REPUBLIC OF CÔTE D'IVOIRE

UNION – DISCIPLINE – WORK

PRIME MINISTER'S CABINET

STEERING COMMITTEE FOR THE CHILD LABOUR MONITORING SYSTEM WITHIN THE FRAMEWORK OF CERTIFICATION OF THE COCOA PRODUCTION PROCESS

INITIAL DIAGNOSTIC SURVEY

IN AGNIBILEKROU, TIASSALE AND SOUBRE

EXECUTIVE SECRETARIAT

FINAL REPORT

NOVEMBER 2007

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Acronyms and abbreviations

ANADER: National Agency for Support to Rural Development

ARCC: Regulatory Authority for Coffee and Cocoa

BCC: Coffee and Cocoa Bourse

ILO: International Labour Office / International Labour Organisation

CDSTE: Departmental Committee for Monitoring Child Labour

CDN: National Directive Committee IPEC/Côte d'Ivoire

CNLTEE: National Committee for the Fight against Child Trafficking and Exploitation

CSPSTE: Sub-Prefectural Committee for Monitoring Child Labour

CVSTE: Village Committee for Monitoring Child Labour

FDPCC: Fund for the Development and Promotion of the activities of Coffee and Cocoa Producers

IPEC: International Program for the Elimination of Child Labour

LTTE: GTZ Project to Combat Child Trafficking and Labour (German Cooperation)

MFPE: Civil Service and Employment Ministry

NGO: Non-Governmental Organisation

PPSSTE: Child Labour Monitoing System (CLMS) Pilot Project

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CONTEXT

Child labour in general, and particularly in cocoa farming, has raised particular and continuous attention for the past several years.

Cote d'Ivoire, the world's leading producer of cocoa is therefore developing significant efforts since 2001 to bring a sustainable and multi-faceted approach to this issue.

The Harkin-Engel Protocol, agreed in September 2001, is the dedicated frame of action to deal with the worst forms of child labour in cocoa production.

According to a subsequent agreement based on the protocol, a process of certification must be implemented in a region producing at least 50 % of the cocoa in Côte d'Ivoire by July 2008. The certification process is a cycle of continuous improvement of living conditions and labour practices in the cocoa sector. The cycle includes four steps:

- Diagnostic survey (data collection)
- Publication of survey results (public reporting)
- Implementation of actions for social protection (remediation)
- Independent verification (verification)

PRESENTATION OF THE SURVEY

The pilot survey was conducted in the districts of Agnibilékrou (East), Soubré (Southwest) and Tiassalé (South). In these three (3) cocoa producing districts, the pilot survey involved visits to 120 households in six villages. 120 heads of household, 184 children (aged 5-17) and 76 adults, involved in cocoa production were interviewed. The survey was conducted between April 25th and July 30th 2007.

Given the fact that this survey was a pilot, two of its key objectives were to test the methodology and tools. In this respect, due to the limited geographical cover of the pilot, the results cannot be extrapolated and pertain only to the surveyed areas.

The survey was conducted by enumerators (surveyors) appointed by ICK Consulting, a private consulting specialist for interventions in the rural sector. Previously, ICK consulting had appointed enumerators for the Child Labor Monitoring System (CLMS) pilot project of Oumé (Center west) in 2005.

For this pilot survey, the enumerators were successively trained by an international consultant, then by the team of the certification project. During this training the

enumerators strengthened their knowledge of the worst forms of child labour, survey techniques, questionnaire administration and general survey methodology.

The analysis of the survey data was accomplished by a multi disciplinary team of experts, comprising a statistician demographer, a sociologist and an agricultural economist.

MAIN RESULTS OF THE SURVEY

- Surveyed household has an average size of 10 persons, 7 of which are children. 98% of the interviewed heads of household are owners of their land. The average size of cocoa fields in this survey is 7.5 hectares. Among these respondents, 86% of the heads of household have less than 10 hectares. Of that number, nearly one-third have less than 4 hectares.

- 97% of the surveyed children are related directly or indirectly to the head of household (71% are the children of the head of household). 3% of the children are not related to any person within the household;

- As far as school is concerned, 71% of the heads of households have never been to school.

- Surveyed children breakdown in three distinct categories with respect to school:

  o Children currently at school (54%). Among them 98% would like to continue going to school;

  o Children who have never been to school (34%);

  o Children having been to school but abandoned it (11%). Among them, 43% reported they have left school because they did not do well, 19% because they did not like school and 14% because the school was too far away. 5% reported they have left school due to work that they perform.

- In addition to reasons given by the children, the analysis of available scholastic facilities informs us that:

  o there is only one or sometimes two primary schools for each of the surveyed villages, including all hamlets which are attached to them;

  o there are no Community Centers of Education in the surveyed villages;

  o there is no secondary school close to surveyed villages (the shortest distance up to the available secondary school being 12 km). This information supports the finding that children in the age category [14-17] have the highest rate of school abandonment.

