count of regional total number of EAs will be greater than the district total number of EAs. This indicates that the differences in total population of children estimated between survey rounds are not comparable though both are valid estimates for the population frames the samples represent.<sup>58</sup>

However, it is important to note that the difference in the sampling frame that led the population estimate of total number of children to be non-comparable, has no effect on the main outcomes of interest (the prevalence rates of children in child labor and children engaged in hazardous work). As described in Annex 9.1, EAs in both the 2008/09 sample and the 2018/19 sample were stratified into high, medium and low cocoa production stratum. While there was no documentation available on the exact cutoff range used for stratification of high, medium and low EAs in 2008/09 round, examination of child labor survey data of 2008/09 and 2018/19 rounds and comparison of distributions among high, medium and low EAs substantiates their similarity. Computing prevalence rates does not involve use of regional or district stratum totals. Comparison of rates involves, for example, the number of children in hazardous work for the entire population divided by the total number of children in the population. Thus, since the rates are not affected by the difference in the stratum totals as involved in generating the population estimate of total number of children and children in child labor and children in hazardous work, rates of prevalence are comparable across the survey rounds.

A second important consideration is that, while we cannot compare population counts across rounds, we can provide very precise and accurate counts for the 2018/19 round as a single point-in-time estimate.

Although not ideal, this balance allows stakeholders to use 2018/19 data as a strong base with more precise estimates moving forward while also allowing for comparisons across study rounds.

#### **9.2.2. Missing data to link the child respondents to their respective households in 2008/09 survey round and its implication on comparison of prevalence estimates**

While exploring the database of 2008/09 survey round, NORC found that although the data from the child survey, the head of the household survey and household roster survey were available, there was no way to map the children from the child labor survey to the data collected from their respective cocoa growing households. After deliberation with the previous contractor, it was realized that the “key” linking individual children to their respective households was missing. This implied that while the estimates of child labor prevalence rate and prevalence rate of hazardous work can be compared between the 2008/09 and 2018/19 survey rounds for the entire sample (including all agricultural households), it was not feasible to compare the estimates broken down by household type (cocoa growing and non-cocoa growing households). As a result, for the report, we are unable to compare the prevalence rate of child labor and prevalence rate of hazardous work for cocoa growing households between 2008/09 and 2018/19 survey rounds.

---

<sup>58</sup> However based upon our review of both datasets, there is no evidence that the underlying distribution of child labor characteristics are different in the 2018/19 round as compared to the 2008/09 round.

**9.2.3. Errors made in survey administration in Côte d’Ivoire during 2013/14 survey round and implication on comparison of population estimates between the 2013/14 and 2018/19 survey rounds.**

The previous contractor selected 60 clusters in both Côte d’Ivoire and Ghana for the 2013/14 round of the child labor survey. The previous contractor conducted a household listing in the 60 selected clusters to create a sampling frame and identify both cocoa and non-cocoa growing agricultural households to be surveyed in 2013/14. They then undertook data collection in both countries and completed data collection activities in Ghana as per the survey design. However, while administering the 2013/14 survey in Côte d’Ivoire, due to error in survey implementation, field teams collected data only from the cocoa growing households and did not survey the sample of non-cocoa growing households. So, the data collected from Côte d’Ivoire included only cocoa growing households. This error was discovered after data collection was complete, and, in an attempt to correct the error, the study team went back to the field one year later (in early 2015). However, for the supplemental survey, the study team adopted a different sampling method for selecting the non-cocoa growing households who were supposed to be surveyed as part of the main sample of the 2013/14 survey round. Ideally, it would have been appropriate to follow the original survey design and to survey non-cocoa growing households from each of the 60 clusters sampled in the 2013/14 round. However, instead of sampling non-cocoa households from each of the 60 clusters, the study team sampled non-cocoa households from only 15 clusters (out of 60) based on a combination of random and systematic sampling methods.<sup>59</sup>

In this process, the team systematically selected 11 clusters and randomly selected 4 clusters. Then approximately 14-16 non-cocoa growing households were surveyed in each cluster in early 2015.

Given that only a small number of clusters were selected to survey the non-cocoa growing households, most of which were “systematically sampled” instead of being randomly sampled, it was important to check the reliability of such sampling method and potential bias involved in generating population estimates. Since there was no information about the process adopted to “systematically sample” these clusters, NORC decided to examine whether these systematically selected clusters were similar to the randomly selected clusters.

NORC compared the unweighted and weighted estimates (using sampling weights provided by the previous contractor) between the systematically and randomly selected clusters which generated separate estimates for the full sample (including both cocoa and non-cocoa growing households) and for the non-cocoa growing households. The findings from NORC’s analysis<sup>60</sup> indicated that the prevalence rate of child labor working in cocoa production in the systematically chosen clusters was higher than the prevalence rate of the randomly selected cluster. This raised serious concerns that the method of sampling of non-cocoa growing households and weighting schema used for the clusters selected for the supplemental sample potentially introduced bias in the population estimates of child labor for all agricultural households in the cocoa growing areas of Côte d’Ivoire. In addition, since the supplemental sample surveyed only 14 -16 households from a small number of clusters (15), the estimates generated from these clusters might be associated with larger sampling error, producing unreliable estimates of the population. Finally, it is important to note that the difference in timing of the survey of non-cocoa households (conducted one year after the main survey was done in 2013/14 cocoa harvest season), also raised significant concerns regarding the comparability of data from the cocoa growing and non-cocoa growing households. These findings indicated that the population estimate of child labor generated by the previous contractor for the 2013/14 survey round was probably not a true representation of the

---

<sup>59</sup> Tulane University, Final Report, 2013/14 Survey Research on Child Labor in West African Cocoa Growing Areas.

<sup>60</sup> Available upon request.

population estimate of child labor in cocoa production in agricultural households in the cocoa growing areas of Côte d'Ivoire, and hence produced a biased estimate for the aggregate population estimate of child labor in the cocoa growing areas of Côte d'Ivoire and Ghana. To err on the side of caution, NORC has dismissed the data collected on non-cocoa growing households from 2013/14 and avoided making any direct comparisons between 2013/14 and 2018/19 as well as between 2008/09 and 2013/14, in terms of all agricultural households as well as the non-cocoa growing households. This indicates that the prevalence rates of child labor in 2013/14 and 2018/19 rounds and 2008/09 and 2013/14 rounds are not statistically comparable.

However, it is important to note that since the survey was administered as per the survey design among the cocoa growing households in Côte d'Ivoire in 2013/14 round, these issues did not affect the population estimates of prevalence rates of child labor and rate of exposure to hazardous work in cocoa growing households in 2013/14 round. As a result, it is still feasible to make a statistically valid comparison of population estimate of prevalence rates of child labor and rate of children's exposure to hazardous work in cocoa growing households between 2013/14 and 2018/19 survey rounds.

### 9.3. Annex III: Common Definition and Local Definitions of Child Labor & Hazardous Child Labor

This section first provides a description of the different components used to form the common definitions used to measure aggregate (between Côte d'Ivoire and Ghana) progress against the goals of the Harkin-Engel Protocol and then describes the local definitions of hazardous child labor. It is important to note that in many cases the local definitions are more proscriptive than the common definition and using local definitions leads to higher rates of child labor and hazardous child labor.

#### 9.3.1. Common definition

Unacceptable working hour conditions for the common definition is defined as a child under 12 years old engaging in at least one hour of work, a child between 12 and 14 engaging in 14 or more hours of work, or a child between 15 and 17 engaging in 43 or more hours of work within a 12 month reference period.

The common definition of hazardous child labor consists of six sub-categories;

1. Land clearing
2. Carrying heavy loads
3. Spraying and agro-chemicals
4. Sharp tools
5. Long working hours
6. Night work.

A child has been exposed to hazardous work during the reference period if they were exposed to at least one subcategory during the reference period.

Land clearing (1) is defined as a child engaging in land clearing, felling and chopping, or burning within the reference period. Heavy loads (2) is defined as a child carrying a heavy load of wood and other things during land clearing, loads of water for spraying, loads of fermented cocoa beans, loads of dry cocoa bean to the shed, or other loads within the reference period. The child's own definition of "heavy" is used.

Agro-chemicals (3) is defined as spraying, carrying water for spraying, or working with agro-chemicals during the reference period. Spraying includes a child spraying of pesticides or insecticides, being present or working in the vicinity of farm during pesticide spraying, or reentering a sprayed farm within

less than 12 hours of spraying. Working with agro-chemicals includes a child having been involved in working with agro-chemical products.

Use of sharp tools (4) includes using machetes/long cutlasses for weeding, handling motorized equipment or machines, knapsack sprayer and/or chainsaw, harvesting with a machete or sickle, harvesting overhead cocoa pods with harvesting hook, or breaking cocoa pods with knife or a sharp object/tool during the reference period. Long working hours (5) is defined as a child working 43 hours or more during the reference period. Night work (6) is defined as a child going to or returning from the farm alone, or working on the farm between 6.00 p.m. and 6.00 a.m.

### **9.3.2. Côte d'Ivoire**

For Côte d'Ivoire local legislative definitions, the definition of the unacceptable working hours condition for children between 5 and 11 is defined as working at least one hour a day. For 12 and 16 year olds unacceptable working hours is defined as engaging in more than two hours of work a day or 10 hours a week on school days or four or more hours a day or 14 or more hours of work during non-school days. For children 17 years old unacceptable working hours is defined as working more than 40 hours a week. The hours are on school days cannot be evaluated for the twelve month reference period.

The Côte d'Ivoire definition of hazardous child labor consists of seven sub-categories

1. Adequate rest
2. Land clearing
3. Charcoal production
4. Carrying heavy loads
5. Agrochemicals
6. Sharp tools
7. Night work

A child has been exposed to hazardous work during the reference period if they were exposed to at least one subcategory during the reference period. The Côte d'Ivoire definition is different than the other definitions because if a child is 16 or 17 and has received any training in the field they are not considered to have been exposed to hazardous work.

Adequate rest (1) is defined as less than one full day of rest per week for children between 13 and 16 years old. This subcategory can only be evaluated for the seven day reference period. Land clearing (2) includes land clearing, tree felling and chopping, bush burning, tree stump removal, or working with animal-drawn cultivation for children 12 to 15. For children 16 and 17 only those who participated in any land clearing activities without receiving training on land cleaning are considered to be exposed to hazardous work.

Charcoal production (3) includes working in charcoal production, working as a lumberjack, or hunting with a weapon. Additionally, any child that is between 12 and 15 years old that dug a hole or was involved in holing/planting of seedlings, and any child between 16 and 17 that was involved in the same activities but did not receive a training on either is considered to be exposed to hazardous labor.

Carrying heavy loads (4) varies by age, gender, and type of transportation used. A complete breakdown of the heavy load definition can be found in Annex 9.3, and there is no heavy load training that would make this permissible.

Agrochemical (5) use includes children between 12 and 15 years old and who report having participated in the sale, transportation, handling and application of agro-pharmaceutical products. Additionally, children between 16 and 17 years old who have not received any training on applying pesticides, insecticides and fertilizers, and reports having been involved in the sale, transport, or handling of agro-

chemical products is considered to be in agrochemical hazardous work. Finally, children between 16 and 17 years old who have not received any training on occupational safety and health, and report having been involved in washing containers of agro-chemical products and spraying machine, and/or disposal of agro-chemical products are also considered to be in agrochemical hazardous work.

Sharp tool (6) use is defined as children between 12 and 15 years old who report having harvesting with a machete or sickle, handled motorized equipment/machines, or broke cocoa pods with knife or a sharp object/tool. Additionally, children between 16 and 17 years old who report harvesting with a machete or sickle without receiving training on harvesting, handling motorized equipment/machines without training on driving motorized vehicles, and breaking cocoa pods with a knife or a sharp object/tool with training on cocoa pod breaking are considered to be in sharp tool hazardous work.

Night work (7) is defined as going to or returning from the farm alone or working on the farm between 7pm and 7am, and there is no night work training that would make this permissible.

### **9.3.3. Ghana**

For the Ghanaian definition of unacceptable working hour conditions for children between 5 and 11 is defined as working at least one hour a day. For 12 and 14 years old is unacceptable working hours is defined as engaging in more than two hours of work a day on a school day or three of more hours a day or 18 or more hours a week during non-school days. For children between 15 and 17 years old unacceptable working hours is defined as working more than three hours a day or more than 18 hours a week. The hours are on school days cannot be evaluated for the twelve month reference period.

The Ghanaian definition of hazardous child labor consists of ten sub-categories

1. Working full time and not attending school
2. Withdrawing from school during cocoa season to do farm work
3. Land clearing
4. Carrying heavy loads
5. Spraying and agrochemicals
6. Sharp tools
7. Climbing trees
8. Night work
9. Working in isolation
10. Working without protective clothing.

A child has been exposed to hazardous work during the reference period if they were exposed to at least one subcategory during the reference period.

Working full time and not attending school (1) is defined as a child working 43 hours or more on a farm and not attending formal or non-formal school during the reference period. Withdrawing from school during cocoa season to do farm work (2) can only be evaluated on a 12 month reference period.

Land clearing (3) includes a child engaging in land clearing, felling of trees, or bush burning during the reference period. Carrying heavy loads (4) beyond permissible carrying weight is defined as a child carrying a load over one third of the child's body weight.

Agro-chemicals (5) is defined as spraying or working with agro-chemicals during the reference period. Spraying includes a child spraying of pesticides or insecticides, being present or working in the vicinity of farm during pesticide spraying, or reentering a sprayed farm within less than 12 hours of spraying. Working with agro-chemicals includes a child having been involved in working with agro-chemical products.

Use of sharp tools (6) is defined as; using machetes or long cutlasses for weeding, handling motorized equipment or machines, harvesting with a machete or sickle, harvesting overhead cocoa pods with harvesting hook or sickle, or breaking cocoa pods with knife or sharp object or tool. Climbing trees (7) is defined as climbing a tree that is three meters or higher to cut mistletoe with a cutlass.

Night work (8) is defined as going to or returning from the farm alone or working on the farm between 6pm and 6am. Working in isolation (9) is defined as working alone on the farm beyond the visible or audible range of the nearest adult. Working without protective clothing (10) is defined as working without adequate basic foot wear (protective boots) and protective clothing (overalls, long sleeves, and trousers).

#### 9.4. Annex IV: Supplementary Tables I

##### 9.4.1. Survey respondents

Table 40: Types and Numbers of Interviews Completed, by Region, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

	Child	Household Head
<b>Ghana</b>	2,809	1,314
Ashanti	995	468
Brong Ahafo	324	144
Central	459	181
Eastern	190	108
Volta	89	54
Western	752	359
<b>Côte d'Ivoire</b>	2,734	1,495
Agnebytiassa	211	102
Bas Sassandra	174	120
Belier	103	40
Cavalé	64	41
Gbokle	203	100
Goh	270	157
Guémon	317	192
Haut Sassandra	458	242
Indeniedjouabke	93	61
Lac	81	40
Lamé	104	60
Loh Djiboua	306	160
Marahoué	173	80
Tonkpi	107	60
Worodougou	70	40

Source: NORC sample 2018/2019, strata 1-3

Table 41: Household Head and Child Survey Response Rates, Côte d'Ivoire and Ghana, All Agricultural Households, 2018/19

Percent of households with:	Total		Côte d'Ivoire		Ghana	
<b>Total household rosters</b>	2,824	N/A	1,507	N/A	1,317	N/A
Household head survey	2,808	99%	1,494	99%	1,314	100%

At least one child survey	2,666	94%	1,380	92%	1,286	98%
Correct number of child surveys	2,195	78%	1,095	73%	1,100	84%
No eligible children	167	6%	83	6%	84	6%
Data collection complete*	2,295	81%	1,113	74%	1,182	90%

Source: NORC household roster, household head, and child surveys 2018/2019, strata 1-3

\*Percentage of households with a roster survey, a HH Head survey, and child surveys for all eligible children.

Table 42: Place of Birth and Nationality of Survey Respondents: Children, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19

	Côte d'Ivoire		Ghana	
<b>Place of Birth</b>				
Côte d'Ivoire	2,610	95%	3	0%
Ghana	4	0%	2,610	100%
Burkina Faso	98	4%	1	0%
Mali	15	1%	0	0%
Other	1	0%	1	0%
No response	1	0%	0	0%
<b>Nationality</b>				
Ivorian nationality	2,043	75%	1	0%
Ghanaian nationality	2	0%	2,610	100%
Burkinabe nationality	582	21%	3	0%
Malian nationality	65	2%	0	0%
Other	15	1%	1	0%
No response	6	0%	0	0%

Source: NORC roster survey 2018/2019, strata 1-3

Table 43: Household Land Under Cultivation and Under Cocoa Cultivation, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

	Côte d'Ivoire	Ghana
Land under cultivation by households involved in agriculture (in acres)	7.1	8.4
Land under cocoa cultivation by cocoa-producing households (in acres)	3.6	6.7

Source: NORC head of household survey 2018/19, unweighted, strata 1-3

### 9.4.2. Descriptive analysis

Table 44: Selected Characteristics (Age Group, Gender) of Children Engaged in Child Labor in Agriculture, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Children engaged in child labor in agriculture	Total			Côte d'Ivoire			Ghana		
	2008/09	2013/14	2018/19	2008/09	2013/14	2018/19	2008/09	2013/14	2018/19
<b>Population</b>	3,323,887	3,377,272	2,856,001	1,854,879	1,876,120	1,577,825	1,469,008	1,501,152	1,278,176
<b>Percentage</b>									
<b>Sex</b>									
Male	57%	59%	57%	56%	62%	56%	57%	56%	57%
Female	43%	41%	43%	44%	38%	44%	43%	44%	43%
<b>Age group</b>									
5-11 Years	47%	46%	50%	49%	48%	52%	44%	43%	48%
12-14 Years	28%	31%	30%	26%	30%	30%	31%	33%	30%
15-17 Years	25%	23%	20%	25%	22%	17%	25%	24%	22%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Includes children who worked in both cocoa production and other agricultural and non-agricultural economic sectors. Does not include children who worked in both cocoa production and agriculture other than the cocoa sector.

Table 45: Selected Characteristics (Age Group, School Attendance) of Children Engaged in Child Labor in Agriculture, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Children engaged in child labor in agriculture		Total		Côte d'Ivoire		Ghana	
		2008/09	2018/19	2008/09	2018/19	2008/09	2018/19
5-11 Years	Attending School	77%	93%	66%	89%	92%	98%
	Not attending school	23%	7%	34%	11%	8%	2%
12-14 Years	Attending School	79%	93%	66%	89%	92%	98%
	Not attending school	21%	7%	34%	11%	8%	2%
15-17 Years	Attending School	55%	78%	31%	68%	85%	88%
	Not attending school	45%	22%	69%	32%	15%	12%

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

Table 46: Prevalence of Child Labor By School Attendance, All Agricultural Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19

Prevalence of Child Labor	Attending school	Not attending school	Diff. (pp)*	Sig of diff^
All	49%	64%	-15	***
5-11 Years	31%	55%	-24	***
12-14 Years	76%	80%	-4	
15-17 Years	78%	83%	-5	

Source: NORC child survey 2018/19, weighted, strata 1-3

\*Calculated as the difference between attending school and not attending school rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 47: Working Hours and Minimum Age, Children Working in Cocoa Production, By Gender, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09 and 2018/19

Number and percentage of children in agricultural households		Côte d'Ivoire			Ghana		
		2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>
<b>Sex: Male</b>							
5-11 years	# Working 1 hour or more per week	384,860	325,405	N/A	319,788	261,535	N/A
	% Working 1 hour or more per week	32%	36%		51%	42%	***
	Average # of hours worked	3.2	4.2	**	4.3	3.7	
12-14 years	# Working 14 hour or more per week	126,776	110,596	N/A	64,726	29,298	N/A
	% Working 14 hour or more per week	33%	32%		21%	11%	***
	Average # of hours worked	11.5	10.7		7.7	6.3	**
15-17 years	# Working 43 hour or more per week	32,776	11,433	N/A	8,202	8,260	N/A
	% Working 43 hour or more per week	11%	6%	*	4%	5%	
	Average # of hours worked	16.9	12.7	**	11.4	11.4	
<b>Sex: Female</b>							
5-11 years	# Working 1 hour or more per week	379,867	352,621	N/A	230,317	239,208	N/A
	% Working 1 hour or more per week	35%	39%		40%	42%	
	Average # of hours worked	3.9	4.7	*	3.7	3.6	
12-14 years	# Working 14 hour or more per week	52,445	64,115	N/A	49,354	18,124	N/A
	% Working 14 hour or more per week	20%	22%		23%	8%	***
	Average # of hours worked	7.7	8.8		8.2	5.2	**
15-17 years	# Working 43 hour or more per week	30,494	10,678	N/A	3,762	3,110	N/A
	% Working 43 hour or more per week	11%	7%		2%	2%	
	Average # of hours worked	15.3	10.8	**	9.1	7.1	

Source: NORC child survey 2008/09 and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 48: Estimates of Change Children, 12-17, Engaged in Light Work and Regular Work in the Cocoa Production, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

		Children 12-14 years engaged in non-hazardous light work* in cocoa production				Children age 15-17 years engaged in regular work** in cocoa production			
		Number	Percent	Diff (pp)***	Sig of diff^	Number	Percent	Diff (pp)***	Sig of diff^
Total	2008/09	13,496	1%	2%	***	6,795	1%	0%	N/A
	2018/19	38,331	3%			6,360	1%		
	2013/14	53,054	4%	N/A	N/A	16,377	2%	N/A	
Côte d'Ivoire	2008/09	1,009	0%	1%	***		0%	1%	*
	2018/19	9,740	2%			2,512	1%		
	2013/14	38,773	5%	N/A	N/A	10,544	2%	N/A	
Ghana	2008/09	12,487	2%	4%	***	6,795	2%	0%	N/A
	2018/19	28,591	6%			3,848	1%		
	2013/14	14,281	3%	N/A	N/A	5,833	1%	N/A	

Source: NORC child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Children aged 12-14 who work less than 14 hours per week in non-hazardous work

\*\*Children aged 15-17 who work less than 43 hours per week in non-hazardous work

\*\*\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 49: Child Work Involved in Cocoa Production, All Children 5-17 Years, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008-09 and 2018-19