- Apart from cocoa farming, the surveyed children perform other household activities (95% work food crop production, 90% in domestic work, 67% in caretaking of livestock);

- With regard to hazardous work[1], 87% of the surveyed children are involved in at least one hazardous activity. The survey data shows that children are most commonly involved in:

  o Carrying of heavy loads (84%), burning brush (18%), application of chemical fertilizer (14%) and the spraying of pesticides (5%)

  o In terms of frequency, the involvement of children in the above hazardous activities is not a regular occurrence (except for the carrying of heavy loads).

  o The hazardous activities were found to take place during one or two periods of the three periods of the cocoa season (peak season, mid-crop and off-season).

- The relationship of the children involved in hazardous activities to the head of household shows that whatever the hazardous work, these children typically have a family tie to the head of household (85%), and are currently at school. This finding leads to a point-of-view that the involvement of children in hazardous activities is an effect of the social reproduction model which characterizes the learning culture of traditional societies within Côte d'Ivoire;

- Almost the half (47%) of the children involved in hazardous activities are currently at school, and a low proportion of children attending school (7%) avoid hazardous work. This data shows that, schooling does not necessarily prevent children from involvement in hazardous work.

- Body pain (73%), severe headache (58%) and irritations (eye 41%, skin 44%) are the maladies most experienced by the children. This is in line with data showing the predominance of the carrying of heavy loads and, in a lesser measure the spreading of chemicals (fertilizers, pesticides). The analysis of the frequency of maladies shows that, except for body pains (66% "sometimes" and 11% "regularly") and for splitting headache (61% "sometimes" and 4% "regularly"), and in a lesser measure for the skin irritations (46% "sometimes" and 6% "regularly"), the discomforts are not reported on a regular basis.

- Despite the maladies experienced due to hazardous works, the majority of the interviewed children do not receive medical care (64%). All the children who receive medical care receive it with support of their parents. .

- 3% of the children involved in hazardous works say they have to work even if they are ill or tired.

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[1]Defined in Côte d'Ivoire by Ministerial Regulation No. 2250 on 14 March 2005 (Ministry of Labor) as an enforcement of ILO Convention 182.

- Out of the 184 children interviewed, suspicion of a case of trafficking is revealed by the fact that a child of 14 years of age said that he was obliged to work, the victim of violence, did not feel safe and had no clear family relationship with the head of household. Checks carried out following indication of this situation were not able to conclude that this was a case of trafficking, according to the classification and pre identification criteria used during the pilot study to detect cases of trafficking. This did, however, make it possible to refine the ability of the study questionnaire to identify presumed cases of trafficking.

- Mathematical modelling of the involvement of the children in hazardous work in this pilot survey shows that:

   o Determinants of this involvement are age, sex and the cohabitation (with the parents) index. Older, female children, living with their parents tend to be more involved in hazardous activities.

   o Children do not constitute a significant labour force for the productivity of the cocoa field.

PROFILE OFCHILDREN INVOLVED IN COCOA FARMING (% CHILDREN)

Category	% Children
Related to head of household	97
Children of the head of household	71
Attending school	54
Never attend school	34
Abandonned school because they must work	5
Involved in at least one hazardous work	87
Involved in tree cutting	3
Involved in burning	18
Involved in spraying of pesticides	5
Involved in application of chemical fertilizer	14
Involved in carrying of heavy loads	84
Involved in hazardous work, related to the head of household	85
Received medical care	30
Not feeling secure	18
Not feeling secure, child of the head of household	17
Forced to work when tired or ill	3
Has three meals per day	91

Recommendations, as a response to survey results, consist of two main streams of action:

Urgent actions in surveyed cocoa producing districts:

- Sensitization of the head of households for the immediate prevention of the involvement of children in hazardous works;

- Sensitization of the head of households to send children, and especially girls to school;

- Promotion and training of free mutual support groups and paid farming work service groups;

Medium term actions:

- Creation of Community Centers of Education, accompanied with income generating activities to support their functioning; creation of literacy centers, and creation of vocational training centers for children not attending school;

- Organization of mobile health campaigns consisting of consultations and primary healthcare for households;

- Rehabilitation or equipping of existing scholastic facilities, building of supplementary scholastic facilities;

- Rehabilitation or equipping of existing health facilities, building of supplementary health facilities;

- Rehabilitation of existing hydraulic facilities, building of supplementary hydraulic facilities;

- Rehabilitation of country roads.

Foreword

This report follows up on the Initial Diagnostic Survey (IDS) undertaken in the context of certification of the cocoa production process in Côte d'Ivoire. It has been drafted by a committee of experts comprising specialists in demographical statistical analysis, sociology and agro-economics. For four weeks, this drafting committee worked with the technical, material and financial support of the CLMS steering committee.

In line with the terms of reference, this report provides the current state of affairs of working and living conditions in cocoa farming in the departments of Agnibilékrou, Soubré and Tiassalé.