Percentage of children	Total			Côte d'Ivoire			Ghana		
	2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>	2008/09	2018/19	Sig of diff <sup>^</sup>
<b>Land preparation activities in cocoa production</b>									
Land clearing	12%	15%	***	15%	19%	***	7%	9%	**
Felling and chopping	1%	9%	***	1%	11%	***	2%	6%	***
Burning	1%	5%	***	1%	5%	***	2%	5%	***
Stumping	0%	5%	***	1%	6%	***	0%	5%	***
<b>Planting activities in cocoa production</b>									
Preparing seedlings	3%	8%	***	3%	8%	***	2%	10%	***
Planting seedlings	2%	9%	***	2%	7%	***	3%	12%	***
Sowing at stake	3%	7%	***	4%	4%		1%	10%	***
<b>Farm maintenance activities in cocoa production</b>									
Weeding	17%	21%	***	10%	16%	***	29%	28%	
Spraying insecticides	0%	4%	***	0%	4%	***	0%	3%	***
Applying fertilizer	0%	3%	***	0%	4%	***	0%	2%	***
Applying fungicides/herbicides/other chemicals	0%	3%	***	0%	3%	***	0%	2%	***
Carrying water for spraying	0%	17%	***	0%	13%	***	0%	24%	***
Doing sanitation and pruning	1%	4%	***	1%	4%	***	0%	5%	***
Doing mistletoe control	2%	4%	***	2%	4%	***	1%	4%	***
<b>Harvest activities in cocoa production</b>									
Plucking cocoa pods	11%	16%	***	9%	16%	***	14%	16%	*
Gathering and heaping cocoa pods	22%	42%	***	16%	35%	***	33%	52%	***
Breaking cocoa pods and fermentation	16%	26%	***	13%	25%	***	21%	27%	***
<b>Post-harvest activities in cocoa production</b>									
Carting fermented cocoa beans	11%	20%	***	9%	18%	***	14%	25%	***
Drying cocoa beans	10%	23%	***	9%	22%	***	13%	24%	***
Carting dry cocoa beans to shed	6%	12%	***	5%	12%	***	8%	12%	***

Source: Child survey 2008/09 and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 50: Children Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work in Cocoa Production, All Agricultural Households, 5-17 Years, by Sex and Age group in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

	Children Engaged in Child Labor in Cocoa Production														
	Total					Côte d'Ivoire					Ghana				
	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff^	2013/14
<b>Population</b>	1,764,856	2,100,477	N/A	N/A	2,121,715	817,079	1,029,256	N/A	N/A	1,203,172	947,777	1,071,221	N/A	N/A	918,543
<b>Sex</b>															
Male	61%	60%	0%		64%	61%	62%	1%		69%	60%	59%	-2%		57%
Female	39%	40%	0%		36%	39%	38%	-1%		31%	40%	41%	2%		43%
<b>Age group</b>															
5-11 Years	45%	47%	2%		42%	47%	47%	0%		42%	43%	46%	3%		42%
12-14 Years	30%	32%	2%		32%	28%	33%	5%	**	32%	32%	31%	-1%		31%
15-17 Years	25%	22%	-4%	**	26%	26%	20%	-6%	**	26%	25%	23%	-2%		27%
	Children Engaged in Hazardous Work* in the Cocoa Production														
<b>Population</b>	1,736,487	1,994,276	N/A	N/A	2,031,979	805,482	991,870	N/A	N/A	1,153,384	931,005	1,002,406	N/A	N/A	878,595
<b>Sex</b>															
Male	60%	61%	1%		65%	61%	63%	3%		70%	60%	59%	-1%		58%
Female	40%	39%	-1%		35%	39%	37%	-3%		30%	40%	41%	1%		42%
<b>Age group</b>															
5-11 Years	44%	44%	0%		40%	46%	45%	-1%		40%	42%	42%	0%		40%
12-14 Years	30%	33%	3%	*	33%	28%	34%	6%	**	33%	32%	33%	1%		32%
15-17 Years	26%	23%	-3%	*	27%	26%	21%	-5%	**	27%	25%	25%	-1%		28%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

\*\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 51: Estimates of Percentages of Children Exposed to Hazardous Work\* Activities in the Cocoa Sector, 5-17 Years, All Agricultural Households, by Age Group in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Percentage of children in agricultural households working in cocoa exposed to:	Total					Côte d'Ivoire					Ghana				
	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14
<b>Age group: 5-11 years</b>															
Land clearing (V1)	7%	9%	2%	**	5%	9%	11%	2%	*	8%	4%	6%	2%	**	0%
Heavy loads (V2)	17%	19%	2%	*	16%	13%	16%	4%	***	12%	24%	22%	-2%		23%
Agro-chemicals (V3)	4%	14%	11%	***	4%	3%	11%	8%	***	2%	5%	20%	15%	***	7%
Sharp tools (V4)	19%	22%	3%	***	16%	14%	19%	5%	***	15%	27%	26%	-1%		18%
Long working hours (V5)	1%	0%	0%	**	0%	1%	0%	0%	*	0%	0%	0%	0%		0%
Night work (V6)	0%	1%	1%	***	0%	0%	1%	1%	***	0%	0%	1%	1%	***	0%
Exposed to one or more Vs	22%	29%	7%	***	22%	16%	25%	9%	***	19%	33%	36%	3%		28%
<b>Age group: 12-14 years</b>															
Land clearing (V1)	17%	30%	14%	***	14%	23%	38%	15%	***	23%	9%	21%	12%	***	1%
Heavy loads (V2)	34%	42%	7%	***	34%	28%	40%	12%	***	29%	42%	44%	2%		41%
Agro-chemicals (V3)	6%	36%	30%	***	12%	4%	30%	26%	***	7%	9%	44%	35%	***	19%
Sharp tools (V4)	42%	54%	12%	***	37%	32%	47%	16%	***	35%	55%	64%	9%	***	40%
Long working hours (V5)	1%	1%	0%		1%	1%	1%	0%		2%	0%	0%	0%		0%
Night work (V6)	1%	3%	3%	***	1%	1%	3%	2%	*	1%	0%	4%	4%	***	0%
Exposed to one or more Vs	45%	60%	16%	***	48%	35%	54%	19%	***	46%	57%	69%	13%	***	51%
<b>Age group: 15-17 years</b>															
Land clearing (V1)	23%	35%	12%	***	23%	28%	39%	11%	***	38%	16%	31%	15%	***	3%
Heavy loads (V2)	34%	48%	14%	***	44%	29%	45%	16%	***	42%	40%	51%	11%	***	45%
Agro-chemicals (V3)	7%	47%	40%	***	20%	5%	38%	33%	***	13%	9%	56%	47%	***	30%
Sharp tools (V4)	42%	60%	18%	***	54%	34%	50%	16%	***	53%	53%	71%	18%	***	55%
Long working hours (V5)	2%	3%	0%		3%	3%	3%	0%		4%	1%	2%	1%		2%
Night work (V6)	1%	7%	6%	***	2%	2%	7%	5%	***	3%	1%	7%	6%	***	1%
Exposed to one or more Vs	44%	65%	21%	***	60%	35%	56%	21%	***	60%	56%	75%	19%	***	60%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\* Measured based on Variables 1-6, as described in Chapter 2.3 of this report.

\*\* Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^ Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 52: Estimates of Percentages of Children Exposed to Hazardous Work\* Activities in the Cocoa Sector, 5-17 Years, By Gender, All Agricultural Households, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Percentage of children in agricultural households working in cocoa exposed to:	Total					Côte d'Ivoire					Ghana				
	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2008/09	2018/19	Diff (pp)*	Sig of diff ^	2013/14
<b>Sex: Boys</b>															
Land clearing (V1)	15%	25%	10%	***	16%	20%	30%	9%	***	24%	8%	18%	11%	***	2%
Heavy loads (V2)	27%	32%	5%	***	28%	21%	30%	9%	***	24%	36%	34%	-2%		34%
Agro-chemicals (V3)	5%	29%	24%	***	11%	4%	24%	20%	***	7%	7%	36%	29%	***	19%
Sharp tools (V4)	32%	44%	12%	***	34%	24%	39%	15%	***	33%	44%	50%	6%	**	37%
Long working hours (V5)	1%	1%	0%		1%	1%	1%	0%		2%	0%	1%	0%		1%
Night work (V6)	1%	3%	3%	***	1%	1%	3%	2%	***	1%	0%	3%	3%	***	1%
Exposed to one or more Vs	34%	49%	14%	***	41%	26%	43%	17%	***	39%	48%	56%	8%	***	43%
<b>Sex: Girls</b>															
Land clearing (V1)	8%	10%	2%	*	3%	9%	11%	2%	**	5%	7%	8%	1%		0%
Heavy loads (V2)	19%	24%	5%	***	21%	15%	20%	5%	***	15%	26%	30%	4%	*	29%
Agro-chemicals (V3)	4%	19%	15%	***	5%	3%	14%	10%	***	2%	6%	26%	21%	***	9%
Sharp tools (V4)	23%	25%	2%	*	18%	17%	19%	2%		14%	32%	34%	2%		23%
Long working hours (V5)	1%	0%	0%		0%	1%	1%	0%		1%	0%	0%	0%		0%
Night work (V6)	0%	1%	1%	***	0%	0%	1%	1%	**	0%	0%	1%	1%		0%
Exposed to one or more Vs	26%	34%	8%	***	26%	19%	27%	8%	***	21%	37%	44%	6%	**	35%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

\*\*Calculated as the difference between the 2008/09 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 53: Disaggregation of Exposure to Agro-Chemicals, Children Working in Cocoa Production in the Last 12 Months, All Agricultural Households, by Age Group and by Gender, in Côte d'Ivoire and Ghana, 2008/09, 2013/14, and 2018/19

Exposed to Agro-Chemicals	Total				Côte d'Ivoire				Ghana			
	2008/09	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2008/09	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14
<b>Sex</b>												
5-11 years	47%	54%	38%	***	26%	40%	37%		27%	37%	**	26%
12-14 years	28%	22%	36%	**	34%	33%	33%		35%	34%	*	34%
15-17 years	25%	23%	27%		40%	27%	30%		39%	28%		39%
<b>Age group</b>												
Male	58%	56%	65%		84%	60%	61%		69%	63%		74%
Female	42%	44%	35%		16%	40%	39%		31%	37%		26%

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 54: Prevalence of Children Engaged Child Labor and Hazardous Child Labor in All Agricultural Households and Cocoa Households, 5-17 Years, in Côte d'Ivoire and Ghana, 2018/19

		Côte d'Ivoire				Ghana			
		Cocoa Households	Non-cocoa Households	Diff (pp)*	Sig of diff^	Cocoa Households	Non-cocoa Households	Diff (pp)*	Sig of diff^
Child labor	Number	1,393,129	286,655	N/A	N/A	1,203,951	120,232	N/A	N/A
	Percent	57%	60%	3%		59%	67%	8%	**
Hazardous child labor	Number	1,269,184	227,187	N/A	N/A	1,074,741	108,223	N/A	N/A
	Percent	45%	55%	9%	***	54%	60%	6%	*

Source: Child survey 2008/09, 2013/14, and 2018/19, weighted, strata 1-3

\*Calculated as the difference between the cocoa and non-cocoa households rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 55: Working Hours and Minimum Age, Children in Cocoa Households Working in Cocoa Production, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Number and percentage of children in cocoa households		Côte d'Ivoire			Ghana		
		2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
5-11 years	# Working 1 hour or more per week	553,724	684,220	N/A	451,194	464,645	N/A
	% Working 1 hour or more per week	28%	38%	***	54%	43%	***
	Average # of hours worked	2.8	4.4	***	4.0	3.9	
12-14 years	# Working 14 hour or more per week	197,429	173,862	N/A	71,412	42,795	N/A
	% Working 14 hour or more per week	27%	28%		20%	10%	***
	Average # of hours worked	9.5	9.19%		8.0	5.8	***
15-17 years	# Working 43 hour or more per week	35,201	19,179	N/A	6,244	7,191	N/A
	% Working 43 hour or more per week	8%	5%		2%	2%	
	Average # of hours worked	15.5	1066%	***	11.3	8.8	*

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3.

<sup>^</sup>Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 56: Working Hours and Minimum Age, Children in Cocoa Households, Working in Cocoa Production, By Gender, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Number and percentage of children in cocoa households		Côte d'Ivoire			Ghana		
		2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
<b>Sex: Male</b>							
5-11 years	# Working 1 hour or more per week	322,881	313,944	N/A	241,499	240,832	N/A
	% Working 1 hour or more per week	30%	35%		56%	43%	***
	Average # of hours worked	319%	385%		435%	388%	
12-14 years	# Working 14 hour or more per week	113,088	104,139	N/A	42,824	26,987	N/A
	% Working 14 hour or more per week	26%	34%		20%	11%	**
	Average # of hours worked	1004%	1036%		772%	628%	**
15-17 years	# Working 43 hour or more per week	17,103	11,943	N/A	4,267	4,444	N/A
	% Working 43 hour or more per week	7%	5%		3%	3%	
	Average # of hours worked	1718%	1190%	**	1149%	994%	
<b>Sex: Female</b>							
5-11 years	# Working 1 hour or more per week	230,843	370,275	N/A	209,695	223,813	N/A
	% Working 1 hour or more per week	25%	40%	***	51%	44%	*
	Average # of hours worked	238%	493%	***	364%	387%	
12-14 years	# Working 14 hour or more per week	84,341	69,724	N/A	28,589	15,807	N/A
	% Working 14 hour or more per week	27%	23%		19%	8%	***
	Average # of hours worked	881%	804%		844%	509%	***
15-17 years	# Working 43 hour or more per week	18,099	7,236	N/A	1,977	2,747	N/A
	% Working 43 hour or more per week	10%	5%		2%	2%	
	Average # of hours worked	1299%	888%		1097%	733%	*

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3.

<sup>^</sup>Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 57: Children in Cocoa Households, Engaged in Child Labor in Cocoa Production and Children Engaged in Hazardous Work\* in Cocoa Production, 5-17 Years, by Sex and Age group in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

	Children Engaged in Child Labor in Cocoa Production							
	Total				Côte d'Ivoire			
	2013/14	2018/19	Diff (pp)**	Sig of diff^	2013/14	2018/19	Diff (pp)**	Sig of diff^
<b>Population</b>	1,982,400	2,007,582	N/A	N/A	1,134,533	964,392	N/A	N/A
<b>Sex</b>								
Male	64%	60%	-4%	*	70%	62%	-7%	**
Female	36%	40%	4%	*	30%	38%	7%	**
<b>Age group</b>								
5-11 Years	42%	47%	5%	**	42%	48%	6%	*
12-14 Years	32%	31%	-1%		33%	32%	-1%	
15-17 Years	26%	22%	-4%	**	25%	20%	-5%	*
	Children Engaged in Child Labor in Cocoa Production				Children Engaged in Hazardous Work* in the Cocoa Production			
	Ghana				Total			
	2013/14	2018/19	Diff (pp)**	Sig of diff^	2013/14	2018/19	Diff (pp)**	Sig of diff^
<b>Population</b>	847,867	1,043,190	N/A	N/A	1,893,023	1,904,721	N/A	N/A
<b>Sex</b>								
Male	57%	59%	2%		65%	61%	-3%	
Female	43%	41%	-2%		35%	39%	3%	
<b>Age group</b>								
5-11 Years	43%	46%	3%		40%	45%	5%	**
12-14 Years	31%	30%	0%		33%	33%	0%	
15-17 Years	26%	23%	-3%		27%	23%	-4%	**
	Children Engaged in Hazardous Work* in the Cocoa Production							
	Côte d'Ivoire				Ghana			
	2013/14	2018/19	Diff (pp)**	Sig of diff^	2013/14	2018/19	Diff (pp)**	Sig of diff^
<b>Population</b>	1,085,104	929,518	N/A	N/A	807,919	975,203	N/A	N/A
<b>Sex</b>								
Male	70%	63%	-7%	**	57%	59%	2%	
Female	30%	37%	7%	**	43%	41%	-2%	
<b>Age group</b>								
5-11 Years	40%	46%	7%	*	40%	42%	2%	
12-14 Years	34%	33%	-1%		32%	33%	0%	
15-17 Years	26%	21%	-6%	**	28%	25%	-3%	

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

\*\*Calculated as the difference between the 2013/14 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 58: Estimates of Percentages of all Children in Cocoa Households, 5-17 Years, By Age Group, Exposed to Hazardous Work\* Activities in the Cocoa Sector, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Percentage of children in cocoa households exposed to:	Total				Côte d'Ivoire				Ghana			
	2013 /14	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2018/19	Diff (pp)*	Sig of diff ^	2013/14	2018/19	Diff (pp)*	Sig of diff ^
<b>Age group: 5-11 years</b>												
Land clearing in cocoa (V1)	6%	9%	3%	***	9%	11%	2%		0%	6%	6%	***
Heavy loads in cocoa (V2)	20%	20%	0%		14%	17%	3%		33%	24%	-8%	***
Agro-chemicals in cocoa (V3)	4%	15%	11%	***	2%	12%	9%	***	10%	21%	12%	***
Sharp tools in cocoa (V4)	20%	24%	4%	***	17%	21%	4%	*	25%	29%	4%	*
Long working hours in cocoa (V5)	0%	0%	0%		0%	0%	0%		0%	0%	0%	
Night work in cocoa (V6)	0%	1%	1%	**	0%	1%	1%	*	0%	1%	1%	
Exposed to one or more Variables in cocoa work	27%	31%	4%	**	23%	27%	4%	*	39%	39%	0%	
<b>Age group: 12-14 years</b>												
Land clearing in cocoa (V1)	18%	33%	15%	***	26%	40%	14%	***	2%	22%	21%	***
Heavy loads in cocoa (V2)	41%	43%	2%		33%	40%	7%		57%	47%	-10%	***
Agro-chemicals in cocoa (V3)	15%	36%	21%	***	8%	28%	20%	***	28%	47%	20%	***
Sharp tools in cocoa (V4)	45%	58%	13%	***	39%	51%	12%	***	57%	68%	11%	***
Long working hours in cocoa (V5)	1%	1%	0%		2%	1%	-1%		0%	0%	0%	
Night work in cocoa (V6)	1%	4%	3%	***	1%	4%	2%		1%	4%	3%	***
Exposed to one or more Variables in cocoa work	58%	64%	6%	*	51%	56%	5%		72%	74%	2%	
<b>Age group: 15-17 years</b>												
Land clearing in cocoa (V1)	27%	36%	9%	**	41%	37%	-4%		4%	34%	30%	***
Heavy loads in cocoa (V2)	54%	52%	-3%		50%	48%	-2%		60%	56%	-4%	
Agro-chemicals in cocoa (V3)	26%	48%	22%	***	16%	37%	21%	***	43%	62%	19%	***
Sharp tools in cocoa (V4)	64%	61%	-4%		59%	48%	-12%	**	73%	77%	4%	
Long working hours in cocoa (V5)	4%	4%	-1%		5%	5%	-1%		2%	2%	0%	
Night work in cocoa (V6)	3%	8%	5%	***	4%	8%	5%		1%	7%	6%	***
Exposed to one or more Variables in cocoa work	73%	69%	-4%		68%	58%	-10%	*	80%	82%	2%	

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

\*\*Calculated as the difference between the 2013/14 and 2018/19 rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 59: Estimates of Percentages of all Children in Cocoa Households, 5-17 Years, By Gender, Exposed to Hazardous Work\* Activities in the Cocoa Sector, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19\*

Percentage of children in cocoa households exposed to:	Total				Côte d'Ivoire				Ghana			
	2013/14	2018/19	Diff (pp)**	Sig of diff^	2013/14	2018/19	Diff (pp)**	Sig of diff^	2013/14	2018/19	Diff (pp)**	Sig of diff^
<b>Sex: Boys</b>												
Land clearing in cocoa (V1)	4%	10%	6%	***	6%	11%	5%	***	0%	9%	9%	***
Heavy loads in cocoa (V2)	26%	26%	0%		18%	21%	3%		42%	33%	-9%	***
Agro-chemicals in cocoa (V3)	6%	19%	13%	***	2%	13%	12%	***	14%	29%	15%	***
Sharp tools in cocoa (V4)	22%	26%	5%	**	16%	20%	4%		33%	37%	4%	
Long working hours in cocoa (V5)	1%	1%	0%		1%	1%	0%		0%	0%	0%	
Night work in cocoa (V6)	0%	1%	1%	***	0%	1%	0%		0%	2%	1%	***
Exposed to one or more Variables in cocoa work	33%	35%	3%		24%	28%	4%		50%	48%	-2%	
<b>Sex: Girls</b>												
Land clearing in cocoa (V1)	19%	26%	7%	***	27%	31%	4%		2%	20%	17%	***
Heavy loads in cocoa (V2)	34%	33%	-1%		28%	31%	2%		45%	36%	-9%	***
Agro-chemicals in cocoa (V3)	14%	30%	16%	***	8%	23%	15%	***	26%	39%	13%	***
Sharp tools in cocoa (V4)	41%	46%	5%	**	38%	41%	4%		49%	54%	5%	*
Long working hours in cocoa (V5)	1%	1%	0%		2%	1%	0%		1%	1%	0%	
Night work in cocoa (V6)	1%	4%	3%	***	1%	4%	3%	**	0%	3%	3%	***
Exposed to one or more Variables in cocoa work	49%	52%	3%		45%	46%	2%		58%	60%	2%	

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

\*\*Calculated as the difference between the 2013/14 and 2018/19 rates in percentage points

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 60: Estimates of Exposure of Children Working in Cocoa Production in Cocoa Households, 5-17 Years, to Hazardous Work, by Count, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Percentage of children exposed to hazardous work (V1-V6)	Côte d'Ivoire			Ghana		
	2013/14	2018/19	Sig of diff <sup>^</sup>	2013/14	2018/19	Sig of diff <sup>^</sup>
6 Variables	0%	0%				
5 Variables	1%	4%	***	0%	2%	***
4 Variables	6%	22%	***	2%	13%	***
3 Variables	24%	23%		23%	23%	
2 Variables	33%	24%	***	38%	28%	***
1 Variable	24%	18%	**	29%	19%	***
0 Variables	12%	8%	**	9%	14%	***

Source: Child survey 2013/14, and 2018/19, weighted, strata 1-3

<sup>^</sup>Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 61: Disaggregation of Exposure to Agro-Chemicals, Children in Cocoa Households Working in Cocoa Production in the Last 12 Months, by Age Group and Gender, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

	Total			Côte d'Ivoire			Ghana		
	2013/14	2018/19	Sig of diff^	2013/14	2018/19	Sig of diff^	2013/14	2018/19	Sig of diff^
<b>Number exposed to V3</b>									
<b>Age group</b>									
5-11 years	122,741	422,020	N/A	42,172	193,991	N/A	80,569	228,029	N/A
12-14 years	156,761	375,097	N/A	55,848	169,658	N/A	100,913	205,439	N/A
15-17 years	185,318	315,614	N/A	66,280	131,145	N/A	119,038	184,469	N/A
<b>Sex</b>									
Male	344,349	696,869	N/A	139,908	320,671	N/A	204,441	376,198	N/A
Female	120,472	416,567	N/A	24,392	174,828	N/A	96,080	241,739	N/A
<b>Spraying pesticides or insecticides</b>									
<b>Age group</b>									
5-11 years	3%	17%	***	0%	18%		7%	15%	
12-14 years	25%	31%		27%	35%		20%	25%	
15-17 years	73%	53%	**	73%	46%	**	72%	60%	
<b>Sex</b>									
Male	98%	79%	***	98%	79%	**	97%	79%	***
Female	2%	21%	***	2%	21%	**	3%	21%	***
<b>Being present or working in the vicinity of farm during pesticide spraying</b>									
<b>Age group</b>									
5-11 years	18%	41%	***	18%	44%	***	17%	38%	***
12-14 years	32%	33%		32%	30%		31%	34%	
15-17 years	50%	27%	***	49%	26%	***	51%	28%	***
<b>Sex</b>									
Male	75%	65%	**	84%	66%	**	69%	64%	
Female	25%	35%	**	16%	34%	**	31%	36%	
<b>Reentering a sprayed farm within less than 12 hours of spraying</b>									
<b>Age group</b>									
5-11 years	15%	29%	**	14%	37%	**	15%	20%	
12-14 years	47%	37%		46%	32%		49%	42%	
15-17 years	38%	35%		39%	31%		36%	38%	
<b>Sex</b>									
Male	81%	66%	*	88%	65%	**	59%	67%	
Female	19%	34%	*	12%	35%	**	41%	33%	
<b>Carrying water for spraying</b>									
<b>Age group</b>									
5-11 years	28%	34%		31%	32%		27%	35%	*
12-14 years	34%	34%		31%	34%		35%	34%	
15-17 years	38%	32%		38%	34%		38%	31%	
<b>Sex</b>									
Male	72%	62%	**	84%	64%	***	67%	61%	

Female	28%	38%	**	16%	36%	***	33%	39%	
<b>Having been involved in working with agrochemicals*</b>									
<b>Age group</b>									
5-11 years	9%	23%	***	9%	28%	**	7%	19%	*
12-14 years	34%	40%		38%	38%		21%	42%	
15-17 years	57%	37%	**	52%	34%		72%	40%	**
<b>Sex</b>									
Male	90%	75%	***	89%	78%		93%	72%	***
Female	10%	25%	***	11%	22%		7%	28%	***

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Such as purchasing, transport, storage, mixing, loading, spraying/applying, washing of containers and spraying machine, and/or disposal

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 62: Children in Cocoa Households, Children Engaged in Child Labor and Hazardous Work in Cocoa Production, by School Attendance, 5-17 Years, in Côte d'Ivoire and Ghana, 2013/14 and 2018/19

Age group		Children Engaged in Child Labor in Cocoa Production					
		Total		Côte d'Ivoire		Ghana	
		2013/14	2018/19	2013/14	2018/19	2013/14	2018/19
5-11 Years	Attending School	35%	40%	29%	35%	44%	46%
	Not attending school	16%	18%	16%	17%	26%	24%
12-14 Years	Attending School	59%	67%	51%	60%	72%	74%
	Not attending school	55%	57%	54%	54%	79%	79%
15-17 Years	Attending School	73%	73%	65%	62%	79%	82%
	Not attending school	74%	67%	72%	63%	89%	81%
Age group		Children Engaged in Hazardous Work* in Cocoa Production					
		Total		Côte d'Ivoire		Ghana	
		2013/14	2018/19	2013/14	2018/19	2013/14	2018/19
5-11 Years	Attending School	31%	35%	26%	32%	39%	39%
	Not attending school	15%	16%	15%	16%	19%	23%
12-14 Years	Attending School	59%	67%	51%	60%	72%	74%
	Not attending school	54%	57%	53%	54%	79%	79%
15-17 Years	Attending School	73%	73%	65%	62%	79%	82%
	Not attending school	74%	67%	72%	63%	89%	81%

Source: Child survey 2013/14 and 2018/19, weighted, strata 1-3

\*Measured based on Variables 1-6, as described in section 2.3 of this report

## 9.5. Annex V: Supplementary tables II

### 9.5.1. Comparison of exposure to Hazardous Work indicators using 7 days vs. 12 months reference periods for 2018/19

The following section investigates the difference between using a 7-day (**current activity status**) versus a 12-month (**usual activity status**) reference period for understanding child labor and grew from debates among various stakeholders on the pros and cons of each approach. Using a 7-day reference period is thought to be cognitively easier for children to answer and situates a child directly within a particular growing season. However, a 7-day reference period ignores seasonality concerns (you may grow cocoa in one season but prepare the fields in another season) and temporal bias (if a study is conducted during the school year or when less work is being conducted) which can impact the estimates of child labor through undercounting. The current activity status would be expected to be lower than the usual activity status since all activities that were performed in the past seven days are, by definition, also performed in the past year. Hence the 12-month reference period includes the 7-day reference period as well as capturing children who may not have worked in just the last seven days.

To better understand this issue we compare the estimates of child engagement based on **usual activity status** (reference period of last twelve months) and **current activity status** (reference period last seven days).

Table 63: Estimates of Change in Children Engaged in Child Labor and Exposure to Hazardous Labor of Children Working in Cocoa Production By the 7 Day and 12 Month Definitions, in Côte d'Ivoire and Ghana, in 2018/19

Children in all agricultural households		All children	Children Working in Agriculture			
		Number	Number	Percent	Diff (pp)*	Sig of diff^
Total	7 Day	3,234,908	2,004,785	41%	26	***
	12 Month	3,828,916	3,205,572	67%		
Côte d'Ivoire	7 Day	1,774,434	1,117,314	39%	24	***
	12 Month	2,160,789	1,769,853	63%		
Ghana	7 Day	1,460,474	887,471	44%	28	***
	12 Month	1,668,127	1,435,719	71%		

Children in all agricultural households		Children Engaged in Child Labor in Agriculture				Children Engaged in Hazardous Work in Agriculture			
		Number	Percent	Diff (pp)*	Sig of diff^	Number	Percent	Diff (pp)*	Sig of diff^
Total	7 Day	1,765,819	36%	23	***	1,469,865	30%	25	***
	12 Month	2,856,001	60%			2,626,482	55%		
Côte d'Ivoire	7 Day	983,339	34%	22	***	809,214	29%	23	***
	12 Month	1,577,825	56%			1,451,319	52%		
Ghana	7 Day	782,480	38%	25	***	660,651	32%	26	***
	12 Month	1,278,176	63%			1,175,163	58%		

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 7 day and 12 month rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 63 shows significant increases in the percent of children working in agriculture, engaged in child labor, and engaged in hazardous child labor between the seven day and twelve month reference periods for both Côte d'Ivoire and Ghana. The increases in Ghana were slightly higher for working (28 percentage points compared to 24 percentage points), engaged in child labor (25 percentage points compared to 22 percentage points), and engaged in hazardous work (26 percentage points to 23

### ★ Quantitative Insight

There were 2.9 million children engaged in child labor in the last year (60%) compared to 1.8 million in the last week (36%) and 2.6 million engaged in hazardous work (55%) compared to 1.5 million (30%).

percentage points). In overall number of children, there were 3.2 million children working in agriculture in the past twelve months (67%) compared to 2 million in past seven days (41%). Additionally, there were 2.9 million children engaged in child labor in the last year (60%) compared to 1.8 million in the last week (36%) and 2.6 million engaged in hazardous work (55%) compared to 1.5 million (30%).

The large increases across the board between the usual activity status and current activity status show that many children do not work year round and are only involved in seasonal work. The fact that there are similar percentage point increases across the different categories even though the overall number of children engaged in activities declines from working to child labor to hazardous work may imply that the hazardous work activities are more driven by the seasonality of the activities. Some activities (land clearing, heavy loads, agro-chemicals, and sharp tools) are more seasonal than others (long working hours and night work) and seasonal activities that take place more often in the harvest season would be expected to see the largest differences. To further explore the increase in children exposed to hazardous

work activities, Table 64 compares the changes in the different hazardous work activities to see which particular activities are driving the changes seen above.

Table 64: Prevalence of Children, 5-17 Years, Exposed to Various Types of Hazardous Work Activities by the 7 Day and 12 Month Definitions, in Côte d'Ivoire and Ghana, 2018/19\*

Percentage of children in agricultural households exposed to:	Total							
	7 Day	12 Month	Diff (pp)*	Sig of diff^				
Number of children 5-17 years	3,235,736	3,830,851	N/A	N/A				
<b>Hazardous Work Activities</b>								
Land clearing (V1)	7%	18%	11	***				
Heavy loads (V2)	17%	36%	19	***				
Agro-chemicals (V3)	11%	30%	20	***				
Sharp tools (V4)	24%	46%	22	***				
Long working hours (V5)	1%	1%	0					
Night work (V6)	1%	3%	1	***				
Exposed to one or more variables	32%	56%	25	***				
Percentage of children in agricultural households exposed to:	Côte d'Ivoire				Ghana			
	7 Day	12 Month	Diff (pp)*	Sig of diff^	7 Day	12 Month	Diff (pp)*	Sig of diff^
Number of children 5-17 years	1,774,434	2,160,789	N/A	N/A	1,461,302	1,670,062	N/A	N/A
<b>Hazardous Work Activities</b>								
Land clearing (V1)	9%	24%	14	***	5%	13%	8	***
Heavy loads (V2)	18%	37%	19	***	17%	36%	19	***
Agro-chemicals (V3)	11%	26%	15	***	10%	34%	24	***
Sharp tools (V4)	22%	43%	21	***	25%	49%	24	***
Long working hours (V5)	1%	1%	0		1%	1%	0	
Night work (V6)	1%	2%	1	***	1%	3%	1	***
Exposed to one or more variables	31%	54%	24	***	33%	59%	26	***

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Calculated as the difference between the 7 day and 12 month rates in percentage points

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table Table 64 shows there were significantly higher levels of engagement in each activity for both Côte d'Ivoire and Ghana for all activities except long working hours (stayed constant at 1%). The largest overall increases were found in work that was seasonal; sharp tool use (21 percentage points in Côte d'Ivoire and 22 percentage points in Ghana), followed by agro-chemicals (15 percentage points in Côte d'Ivoire and 24 percentage points in Ghana), heavy loads (19 percentage points in both Côte d'Ivoire and Ghana), and land clearing (14 percentage points in Côte d'Ivoire and 8 percentage points in Ghana). There was a much smaller increase in night work (1 percentage points in both Côte d'Ivoire and Ghana), which along with long working hours are activities that are less likely to be seasonal in nature.

The large increases in the seasonal activities (V1-V4) show that much of the increase in children involved in hazardous labor is driven by the increases in seasonal activities instead of just an overall increase in the number of children working. If the increase was only due to increase in children working then there would be expected to be a large and consistent change across all six categories. It is important to note that the overall incidence of hazardous labor is lower in non-seasonal activities (1 percent for long working hours and night work in the seven day reference period), so the large increase in absolute terms would not be expected. However, the fact that these numbers are low and stay low show that much of

driving force behind the level of children involved in hazardous work is driven by the more seasonal activities.

Also interesting to note is that Ghana is facing an environmental crisis over land clearing and deforestation, which is reflected in the data. Of the four seasonal activities, the only activity with a lower percentage point increase in Ghana than in Côte d'Ivoire was land clearing (8 percentage points compared to 14 percentage points).<sup>61</sup>

**9.5.2. Frequency of exposure to Hazardous Work in 2018/19 over the 12 months reference periods<sup>62</sup>**

The frequency that children engaged in hazardous work is also important in determining the prevalence and impact/intensity of child labor and hazardous labor. Merely looking at the binary of whether or not a child was exposed to any activities does not paint the full picture, and knowing how often these activities occur is an important step in determining how wide spread the issue is. Additionally, breaking the different activities into components shows how different aspects of the activities play into the narrative. Tables 65-68 show the frequency of which components of hazardous work<sup>i</sup> children were exposed to.

*Table 65: Prevalence of Children, 5-17 Years, Exposed to Land Clearing Components by Frequency\*, in Côte d'Ivoire and Ghana, 2018/19*

Percentage of children in agricultural households exposed to:	Total							
	0 times	1-2 times	3-5 times	6+ times				
Number of children exposed to land clearing (VI)	885,860							
<b>Land Clearing (VI)</b>								
Land clearing	20%	19%	21%	40%				
Felling and Chopping	51%	14%	13%	22%				
Burning	74%	14%	7%	5%				
Percentage of children in agricultural households exposed to:	Côte d'Ivoire				Ghana			
	0 times	1-2 times	3-5 times	6+ times	0 times	1-2 times	3-5 times	6+ times
Number of children exposed to land clearing (VI)	611,879				273,981			
<b>Land Clearing (VI)</b>								
Land clearing	15%	20%	22%	44%	31%	18%	19%	31%
Felling and Chopping	49%	14%	15%	22%	56%	15%	8%	21%
Burning	79%	11%	6%	3%	62%	20%	10%	8%

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Frequencies only calculated for children exposed to Land Clearing (VI)

Table 65 shows that of the children who were exposed to land clearing (V1), the most common overall subcomponent to be exposed to was land clearing (80%), followed by felling and chopping (49%), and

<sup>61</sup> <https://www.worldbank.org/en/news/press-release/2019/07/09/ghana-signs-landmark-deal-with-world-bank-to-cut-carbon-emissions-and-reduce-deforestation>  
<https://www.weforum.org/agenda/2019/05/ghana-is-losing-its-rainforest-faster-than-any-other-country-in-the-world/>

[https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year?utm\\_campaign=GFW&source=socialmediakit&utm\\_medium=gfwsocial&utm\\_term=2018tcl\\_4\\_2019](https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year?utm_campaign=GFW&source=socialmediakit&utm_medium=gfwsocial&utm_term=2018tcl_4_2019)

<sup>62</sup> Note that frequencies of components can only be calculated for V1-V4, as the survey data does not include frequencies of V5 (long working hours) and V6 (night work).

burning (26%). The general trend for land clearing and felling and chopping was that highest frequency level of six or more times saw the largest percent of those engaged in that activity (44% and 31% for land clearing and 22% and 21% for felling and chopping for Côte d'Ivoire and Ghana). The opposite trend was suggested for burning with only 3 percent reporting six or more times in Côte d'Ivoire and 8 percent in Ghana. These frequencies suggest that the biggest drivers of V1 were also the activities that happened the most frequently, and that the incidence of land clearing was high.

Table 66: Prevalence of Children, 5-17 Years, Exposed to Heavy Loads Components by Frequency, in Côte d'Ivoire and Ghana, 2018/19

Percentage of children in agricultural households carrying different types of loads:	Total Number of times			
	Total			
	0	1-2	3-5	6+
Number of children exposed to heavy loads (V2)	1,734,983			
<b>Heavy loads (V2)</b>				
Loads of wood and other loads during land clearing	54%	10%	13%	23%
Loads of water for spraying	72%	8%	10%	10%
Loads while gathering and heaping cocoa pods	51%	14%	16%	19%
Loads of fermented cocoa beans	67%	11%	11%	11%
Loads of dry cocoa beans to shed	84%	6%	5%	5%
Other heavy loads	70%	7%	8%	15%

Percentage of children in agricultural households carrying different types of loads:	Total Number of times							
	Côte d'Ivoire				Ghana			
	0	1-2	3-5	6+	0	1-2	3-5	6+
Number of children exposed to heavy loads (V2)	1,012,407				722,576			
<b>Heavy loads (V2)</b>								
Loads of wood and other loads during land clearing	57%	11%	12%	20%	50%	10%	14%	26%
Loads of water for spraying	73%	7%	10%	11%	71%	9%	11%	9%
Loads while gathering and heaping cocoa pods	56%	12%	14%	18%	44%	16%	18%	21%
Loads of fermented cocoa beans	74%	10%	7%	9%	57%	11%	17%	15%
Loads of dry cocoa beans to shed	84%	6%	4%	5%	84%	5%	6%	5%
Other heavy loads	62%	9%	10%	19%	80%	5%	6%	9%

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Frequencies only calculated for children exposed to Heavy Loads (V2)

The types and frequency of heavy loads carried is shown in Table 66 for those children that carried a heavy load. The most common types of loads carried overall were gathering/heaping cocoa pods (49%) and loads during land clearing (46%). Each of these types of loads saw the general trend that the higher frequency levels saw a higher percentage of children engaged in that activity in both Côte d'Ivoire and Ghana (18% and 21% for gathering and 20% and 26% for loads during land clearing for Côte d'Ivoire and Ghana in the highest frequency level).

The next most common types of loads were fermented cocoa beans (33%), other loads (30%), and water for spraying (28%), and the least common was dry cocoa beans to shed (16%). For all the loads (except other) the level of engagement by children stayed constant across the different frequency levels. This indicates that the most common types of loads carried were also the loads that were the most frequently carried, and that the overall incidence of carrying heavy loads was high.

Table 67: Prevalence of Children, 5-17 Years, Exposed to Agrochemicals Components by Frequency\*, in Côte d'Ivoire and Ghana, 2018/19

Percentage of children in agricultural households exposed to:	Total Number of times							
	Total							
	0	1-2	3-5	6+				
Number of children exposed to agro-chemicals (V3)	1,390,133							
<b>Agro-chemicals (V3)</b>								
Spraying of pesticides, insecticides	85 %	6%	5%	3%				
Being present or working in the vicinity of farm during pesticide spraying	51 %	27 %	14 %	8%				
(Re)entering a sprayed farm within less than 12 hours of spraying	79 %	11 %	6%	3%				
Carrying water for spraying	40 %	18 %	19 %	23 %				
The sale, transport, or handling of agro-chemical products	77 %	10 %	8%	5%				
Washing containers of agro-chemical products and spraying machine, and/or disposal of agro-chemical products	79 %	10 %	8%	3%				
Percentage of children in agricultural households exposed to:	Total Number of times							
	Côte d'Ivoire				Ghana			
	0	1-2	3-5	6+	0	1-2	3-5	6+
Number of children exposed to agro-chemicals (V3)	709,101				681,032			
<b>Agro-chemicals (V3)</b>								
Spraying of pesticides, insecticides	84 %	7%	5%	4%	86 %	6%	5%	3%
Being present or working in the vicinity of farm during pesticide spraying	49 %	28 %	13 %	10 %	52 %	25 %	16 %	7%
(Re)entering a sprayed farm within less than 12 hours of spraying	78 %	13 %	6%	4%	81 %	10 %	7%	2%
Carrying water for spraying	50 %	16 %	14 %	19 %	30 %	20 %	23 %	26 %
The sale, transport, or handling of agro-chemical products	78 %	10 %	8%	4%	76 %	11 %	9%	5%
Washing containers of agro-chemical products and spraying machine, and/or disposal of agro-chemical products	77 %	11 %	9%	4%	82 %	9%	7%	3%

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Frequencies only calculated for children exposed to Agro-chemicals (V3)

The different types of exposure to agro-chemicals and the frequency of this exposure for children who were exposed can be found in Table 67. The two most common types of exposure were carrying water for spraying (60%) and being present during pesticide spraying (49%). Carrying water for spraying was more common for higher frequencies of exposure (19% for Côte d'Ivoire and 26% for Ghana for the highest frequency level), this is inconsistent with carrying a heavy load of water for spraying, which stayed constant across frequency levels. Conversely being present during spraying decreased in percentage of children exposed as the frequencies increased.

The next most common types of exposure were the sale/transport/handling of agrochemicals (23%), re-entering a sprayed farm (21%), washing/disposal of agrochemicals (21%), and spraying of pesticides (15%). Each of these types of exposure also decreased in percentage of children exposed as the frequencies increased like being present during spraying. The fact that for all types of exposure (except

carrying water for spraying) has lower frequencies of exposure shows that the intensity of exposure to agro-chemicals is less prominent than for land clearing and carrying heavy loads.

Table 68: Prevalence of Children, 5-17 Years, Exposed to Sharp Tools Components by Frequency\*, in Côte d'Ivoire and Ghana, 2018/19

Percentage of children in agricultural households exposed to:	Total Number of times							
	Total							
	0	1-2	3-5	6+				
Number of children exposed to sharp tools (V4)	2,185,967							
<b>Sharp tools (V4)</b>								
Using machetes or long cutlasses for weeding	12 %	17 %	23 %	47 %				
Handling motorized equipment or machines	96 %	1%	1%	1%				
Harvesting with a machete or sickle	65 %	10 %	10 %	16 %				
Harvesting overhead cocoa pods with harvesting hook or sickle	80 %	5%	6%	9%				
Breaking cocoa pods with knife or a sharp object/tool	53 %	14 %	14 %	20 %				
Percentage of children in agricultural households exposed to:	Total Number of times							
	Côte d'Ivoire				Ghana			
	0	1-2	3-5	6+	0	1-2	3-5	6+
Number of children exposed to sharp tools (V4)	1,190,672				995,295			
<b>Sharp tools (V4)</b>								
Using machetes or long cutlasses for weeding	16 %	21 %	20 %	44 %	9%	14 %	26 %	52 %
Handling motorized equipment or machines	97 %	1%	1%	1%	95 %	2%	2%	2%
Harvesting with a machete or sickle	64 %	11 %	10 %	14 %	65 %	8%	10 %	17 %
Harvesting overhead cocoa pods with harvesting hook or sickle	82 %	6%	5%	8%	78 %	4%	8%	9%
Breaking cocoa pods with knife or a sharp object/tool	52 %	17 %	13 %	19 %	54 %	10 %	16 %	20 %

Source: NORC Child survey 2018/19, weighted, strata 1-3

\*Frequencies only calculated for children exposed to Sharp Tools (V4)

Table 68 shows the frequency levels for different types of sharp tool use for children who used sharp tools. The most common use of sharp tools by far was using machetes/long cutlasses (78%), and this was more common at higher frequencies of exposure (44% for Côte d'Ivoire and 52% for Ghana in the highest frequency level). The next most common uses of sharp tools were breaking cocoa pods (47%), harvesting with a machete/sickle (35%), and harvesting cocoa pod with a harvesting hook/sickle (20%). Each of these types of sharp tool use were also more common at higher frequencies, which shows that the incidence of sharp tool use is also very high overall.