Considering the pilot nature of this survey, it was primarily about testing the methodology and tools. By doing this, because of the limited geographical scope of this pilot project, the results obtained cannot be used for extrapolation and are only valid for the departments covered.

1.   Introduction

Child labour, a global phenomenon in view of the data provided by specialised bodies such as the International Labour Office (ILO), can also be observed in Côte d'Ivoire where, in 2004, the estimated number child labourers was 616,500 (ILO/IPEC, 2004).

In this developing country, which draws its principal financial resources from agriculture (which is still undergoing modernisation) this phenomenon takes on a socio-cultural character over and above all other considerations: here, socialisation comes from learning. In other words, to become a farmer, it is necessary to learn how to perform farming activities.

At the present time, across the globe, with the disappearance of physical frontiers and the clash of civilisations, child labour in general, and particularly work in cocoa production, is under the spotlight.

Since 2001, Côte d'Ivoire, the world's leading cocoa producer, has therefore been making significant efforts to come up with a multiform and sustainable response to the problem at hand.

The Harkin-Engel protocol, signed in September 2001, and completed by the joint Harkin-Engel Industry declaration, constitutes the chosen framework for action in dealing with the issue of the worst forms of child labour in cocoa farming.

In terms of the protocol, a process of certification should be implemented across 50% of the cocoa producing areas in Côte d'Ivoire by 1 July 2008. Certification is a cycle of continuous improvement comprising four stages as below:

- Initial diagnostic survey;
- Publication of the survey report;
- Implementation of social protection measures (in response to the results of the survey);
- Independent verification.

The current report follows the completion of the pilot initial diagnostic survey in the departments of Agnibilékrou (East), Soubré (South West) and Tiassalé (South), in line with the chronology of the certification cycle.

After reiterating the context, the problem and the objective of the study, the report presents a review of the available literature, before going on to set out the methodology and general results of the survey.

It then establishes the factors determining the involvement of children in cocoa farming before making recommendations. These relate both to the survey methodology as well as to social protection necessary with regards child labour, both curative and preventative.

2. Context and problematics

2.1 Context

The design and execution of the pilot project, Child Labour Monitoring System in cocoa farming (SSTE) in OUME[2] played a significant role in postponing the certification deadline of 1 July 2005 to 1 July 2008. Subsequent to the undertakings made with the signature of the joint declaration of 1 July 2005 between the chocolate industry and the american representatives Senator Harkin and Congressman Engel, Côte d'Ivoire, a cocoa producing country, is required to implement a certification mechanism in 50% of its cocoa production areas.

In Côte d'Ivoire, at the time of the survey which is the subject of this report, overall responsibility for certification was incumbent upon the Coordination Cell for the certification of the cocoa production process, reporting to the Prime Minister's Office[3]. For the implementation of actions in the field, the Cell was given the support of specialist structures. In application of this principle, the Coordination Cell entrusted the FDPCC with the implementation of the initial diagnostic survey.

2.2 Problematics

In certain situations, children, invaluable human capital for any nation, are used and exploited, particularly in cocoa farming. This endangers their physical growth, their psychological development, their IQ and, as a result, the country's future. Furthermore, attention should also be drawn to the working conditions of adults, particularly of forced adult labour in cocoa plantations. With a view to confronting this problematic of the social and ethical conditions of cocoa production, Côte d'Ivoire is committed to combating child labour and forced adult labour in cocoa farming in preparation for the certification of its cocoa production process.

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[2] The project was executed between 2004 and 2005
[3] The Coordination Celle is nox replaced with the Steering Committee for the Child Labour Monotoring System within the framework of certification of the coca production process, created by the decree n° 2007-499 of 28th March 2007

2.3 Responses from the State of Côte d'Ivoire

In order to respond to the problematics of child labour, the State of Côte d'Ivoire has undertaken a series of actions both in terms of national regulation(implementation of judicial instruments) and international directives (adoption and ratification of conventions). Actions aimed at reinforcing the institutional framework have also been undertaken, in particular the creation of focus groups, national committees to combat child labour within key technical ministries (Ministries in charge of the child, labour, agriculture, territorial administration and human rights). Moreover, actions in the field, in the form of preventive, immediate action, penal and integrated actions, have been undertaken.

Within the framework of these measures, in accordance with integrated measures, the first pilot project was implemented in the OUME region (Central-West) in 2004/5 with a view to testing the technical and social feasibility of a child labour monitoring system in the field.

Drawing on the technical lessons learnt from the implementation of this pilot project, and considering joint comprehension of certification (see 1. Introduction) the new methodology of the initial diagnostic survey has been tested in three cocoa-producing departments.

3.   Report objectives

3.1   General objective

The general objective set by this survey report is to provide the necessary information on the worst forms of child labour, and also on the working conditions of adults in view of the certification of the cocoa production process in Côte d'Ivoire.