Across the four hazardous work activities, there were generally high intensity of exposure for land clearing, heavy loads, and sharp tools as measured by frequency of activity levels. The only hazardous work activity with lower intensity was use of agro-chemicals. In section 3.2 the largest increase in exposure to a hazardous work activity from 2008/09 to 2018/19 came from use of agro-chemicals,

however since the intensity of agro-chemical use is overall not very high this makes that result less troubling as the overall impact of agro-chemical use is not as high relatively.

#### 9.6. Annex VI: Additional Insights from 2018/19 Round of Survey

In this section we explore how different household, community, and school characteristics are related to children's exposure to child labor in agriculture and to hazardous work within a household. Each of the variables analyzed below most likely play some role in determining child labor rates and lend further evidence to the necessity of taking an ecosystem approach to the complex issue of child labor. To do this we present the proportion of households having children in child labor in agriculture and children exposed to hazardous work within a household disaggregated by the given demographic, economic characteristics of households, by community characteristics and by school characteristics in the neighborhood of cocoa producing areas in Côte d'Ivoire and Ghana. **It is important to note that these comparisons do not imply attribution/causality**, rather indicates potential correlation only. Tables 32-33 present the values of proportion of children in child labor in agriculture and children exposed to hazardous work by parent and household characteristics, by community and school characteristics.

Data presented in Tables 69-70 indicate that mother education level and household head's awareness of child labor are negatively correlated with the prevalence of child labor.

Proximity to schools may influence child labor and hazardous child labor prevalence, where a higher rate of child labor and hazardous child labor would be expected in areas without schools because sending children to school would be more costly than sending them to work. Data presented in Tables 32-33 show proximity to primary school in Ghana and junior secondary and senior secondary school in Côte d'Ivoire are negatively correlated with child labor prevalence.

Among community infrastructure, in Côte d'Ivoire communities that had improved roads and microfinance institution had a lower child labor and hazardous child labor. However, in Ghana, no such correlation was found.

In addition to proximity to schools, it is also likely that school quality might affect attendance and hence child labor and hazardous child labor. As a proxy of school quality, we test whether prevalence of child labor and hazardous child labor were lower in communities where greater proportion of schools had toilets, piped drinking water and canteens. Data reported in Table 69 indicates that school infrastructure

In Côte d'Ivoire, communities where schools had a toilet inside the school had lower child labor rate and hazardous child labor rates (However, no such effect was found in Ghana. On the other hand, in Ghana, communities with a greater proportion schools with piped drinking water had higher child labor and hazardous child labor which seems to be counter intuitive. Communities where greater proportion schools had a canteen or kitchen had a lower percentage of child labor in Côte d'Ivoire, while no such correlation was found in Ghana.

Table 69: Estimate of Proportion of Children Engaged in Child Labor and Exposure to Hazardous Child Labor by Parent and Household Characteristics, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

Parent and Household Characteristics	Côte d'Ivoire		Ghana	
	Exposure to Child Labor	Exposure to Hazardous Child Labor	Exposure to Child Labor	Exposure to Hazardous Child Labor
<b>Education of Mother</b>				
Below secondary	54%	50%	70%	66%
Secondary or above	52%	47%	60%	55%
Significance			***	***
<b>Education of Father</b>				
Below secondary	55%	52%	65%	61%
Secondary or above	55%	50%	64%	58%
Significance				
<b>Income Group</b>				
Low income*	55%	50%	63%	58%
High income**	57%	53%	66%	61%
Significance				
<b>Area under Cocoa Cultivation</b>				
Less than 5 acres	57%	54%	66%	60%
Greater than 5 acres	56%	53%	65%	60%
Significance				
<b>Household Heads' Awareness of Child Labor</b>				
Head not aware	59%	54%	67%	61%
Head aware	52%	48%	62%	58%
Significance	***	***	**	
<b>Migration: Head ever migrated to and from another village</b>				
Not migrated	56%	51%	64%	59%
Migrated	56%	53%	64%	59%
Significance				

Source: NORC Household Head survey 2018/19, weighted, strata 1-3

^Significance of Difference \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

\* Low income: with income within the lower 60% of income distribution

\*\*High income: with income within the upper 40% of income distribution

Data presented in Table 69 explore maternal and paternal education, household income, area under cocoa cultivation, head-of-household migration status and awareness of child labor. These issues likely have an influence on children's exposure to child labor and hazardous work. In Ghana a higher proportion of children whose mother have below secondary level education were exposed to child labor and hazardous child labor compared to children whose parents have at least secondary level education (70% versus 60% for child labor and 66% versus 55% for hazardous child labor). However, in Ghana there was no statistically significant difference in child labor and hazardous child labor for children whose father had at least a secondary education (around 65% child labor and 50% hazardous child labor). In Côte d'Ivoire there was no statistically significant difference in child labor & hazardous child labor by either parents' education level (around 53% child labor and 49% hazardous child labor for mother's education level and 55% and 51% for father's education level).

Higher education levels may imply greater awareness on the issue of child labor, which might, in turn, lead to lower child labor and hazardous child labor rates. While the differences in the likelihoods were not present in Côte d'Ivoire, they were more prominent in Ghana, as exposure to child labor and hazardous child labor was much larger when mothers had below secondary education versus when mothers had at least secondary education.

Household income is often considered as one of the most important factors that influences the prevalence of child labor and hazardous child labor. In low-income households, it is likely that more children are working in agriculture to support their parents and as a result, potentially have greater proportion exposed to child labor or hazardous child labor. However, the data reported in Table 69 indicates that there was no statistically significant difference in child labor and hazardous child labor rates between low income families (with income in the lower 60% of income distribution) and high income families (incomes quintiles 4-5). An important caveat is that the NORC research program did not include a detailed household income module but rather asked a few, self-reported measures of household income. Future studies, with a household economy focus, should continue this investigation into the relationship between household income and child labor. However, taking an ecosystem approach is essential, and household income is most likely only one variable among others to consider when attributing changes in child labor.

The comparison of child labor and hazardous child labor rates by household's area under cocoa cultivation indicates that there was no statistically significant difference in child labor and hazardous child labor prevalence between households with small cocoa farms (less than 5 acres) and households with large area under cocoa (more than 5 acres) in both countries.

Household head's awareness of child labor and the effects of it on children likely leads to fewer children from these households being exposed to child labor in both countries and hazardous child labor in Côte d'Ivoire. For instance, in Côte d'Ivoire, 59 percent of children from households where the household head was not aware of child labor were exposed to child labor compared to 52 percent of children from households where the household head was aware of child labor. There was however no statistically significant difference in hazardous child labor in Ghana by head's awareness.

Household migration could also affect child labor with households that migrated being more in need of money and therefore have higher levels of child labor. This was not found in the data where there was no statistically significant difference in child labor or hazardous child labor in Côte d'Ivoire and Ghana between the households with head migrated at least once versus the household where head did not migrate.

The next section will discuss the potential effects of community characteristics on child labor and hazardous work.

Table 70: Estimate of Proportion of Child Labor and Exposure to Hazardous Child Labor by Community Characteristics, All Agricultural Households, in Côte d'Ivoire and Ghana, 2018/19

Community Characteristics	Côte d'Ivoire		Ghana	
	Exposure to Child Labor	Exposure to Hazardous Child Labor	Exposure to Child Labor	Exposure to Hazardous Child Labor
<b>Primary School Location</b>				
Closet primary less than 1 KM away	60%	53%	66%	58%
Closet primary more than 1 KM away	55%	49%	70%	64%
Significance			*	*
<b>Junior High School (JHS) Location</b>				
Closet JHS less than 2 KM away	56%	48%	66%	58%
Closet JHS more than 2 KM away	61%	54%	68%	61%
Significance	*	**		
<b>Senior High School (SHS) Location</b>				
Closet SHS less than 5 KM away	55%	48%	65%	57%
Closet SHS more than 5 KM away	60%	54%	67%	60%
Significance	*	*		
<b>Improved Road</b>				
Community has improved road	59%	52%	66%	59%
Community does not have improved road	66%	62%	66%	61%
Significance	**	***		
<b>Grid Electricity Available</b>				
Has access to grid electricity	58%	52%	69%	62%
Does not have access to grid electricity	61%	54%	66%	59%
Significance				
<b>Microfinance Institution</b>				
Community has institution	59%	52%	66%	59%
Community does not have institution	69%	64%	68%	59%
Significance	***	***		

Source: NORC Community survey 2018/19, weighted, strata 1-3

^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 70 shows how community and infrastructure characteristics such as ease of access to JHS and SHS schools (based on distance to the nearest school), access to improved roads, access to grid electricity,

### ★ Quantitative Insight

In Côte d'Ivoire, exposure to child labor and hazardous child labor were lower in communities where the closest JHS was less than 2 km away and where the closest SHS was less than 5 km away. In Ghana communities where the closest primary school was within 1 km saw lower rates of child labor and hazardous child labor.

and presence of microfinance institutions could influence prevalence of child labor and hazardous child labor in Côte d'Ivoire and Ghana.

Proximity to schools may influence child labor and hazardous child labor prevalence, where a higher rate of child labor and hazardous child

labor would be expected in areas without schools because sending children to school would be more costly than sending them to work. In Côte d'Ivoire, exposure to child labor and hazardous child labor were lower in communities where the closest JHS was less than 2 km away (56% versus 61% and 48% versus 54%) and where the closest SHS was less than 5 km away (55% versus 60% and 48% versus 54%),

but there was no statistically significant difference with the closest primary school being within 1 km. In Ghana communities where the closest primary school was within 1 km saw lower rates of child labor (66% versus 70%) and hazardous child labor (58% versus 64%), but no statistically significant difference was found on the distance to the nearest JHS and SHS.

Community infrastructure in terms of improved roads and availability of grid electricity are also factors likely influencing the extent to which children are exposed to child labor or hazardous child labor. In Côte d’Ivoire, compared to the communities without improved road, a smaller percentage of children in communities with improved road were exposed to child labor (59% against 66%) or hazardous child labor (52% against 62%). In Ghana no statistically significant difference in child labor and hazardous child labor rates was found in communities with improved roads. Similarly, having access to grid electricity had no statistically significant difference on exposure to child labor or hazardous child labor.

Microfinance institutions provide financial services to individuals in communities in the form of loans that can be used to expand agricultural activities. Access to credit is considered as one of the factors that can influence households’ ability to hire labor from the market. Lack of smooth access to finance can make a household vulnerable to liquidity constraints and thus influence them to use children from own household to substitute hired labor. In 2018/19, communities that had a microfinance institution had a lower proportion of children exposed to child labor and hazardous child labor in Côte d’Ivoire (59% versus 69% for child labor and 52% versus 64% for hazardous child labor). However, in Ghana, there was no statistically significant difference in child labor and hazardous child labor rate by the access to a microfinance institute.

Next, we explore whether exposure to child labor and hazardous vary among communities with different school infrastructure.

Table 71: Estimate of Proportion of Child Labor and Exposure to Hazardous Child Labor by Child, School Characteristics, All Agricultural Households, in Côte d’Ivoire and Ghana, 2018/19

School Characteristics	Côte d’Ivoire		Ghana	
	Exposure to Child Labor	Exposure to Hazardous Child Labor	Exposure to Child Labor	Exposure to Hazardous Child Labor
<b>Toilet in School</b>				
School does not have toilet	61%	55%	66%	60%
School has toilet	57%	49%	66%	57%
Significance	**	***		
<b>Piped Drinking Water in School</b>				
School does not have piped drinking water	61%	54%	65%	58%
School has piped drinking water	55%	49%	70%	63%
Significance	**	**	**	*
<b>School has Canteen/Kitchen</b>				
School does not have kitchen	61%	54%	67%	59%
School has kitchen	57%	51%	64%	59%
Significance	*			

Source: NORC School survey 2018/19, weighted, strata 1-3  
^Significance of Difference \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As school attendance has increased in Côte d’Ivoire and Ghana, it is likely that school infrastructure related factors such as –toilets, piped drinking water and canteens – also influence the prevalence of child labor and hazardous child labor in these countries. In Côte d’Ivoire schools with a toilet had lower

child labor rate (57% against 61%) and hazardous child labor rates (49% against 55%) than schools without a toilet. However, no such effect was found in Ghana.

In Côte d'Ivoire, in the communities that had schools with piped drinking, children's exposure to child labor was lower compared to the communities with schools not having piped drinking water (55% against 61%) or lower hazardous child labor (49% against 54%). On the other hand, in Ghana, a greater proportion of Ghanaian children in schools with piped drinking water were exposed to child labor (70%) or hazardous child labor (63%) versus children in schools with piped drinking water exposed to child labor (65%) or hazardous child labor (58%). Additionally communities with schools having a canteen or kitchen had a lower percentage of child labor and no statistically significant difference in hazardous child labor in Côte d'Ivoire or child labor/hazardous child labor in Ghana.

Some of the household level factors such as household head's awareness of child labor and parental education seemed to be correlated to children's exposure to child labor and hazardous child labor. Overall, child labor and hazardous child labor rates seemed to be lower in areas with better access to schools. Communities with access to improved roads and microfinance institutions seem to have lower child labor and hazardous child labor rates in Côte d'Ivoire, but in Ghana, child labor and hazardous child labor rates did not seem to differ by community level infrastructure considered here.

## **9.7. Annex VII: Supplement I: Quantitative Analysis of Assessment of Effectiveness of Interventions**

### **9.7.1. Literature survey**

In order to assess the effectiveness of interventions, we first need to identify the various channels through which interventions influence child labor. Through a literature review, we identified the following factors that typically affect child labor and, correspondingly, the major channels through which these factors affect and moderate child-labor outcomes: poverty, opportunity costs of child labor, household composition, access to capital markets, regulatory factors and production-related factors.

Poverty, especially in the form of adult household members' wages, has been shown to have an important influence on child labor. Blunch, in an evaluation of the 1997 Core Welfare Indicators Survey in Ghana, finds that "Poverty affects the likelihood of engaging in harmful child labor positively." Edmonds's 2001 study (as cited in Basu and Tzannatos 2003), found that increased household income can explain 94 percent of the decline in child labor for households at the poverty line, illustrating the key role that income plays with regards to the level of child labor. This is also documented by Levy (1985), Rosenzweig (1981), Sakellariou and Lall (1998), and Cartwright (1998) who find that increases in women's wages significantly decrease female child labor (as cited in Canagarajah and Nielsen 2001). In fact, the first two of these studies find that "that a 10 percent increase in women's wage rates would decrease the female child's labor force participation by as much as 10 percent", while the last two "reach a similar conclusion." Together, these studies highlight the important influence of poverty, and especially of wages, on child labor rates.

Opportunity costs, in the form of the expected returns to labor and its clearest substitute —education, also play an important role in affecting child labor. The daily wage earned through child labor, for example has a significant positive impact on the hours of work for children, according to Bhalotra and Heady (1998), as cited in Canagarajah and Nielsen (2001). The returns on child labor are also variable based on farm size, such that larger farms, which require more labor but which do not have the ability to mechanize, see increased child labor.

Households also weigh the potential returns to education and its costs when determining the level of child labor. In an analysis of child labor in Zambia, Nielsen (1998), using the school's roofing as a proxy for school quality, found that in some cases, a school roof's poor condition increases the probability of

working by 15 percentage points (as cited in Canagarajah and Nielsen (2001)). Accessibility to a primary school is likewise a determinant of child labor, as shown by Nielsen (1998) who found that presence of a primary school increases school attendance by 10 percentage points in some cases, whereas the availability of a passable road decreases child labor by more than 10 percentage points and also increases school attendance significantly. As children lack the agency to make these decisions themselves, their guardians will weigh these factors, the demand for labor and its expected returns, against the supply, quality and returns to education when determining levels of child labor.

Also at play within these decisions is the household's composition, which includes household size and education levels, and shows intra-household variance for child labor based on age. This latter condition is summarized in the idea of "sibling complementarity," described by Basu and Tzannatos (2003) as the condition "where one child's labor makes it possible for another child to go to school." Citing DeGraff, Bilsborrow, and Herriman (1993), Canagarajah and Nielsen (2001) noted that the incidence of child labor is higher for the older children than for the younger children. Complementary to this, Nielsen (1998) finds that the higher the number of older siblings, the lower the probability of working and the higher the probability of attending school. Younger children, therefore, should be less likely to engage in child labor than their older siblings.

The relationship between age and child labor, however, is more complicated when considering the ages of older household members and the age of the household head. Grootaert (1998) and Nielsen (1998), for example, find that the higher the age of the household head the lower the probability of working. This is presumably influenced by the household head's own increased wealth over time. Older household members, on the other hand, who may themselves affect the dependency ratio in the household, have a negative impact on school attendance. Canagarajah and Coulombe (1998), for example, "find that the presence of household members older than 60 increases the probability of working and decreases the probability of attending school. In Ghana, the effect varies from 1 to 4 percentage points (Canagarajah and Nielsen, (2001). These impacts highlight the differential effects of household distributions within and across generations on child labor.

Capital markets are likewise a determinant of child labor, especially as it relates to the ability of a household to manage shocks. Households that lack access to credit and assets to shed see the greatest increase in child labor from such shocks. Nielsen (1998) finds that an indicator for whether or not a household owns an asset has a significant effect on both the probability of working and the probability of attending school by as much as 10-percentage-points.

However, regulatory factors can also include informal mechanisms such as culture, which dictate the cultural norms around child labor. Coulombe evaluates the differences of child labor as they related to religion and finds that Christians are more likely to attend school, and in rural areas they are also less likely to work than Muslims and those who practice traditional religion (Coulombe, 1998). He further finds that traditions and attitudes have a significant impact on child labor and can increase the probability of child labor by 30 percentage points. Similar to this, Webbink (2013) finds that culture context have a significant effect and that these factors affect child labor generally and may also have differential effects based on the gender of the child.

Production-related factors also serve an important role in determining child labor and are influenced by the sector, mode of production, and pricing for products. Perhaps most fundamental to production-related factors are the differential labor demands for across products and the ability for children to supply the required labor for these goods. In a rural setting, for example, the labor demands for different agricultural crops may vary significantly as will the demands for child labor for irrigation or

pesticides. Regulatory factors also overlap with production-related factors in such cases where production is gender-based, creating differential labor demands across children. For example, Cogneau (2012) finds that cocoa bean harvesting is more a male task, whereas plantains are more a female crop. Production-related factors can further differential child labor based on age, as Cogneau argues that young kids are probably too young to be put to work significantly in cocoa bean harvesting.

As illustrated above, the factors which influence child labor may interact with one another. There are also variations in the relative importance of these factors depending on the context and market under consideration. However, as the literature demonstrates, these factors are key mechanisms in determining the supply and demand for child labor. As such, these same factors of poverty, opportunity costs of child labor, household composition, access to capital markets, regulatory factors and production-related factors are the key avenues for affecting child-labor outcomes.

### **References**

- Basu, K. and Tzannatos, Z., 2003. The Global Child Labor Problem: What do we know and what can we do?. *The World Bank Economic Review*, 17(2):147-173.
- Blunch, N.H. and Verner, D., 2001. Revisiting the link between poverty and child labor: the Ghanaian experience.
- Bhalotra, S. and Heady, C., 2003. Child farm labor: The wealth paradox. *The World Bank Economic Review*, 17(2):197-227.
- Canagarajah, S. and Coulombe, H., 1998. Child labor and schooling in Ghana.
- Canagarajah, S. and Nielsen, H.S., 2001. Child labor in Africa: A comparative study. *The ANNALS of the American Academy of Political and Social Science*, 575(1):71-91.
- Cartwright, K. 1998. Child Labor in Colombia. In *The Policy Analysis of Child Labor: A Comparative Study*, ed. C. Grootaert and H. A. Patrinos. Washington, DC: World Bank.
- Cogneau, D. and Jedwab, R., 2012. Commodity price shocks and child outcomes: the 1990 cocoa crisis in Côte d'Ivoire. *Economic Development and Cultural Change*, 60(3):507-534.
- Coulombe, H. 1998. Child Labor and Education in Cote d'Ivoire. Background paper, World Bank, Washington, DC.
- DeGraff, D.S., Bilsborrow, R.E. and Herrin, A.N., 1993. The implications of high fertility for children's time use in the Philippines.
- Edmonds, E. 2001. "Will Child Labor Decline with Improvements in Living Standards?" Working Paper 01-09. Dartmouth College, Department of Economics, Hanover, N.H.
- Grootaert, C. 1998. Child Labor in Cote d'Ivoire. In *The Policy Analysis of Child Labor: A Comparative Study*, ed. C. Grootaert and H. A. Patrinos. Washington, DC: World Bank.
- Levy, V. 1985. Cropping Patterns, Mechanization, Child Labor and Fertility Behavior in a Farming Economy: Rural Egypt. *Economic Development and Cultural Change* 33:777-91.
- Nielsen, H. S. 1998. Child Labor and School Attendance in Zambia: Two Joint Decisions. Working Paper No. 98-15, Centre for Labour Market and Social Research, Aarhus, Denmark.
- Rozenzweig, M.R. 1981. Household and Non-Household Activities of Youth: Issues of Modelling, Data and Estimation Strategies. In *Child Work, Poverty and Underdevelopment*, ed. G. Rodgers and G. Standing. Geneva: International Labor Organization.

Sakellariou, C. and A. Lall. 1998. Child Labor in the Philippines. In *The Policy Analysis of Child Labor: A Comparative Study*, ed. C. Grootaert and H. A. Patrinos. Washington, DC: World Bank.

Webbink, E., Smits, J. and de Jong, E., 2013. Household and context determinants of child labor in 221 districts of 18 developing countries. *Social Indicators Research*, 110(2):819-836.

### 9.7.2. Modelling Child Labor and Hazardous Child Labor

One of the main objectives of this study is to assess how different interventions, either independently or in conjunction with other interventions, affect the main outcome variables of interest - children's engagement in child labor and hazardous work as well as their prevalence rates within a household.

For addressing research questions relating to the effect of interventions, it is important to develop a model-based approach which will be able to empirically test whether, after controlling for observable influences of different factors, interventions affect the outcome variables of interest. For this purpose, we apply a regression framework using a two-step approach. First we used a theoretical model of the household (HH) decision-making process to identify factors that might influence children's exposure to child labor and hazardous work in cocoa production. Then we estimate, whether, after controlling for such factors, the interventions affect children's exposure to child labor and hazardous work in cocoa production.

In this section we develop a generic model that examines the relationship between children's exposure to child labor and hazardous work in cocoa production and their determinants using a theoretical model of the household's decision-making process. This generic model will serve as the base of the empirical analysis to be undertaken for addressing the research questions on the influence of different interventions on children's exposure to child labor and hazardous work in cocoa production.

There are several factors that might affect the trade-offs that a family faces between sending children to school and engaging them in child labor (CL) in production activities. Using guidance from the literature review of previous research studies (see Section 9.7.1), we developed a theoretical model that examines for district  $d$  the household's decision to subject its children to child labor. The approach accounts for the head of household  $i$ 's concern for their children's welfare ( $W_{d,i}$ ), opportunity cost of child (hazardous) labor ( $O_{d,i}$ ), and the relevant household characteristics. Toward that end consider the following model:

$$L_{d,i}^{CL} = f\{(W_{d,i}); (O_{d,i}); (Z_{d,i}); \varepsilon_i\}$$

where  $L_{d,i}^{CL}$  is the observed child labor function, and  $Z_{d,i}$  are household characteristics and  $\varepsilon_i$  is Normal deviate. Consider each of the explanatory variables in turn.

Child welfare might be proxied by the number of children in household, ( $C_{d,i}$ ) (more children implies less concern), level of household member's education, ( $E_{d,i}$ ) (the higher it is the more a child might be valued) and, and head's perception about child work and benefit of education ( $M_{d,i}$ ). These result in the following sub-model:

$$W_{d,i} = f\{(C_{d,i}); (E_{d,i}); (M_{d,i})\}$$

Child labor has two opportunity costs, one financial and immediate, the other investment- related and delayed. The financial component comprises wages foregone (or the child works) and wages paid out to a labor substitute. A potential proxy variable for these would be the average product of labor for a household ( $AP_{d,i}$ , which is a function of farm and household characteristics) and average wage in the village ( $w_V$ ). The investment component might be captured by school quality and infrastructure ( $SC_V$ ). These result in the following sub-model:

$$O_{d,i} = f\{(AP_{d,i}) (w_V); (SC_V)\}$$

Household characteristics might comprise the demographic influence ( $D_{d,i}$ , includes religion, number of household members, head age, proportion of children in different age groups, proportion of girl child in the household, whether household migrated, presence of non-relative children in household), household wealth and liquidity ( $HW_{d,i}$ ) and farming characteristics ( $F_{d,i}$ ).

$$Z_{d,i} = f\{(D_{d,i}); (HW_{d,i}); (F_{d,i})\}$$

Finally, these sub-models are substituted into the model for  $L_{d,i}^{CL}$  and the combination is estimated this using a reduced form specification:

$$L_{d,i}^{CL} = \beta_C C_{d,i} + \beta_E E_{d,i} + \beta_M M_{d,i} + \beta_{SC} SC_{d,i} + \beta'_D D_{d,i} + \beta'_H HW_{d,i} + \beta_H F_{d,i} + \beta_V V_d + u_{d,i}$$

where  $V_d$  is a set of village/community characteristics that influence opportunity cost and average wage (through labor demand) in the community<sup>63</sup> and  $u_{d,i}$  is the normal error term assumed to be independently and identically distributed.

This equation will be used as the fundamental model of child and hazardous labor while we estimate program impact of different interventions as specified in Section 7.3. Based on this expression, of the child labor function above, the following sets of variables are included in the regressions:

- **Children number:** Number of children (total).
- **Household demographic characteristics:** Head age, gender, total adult members, total member with secondary/above education, proportion in different age groups (5-11, 12-14 & 15-17), proportion of girl child in the household, religion, whether family migrated and whether non-relative children live in HH),
- **Household Head's perception:** Value for education of children, perception about whether children should be working for pay.
- **Farming characteristics:** type of crop produced.
- **Household wealth and liquidity:** asset (indicator of home quality and household asset/wealth) liquidity (whether can borrow to meet needs)
- **Community characteristics:** Importance of cocoa (most important source of income), having improved road, having access to senior high school (less than 5 KM), remoteness (distance from district capital)
- **School quality/infrastructure:** Indicator variable for concrete building, toilet inside school, having access to improved water source.

## 9.8. Annex VIII: Supplement II: Quantitative Analysis of Assessment of Effectiveness of Interventions

This annex presents the methodology used for conducting statistical analyses as a part of quantitative assessment of effectiveness of different interventions.

### 9.8.1. Education Material Assistance and Child Labor in the Cocoa Sector

Here we present the quantitative analysis undertaken to address the following research question:

---

<sup>63</sup> We hypothesized that wages are highly correlated with the average product of labor (APL) and then introduced an additional model in which the average product of labor is a function of farm and household characteristics which are included in the model.

*Are children in households that received materials assistance related to education of children (such as school supplies, text books, uniform, etc.) less likely to be involved in child labor in the cocoa sector than their peers who did not receive such assistance?*

#### 9.8.1.1. Methodology

Given that provision of material support would be limited by the amount of resources available to the implementers, it is likely that beneficiary selection criteria were used to select the households who would most benefit from it. Thus, comparison of outcomes differences between the recipients and non-recipients necessitates first identifying potential differences in these two groups that might have influenced the beneficiary selection process. Such differences on their own could have led to the observed differences in outcomes rather than the effectiveness of the assistance. If not controlled for, these differences can lead to selection bias in estimation. In order to address the potential selection bias which might influence the estimated effect of treatment (educational material assistance) on outcome variables (child labor and hazardous child labor), we used a quasi-experimental design. The quasi-experimental design was based on a two-step approach:

- a. **Generate counterfactual:** To address selection bias where a group of household were selected by the implementers for disbursement of benefits, we identify a set of characteristics that may influence selection of beneficiaries such as number of children in different age groups, households' demographic characteristics and economic profile, among others. We then use entropy balancing,<sup>64</sup> a multivariate reweighting technique that generates a synthetic comparison group in such a way that the treated (beneficiary) households and the non-treated (comparison) households become statistically very similar (balanced) in observable characteristics that are likely to influence beneficiary selection process.
- b. **Use regression model to estimate the impact:** Next, we estimate an attribution model to test whether the households that received educational material support were less likely to have child labor and children engaged in hazardous child labor in cocoa production. We estimate two models: one model defines the outcome variable as the likelihood (probability) of having at least one child in child labor/hazardous child labor; the other model defines the outcome variable as the percent of children in the household exposed to child labor/hazardous child labor. The models specify the outcome variables (child labor/hazardous child labor) as a function of household, community, and school characteristics. Finally, the model tests whether provision of material support related to education had any statistically significant effect on children's engagement in child labor and in hazardous child labor in cocoa production after controlling for other factors that influence a household's decision to engage children in child labor and in hazardous child labor.<sup>65</sup>

#### 9.8.1.2. Data Source

The data sources we used for examining the research question is the nationally representative child-labor and head-of-household surveys conducted by NORC during the 2018/19 main cocoa harvesting season. The 2018/19 child-labor survey captured data on children's exposure to child labor and hazardous child labor, and the head-of-household surveys captured whether there was any child in the household who benefited from material support related to education. In addition, we used data collected from a survey of community leaders and schools to control for community- and school-

---

<sup>64</sup> Hainmueller, J. (2012). Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies. *Political Analysis*, 20(1): 25-46).

<sup>65</sup> Other influencing factors not of specific interest to research are often referred to as "covariates".

infrastructure-related influences on the outcome variable of interest. Examples of these include the presence of improved roads, distance to the schools from the community, school building construction material, availability of toilets inside school, source of drinking water, etc.).

The self-reported data show that in Côte d'Ivoire 605 households (44%) had at least one child who received benefits and in Ghana 164 households (14%) with at least one child that received material assistance related to education.

### 9.8.1.3. Analysis and Results

For generating the comparison group, the first step of the analysis was to use entropy balancing on the leading to a synthetically designed group of comparison households that were very similar to the treatment group (the *counterfactual*). Table 72 and Table 73 present the result of entropy balancing showing the difference in variables with influence on selection process before balancing and after balancing for Côte d'Ivoire and Ghana. The results of the entropy balancing is presented below for Ghana.

Table 72: Ghana Entropy Balancing: Differences in covariates affecting selection before and after balancing

	Comparison				Treatment	
	Before		After		Before	
	Mean	Variance	Mean	Variance	Mean	Variance
Total number of children age 5-11	1.37	0.99	1.48	0.99	1.48	0.99
Total number of children age 12-14	0.55	0.47	0.65	0.46	0.65	0.46
Dummy: HH head secondary education	0.39	0.36	0.38	0.37	0.38	0.37
Dummy: Head believe that children should receive at least SHS education	0.33	0.22	0.41	0.24	0.41	0.24
Dummy: Household paid for school fees	0.51	0.25	0.37	0.23	0.37	0.24
Dummy: Household performs food crop farming	0.87	0.11	0.91	0.08	0.91	0.08
Dummy: Land cultivated is above median	0.54	0.25	0.58	0.24	0.59	0.24
Dummy: Agricultural labor main income source	0.15	0.13	0.21	0.16	0.21	0.17
Dummy: Petty trade main income source	0.32	0.22	0.31	0.21	0.31	0.22
Index: home quality	0.17	1.41	0.00	1.02	0.00	1.02
Index: non-agricultural assets	0.00	2.01	-0.05	1.90	-0.05	1.90
Dummy: High income household	0.36	0.23	0.41	0.24	0.41	0.24

After the counterfactual was constructed, we used a multivariate regression model to estimate whether provision of material support related to education had any statistically significant effect on children's engagement in child labor and in hazardous child labor in cocoa production after controlling for other factors that influence a household's decision to engage children in child labor and in hazardous child labor. The following table presents the regression results for Ghana.

Table 73: RQ2 Ghana, Probit Regression and OLS Regression: Education Material Assistance and Child Labor and Hazardous Child Labor

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Treatment Dummy: Household received education material support	0.0589 (0.133)	0.0852 (0.147)	0.0305 (0.0323)	0.0217 (0.0294)
Total number of children	-0.0358 (0.0314)	0.331*** (0.0611)	-0.00274 (0.00820)	0.000784 (0.00901)
% of 12-14 children	1.073*** (0.211)	1.333*** (0.299)	0.305*** (0.0605)	0.377*** (0.0651)
% of 15-17 children	1.536*** (0.262)	1.325*** (0.335)	0.339*** (0.0733)	0.416*** (0.0738)
% of girl children 5-17	-0.392*** (0.149)	-0.502*** (0.163)	-0.0818** (0.0358)	-0.104*** (0.0381)
Head age	-0.000173 (0.000297)	0.000244 (0.000592)	7.81e-05 (0.000112)	9.30e-05 (0.000105)
Dummy: Head Gender: Male	0.0505 (0.137)	0.246 (0.179)	0.00602 (0.0359)	0.0122 (0.0352)
Total number of adults	0.0844 (0.0805)	-0.0113 (0.0869)	0.00598 (0.0187)	0.00342 (0.0185)
Number of adults with secondary/above education	-0.0284 (0.0837)	-0.000976 (0.0891)	-0.0143 (0.0196)	-0.0190 (0.0182)
Dummy: Religion Christian	-0.101 (0.170)	-0.151 (0.167)	0.0156 (0.0412)	-0.0107 (0.0402)
Dummy: Cocoa Household	0.708*** (0.250)	1.246*** (0.281)	0.244*** (0.0581)	0.230*** (0.0613)
Dummy: Household produce commercial crop	0.00138 (0.183)	-0.103 (0.190)	-0.0235 (0.0405)	-0.00410 (0.0400)
Dummy: Household produce food crop	0.149 (0.162)	-0.00726 (0.200)	0.0210 (0.0320)	0.0329 (0.0343)
Dummy: Household has livestock farm	0.186 (0.123)	0.305** (0.133)	0.0729** (0.0296)	0.0561* (0.0291)
Amount of cocoa sold in 2017/18 harvest	2.23e-05 (7.16e-05)	-5.21e-05 (9.49e-05)	9.95e-06 (2.45e-05)	-7.07e-06 (2.39e-05)
Index of Home quality	0.0332 (0.0678)	0.0128 (0.0752)	-0.00516 (0.0179)	-0.000821 (0.0177)
Index of Non-agricultural assets	-0.0639 (0.0437)	-0.142*** (0.0450)	-0.0163 (0.0110)	-0.0202* (0.0119)
Dummy: Can sufficiently borrow to meet finance needs	0.119 (0.140)	0.298** (0.149)	0.0672* (0.0356)	0.0575 (0.0365)
Dummy: Children's family migrated	0.187 (0.128)	-0.0552 (0.153)	-0.0162 (0.0357)	0.00398 (0.0364)
Dummy: Non-relative children staying in the household	-0.0702 (0.323)	-0.188 (0.284)	-0.0429 (0.0871)	-0.00229 (0.0834)

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Dummy: HH Head believe children start work for pay below 18	0.351** (0.167)	0.429*** (0.165)	0.0905** (0.0400)	0.0562 (0.0387)
Dummy: Cocoa most important source of income in community	0.639* (0.355)	0.920** (0.377)	0.176* (0.101)	0.140 (0.0954)
Dummy: Community has improved road	-0.296 (0.205)	-0.334* (0.189)	-0.115** (0.0489)	-0.106** (0.0497)
Dummy: District capital more than 10 KM	-0.0326 (0.277)	-0.556** (0.246)	-0.113 (0.0735)	-0.140** (0.0698)
Dummy: Secondary school within 5 KM	-0.0114 (0.140)	0.0462 (0.172)	0.0160 (0.0434)	0.0277 (0.0446)
Dummy: School has concrete building	0.329 (0.260)	0.226 (0.239)	0.0697 (0.0705)	0.0698 (0.0620)
Dummy: Toilet inside school	-0.0353 (0.255)	0.287 (0.254)	0.0522 (0.0809)	0.0172 (0.0742)
Dummy: School has improved water	-0.167 (1.045)	1.781 (1.102)	0.553** (0.258)	0.393 (0.251)
Dummy: Strata1 (High cocoa production)	0.605 (0.637)	0.882* (0.517)	0.349* (0.192)	0.293* (0.169)
Dummy: Strata2 (Medium cocoa production)	-0.0268 (0.581)	0.212 (0.584)	0.182 (0.187)	0.167 (0.168)
Constant	-2.666*** (0.924)	-3.557*** (0.935)	-0.446* (0.266)	-0.352 (0.252)
Observations	1,173	1,173	1,179	1,179
Pseudo R2	0.224	0.371	N/A	N/A
R-squared	N/A	N/A	0.341	0.358

Robust standard errors in parentheses

<sup>^</sup> Likelihood of Child Labor and Hazardous Child Labor

<sup>^^</sup> Rate of Child Labor and Hazardous Child Labor in the Household

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Similar to Ghana, we used entropy balancing to generate counterfactual for Côte d'Ivoire. The results of the entropy balancing is presented below for Côte d'Ivoire.

Table 74: Côte d'Ivoire Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing

	Comparison				Treatment	
	Before		After		Before	
	Mean	Variance	Mean	Variance	Mean	Variance
Total number of children age 5-11	1.20	0.81	1.35	0.97	1.35	0.97
Total number of children age 12-14	0.39	0.38	0.49	0.43	0.49	0.43
Dummy: HH head secondary education	0.13	0.12	0.21	0.16	0.21	0.16
Dummy: Head believe that children should receive at least SHS education	0.65	0.23	0.70	0.21	0.70	0.21
Dummy: Household paid for school fees	0.84	0.13	0.95	0.05	0.95	0.05
Dummy: Household performs food crop farming	0.74	0.19	0.85	0.12	0.85	0.12
Dummy: Land cultivated is above median	0.52	0.25	0.60	0.24	0.60	0.24
Dummy: Agricultural labor main income source	0.11	0.10	0.08	0.08	0.08	0.08
Dummy: Petty trade main income source	0.39	0.24	0.42	0.24	0.42	0.24
Index: home quality	-0.24	0.88	-0.10	1.13	-0.10	1.13
Index: non-agricultural assets	-0.12	1.73	0.01	1.82	0.01	1.82
Dummy: High income household	0.36	0.23	0.35	0.23	0.35	0.23

After the counterfactual was constructed, we used a multivariate regression model to estimate whether provision of material support related to education had any statistically significant effect on children's engagement in child labor and in hazardous child labor in cocoa production after controlling for other factors that influence a household's decision to engage children in child labor and in hazardous child labor. The following table presents the regression results for Côte d'Ivoire.

Table 75: Côte d'Ivoire, Probit Regression and OLS Regression: Education Material Assistance and Child Labor and Hazardous Child Labor

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Treatment Dummy: Household received education material support	-0.0304 (0.102)	0.0133 (0.0894)	-0.0137 (0.0249)	-0.00450 (0.0236)
Total number of children	0.0159 (0.0288)	0.165*** (0.0326)	0.00973 (0.00804)	0.00992 (0.00795)
% of 12-14 children	0.748*** (0.171)	0.609*** (0.172)	0.199*** (0.0505)	0.212*** (0.0494)
% of 15-17 children	1.049*** (0.178)	0.599*** (0.203)	0.216*** (0.0552)	0.225*** (0.0558)
% of girl children 5-17	-0.265*** (0.0838)	-0.328*** (0.0872)	-0.0808*** (0.0232)	-0.0912*** (0.0243)
Head age	0.00105 (0.00360)	0.00160 (0.00381)	-0.000110 (0.00107)	3.74e-05 (0.00102)
Head Gender: Male	0.0344 (0.144)	-0.0532 (0.117)	-0.00844 (0.0348)	-0.0167 (0.0344)
Total number of adults	-0.0211 (0.0316)	-0.0621** (0.0306)	-0.0132 (0.00820)	-0.0116 (0.00831)
Number of adults with secondary/above education	0.00447 (0.0607)	0.0833 (0.0577)	0.0182 (0.0162)	0.0148 (0.0152)
Dummy: Religion Christian	-0.0769 (0.0853)	-0.0179 (0.0873)	0.00744 (0.0242)	0.00610 (0.0241)
Dummy: Cocoa Household	0.956*** (0.160)	0.871*** (0.131)	0.220*** (0.0281)	0.221*** (0.0270)
Dummy: Household produce commercial crop	-0.0631 (0.102)	-0.114 (0.0899)	-0.0424 (0.0280)	-0.0365 (0.0263)
Dummy: Household produce food crop	0.0542 (0.114)	0.161 (0.110)	0.0222 (0.0310)	0.0188 (0.0314)
Dummy: Household has livestock farm	0.00934 (0.0883)	-0.0669 (0.104)	0.00743 (0.0257)	0.0101 (0.0261)
Amount of cocoa sold in 2017/18 harvest	3.48e-05 (3.13e-05)	4.13e-05 (3.09e-05)	1.22e-05 (9.11e-06)	1.22e-05 (9.19e-06)
Index of Home quality	-0.00365 (0.0435)	-0.00786 (0.0453)	-0.00264 (0.0117)	-0.00102 (0.0114)
Index of Non-agricultural assets	-0.0937*** (0.0339)	-0.0912** (0.0369)	-0.0256*** (0.00879)	-0.0227*** (0.00829)
Dummy: Can sufficiently borrow to meet finance needs	-0.155* (0.0790)	-0.249*** (0.0806)	-0.0658*** (0.0224)	-0.0685*** (0.0219)
Dummy: Children's family migrated	0.231** (0.103)	0.114 (0.0948)	0.0269 (0.0282)	0.0409 (0.0282)
Dummy: Non-relative children staying in the household	0.00728 (0.205)	0.0370 (0.180)	0.00365 (0.0403)	-0.000450 (0.0369)

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Dummy: HH Head believe children should have at least secondary education	-0.0685 (0.0807)	-0.0495 (0.0907)	-0.0251 (0.0238)	-0.0268 (0.0235)
Dummy: HH Head believe children start work for pay below 18	0.225** (0.0879)	0.199** (0.0921)	0.0590** (0.0252)	0.0540** (0.0249)
Dummy: Cocoa most important source of income in community	0.115 (0.142)	-0.00512 (0.136)	0.0267 (0.0409)	0.0128 (0.0398)
Dummy: Community has improved road	0.0233 (0.154)	-0.0180 (0.140)	0.0137 (0.0390)	0.0118 (0.0382)
Dummy: District capital more than 50 KM	-0.0922 (0.164)	-0.438*** (0.167)	-0.0817 (0.0498)	-0.102** (0.0475)
Dummy: Secondary school within 5 KM	-0.320** (0.124)	-0.393*** (0.131)	-0.105*** (0.0335)	-0.105*** (0.0352)
Dummy: School has concrete building	-0.144 (0.186)	-0.522*** (0.187)	-0.115** (0.0498)	-0.126** (0.0519)
Dummy: Toilet inside school	0.197 (0.164)	0.146 (0.140)	0.0559 (0.0443)	0.0722* (0.0432)
Dummy: School has improved water	-0.604 (0.505)	-0.227 (0.463)	-0.0220 (0.146)	-0.0666 (0.149)
Dummy: Strata1 (High cocoa production)	1.186*** (0.372)	0.118 (0.387)	0.156 (0.108)	0.117 (0.106)
Dummy: Strata2 (Medium cocoa production)	-0.0269 (0.380)	-0.857** (0.410)	-0.208* (0.111)	-0.264** (0.108)
Constant	-1.243*** (0.464)	0.219 (0.432)	0.465*** (0.127)	0.488*** (0.129)
Observations	1,357	1,357	1,374	1,374
Pseudo R2	0.164	0.220	N/A	N/A
R-squared	N/A	N/A	0.253	0.265

Robust standard errors in parentheses

<sup>^</sup> Likelihood of Child Labor and Hazardous Child Labor

<sup>^^</sup> Rate of Child Labor and Hazardous Child Labor in the Household

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### 9.8.2. Livelihood Support and Child Labor in the Cocoa Sector

Here we present the quantitative analysis undertaken to address the following research question:

*Are children in households where members received livelihood services (such as agricultural training, microfinance, and market access) less likely to be engaged in child labor in the cocoa sector than are children from households that did not receive such services?*

#### 9.8.2.1. Methodology

We use a model-based regression approach to assess whether households that received livelihood services (GAP, microfinance services, and market linkage) were less likely to engage children in child

labor and hazardous child labor or had lower rates of child labor and hazardous child labor compared to households that did not receive livelihood services, after controlling for other observable influences. For that, we follow the approach described in Section 9.8.1. We first express the outcome variables (exposure to child labor and hazardous child labor) as a function of household, community, and school characteristics. Then, we estimate a regression equation to test whether, after controlling for such factors, the households where at least one member received livelihood services were less likely to engage children in child labor and in hazardous child labor in cocoa production and had lower prevalence rates of child labor and hazardous child labor in cocoa production than households that did not receive livelihood services.