3.2   Specific objectives

To achieve this general objective, the study must:

- Draft a report on the current state of affairs in terms of the living and working conditions of children and adults in cocoa farming;

- Identify immediate response factors aimed at stopping, in the long-term, the inappropriate work situations in cocoa farming;

- Identify prevention factors aimed at anticipating such situations arising.

4.   Review of the literature

4.1   The Child Labour Monitoring System in Cocoa Farming Pilot Project in
            Oumé (Central-West)

The "Harkin and Engel Protocol" signed in September 2001 tackles the worst forms of child labour in the cocoa supply chain. The objective of this accord was to observe any ways forward which may lead the chocolate industry, governments (in particular the Côte d'Ivoire government) and civic society to the elimination of the worst forms of child labour in cocoa farming. And so a pilot project was carried out in Côte d'Ivoire to develop and test a child labour monitoring system, within the context of the certification of cocoa production processes.

4.1.1   Reminder of the PPSSTE elements

In 2005, Côte d'Ivoire put in place the PPSSTE in the department of Oumé. This made it possible to test an objective and sustainable system for monitoring child labour, verification of data, treatment of cases inventoried and the publication of reports.

The PPSSTE followed the following four stages:

1.   Operationalisation of the project;

2.   Determination of precise locations to carry out the monitoring of the working situation of children in cocoa farming;

3.   Perenniality of the awareness of corporate and institutional partners;

4.   Promoting coverage of the issue of child labour in the cocoa industry.

4.1.2   Benefits and limitations of PPSSTE

Because of the crisis situation affecting Côte d'Ivoire, the PPSSTE operated in a relatively unfavourable environment. However, it was nonetheless possible to record a range of noteworthy information.

The major lesson of the PPSSTE is the recognition by the American representatives and by the industry of Côte d'Ivoire's will to combat the worst forms of child labour in cocoa farming in a sustainable manner.

This being the case, the deadline for the implementation of certification, initially set at 1 July 2005 by the Harkin–Engel Protocol, was pushed back to 1st July 2008.

Other important lessons can be learned at institutional, social, technical and communication levels.

Implementation of the various components of the PPSSTE gave the following results:

1. *Set-up and operation of operational and administrative structures* (personnel, logistics resources, creation of the steering committee, personnel training, etc.). Functioning of the operational structure in May 2005, by following three stages (participative diagnosis, action plan, and execution of the action plan).

2. *Identification of the precise locations for observing and monitoring the development of the situation regarding child labour in cocoa farming.* This stage enabled the identification of the pilot area, the establishment of the sample of locations for observation, intelligence on the situation regarding child labour in cocoa farming in the project area and follow-up on the database update.

3. *Perenniality of the awareness of corporate and institutional partners regarding the control of child labour.* This stage saw active involvement in drawing up a list of work judged dangerous (particularly in agriculture in February and March 2005), the ongoing coordination of the Village Committees for Monitoring Child Labour (CVSTE).

4. *Promotion of the treatment applied to the question of child labour in cocoa farming (communication and lobbying).* This stage saw media appearances, major promotional activities, the design and onlining of the bilingual website (www.cacao.ci) in July 2005, which collects and circulates pertinent information on the fight against child labour.

However, the work of the PPSSTE was faced with certain restrictions, the most significant of which are the following:

- Overlap of competencies in terms of activities between the administrative structure and the operational structure of the project.

- Failure to fulfil three activities scheduled (local workshop on the issues of child labour in cocoa farming, parliamentary information meeting, workshop on the issues and rules governing child labour in cocoa farming).

- Insufficiency of financial means.

- A survey based on an exhaustive and costly statistical model to be reproduced.

In light of these limitations, solutions were applied with the help of partners and the support of the State of Côte d'Ivoire to respond to the urgency of the situation.

4.2   Justification of the current survey report

In its firm will to undertake actions aimed at preventing child labour in the long term, Côte d'Ivoire has made a commitment to the certification of its cocoa production process. In particular, the first stage of the certification cycle, is about establishing on a scientific base, the state of places of child labour in cocoa farming in order to make way for the major lines of social protection necessary and then to draw technical and financial support from partners (internal and external) in order to implement this social protection in the long term.

5   Data collection

Before analysing as such the collected data, we should recap on sampling plan, the collection support, the collection administration and use of information. Observations on the data production chain shall also be made.

5.1   Sampling

Compared with the pilot operation in Oumé, the information for the current initial diagnostic survey was collected during surveys by sampling.

In effect, subsequent to the pilot survey in OUME, the work undertaken based on existing data made it possible to categorise the various departments of Côte d'Ivoire.

The factors used where the following variables, themselves potentially linked to the presence of children in cocoa production processes:

- Cocoa production;
- The degree of homogeneity of the population;
- The rate of literacy of the farming population;
- The proportion of children in the agricultural population;
- The share of agriculture in the economy.