It is important to note that when implementing partners offer livelihood services to a community not all the households participate. Only a subgroup of households in the community would either be eligible or self-select to participate in such programs. It is possible that the households that were eligible or self-selected to participate in such programs were fundamentally different from the households that did not participate in such program, leading to the problem of selection bias. This could have occurred, for example, if some of the characteristics of the household that influenced its program eligibility or uptake also influenced the household's response ("performance") as a result of the intervention. One such example would be if entrepreneurial farmers were not only more likely to participate in a microfinance program but also more likely to put their children into school. Likewise, a farmer that accepts GAP training may be more likely to then those who don't to reduce the number of children in child labor and hazardous child labor.

In order to address the potential selection bias which might influence the estimated effect of treatment (livelihood services) on outcome variables (child labor and hazardous child labor), we used a quasi-experimental design. The quasi-experimental design is based on a two-step approach described below:

- a. **Generate counterfactual:** To address selection bias where households self-select to participate in livelihood-support initiatives, we identify a set of variables that are expected to influence households' decision to participate in livelihood services offered in a community. We identify factors by examining the differences between the households that received/participated in such activities and the households that did not in the villages where the services were offered. These factors include household demographic characteristics (such as head's gender and age, and number of adults with secondary or above education), farming characteristics (such as engage in cocoa, plant other commercial crops, size of landholding), economic profile (such as having income from agricultural labor, petty trade, other self-employment etc., plus an indicator of wealth), variable on whether household recently migrated to the village, etc. In order to select the comparison group that could serve as the counterfactual, we decided to select households from the communities where the livelihood services were not offered (based on self-reported data by the head of the households). This was done to avoid the possibility of spillover effect influencing the results in the treatment communities. We then use entropy balancing on the sample of households from the non-treated communities, to generate a synthetically designed group of comparison households in such a way that the synthetic comparison group, on average, looks like the treatment group (that received livelihood services) in observable characteristics that might have influence on selection of beneficiaries.
- b. **Use regression model to estimate the impact:** Next, we estimate whether the households that received livelihood services were less likely to engage children in child labor and in hazardous child labor in cocoa production. As described in Section 4.3.2.1, we estimated two models: one where the outcome variable was the probability of having at least one

child engaged in child labor & hazardous child labor; and the other with the outcome variable as the rate of exposure to child labor & hazardous child labor among the children in the households. The models specified the outcome variables (exposure to child labor/hazardous child labor) as a function of household, community, and school characteristics. Finally, the model tested whether, receiving livelihood services had any statistically significant effect on children’s engagement in child labor and in hazardous child labor in cocoa production controlling for other covariates.

9.8.2.2. Data Source

The data source to examine this research question is the child labor, head of the household, community and school surveys conducted by NORC during the 2018/19 main cocoa harvesting season in Côte d’Ivoire and Ghana.

The self-reported data show that in Côte d’Ivoire 128 households (9%) had at least one member who received livelihood support and in Ghana 70 households (5.8%) with at least one member who received livelihood support.

Given the relatively small sample size of households that received livelihood services in Ghana, the model was estimated only for Côte d’Ivoire.

9.8.2.3. Analysis and Results

The first step of the analysis was to use entropy balancing on the sample of households from the non-treated communities, to generate a synthetically designed group of comparison households. Table 76 presents the result of entropy balancing for Côte d’Ivoire showing the difference in variables with influence on selection process before balancing and after balancing which generated the synthetic comparison group.

Table 76: Côte d’Ivoire Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing

	Comparison				Treatment	
	Before		After		Before	
	Mean	Variance	Mean	Variance	Mean	Variance
Land ownership	0.89	0.10	0.89	0.10	0.89	0.10
Household performs cocoa farming	0.86	0.12	0.86	0.12	0.91	0.08
Household performs commercial farming	0.47	0.25	0.47	0.25	0.54	0.25
Agricultural labor main income source	0.12	0.11	0.12	0.11	0.12	0.11
Self-employment main income source	0.10	0.09	0.10	0.09	0.09	0.09
Index of home quality	-0.16	1.06	-0.16	1.06	-0.29	0.70
Index of non-agricultural assets	-0.11	1.64	-0.11	1.64	0.29	2.24
Household head gender	0.88	0.10	0.88	0.10	0.98	0.02
Number of adults in household	3.03	2.56	3.03	2.56	3.39	2.83
Girls should start working before 18	0.41	0.24	0.41	0.24	0.38	0.24

After the counterfactual was constructed, we used a multivariate regression model to estimate whether provision of livelihood services had any statistically significant effect on children’s engagement in child labor and in hazardous child labor in cocoa production after controlling for other factors that influence a household’s decision to engage children in child labor and in hazardous child labor. The following table presents the regression results for Côte d’Ivoire.

Table 77: Côte d'Ivoire, Probit regression: Livelihood Service Support and Child Labor and Hazardous Child Labor

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Treatment Dummy: Household received Livelihood support	-0.141 (0.292)	-0.167 (0.321)	-0.103* (0.0610)	-0.0892 (0.0605)
Total number of children	0.0907* (0.0480)	0.246*** (0.0606)	0.0159 (0.0127)	0.0165 (0.0123)
% of 12-14 children	0.508 (0.334)	0.195 (0.316)	0.104 (0.0973)	0.106 (0.0971)
% of 15-17 children	1.310*** (0.323)	0.657* (0.336)	0.211** (0.0912)	0.221** (0.0901)
% of girl children 5-17	-0.187 (0.162)	-0.269 (0.182)	-0.0856* (0.0448)	-0.0950** (0.0458)
Head age	0.0147* (0.00796)	0.00905 (0.00744)	0.00342 (0.00228)	0.00348 (0.00221)
Head Gender: Male	-1.015*** (0.394)	-1.071*** (0.401)	-0.260** (0.123)	-0.287** (0.120)
Total number of adults	-0.0799 (0.0563)	-0.0908* (0.0547)	-0.0276* (0.0148)	-0.0270* (0.0148)
Number of adults with secondary/above education	0.0379 (0.106)	-0.0216 (0.101)	-0.000186 (0.0274)	0.000159 (0.0275)
Dummy: Religion Christian	-0.0525 (0.170)	0.0790 (0.169)	0.00897 (0.0465)	-0.0103 (0.0466)
Dummy: Cocoa Household	1.424*** (0.310)	1.694*** (0.300)	0.354*** (0.0496)	0.338*** (0.0519)
Dummy: Household produce commercial crop	-0.247 (0.171)	-0.228 (0.164)	-0.0764* (0.0429)	-0.0730* (0.0425)
Dummy: Household produce food crop	-0.161 (0.198)	-0.111 (0.178)	-0.0152 (0.0483)	-0.00618 (0.0456)
Dummy: Household has livestock farm	0.233 (0.161)	0.133 (0.178)	0.0453 (0.0451)	0.0551 (0.0457)
Amount of cocoa sold in 2017/18 harvest	7.78e-05 (5.32e-05)	5.54e-05 (5.22e-05)	1.77e-05 (1.54e-05)	2.01e-05 (1.45e-05)
Index of Home quality	0.0694 (0.0883)	0.105 (0.0963)	0.0217 (0.0239)	0.0144 (0.0221)
Index of Non-agricultural assets	-0.103* (0.0604)	-0.0602 (0.0571)	-0.0176 (0.0125)	-0.0190 (0.0124)
Dummy: Can sufficiently borrow to meet finance needs	-0.0727 (0.175)	-0.336* (0.189)	-0.0570 (0.0503)	-0.0633 (0.0502)
Dummy: Children's family migrated	0.492*** (0.175)	0.242 (0.187)	0.0706 (0.0485)	0.0854* (0.0477)
Dummy: Non-relative children staying in the household	0.464 (0.305)	1.326*** (0.292)	0.244*** (0.0763)	0.227*** (0.0707)

	Probit Regression <sup>^</sup>		OLS Regression <sup>^^</sup>	
	Child Labor	Hazardous Labor	Child Labor	Hazardous Labor
Dummy: HH Head believe children should have at least secondary education	-0.327* (0.172)	-0.410** (0.198)	-0.100* (0.0508)	-0.105** (0.0511)
Dummy: HH Head believe children start work for pay below 18	0.262* (0.155)	0.207 (0.149)	0.0597 (0.0365)	0.0400 (0.0343)
Dummy: Cocoa most important source of income in community	0.364 (0.276)	0.0418 (0.310)	0.162** (0.0624)	0.127* (0.0638)
Dummy: Community has improved road	0.0485 (0.261)	0.175 (0.284)	-0.00658 (0.0722)	0.0190 (0.0739)
Dummy: District capital more than 50 KM	-0.260 (0.221)	-0.736*** (0.237)	-0.166*** (0.0553)	-0.155*** (0.0579)
Dummy: Secondary school within 5 KM	0.0744 (0.232)	0.0316 (0.247)	0.0355 (0.0522)	0.0295 (0.0528)
Dummy: School has concrete building	-0.421* (0.254)	-0.852*** (0.302)	-0.154** (0.0731)	-0.182** (0.0734)
Dummy: Toilet inside school	0.306 (0.244)	0.0370 (0.247)	0.104 (0.0639)	0.0998 (0.0649)
Dummy: School has improved water	-0.913 (0.583)	-1.452** (0.582)	-0.380** (0.148)	-0.398** (0.156)
Dummy: Strata1 (High cocoa production)	0.762 (0.795)	0.978 (0.782)	0.358* (0.189)	0.392** (0.193)
Dummy: Strata2 (Medium cocoa production)	-0.383 (0.738)	-0.0947 (0.805)	-0.368* (0.200)	-0.319 (0.204)
Constant	-1.237 (0.884)	-0.270 (0.942)	0.512** (0.227)	0.564** (0.221)
Observations	570	569	579	579
Pseudo R2	0.241	0.303	N/A	N/A
R-squared	N/A	N/A	0.346	0.354

Robust standard errors in parentheses

<sup>^</sup> Likelihood of Child Labor and Hazardous Child Labor

<sup>^^</sup> Rate of Child Labor and Hazardous Child Labor in the Household

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 9.8.3. Occupational Safety and Health Training and Hazardous Child Labor in the Cocoa Sector

Here we present the quantitative analysis undertaken to address the following research questions:

*Do youth beneficiaries of occupational safety and health interventions report working with appropriate safety equipment? Is the exposure to hazardous work lower among the beneficiaries?*

#### 9.8.3.1. Methodology

In order to examine whether beneficiary youth report more frequent use of safety equipment and less involvement in hazardous child labor than the non-beneficiary youth, it is important to note that among all the youth only a subgroup would either be eligible or self-select to participate in OSH programs. It is

possible that the youth that were eligible or self-selected to participate in such programs were fundamentally different from the youth that did not participate in such program leading to the problem of selection bias which can generate misleading conclusions. As an example, youth from high income families might be more likely to participate in such training, and might report more frequent use of safety equipment and less involvement in hazardous child labor than the non-beneficiary youth. This result could lead to a misleading conclusion about true program impact since the youth from high income families might have better access to safety tools, and thus use them more frequently. As a result, just a simple comparison of difference in usage between those who received training and those who did not could lead to incorrect conclusions about the usefulness of OSH training.

In order to address the potential selection bias, we used a quasi-experimental design. The quasi-experimental design is based on a multi-step approach described below:

- a. **Generate counterfactual:** To address selection bias where youth self-select to participate in OSH programs, we use statistical matching technique. We identify a set of variables that are expected to influence youth's participation in OSH program. These factors include youth's age and gender, household demographic characteristics (such as head's gender and education), type of farming done in household (such as cocoa, other commercial crops, food crop), indicator of household assets (housing quality and non-farm assets), and head's perception about riskiness of different activities undertaken by children. We then use entropy balancing on the sample of youth who did not participate in OSH to generate a synthetically designed group of comparison youth group in such a way that the synthetic comparison group, on average, looks like the group that participated in OSH program in observable characteristics that might influence participation in the program.
- b. **Use statistical test of significance to detect difference in usage of safety equipment:** After identifying the comparison group of youth, we use a statistical test of significance to test the difference in usage of safety tools between the youth who received OSH training and the matched comparison group of youth.
- c. **Use regression model to estimate the correlation between participation in OSH and likelihood of undertaking hazardous child labor:** We use a model-based regression approach to assess whether youth who participated in OSH training program were less likely to engage in hazardous child labor compared to youth who did not receive such training, after controlling for other observable influences. For that, we follow the approach described in Section 4.3.2.1.1. We first express the likelihood of exposure hazardous child labor as a function of youth characteristics, household, community, and school characteristics. Then, we estimate a regression equation to test whether, after controlling for such factors, the youth who received OSH training were less likely to engage in hazardous child labor in cocoa production than those who did not receive OSH training.

#### 9.8.3.2. Data Source

The data source to examine this research question is the child labor, head of the household, community and school surveys conducted by NORC during the 2018/19 main cocoa harvesting season in Côte d'Ivoire and Ghana.

In the child survey, children were asked to report whether they used any protective wear while working in agriculture. The types of protective gears considered include protective boots (Wellington boots, Afro Moses), gloves, protective clothing (overalls, long sleeves, trousers), nose mask or gas mask, helmet, goggles, and other protective wear. Based on the responses, an indicator variable was constructed to

specify whether the children reported using any one of the above categories of protective wear while working in agriculture in the past 12 months before the survey. The data indicates that in Ghana, 48% of youth of age 15-17 were using at least one of the protective gears listed above.

### 9.8.3.3. Analysis and Results

In the first step of our analysis, we performed entropy balancing to generate a synthetic group of comparison youth using the data from Ghana to generate counterfactual (the comparison group of youth which on average, looks like the group that participated in Occupational Safety and Health training program in observable characteristics that might influence participation in the program). The entropy balancing result reported in Table 78.

Table 78: Ghana Entropy Balancing: Differences in Covariates Affecting Selection Before and After Balancing

	Control				Treatment	
	Before		After		Before	
	Mean	Variance	Mean	Variance	Mean	Variance
Child age	12.64	14.71	12.48	13.52	12.49	13.53
Child sex	0.66	0.22	0.60	0.24	0.60	0.24
Household head age	73	21436	51	167	51.33	167.30
Number of adults with secondary education	0.93	1.03	1.00	1.25	1.00	1.25
Dummy: Household performs cocoa farming	0.92	0.08	0.94	0.06	0.94	0.06
Dummy: Household produces commercial farming	0.11	0.10	0.13	0.12	0.13	0.12
Dummy: Household produces food crop farming	0.89	0.10	0.86	0.12	0.86	0.12
Household's cocoa output	492	833,318	600	666,479	600	666,676
Index of home quality	-0.15	0.78	0.37	1.49	0.37	1.49
Index of agricultural assets	-0.13	1.26	0.17	1.62	0.17	1.62
Dummy: Household head believes children start work for pay below 18	0.22	0.17	0.24	0.18	0.24	0.19

After identification of the comparison youth group, we ran multivariate regression technique to test whether the youth who received OSH training were less likely to engage in hazardous child labor in cocoa production. The following table presents the regression results for Ghana.

Table 79: Participation in Occupational Safety and Health Training and Likelihood of Exposure to Hazardous Labor

	Likelihood of Engagement in Hazardous Child Labor
Treatment Dummy: Child received OSH training from formal sources	0.384 (0.305)
Child age	-0.0179 (0.0141)
Child sex	0.780*** (0.262)
Total number of children	-0.212 (0.144)
% of 12-14 children	0.917*** (0.300)
% of 15-17 children	-0.284 (0.299)
Head age	0.00145 (0.0126)
Head Gender: Male	0.280 (0.344)
Total number of adults	-0.142 (0.168)
Number of adults with secondary/above education	-0.0202 (0.213)
Dummy: Religion Christian	-0.165 (0.511)
Dummy: Cocoa Household	1.331** (0.678)
Dummy: Household produce commercial crop	1.245** (0.493)
Dummy: Household produce food crop	1.003*** (0.288)
Dummy: Household has livestock farm	0.125 (0.357)
Amount of cocoa sold in 2017/18 harvest	0.000351 (0.000223)
Index of Home quality	0.154 (0.175)
Index of Non-agricultural assets	-0.293** (0.122)
Dummy: Can sufficiently borrow to meet finance needs	0.907*** (0.318)
Dummy: Children's family migrated	0.233 (0.372)
Dummy: Non-relative children staying in the household	0.372 (0.482)

	Likelihood of Engagement in Hazardous Child Labor
Dummy: HH Head believe children start work for pay below 18	-0.341 (0.404)
Dummy: Cocoa most important source of income in community	0.733 (0.742)
Dummy: Community has improved road	0.335 (0.387)
Dummy: District capital more than 10 KM	0.507 (0.384)
Dummy: Secondary school within 5 KM	-0.986*** (0.375)
Dummy: School has concrete building	0.186 (0.343)
Dummy: Toilet inside school	-0.0409 (0.354)
Dummy: School has improved water	-0.952 (1.683)
Dummy: Strata1 (High cocoa production)	-0.0579 (0.419)
Dummy: Strata2 (Medium cocoa production)	-0.339 (0.591)
Constant	-1.759 (1.508)
Observations	415
Pseudo R2	0.399

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

#### **9.8.4. Impact of Multiple Interventions and Child Labor in the Cocoa Sector**

Here we present the quantitative analysis undertaken to address the following research question:

*Did interventions funded by the stakeholders (including the CLCCG members and other organizations) to reduce the prevalence of child labor and children’s exposure to hazardous child labor in cocoa production have any impact?*

##### **9.8.4.1. Methodology**

In order to evaluate whether interventions funded by the stakeholders were effective, we evaluate the impact of implementing combinations of interventions on the prevalence of child labor and hazardous child labor by undertaking an attribution analysis. The challenge in the present case of conducting attribution analysis is that there was no control group or even explicit counterfactual group identified at the start of the interventions. Another significant concern is that communities exposed to multiple types of interventions appear to have been selected purposively, not randomly by the implementer. Lack of random assignment of a community to an intervention means that it is hard to disentangle the effect of the intervention from the effect of the selection criteria. Thus, the evaluation design is constrained to make the most of the pattern of intervention assignments that resulted from the site decisions of the various Implementing Partners (IPs). A consequence of this is that in what follows there are analyses constrained by the limited sample size and, therefore, whose power to detect the expected effect sizes (impacts) is low. This does not imply that there was no impact, only that the size of the impact was not large enough to have been able to detect it, given the available sample size.<sup>66</sup>

In order to address the methodological challenges associated with the unfavorable intervention assignment of communities, we adopted a two-step approach. In the first step, we address the potential site selection issue related to the IPs’ choice of communities to strategically implement multiple interventions. In the second step, once the community selection issue has been addressed, we estimate an attribution equation to test whether, after controlling for other influences of children’s engagement in child labor and in hazardous child labor, the prevalence of child labor and in hazardous child labor were lower in communities where combinations of interventions were implemented.

##### **9.8.4.2. Data Source**

The stakeholders funded and implemented more than 15 different categories of interventions in the cocoa-growing areas of Côte d’Ivoire and Ghana since 2010 (see Annex 9.11 for a description of the different intervention categories). Ideally, an evaluation would aim to assess which intervention categories (or combination of categories) have the greatest impact, so that implementers can better target their resources and efforts. However, the ability of an evaluation to scientifically detect the impact of interventions and their relative effectiveness critically depends on the availability of data and on feasibility of constructing a valid counterfactual.

In order to assess the effectiveness of interventions in fighting child labor, we collected intervention data from the CLCCG partners and other institutions such as the ILO, UNICEF and Fairtrade focusing on interventions they implemented in communities during 2010-2018 in the cocoa-growing areas of Côte d’Ivoire and Ghana. Combining the data shared by the CLCCG partners and other institutions, we

---

<sup>66</sup> Recall that these tests are “opportunistic” in the sense that the sample could only be identified after data collection; the evaluation had no control over where the IPs conducted their interventions nor were the combinations of interventions at each site known in advance.

constructed an intervention database that contains information on different types of projects funded by the partners, as well as on the projects' coverage at the national, regional, and district level. We then used information provided by the stakeholders on whether they implemented interventions in each of the communities covered by the 2018/19 survey round and overlaid them with the implantation data (also from the 2018/19 survey). The objective was to link the interventions implemented by the stakeholders with the prevalence of child labor and hazardous child labor as captured by the 2018/19 survey rounds.

The majority of these interventions covered here were either implemented or supported by the CLCCG partners. Table 80 and

Table 81 present a summary of the data on the exposure of communities surveyed in the 2018/19 round to different interventions based on the intervention database.

Table 80: Distribution of communities in Côte d'Ivoire by treatment combination

Combination	Total EAs	Categories of Interventions*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	41															
B	16			x	x	x	x									
C	7	x		x	x	x	x	x	x	x	x	x	x	x	x	
D	3		x	x	x	x	x	x			x	x	x	x		
E	2			x	x	x	x					x		x		
F	2		x	x	x	x	x				x	x		x		
G	1	x	x	x	x	x	x						x			
H	1	x	x	x	x	x	x									
I	1	x	x		x	x	x	x			x		x			x

\*1: Education, 2: Vocational training, 3: Sensitization/awareness raising program, 4: OSH program, 5: Capacity building, 6: Child labor monitoring and remediation systems, 7: Community action/development plans, 8: Promotion of sustainable livelihood, 9: labor saving practices, 10: Improving access to public services, 11: Women's empowerment, 12: Research, 13: Material assistance, 14: Enforcement of anti-child labor regulations, 15: Compliance initiatives

Table 81: Distribution of communities in Ghana by treatment combination

Combination	Total EAs	Categories of Interventions*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	41															
B	13				x		x									
C	9			x	x		x									
D	3	x		x	x	x	x						x			
E	3	x		x	x	x	x			x			x			
F	1	x		x	x	x	x		x	x	x	x	x	x		
G	1	x		x	x	x	x	x	x	x	x	x	x	x		
H	1			x	x	x	x						x			
I	1	x		x	x	x	x		x	x	x	x	x			

\*1: Education, 2: Vocational training, 3: Sensitization/awareness raising program, 4: OSH program, 5: Capacity building, 6: Child labor monitoring and remediation systems, 7: Community action/development plans, 8: Promotion of sustainable livelihood, 9: labor saving practices, 10: Improving access to public services, 11: Women's empowerment, 12: Research, 13: Material assistance, 14: Enforcement of anti-child labor regulations, 15: Compliance initiatives

Table 80 and Table 81 show the combinations of intervention categories implemented in these communities (EAs) and the total number of EAs that were exposed to a given combination. For example, the first row indicates a total of 41 EAs included in the 2018/19 survey round received Combination A (corresponding to value zero for each of the 15 treatment categories, indicating no treatment being reported by the stakeholders for any those 41 EAs). Similarly, the second row (Combination B) indicates total of 16 EAs included in the 2018/19 survey round received intervention Categories 4, 5, 6, and 7. In examining the tables the reader should observe, in particular,

- which combinations have enough observations for analysis (number of EAs x 15 households per EA sampled); and
- which combinations comprise intervention categories that are subsets of other combinations so that in comparing them the non-overlapping categories can be evaluated.