Three (3) distinct categories became apparent:

Category 1: This brings together the departments characterised by low cocoa production, high autochthony, a high rate of illiteracy, a high proportion of children and a low contribution by agriculture to the economy. In this category, we found 20 departments in 2006, contributing around 2% to national cocoa production;

Category 2: This brings together the departments characterised by average production, average population diversity and a high rate of literacy in the farming population. This category accounted for fourteen (14) departments in 2006, contributing around 11% to national cocoa production;

Category 3: This brings together the departments characterised by high cocoa production, high population diversity, a high rate of literacy, a low proportion of children and a strong contribution

by agriculture to the economy. It accounted for seventeen (17) departments [4] in 2006, contributing 87% to national cocoa production.

Based on this typology and the conclusions of the Oumé operation, it was possible to construct a new sample. In preparation for carrying out the pilot phase of the Initial Diagnostic Survey, the following selections were made as a matter of priority:

- One (1) department was randomly selected by the Microsoft Excel application from the fourteen (14) in category 2.

- Two (2) departments were randomly selected by the Microsoft Excel application from the seventeen (17) in category 3.

In each department, two (2) villages were randomly selected by the same application from the exhaustive list of villages.

In each village, as there was no recent survey base (the last general population census dating from 1998 and with the crisis suffered by the country), the list of households is no longer up to date. A preliminary census of the heads of cocoa-producing households was carried out, followed by the random selection of twenty (20) heads of household.

Within the household, a maximum of five (5) children from over six (6) to seventeen (17) years of age and five (5) adult workers with no family relationship with the head of the household were targeted by the survey.

It should be noted that two sampling methods were used in combination with random selection in selecting the heads of households to be surveyed. The method used was the quota method, which consisted in breaking down the subjects of the survey according to their origin for the heads of household and the appurtenance or not to the household for adult workers and, according to age, the appurtenance or not to the household for children.

On this basis, the breakdown of the subjects of the survey per village is presented as per table 1 below.

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[4] At the present time, Côte d'Ivoire has sixty eight (68) departments, i.e. ten (10) more than in 2006.

Table 1. Breakdown of units surveyed

Department	Sub prefecture	Village	Number of households registered	Heads of household surveyed	Children surveyed	Adults surveyed	Total
Agnibilékrou	Damé	Kotokosso	231	20	45	9	54
	Duffrebo	Amoriakro	498	20	31	12	43
Sub-total 1	**2**	**2**	**729**	**40**	**76**	**21**	**97**
Tiassalé	Taabo	Amani Ménou	259	20	29	11	40
	Tiassalé	Botindé	210	20	24	12	36
Sub-total 2	**2**	**2**	**469**	**40**	**53**	**23**	**76**
Soubré	Méagui	Gbalébouo	297	20	23	12	35
	Méagui	Brouagui	258	20	32	20	52
Sub-total 3	**2**	**2**	**555**	**40**	**55**	**32**	**87**
Totals	**6**	**6**	**1753**	**120**	**184**	**76**	**260**

5.2 Collection media

Information was collected by interviewing the target populations on the basis of questionnaires designed to this end.

Thus, four (4) types of questionnaires were used:

- One (1) village questionnaire used to draft a monograph of the location;

- One (1) household questionnaire aimed at the head of the cocoa-producing household describing his socio-demographic characteristics, the composition of his household and his living and working conditions;

- One (1) child questionnaire intended for children who have worked in cocoa farming on behalf of the head of household, describing their socio-demographic characteristics as well as their living and working conditions;

- One (1) adult worker questionnaire aimed at adult workers with no family relationship with the head of household, describing their socio-demographic characteristics as well as their living and working conditions.

It should be noted that the questionnaires were to a very large extent precoded.

5.3   Administration

The survey in the field was conducted by three (3) teams of two (2) members for all three (3) departments, one after the other. The average duration of data collection per village was eleven (11) days, i.e. in total a survey lasting three (3) months.

The enumerators were trained by an international consultant, then by the team of the certification project. The themes of the training comprised consolidation of knowledge relating to child labour issue, survey techniques, understanding the questionnaires and the general methodology to be used in carrying out the survey.

5.4   Computer exploitation

After verifying and checking the questionnaires, the data were input by means of an input template using Microsoft ACCESS software; in places, this did not always take account of the dictionary of variables. This led to the data analysis team having to do adaptation work on the initial database to take account of the variables relative to adult workers.

Once the data had been audited, analysis tables were produced on **SPSS 15.0** software.

5.5   Observations

The observations cover all aspects of collection: sampling, collection media, the administration of questionnaires, computer exploitation.

5.5.1   Sampling

The sampling plan used for this survey covers several levels:

- The department on the basis of prior stratification;
- The village within the department without the sub-prefecture stage;
- The household within the village in a targeted manner among cocoa-producing households;
- The adult workers with no family relationship with the head of household within households;
- The child workers in cocoa farming within households.

This survey plan combines the quota and random selection methods for the units (households, adult and child workers in cocoa farming in the same proportions (20 households, 5 children and 5 adult workers)).

The choice of the same number of villages (2) in departments assumed to be of different typology, on the one hand, and, on the other hand, choosing 2 departments of the same type, are not of a nature likely to facilitate eventual extrapolation.

Furthermore, the number of working adults and children actually surveyed is significantly different from that expected, given the sampling plan: 76 and 184 as opposed to 600 and 600 respectively.

5.5.2 Collection media

The collection media seem suitable, if the final objective is to eradicate dangerous child labour. It must be noted, however, that in reality we only have information on those children that are involved in cocoa farming and not on other categories of children with different living conditions. As a result it is not possible to carry out an exhaustive causal analysis into the phenomenon of child labour in general and hazardous work in particular using the information gathered

5.5.3 Administration of questionnaires

Administration of the questionnaires was handled by very high level agents in the interests of working in the first instance with people capable of grasping the problematics.

5.5.4 Computer exploitation

Computer exploitation consisted in precoding the questionnaires and then inputting the data gathered. The operational difficulties observed will be subject to recommendations aimed at improving data collection for subsequent stages of the process.

6.   Survey data analysis methodology

The methodology used for the data analysis comprises two stages as below:

- Descriptive analysis of the data collected;

- Modelling the determining factors for using children in cocoa plantations.

6.1   Descriptive analysis

The descriptive analysis of the collected data is based on the tables produced using the **SPSS 15.0** software with the aim of interpreting the survey results as shown by the tables for each of the survey targets (village, head of household, child worker and adult worker).

6.2   Modelling the determining factors for using children in cocoa plantations.

In the interests of researching the determining factors for the use of children in cocoa plantations, an attempt at modelling was conducted. This considered the fact that the heads of household in cocoa production areas are economic units which have the fundamental objective of maximising their profit or utility functions in the selection of their production factors. In the interests of simplifying notation and analysis, whilst remaining focused on the spirit of the current study, we are going to consider that land is the only cocoa production factor.

This made it possible to grasp the choice of heads of household regarding the use of a child labour force from among the labour force available by focusing on the socio-economic and demographic characteristics of the children.

On this basis, and with reference to the work of Khun-Tucker, Abi, Diagne and Kouamé, the probability of using children can be expressed by the following formula:

$$p = \alpha + \beta\theta + \varepsilon$$

with α an unknown parameter, β a vector of unknown parameters, θ is the vector of variables and ε the term of error.

The marginal effect of a variable on the probability of use of children is:

$$\frac{\partial p(r_j > 0)}{\partial \theta} = \beta(1-p)$$

The details of this test can be found in the appendix (see Appendix 2).

7 Survey results

The presentation of the data from the initial diagnostic survey will be done at four (4) levels, i.e. village, household, adults and children in the household.

7.1 Characteristics of the villages

The surveys took place in 6 villages:

- Department of Agnibilékrou: Kotosso, Amoriakro;

- Department of Tiassalé: Amanimenou, Botindé;

- Department of Soubré: Gbalébouo, Brouagui.

The general data on the villages surveyed present the following characteristics in relation to the typology of cocoa production areas:

❖ **In terms of production**

Cocoa production is high in the three (3) departments and approaches 256 tonnes for the 60 households. However, we see that Tiassalé, listed in the category of departments with average production, seems to have a production somewhat higher than average producers. The department of Soubré tops the list with 48.2% of production, followed by Tiassalé with 31.5% and Agnibilékrou with 19.8%.

❖ **In terms of population diversity**

The data presented show that we are in the presence of villages in which the population is primarily indigenous (79%). The villages which present a low presence of outsiders are Brouagui (Soubré) and Kotokosso (Abengourou). From this point of view, these villages have the particularity of not reproducing the general characteristics of the categories to which they belong. Nevertheless, national migrants, Burkinabe and Malian populations, as well as other nationalities do exist.

The majority of the seasonal immigrants come from other areas of Côte d'Ivoire, from Burkina Faso and from Mali.

Generally speaking, immigrants live primarily as much in the villages as in encampments. The majority of these immigrants live there permanently. More often than not, migrant adults do not live seasonally in the environment to

which they relocate. Young migrants, on the other hand, live as frequently permanently (50%) as seasonally (50%) in the village or encampment.

❖ **In terms of socio-economic infrastructures**

The analysis highlights the general situation in villages, which presents as follows:

- The majority of locations have minimal formal schooling infrastructures;

- Koranic and Franco-Arabic schools are present in certain villages;

- There are no Community Education Centres in these villages;

- There is no secondary school establishment near to the villages surveyed (the shortest distance to an available secondary school was 12 km);

- 2 of the 6 villages have water conveyance, the others have to do with an average of 3 village pumps in good working order;

- Only one of the 6 villages does not have electricity;

- The distance (average of more than 4.3 kilometres) from villages and the nearest health centre is high (only 2 villages out of the 6 have a health centre).

- The quasi-totality (i.e. 83%) of villages visited is difficult to access by road at certain periods of the year.

7.2 Characteristics of households

The analysis of the characteristics of households covers the following issues:

- Socio-demographic characteristics of the heads of households;

- Means of travel;

- Living conditions;

- Production conditions;

- Communication and information resources.