Table 80 and Table 81 suggest that one analysis strategy would be to test whether exposure to *some* – one or more – categories of intervention has an impact when compared no exposure at all. This would compare the 34 EAs that received some set of interventions against the 41 EAs that were not exposed to any intervention. However, this approach is not likely to be successful since many of the exposed combinations contain intent-to-treat interventions – that is, interventions at the community level who probable impact would be very diffuse and therefore undetectable at any financially affordable sample size (not to mention the often highly inadequate sizes to which the evaluation was constrained). A more successful approach – which we describe, below – is to limit the evaluation of impact to just those EAs that received the most significant, or highest “dosage” of treatment. For Côte d’Ivoire, we do this by comparing the 11 EAs belonging to Combinations C, D and I to the 41 EAs remaining unexposed. However, for Ghana, we had only 3 villages with similar dosages of interventions (Combinations F, G and I), we were not able to do any analysis of effectiveness due to small sample size issue.<sup>67</sup> Tables XX and XX also makes clear the limits of the potential analyses that can be undertaken. Although they permit examining the impact for aforementioned combinations, these tables illustrate that our ability to evaluate the effectiveness of the vast majority of intervention category combinations – not to mention individual categories of intervention – is severely limited. First, they reveal the unfavorable distribution of intervention categories across the sampled communities, so combinations generally have too few EAs or more than necessary in order to compare combinations. Thus, even for the data we do have, with two or three exceptions in each country, the small number of communities receiving a given combination of intervention categories means there are too few observations for detecting all but the biggest impacts – and bigger than those anticipated for the interventions.

With the objective of assessing effectiveness of funded interventions, this research question explores whether the interventions were successful in reducing the prevalence of child labor and hazardous child labor in the cocoa sector. We do this by testing whether community exposure to a given combination of intervention categories (as reported by the IPs) had any detectable impact on the exposed communities. Given that for Ghana there were only 3 communities with multiple interventions, it was only feasible to assess the impact of multiple interventions in Côte d’Ivoire.

#### 9.8.4.3. Analysis and Results

##### Construction of Counterfactual

It is likely that the IPs' choice of which enumeration areas (EAs) received a given intervention combination was not random. This means that in order to isolate intervention impact the potential effects of

---

<sup>67</sup> It was by design that both countries had 41 EAs untreated and 34 treated.

purposive selection must be disentangled from the effect of the intervention itself. Otherwise, a “selection bias” may exist, leading the evaluator to risk misattributing impact or lack thereof. This is especially likely in the present case where only an endline and no baseline is available. For example, if IPs selected communities (possibly unwittingly) based on proximity to major roads (ease of access to the community) and major roads facilitated business, then testing the effectiveness of multiple interventions by comparing treated communities to untreated communities might simply be picking up the effect of proximity to a major road, not the effectiveness of multiple interventions.

To mitigate the potential for community selection bias we statistically match communities that received intervention combinations to the communities that did not receive any intervention (comparison communities). The statistical matching method is used to identify a set of comparison communities that are very similar to the treatment communities with respect to observable characteristics that are correlated to selection of sites by the implementers.

Based on our discussion with the stakeholder who implement multiple interventions and our understanding of the selection process of communities by IPs, we identified the community characteristics that likely played an important role in the selection process. In our matching process, we first used the survey data (from the community leaders’ survey) to explore if there were some particular characteristics that differentiate the multiply treated communities from those that received no intervention (comparison communities). The survey data showed that for all communities selected for multiple interventions by IPs, cocoa production was the most important source of income, and these communities were all close to market (distance to the market less than 10 km). Thus, we started the matching exercise by narrowing down the set of comparison communities to only those in which cocoa production was the most important source of income and which were less than 10 km to the market. This left us with 11 treated communities to be matched with 32 comparison communities in Côte d’Ivoire.

We then used *Propensity Score Matching* (PSM) technique to identify a set of treatment and comparison communities that are most similar with respect to observed characteristics that were expected to influence IP’s community selection process. These variables can be classified as community infrastructure indicators (having access to grid electricity) remoteness indicator (community less than 20 km away from the district capital); and socio-economic indicators (whether migrant live in the community).

The PSM was then applied to the 11 treatment and 32 comparison communities in Côte d’Ivoire in order to create two groups of communities such that the average value on an array of variables was the same for both groups (i.e., the groups of communities were statistically “balanced”). The matching method generated a group of 9 treated communities (those that received multiple interventions) and 9 comparison communities that were most similar to the treated communities with respect to the variables identified above. This led to a dataset that we used to assess the impact of intervention combinations on the prevalence of children’s engagement in child labor and in hazardous child labor.

#### *Use of attribution model to estimate the impact of multiple interventions*

Next, we used an attribution model to test whether the households in the communities where multiple interventions were implemented had a lower prevalence of child labor and children’s exposure to hazardous child labor than the communities that were similar but did not receive such interventions.

We estimate two regression models: one where the outcome variable was the probability of a household having at least one child in child labor and in hazardous child labor; and the other with the outcome variable as the rate of exposure to child labor and in hazardous child labor among the children in the households. The models specified the outcome variables as a function of household, community, and school characteristics. Finally, the model tested whether, controlling for other covariates, there was any statistically significant difference in children’s engagement in child labor and in hazardous child labor in cocoa production among the households in the treatment communities compared to the households in the matched comparison communities.

For this research question, in the first step of analysis, we used *Propensity Score Matching* (PSM) technique to identify a set of treatment and comparison communities (from total 11 treatment and 32 comparison communities in Côte d’Ivoire) that are most similar with respect to observed characteristics that were expected to influence IP’s community selection process. The following table presents the results of balance check before and after the PSM was applied.

Table 82: Matching Balance Check: Covariates before and after Propensity Score Matching in Cote d’Ivoire

Used in Matching	Comp	Treat	Comp	Treat	Diff	P-value
	Before Matching		After Matching			
Dummy: Community has electricity grid	69%	82%	78%	78%	0%	1.0
Dummy: Migrants live in the community	97%	73%	89%	89%	-0%	1.00
Dummy: District capital more than 20 KM	38%	73%	67%	67%	0%	1.00
<b>Other Community Characteristics</b>						
Dummy: Community has primary school within 1 km	97%	91%	100%	90%	10%	0.33
Dummy: Community has cell phone coverage	88%	91%	89%	100%	11%	0.33
Dummy: Community has improved roads	44%	55%	44%	66%	22%	0.37
Dummy: Low income EA (with >50% HHs are low income)	25%	18%	33%	22%	-11%	0.62

Using the PSM technique, we matched 9 treatment communities with 9 comparison communities that were very similar with respect to the community important characteristics that are expected affect community selection. This led to a total of 18 matched communities which serves as the sample for running the attribution analysis.

Next, we present the results of estimation of the attribution model which tested whether the households in the communities where multiple interventions were implemented had a lower prevalence of child labor and children’s exposure to hazardous child labor than the communities that were similar but did not receive such interventions. Table 83 presents the results where the outcome variable was the likelihood of children’s exposure to child labor and hazardous child labor, while Table 84 presents the results where the outcome variable was the prevalence rate of children’s exposure to child labor and hazardous child labor.

Table 83: Impact of Multiple Treatment on Child Labor and Hazardous Child Labor in Probit Regression in Cote d'Ivoire

	Child Engaged in Child Labor		Child Engaged in Hazardous Labor	
	Household Characteristics	All Characteristics	Household Characteristics	All Characteristics
	1	2	3	4
Treatment Dummy: Community exposed to multiple interventions	-0.322* (0.180)	-0.791*** <sup>68</sup> (0.169)	-0.415** (0.195)	-0.734*** <sup>69</sup> (0.197)
Total number of children	0.200*** (0.0676)	0.220*** (0.0714)	0.191*** (0.0701)	0.214*** (0.0745)
% of 12-14 children	-0.0607 (0.346)	0.0749 (0.350)	0.0960 (0.340)	0.235 (0.356)
% of 15-17 children	0.349 (0.332)	0.383 (0.354)	0.430 (0.306)	0.455 (0.336)
% of girl children 5-17	-0.200 (0.129)	-0.232* (0.127)	-0.258* (0.147)	-0.295** (0.141)
Head age	0.00893 (0.00790)	0.00819 (0.00815)	0.0109 (0.00802)	0.00976 (0.00868)
Head Gender: Male	-0.193 (0.236)	-0.301 (0.230)	-0.193 (0.211)	-0.310 (0.215)
Total number of adults	-0.0880 (0.0650)	-0.0931 (0.0646)	-0.0978 (0.0680)	-0.0987 (0.0736)
Number of adults with secondary/above education	-0.00173 (0.131)	0.0322 (0.134)	0.0409 (0.123)	0.0751 (0.128)
Dummy: Religion Christian	0.0578 (0.171)	0.0856 (0.189)	0.0743 (0.162)	0.0864 (0.180)
Dummy: Cocoa Household	0.865*** (0.275)	0.722*** (0.277)	0.867*** (0.267)	0.779*** (0.296)
Dummy: Household produce commercial crop	0.192 (0.203)	0.130 (0.201)	0.178 (0.191)	0.113 (0.189)
Dummy: Household produce food crop	0.102 (0.187)	0.0594 (0.199)	0.143 (0.179)	0.105 (0.202)
Dummy: Household has livestock farm	-0.112 (0.168)	-0.149 (0.177)	-0.106 (0.193)	-0.140 (0.198)
Amount of cocoa sold in 2017/18 harvest season	1.06e-05 (5.89e-05)	4.19e-05 (6.27e-05)	2.02e-05 (6.02e-05)	6.75e-05 (6.51e-05)
Index of Home quality	-0.00458 (0.131)	0.0292 (0.126)	0.0386 (0.128)	0.0828 (0.131)

<sup>68</sup> Estimated value of the marginal treatment effect = 0.30, which indicates that likelihood of children's exposure to child labor is 30 percentage points lower among households living in the communities that received multiple treatment compared to the households living in the (matched) communities that had no intervention.

<sup>69</sup> Estimated value of the marginal treatment effect = 0.28 which indicates that likelihood of children's exposure to hazardous child labor is 28 percentage points lower among households living in the communities that received multiple treatment compared to the households living in the (matched) communities that had no intervention.

	Child Engaged in Child Labor		Child Engaged in Hazardous Labor	
	Household Characteristics	All Characteristics	Household Characteristics	All Characteristics
	1	2	3	4
Index of Non-agricultural assets	-0.0333 (0.0707)	-0.0319 (0.0709)	-0.0178 (0.0702)	-0.0186 (0.0713)
Dummy: Can sufficiently borrow to meet finance needs	-0.0450 (0.166)	0.0138 (0.174)	-0.201 (0.124)	-0.159 (0.131)
Dummy: Children's family migrated	0.266 (0.173)	0.263 (0.183)	0.251 (0.164)	0.240 (0.171)
Dummy: Non-relative children staying in the household	-0.0518 (0.421)	-0.160 (0.410)	-0.0585 (0.398)	-0.161 (0.387)
Dummy: HH Head believe children should have at least secondary education	-0.226 (0.160)	-0.117 (0.195)	-0.314** (0.159)	-0.194 (0.190)
Dummy: HH Head believe children start work for pay below 18	0.226 (0.144)	0.221 (0.142)	0.200 (0.143)	0.194 (0.142)
Dummy: Community has improved road		0.245 (0.194)		0.290 (0.204)
Dummy: District capital more than 50 KM		-0.338 (0.319)		-0.398 (0.315)
Dummy: Secondary school within 5 KM		-0.449** (0.185)		-0.460** (0.194)
Dummy: School has concrete building		0.446 (0.386)		0.202 (0.399)
Dummy: Toilet inside school		-0.214 (0.333)		-0.0769 (0.344)
Dummy: School has improved water		1.059 (0.878)		0.649 (0.919)
Dummy: Stratum I (High cocoa production)	-0.00345 (0.187)	0.504** (0.200)	0.241 (0.156)	0.641*** (0.196)
Dummy: Low income Community		0.279* (0.146)		0.327** (0.147)
Amount of cocoa sold in 2017/18 harvest season (from cocoa shed)		5.09e-08* (2.98e-08)		3.74e-08 (3.50e-08)
Constant	-0.827 (0.570)	-1.420*** (0.536)	-1.047** (0.521)	-1.495*** (0.476)
Observations	341	341	341	341
Pseudo R2	0.180	0.201	0.198	0.223

Robust standard errors in parentheses

^ Likelihood of Child Labor and Hazardous Child Labor, ^^ Rate of Child Labor and Hazardous Child Labor in the Household

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 84: Impact of Multiple Treatment on Child Labor and Hazardous Child Labor in OLS Regression in Cote d'Ivoire

	Child Engaged in Child Labor		Child Engaged in Hazardous Labor	
	Household Characteristics	All Characteristics	Household Characteristics	All Characteristics
	1	2	3	4
Treatment Dummy: Community exposed to multiple interventions	-0.0907* (0.0517)	-0.218*** (0.0463)	-0.101* (0.0537)	-0.198*** (0.0488)
Total number of children	0.0214 (0.0151)	0.0239 (0.0162)	0.0202 (0.0159)	0.0217 (0.0170)
% of 12-14 children	0.0350 (0.100)	0.0343 (0.102)	0.0657 (0.0968)	0.0682 (0.0999)
% of 15-17 children	0.159 (0.108)	0.152 (0.118)	0.184* (0.102)	0.178 (0.110)
% of girl children 5-17	-0.0766* (0.0408)	-0.0833* (0.0413)	-0.0977** (0.0447)	-0.104** (0.0444)
Head age	0.00277 (0.00230)	0.00295 (0.00231)	0.00278 (0.00230)	0.00289 (0.00238)
Head Gender: Male	-0.0542 (0.0808)	-0.0606 (0.0813)	-0.0477 (0.0778)	-0.0580 (0.0797)
Total number of adults	-0.0239 (0.0206)	-0.0243 (0.0204)	-0.0231 (0.0211)	-0.0221 (0.0220)
Number of adults with secondary/above education	0.0137 (0.0474)	0.0175 (0.0479)	0.0138 (0.0404)	0.0159 (0.0413)
Dummy: Religion Christian	-0.00991 (0.0463)	-0.00252 (0.0530)	-0.00559 (0.0433)	-0.00422 (0.0487)
Dummy: Cocoa Household	0.216** (0.0752)	0.188* (0.101)	0.207** (0.0738)	0.191* (0.102)
Dummy: Household produce commercial crop	0.0189 (0.0655)	0.0134 (0.0608)	0.0307 (0.0614)	0.0278 (0.0566)
Dummy: Household produce food crop	0.0124 (0.0658)	0.00222 (0.0700)	0.0243 (0.0617)	0.0149 (0.0669)
Dummy: Household has livestock farm	-0.0363 (0.0464)	-0.0500 (0.0483)	-0.0243 (0.0502)	-0.0324 (0.0515)
Amount of cocoa sold in 2017/18 harvest season	5.52e-06 (1.39e-05)	8.37e-06 (1.41e-05)	4.81e-06 (1.34e-05)	1.02e-05 (1.37e-05)
Index of Home quality	-0.00493 (0.0372)	0.00879 (0.0362)	0.00931 (0.0358)	0.0240 (0.0366)
Index of Non-agricultural assets	-0.0164 (0.0181)	-0.0153 (0.0172)	-0.0129 (0.0179)	-0.0120 (0.0174)
Dummy: Can sufficiently borrow to meet finance needs	-0.00383 (0.0432)	0.0105 (0.0458)	-0.0343 (0.0357)	-0.0230 (0.0374)
Dummy: Children's family migrated	0.0726 (0.0486)	0.0654 (0.0509)	0.0709 (0.0454)	0.0600 (0.0489)

	Child Engaged in Child Labor		Child Engaged in Hazardous Labor	
	Household Characteristics	All Characteristics	Household Characteristics	All Characteristics
	1	2	3	4
Dummy: Non-relative children staying in the household	-0.0697 (0.144)	-0.0855 (0.153)	-0.0642 (0.144)	-0.0789 (0.152)
Dummy: HH Head believe children should have at least secondary education	-0.0561 (0.0403)	-0.0512 (0.0455)	-0.0779* (0.0397)	-0.0715 (0.0440)
Dummy: HH Head believe children start work for pay below 18	0.0831* (0.0475)	0.0745 (0.0491)	0.0631 (0.0464)	0.0547 (0.0479)
Dummy: Community has improved road		0.0272 (0.0578)		0.0436 (0.0600)
Dummy: District capital more than 50 KM		0.0127 (0.0819)		0.0121 (0.0751)
Dummy: Secondary school within 5 KM		-0.162*** (0.0520)		-0.167*** (0.0503)
Dummy: School has concrete building		0.168* (0.0955)		0.100 (0.0831)
Dummy: Toilet inside school		0.0385 (0.0979)		0.0701 (0.0942)
Dummy: School has improved water		0.194 (0.223)		0.151 (0.219)
Dummy: Stratum I (High cocoa production)	-0.0304 (0.0704)	0.109* (0.0547)	0.0152 (0.0555)	0.132** (0.0465)
Dummy: Low income Community		-0.00311 (0.0371)		0.0214 (0.0365)
Amount of cocoa sold in 2017/18 harvest season (from cocoa shed)		2.34e-08*** (7.79e-09)		1.88e-08* (9.08e-09)
Constant	0.283 (0.194)	0.0846 (0.193)	0.246 (0.180)	0.0793 (0.167)
Observations	341	341	341	341
R-squared	0.168	0.184	0.183	0.198

Robust standard errors in parentheses

^ Likelihood of Child Labor and Hazardous Child Labor

^^ Rate of Child Labor and Hazardous Child Labor in the Household

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## 9.9. Annex IX: Qualitative Methodology and Supplemental Analysis

### 9.9.1. General Qualitative Approach

The qualitative component of the 2018/19 Child Labor Survey provides context for the quantitative results, and a deeper understanding of how various key players understand child labor within the cocoa sector in Ghana and Côte d'Ivoire. This component also provides nuanced perspectives on the topics covered in the surveys, including complex concepts such as night work, heavy loads, and sharp tool use.

These helped to identify factors contributing to observed prevalence rates, changes in prevalence rates, and changes in hazardous work trends. A summary of each of the research questions and corresponding respondent groups are in Annex 9.1.

#### 9.9.1.1. Key Informant Interviews

NORC conducted key informant interviews (KIIs) at the community, national, and international level with the following groups: community leaders, donors, cocoa industry members at different points in the value chain, government officials, and implementers. At the community level, NORC conducted 25 KIIs with teachers and community leaders in seven communities in Côte d'Ivoire with, and 28 KIIs with teachers and community leaders in eight communities in Ghana. These interviews provided key stakeholder perspectives on child labor, and interventions aimed at reducing child labor.

#### 9.9.1.2. Focus Group Discussions

NORC conducted focus group discussions with children and caregivers in cocoa growing regions of Ghana and Côte d'Ivoire. Focus groups were disaggregated by gender and beneficiary status (project beneficiary communities vs. non-beneficiary communities). For the purposes of this analysis, we use the term “caregivers” instead of parents, as we found that in many communities, children lived with aunts, uncles, grandparents, or other family members. Respondents were not asked about their familiarity with specific interventions, but rather, types of interventions. For focus groups with children, groups were separated into two age groups: children 5-11 years old and children 12-17.

#### 9.9.1.3. Sampling

For national and international level KIIs, we used a snowball sampling approach, in which respondents were asked to identify other appropriate KII respondents for the study. NORC also leveraged opportunities at workshops and meetings related to child labor in cocoa and approached potential respondents in this way. We also conducted community-level KIIs with community leaders and teachers. These respondents were identified after the team completed the sampling approach below.

To select communities for focus groups and community-level KIIs, NORC used quantitative survey responses<sup>70</sup> to generate a comprehensive list detailing average responses for key intervention and hazardous labor data. The team closely analyzed surveyed communities along the following parameters:

- Training exposure: percent of respondents exposed to occupational safety training, vocational training, awareness training, and livelihood projects
- Reported activities: percent of respondents reporting land clearing, agrochemical use, night work, working hours
- Child labor rate: percent of children in EA engaged in child labor.

To maximize variance in perspectives, we purposively selected EAs with varying rates of training exposure, reported activities, and child labor. The team then narrowed the list of communities by focusing on communities with inverse relationships between training exposure and reported activities/child labor rates, high training exposure and low child labor rates/reported activities, and low training exposure and high reported activities/child labor rates. The team also individually selected communities where training exposure rates were high, but child labor and hazardous activity rates were also high, and communities where training exposure was low, but child labor rates and hazardous activity rates were also low. This was an iterative exercise in which after each pass, team members discussed their reasoning for selecting each community. Finally, the team agreed on 15 communities in

---

<sup>70</sup> Survey responses (from Part 1) included community leader responses about the types of interventions in the area, as well as calculated rates for sharp tool use, night work, and other forms of hazardous labor

each country representing varying rates of child labor and hazardous child labor and varying levels of intervention of exposure.

Following this exercise, NORC used GPS data and STATA to generate a map of each country displaying where each selected community was located. The purpose of this exercise was to ensure that selected communities were spread across each country and represented an array of interventions. The team worked closely with our local subcontractor to ensure the accuracy of the maps generated and selected the final communities. Final communities for FGDs and community-level KIIs are listed in Annex 9.1.2.2.

It is important to note that this sampling approach was purposive and intended to obtain a wide array of perspectives on beneficiary experiences with interventions. Therefore, the sample selected is not representative of all cocoa growing communities in Côte d'Ivoire and Ghana.

#### 9.9.1.4. Training

NORC's qualitative expert conducted trainings in Ghana and Cote d'Ivoire. Our local subcontractor recruited experienced focus group moderators for this exercise. The qualitative training was four days long, including one day of pilot, and one day of post pilot debrief. In Ghana, the training took place April 23 to 26, 2019, and April 29 to May 3, 2019 in Cote d'Ivoire. Moderators and note-takers were trained in best practices in focus group moderation, including topics around managing group dynamics, minimizing risk for adult and child respondents, maintaining neutrality throughout the discussion, and maintaining intragroup confidentiality. Moderators were also trained on how to manage child disclosures of abuse and forced labor, including response and reporting to appropriate authorities. Moderators were provided with a risk and response protocol outlining the appropriate procedures of bringing attention to disclosure. Focus group moderation teams were also provided with operative definitions for intervention categories, and a list of common off-farm and off farm activities in cocoa. Focus group moderation teams were required to be very familiar with both lists in order to probe effectively and recognize local names for various tools.

During training, moderators held extensive practice rounds and discussions to ensure that the proper local words were being used. Moderators also made considerations for regional variations for the names of key terms, and concepts. Following the pilot, data collection teams made the necessary adjustments to the data collection instruments. These changes maintained the meanings of each question, but were reworded to be more direct, and ensure consistent translation to local languages in the field.

Following the pilot, the data collection team held a debrief session in which moderators outlined the questions and key concepts that were harder to convey in the field. Following this, the made minor edits to focus group and community-level KII instruments. Data collection teams deployed immediately after instrument modification. Fieldwork in Ghana began the week of April 29, 2019, while fieldwork in Côte d'Ivoire began the week of May 6, 2019. Focus groups and community-level KIIs were recorded, translated, and transcribed into English and French. Transcriptions were transmitted through NORC's secure file transfer platform

#### 9.9.2. Analysis

Qualitative analysis took a multistep approach. NORC received a total of 96 transcripts, 48 from each country. Following receipt, NORC's qualitative expert conducted phenomenological analysis by reviewing two transcripts in each respondent group in each country and developed a list of key emerging themes. These key themes served as preliminary codes and aligned with research questions. Next, the qualitative expert used preliminary findings from the quantitative data to identify trends for further investigation. These themes were used to develop a preliminary coding framework to be tested. Next, the qualitative expert coded one transcript from each respondent group to identify gaps in the

existing coding framework. This framework was amended with additional codes to produce a final codebook. All transcripts were then coded in NVivo. Following coding, the qualitative expert conducted in-depth analysis of each code, identified patterns between codes, patterns and variances across respondent groups, and patterns and variances across countries.

#### 9.9.2.1. Education and Vocational Training

To gather perceptions and impact of education and vocational training programs, NORC asked community leaders, teachers, caregivers and children about their exposure to and perspectives on education and vocational training interventions

Older children who received vocational training were asked to reflect on the skills they learned, how these skills affected their future aspirations, and any additional skills they would have liked to learn. Community leaders and teachers were asked about their perspectives on vocational training programs, particularly how vocational training programs affected children's propensity to engage in child labor, and children's prioritization of education. Caregivers (parents, guardians and those who are responsible for the care children) were also asked their opinions on vocational training programs, but specifically focused on how their children benefitted from these initiatives.

Measurement of perceptions and the impact of education interventions followed the same approach. Additionally, NORC asked caregivers, teachers, and community leaders to reflect on how education interventions affected children's school attendance. Caregivers and teachers were asked about the instances where children missed school and the extent to which school-based interventions had any impact on attendance. These responses were then triangulated with data from children's focus groups. Children were asked to reflect on the ways their schools had changed in recent years, and how they benefitted from these changes. NORC then compared responses from children, caregivers, teachers, and communities where school-based interventions were taking place, and where they were not. To assess differences in child labor engagement between beneficiaries and non-beneficiaries of school-based interventions, NORC compared child-reported responses related to on-farm activities, off-farm activities, days and times worked, and the ages of working children. NORC also compared beneficiary and non-beneficiary children's responses regarding perceptions on education, and the situations in which they typically missed school.

To assess children's reported gains in education or training interventions, children were first asked to discuss their schools, and any recent changes they'd observed in their schools. Children were asked about how these changes affected them or changed what they liked about school. Only focus groups with older children (aged 12 to 17) included discussion of vocational training programs. In these discussions, children were asked to discuss their involvement in vocational training programs, how they benefitted from vocational training programs, and any additional skills they would like to learn. Those who had no involvement in vocational training programs were asked to consider the types of skills training they would like to receive if training were to become available in their communities.

To assess caregiver's perspectives on their children's gains, caregivers were asked to reflect on infrastructural and administrative issues at their children's schools, and how various initiatives have addressed these issues. Caregivers were also asked to report on any changes in their children's opinions of their schools, and how these changes affected their attitudes towards school. For vocational training programs, caregivers were asked about their familiarity with such programs, whether their children were participating, and whether this participation affected their children's aspirations.

To measure teachers' perceptions of education and training interventions, teachers were asked about their familiarity with school-based interventions and vocational training programs in the area. Teachers who were familiar with these programs were then asked to report on the impacts of these programs on student and caregiver attitudes towards learning. Teachers were also asked to provide definitions of child labor in their own words, and report on the prevalence of child labor in the communities in which they resided. Teachers were asked directly about whether these interventions changed the likelihood that a child would be engaged in child labor. Teachers' responses to questions about beneficiary children's likelihood to engage in child labor were compared to their responses about familiarity with these interventions, and the detail with which they could describe the education and training interventions to which they were exposed. Teacher anecdotes concerning their interactions with caregivers, particularly to discuss children's wellbeing were also included in this analysis.

#### 9.9.2.2. Impact of Livelihood Services

To assess the impact of livelihood services, community leaders and caregivers were provided with operative definitions of livelihood services, including examples. They were then asked to report on their level of exposure to such services, and their impact, including whether their involvement in livelihood services changed the frequency, or nature of their children's assistance with cocoa. To measure the impact of livelihood services, community leaders and caregivers were provided with operative definitions of livelihood services, including examples. They were then asked to report on their level of exposure to such services, and their impact, including whether their involvement in livelihood services changed the frequency, or nature of their children's assistance with cocoa. Caregivers were also asked to describe other income-generating activities in which they were involved outside of cocoa. These responses were triangulated with reported increases in income, changes in yield, and capacity to hire laborers. In each community, caregiver responses to these questions were triangulated with child responses regarding changes in on-farm and off-farm activities. This produced a broader picture of the impact of livelihood services on child activities.

#### 9.9.2.3. Occupational Safety & Health (OSH) Training

To assess exposure to occupational safety and health interventions, older children (aged 12-17, hereafter referred to as youth) were asked whether they have received any training on messaging on how to be safer on farms, and from whom this messaging came. To measure the extent to which these youth were less likely to be exposed to hazardous work, NORC analyzed responses related to on-farm and off-farm activities, particularly the activities youth reported had changed, or they were not allowed to do. These responses were then compared to reported past and ongoing injuries, and reported changes in methods of self-protection.

#### 9.9.2.4. Awareness-Raising Campaigns

Community leaders, teachers, and caregivers were asked about their exposure to awareness campaigns, their perceptions of these campaigns, and the impact of campaigns of these campaigns on child labor practices in their communities. Community leaders were asked to report on the types of awareness campaigns, their involvement in the promotion of awareness campaigns, and any changes in prevalence of child labor in their communities. Teachers were asked about the types of awareness campaigns they were exposed to, their involvement in the promotion of any campaigns, Caregivers were asked about their exposure to campaigns, their perceptions of campaigns, and whether these campaigns affected their practices. Donors, government officials, and implementers were also asked about their involvement with and perceptions of awareness campaigns, including their efficacy, and challenges in changing knowledge and practices around child labor.

Children were not asked directly about child labor, or their exposure to child labor awareness campaigns. To measure children's attitudes towards child labor, children were asked questions about what they liked about helping their caregivers, and what they did not enjoy. Children in both age groups were asked the same questions about their activities, including the day and times they worked. To ensure age appropriateness of all questions related to child labor, children were separated into age groups, five to eleven years old, and then twelve to seventeen years old. Older children were asked to report how long they had engaged in on and off-farm activities, and if there were any changes in levels of responsibility in their tasks.

To measure the on-the-ground impact of awareness campaigns on reported practices, analysis compared caregiver and child responses to questions about the types of activities children engaged in, and the types of activities they were not allowed to do. These comparisons took place between caregivers and children from the same communities, and then compared to responses from community leaders with these communities. To measure the broader impacts of awareness-raising campaigns, government officials, donors, and implementers were asked to reflect on recent changes in attitudes and practices around child labor and provided anecdotes on key successes and challenges in implementing awareness campaigns.

#### 9.9.2.5. Relative Effectiveness of Interventions

To assess the efficacy of interventions, beneficiary respondents were asked to report on changes they experienced as a result of intervention activities. Child respondents were only asked about school-based interventions, vocational training programs, and occupational safety interventions, while adult beneficiaries and community leaders were asked about all interventions. Each beneficiary reported on the impact of interventions, and any challenges they had participating in intervention activities. These responses were compared with teacher and community leader perceptions of the specific interventions in their communities to inspect emerging themes related to efficacy, challenges with interventions, and recommendations.

Implementers, donors, and government officials were asked directly about which interventions were most effective, and the strategies they put in place to promote the efficacy of these interventions. These respondents were also asked about which interventions were more challenging to implement or did not meet expectations of expected impact. These responses were triangulated with beneficiary, community leader, and teacher responses to reveal several lessons learned, and considerations for future interventions.

#### 9.9.2.6. Sustainability

To measure the overall sustainability of interventions, community leaders, implementers, donors, and government officials were asked to reflect on strategies used to promote the sustainability of interventions, and to report on which intervention outcomes were most likely to be sustained outside of external material assistance. Beneficiary anecdotes revealing common challenge to intervention participation or efficacy were also analyzed to generate findings on which types of interventions were most sustainable.

### **9.10. Annex X: Caveats and limitations of Quantitative Analysis**

While an extensive effort was undertaken to address the research questions posed by this study using appropriate statistical methods, it is important to point out some caveats and limitations of the methods adopted. Understanding the caveats and context of some of the results indicating there were few impacts from interventions as well as interpreting the findings where we found statistically significant impact.

**Model-based approach and sample-size issues:** One of the major factors weakening the ability of any evaluation methodology to detect impact in the context of the present intervention is the that the interventions being evaluated were not implemented (geographically or via roll-out) in a way that facilitated evaluation or addressing the study’s research questions. Ideally, group of communities would have been randomly assigned to receive the interventions (or various combinations of intervention categories). Such randomization could have been spatial or over time. Instead, the lack of random assignment was made even more challenging by the retrospective nature of the study, and a lack of baseline data on beneficiaries with the present one. This limited the evaluation to a single cross-section, preventing the conditioning of performance on baseline levels and reducing further the scope for identifying pre-treatment variables with which to construct a strong counterfactual.

Facing such unfavorable constraints, we addressed the research questions using available data by retrofitting a model-based approach onto a quasi-experimental design. There were two main consequences of this approach. First, a model-based approach is based on “observables”, that is, only on factors that could be and were measurable. Thus, the credibility of the evaluation depends on the degree to which the salient explanatory variables (e.g., household skills, perceived opportunity costs of own-children) were not omitted from the attribution models’ specifications and the modelling of how the implementers selected beneficiaries. While our approach modeled sources of selection very carefully and checked for relationships that were robust to specification perturbations, it is still not perfect and may be vulnerable to unknown inaccuracies and biases.

Second, the observational nature of the evaluation sample and the sample sizes of treated and comparison units were entirely dependent on the implementer’s earlier choices of which communities to expose and, often, which households within them to treat (e.g., give material support). NORC’s 2018/19 round of survey, rather than being drawn as a dedicated sample with a pre-specified target sample size of the treated and non-treated households, had to make do with a highly unfavorable distribution of sampling units. To wit, among the 1,495 household surveyed in the 2018/19 round in CDI, 605 households (44% of the sample) had at least one child benefiting from the material-support programs, while only 120 household (14% of the sample) surveyed in Ghana had at least one child benefiting. Thus, this design has restricted and unbalanced treatment and comparison sample sizes, which led to an evaluation design with *per se* low statistical power and, in spite of NORC’s extensive efforts to consider every possible causal channel and influence, resulted in the model’s inability to detect an effect of anticipated size, had there been one, with satisfactory precision.

**“All-or-nothing” outcome indicator (“dependent” variable).** It would be very unlikely for a dichotomous (“dummy”) outcome variable to detect an effect since the only way to register a positive outcome would have been for the household to withdraw children in child labor and hazardous labor entirely, rather than simply to respond to treatment by reducing its occurrence. Given how hard it is for a family to end the practice of child labor it would be extremely unlikely to see a household’s total withdrawal from CL or HCL. To do so would have required a much larger dataset (ideally with a baseline) or a design-based evaluation (i.e., a randomized control trial). For the purposes of policy and of evaluation, therefore, where the former is not feasible and the latter is not affordable, it would be more useful to take as the outcome variables the child’s number of hours worked and number of hazards exposed to.

**Lack of a baseline.** While an evaluation can be rigorously conducted with just an endline (i.e., one cross-section), such an empirical strategy is not advisable when observational units have very different initial (pre-treatment) levels on characteristics thought to influence performance on the outcomes of interest. For example, with a single cross-section it is not possible to know whether a household that acknowledges engaging in two types of hazardous labor after treatment previously had engaged in four types or no types. The former suggests effective treatment and the latter ineffective treatment. The present

evaluation was hobbled by the existence of just an endline when much greater precision was called for given all the other empirical challenges of the study.

**Lack of direct link between treatment and outcome.** According to the theory of change, many of the individual interventions were meant to have their effect operate indirectly. For example, the education related material-support intervention does not affect CL directly, but only through its effect on school attendance. In other words, this theory of change posits that (i) the household decides not to send the child to school due to lack of appropriate material support and (ii) with the child not in school would be more likely to engage in work and potentially exposed to CL and HCL. Thus, in order to influence the rates of CL or HCL exposure, the intervention focused on reducing absenteeism, such as by providing material support.<sup>71</sup> An analogous theory of change exists for livelihood support, which does not directly lower CL but seeks to increase household income so as to reduce the need for an extra set of hands to generate income. The indirect nature of these interventions again had the result of lowering the precision of the statistical analysis. Finally, most of the interventions were indirect in another way. Rather than offering a good or service directly to the household, interventions targeted communities. Here the theory of change posited that there would be follow-on exposure to the treated communities' households. For example, awareness campaigns that are typically implemented at the community level. From an evaluation perspective, these types of "intent-to-treat" effects are always harder to detect and, *ceteris paribus* require more data to achieve a desired level of precision.

**Strategic targeting of communities for administering intervention and limited sample size.** Due to the inauspicious choice (from the evaluation point of view) of communities to be treated and not treated, the evaluators were often faced with a paucity of primary statistical units with which to conducting match (in an effort to confront potential selection bias). For example, for measuring the impact of multiple interventions as reported in 9.8.4, since we have a very small number of treatment communities (only 10) available for analysis, the efficiency of matching method used for generating the counterfactual<sup>72</sup> in producing acceptable range of bias reduction through matching was not great. In other words, while matching resulted in there being no *statistically* significant difference between the treatment and matched comparison communities the precision of such tests was poor (see above for a discussion of precision).

## 9.11. Annex XI: Definitions of the Child Labor Intervention Categories

### 9.11.1. Education

Any intervention that seeks to improve and expand education opportunities to children (excluding vocational training interventions). To be classified in this category, an intervention does not need to specifically or explicitly target child labor reduction.

**Please note:** Any intervention that offers or facilitates access to formal and non-formal education (e.g. kindergartens) should be included.

The interventions in this category can include:

- Construction of schools/classrooms, improvement of infrastructure (classroom/canteen/water/toilet/energy such as provision of benches, tables etc., the drilling of a bore hole,

---

<sup>71</sup> We note that one could test this theory of change by examining whether the exposure rate among children who do not attend school is much larger than those who attend school, and whether provision of material support leads to a significant fall in school absenteeism.

<sup>72</sup> The "comparison communities" that are very similar to the treatment communities with respect to the factors that influenced the selection of the treatment communities

provision of a water pump on school premises, toilet facility, construction of teacher housing, the installation of solar panels for the school etc.)

- Mobile schools, provision of birth certificates
- School feeding (provision of meals/food/canteens/equipment)
- School nutrition programs (school gardens, nutrition awareness-raising, supplementary feeding)
- School uniform/book, provision of scholastic materials (study material)
- Improvement of the school environment (playgrounds, etc.)
- Support services to school: capacity of school management committees and teachers, and reinforcing child protection in schools
- Provision of teachers training
- Actions related to violence in schools
- Conditional cash transfer to families (conditional on sending their children to school)
- Non-formal education (to those who are not enrolled/dropped out such as bridging classes)
- Parent engagement programs (e.g., to convince parents to send their children to school and to improve child protection etc.)
- Literacy and numeracy activities

#### **9.11.2. Vocational Training**

Any intervention that provides or facilitates access to vocational training to children. To be classified in this category, an intervention does not need to specifically or explicitly target child labor reduction.

The interventions in this category can include:

- Training related to participation in formal jobs, improvement of skills, life-skills training, and linking with formal employment
- Apprenticeships

#### **9.11.3. Sensitization/awareness raising program**

Any intervention that seeks to raise awareness of child labor practices (such as what differentiates permissible child work from child labor, what constitutes child labor and hazardous work for children), and awareness of legislation against use of child labor. This includes interventions raising awareness of importance of education (but not the actual provision of education, which is covered in Category 1), awareness of the laws and legislation around child labor, the risk of child labor, common child labor practices to avoid, and awareness of the measures and resources communities can use to prevent child labor practices (such as where to report violations and seek remediation).

The interventions can be implemented at the community, school, or household level and be targeted at children, adults, or both.

#### **9.11.4. Occupational Safety and Health program for youth of legal working age**

Interventions that provide occupational safety or health-related services or training to promote safe working conditions for youth of legal working age. Such interventions do not need to explicitly or directly target the reduction of exploitative child labor or hazardous work, but would contribute to the reduction of hazardous child labor.

#### **9.11.5. Capacity building including community, regional, and national level initiatives.**

Interventions that build the capacity of community leaders and members of community committees, cooperative staff, or members of other types of farmers organizations, law enforcement staff, or other public officials (e.g. teachers, school inspectors, social services staff, extension agents) to reduce the risks and incidences of child labor in their communities. This includes provision of training (but not

actual implementation of monitoring/remediation which is covered in Category 6) to improve stakeholders' ability to identify child labor practices and employers exploiting child labor, and sensitizing families to child labor prevention. Regional- and national-level initiatives may also be counted in this category.

This category **does not include the implementation of the follow-up activities** at which the greater capacity was targeted to better deliver, and will be captured under other categories (such as community action plan covered under Category 7 & enforcement covered under Category 14). This intervention also excludes any capacity building that accompanies the setting-up of community-based monitoring systems (see Category 6).

**9.11.6. National, Community-based and/or supply-chain based monitoring and remediation systems/Child Protection and Child Labor Monitoring and Remediation Systems**

Interventions that set-up or strengthen national, community-level or supply-chain based systems that seek to assess, identify and monitor instances of child labor. This type of intervention also includes any local capacity building that accompanies the setting-up of the monitoring system (but excludes any capacity building that is covered in Category 5). This category can include interventions effective at national level as well as both, community-based and supply-chain based models (implemented through the cocoa supply chain, and the community). This can include remediation activities that are not covered in other categories.

**9.11.7. Community Action Plans and Community Development Plans**

Interventions that develop participatory tools used to build the capacity of community members in taking action in accordance with the problems, needs, and potential of the community, as well as the implementation of those plans when this is not covered into one of the other categories. This category should include community action plans that are explicitly driving child protection/child-centered community development.

**9.11.8. Promotion of sustainable livelihood for vulnerable households**

Interventions that seek to strengthen the economic situation of households that are vulnerable to engaging in child labor practices. This includes, but is not limited to, interventions to improve agricultural income or productivity (not directly related to labor savings such as use of fertilizer and pesticides), and interventions that seek to strengthen other economic opportunities for households.

Please note that for inclusion into this category, the interventions need to target promotion of livelihood for households that are vulnerable to the use/engagement of child labor. Interventions that are targeted to improve livelihood and income generation of low income HHs with children should be captured here.

Other economic opportunities may include, for example:

- Linking households to mobile money providers or other financial services (e.g. micro-credit, formal banking systems)
- Supporting income generation activities and employment services aim to increase employment opportunities, and job retention: These may include:
  - Provision or linkage to employment assistance programs, micro-finance programs, job placement, apprenticeships and public works programs.
  - Skill training services aim to provide participants with the basic skills and knowledge necessary to benefit from social services, provision of business or leadership training, financial education, and literacy and numeracy programs.
- Supporting the implementation of VSLAs or other savings and/or loan activities

**9.11.9. Labor saving practices**

Interventions that provide services, training, or materials that specifically target reduction in the need for labor-intensive practices including child labor. This could include, for example:

- Provision of improved forms of transport for materials related to agriculture, including the basic wheelbarrow (which helps prevent the carrying of heavy loads for long distances)
- Provision of materials that may, for example, reduce the need for manual pulling of weeds (such as herbicides), so children do not need to be used as a cheap labor source for weeding

**9.11.10. Improving access to existing public services for families vulnerable to child labor**

Interventions that aim to link families to existing social and public services provided by the state, such as health services, social services, cash transfers, and other infrastructure (e.g. water and sanitation activities) and help them to avail the benefits offered by such infrastructure and services. This will include only services focusing on child protection or prevention of child labor.

**9.11.11. Gender and Women’s Empowerment**

Interventions with a defined gender and empowerment component. These interventions are expected to improve women’s decision making power relating to various households decisions including education of children and engagement of children in work.

**9.11.12. Research**

Interventions that support research into the prevalence and nature of child labor, the risk factors for child labor, or any other child labor-related area.

**9.11.13. Material Assistance**

Interventions that provide material assistance to at-risk children or children engaged in child labor including provision of food (excluding school supplies and School Feeding program included in Category 1), other goods and services (medical/health services), family stipend/monetary assistance (not related to school that are covered under Category 1), housing/shelter etc.

**9.11.14. Enforcement of anti-child labor regulations**

Interventions that facilitate enforcement of laws and regulations in preventing child labor and hazardous child labor through local, state, and national enforcement agencies. This can include preparing documents and harmonized tools to promote an adequate and holistic care of children victims and prevent abuse, violence and exploitation; setting up of call center for assisting children victims; and strengthening the operational capacity of legislative units including additional staff, and provisioning of resources (such as vehicle and fuel, and other supply) to labor inspectors, police and other departments in charge of implementation of anti-child-labor regulations.

**9.11.15. Compliance initiatives (Code of conduct/certification)**

Interventions that facilitate establishing/incorporating code of conduct for cocoa cooperatives/cocoa farms (or other members of the cocoa supply chain) and certification of cocoa farms that prohibits use of child labor/engaging children to hazardous labor.