7.2.1 Socio-demographic characteristics

In this section, we are interested principally in the traditional variables which are:

- Structure by age;

- Sex;

- Nationality and ethnic group;

- The level of education;

- Marital status.

7.2.1.1   Structure by age

The structure by age of the heads of household is as follows:

Figure 1. Breakdown of heads of household per age group
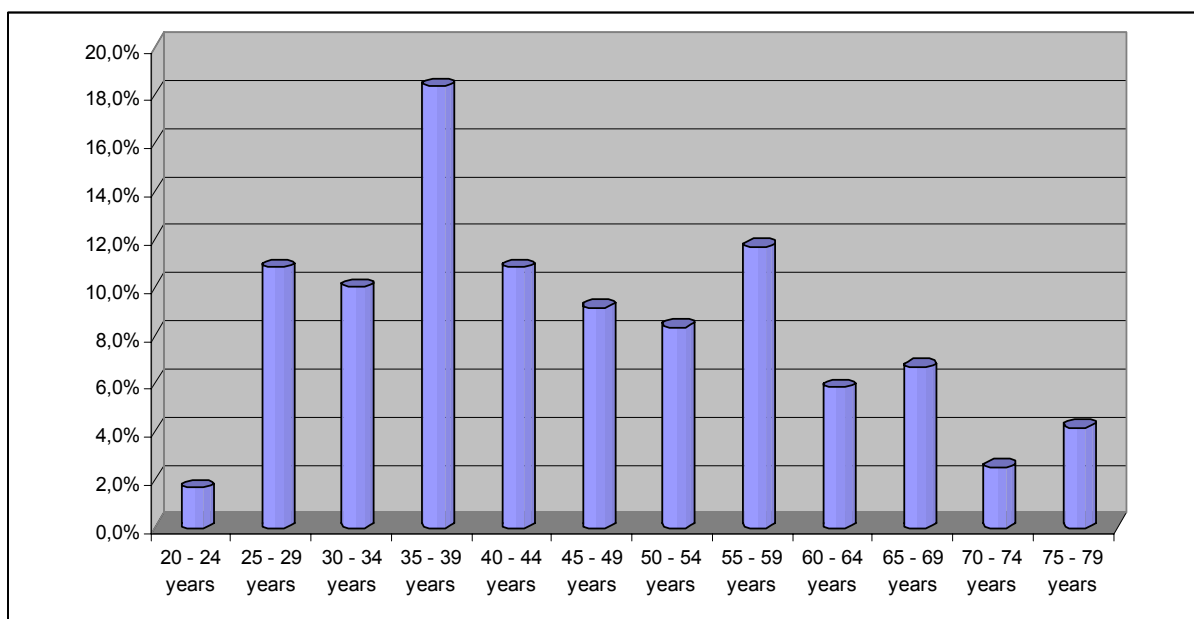
The youngest head of household was 22 years old and the oldest 79 years old. The majority of the heads of household were between 35 and 39 years old (18.3%) as indicated by figure 1 above.

7.2.1.2 Sex

In the sample, male heads of household are more numerous. They represent 96.7% as opposed to 3.3% of persons of female sex (appendix 1, table 2).

7.2.1.3 Nationality

The nationality of the heads of household surveyed is as follows:

Table 2. Breakdown of heads of household by nationality

Nationality	Number	%
Côte d'Ivoire nationals	96	80,0
Malian	3	2,5
Burkinabe	18	15,0
Others	3	2,5
Total	120	100

The sample is composed primarily of heads of households of Côte d'Ivoire nationality indigenous to the areas surveyed.

Then come those originating from Burkina Faso (15%). A less significant proportion comes from other regions of Côte d'Ivoire and the sub-region, principally from Mali.

Among the Côte d'Ivoire nationals, those of Baoulé ethnicity top the list with 42.7 %, followed by Agnis with 39.6 %. Of the others, 17.8% are from ethnic groups from the Centre-West (Beté, Dida, etc.) and from the North (Koulango, Lobi, Tagbana).

7.2.1.4 The level of education

The level of education of heads of household is presented in figure 2:

Figure 2. Breakdown of heads of household according to their level of education
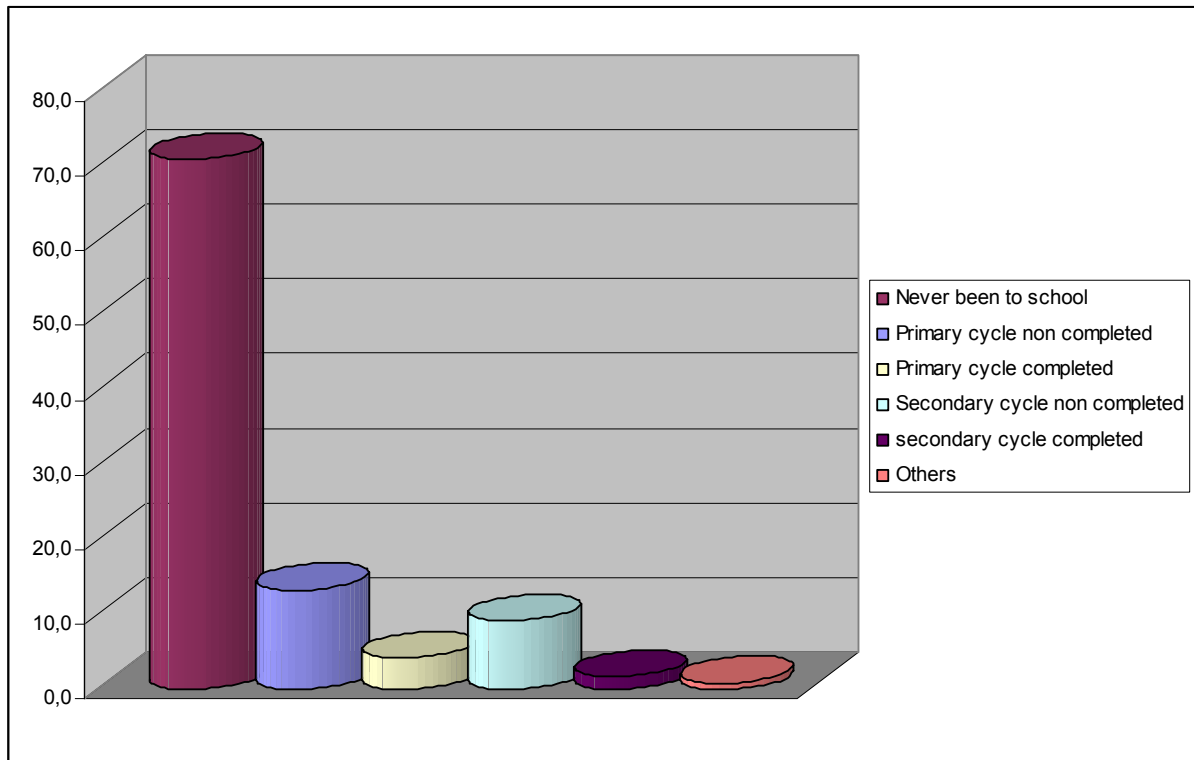
The survey reveals that the majority of heads of household (71 %) have never set foot in a formal school nor in a Community Education Centre. Some of them started the primary cycle and did not complete it (13 %).

Only 4 % managed to go further than primary level. Others (9 %) managed to get into the secondary cycle without completing it whilst 3 % completed the first cycle of secondary education.

7.2.1.5 Marital status

The marital status of the heads of household surveyed is shown in figure 3:

Figure 3. Marital status of heads of household (%)
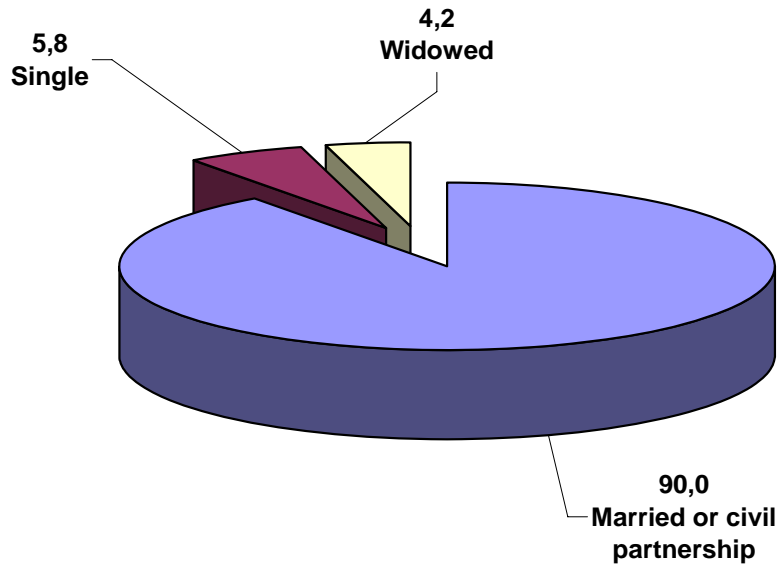
The majority of heads of household are married or living in a common-law union (90 %). A few are unmarried or widows. The average number in the households surveyed is in the order of 7 children accompanied by 2 adults. In general, households present an average size of 10 people.

7.2.2 Means of travel

The means of travel used by heads of household is shown in table 5:

Table 3. Means of travel used by heads of household

	Number	%
Moped	4	3,3
Bicycle	53	44,2
On foot	63	52,5
Total	**120**	**100**

To get to the plantations, just over half of heads of household go on foot (52.5%). The remaining heads of household get there by bicycle or moped (47.5%). Only 3 heads of household possess a vehicle but they did not specify whether they used it to get to the plantation.

7.2.3   *Habitat and living environment*

The characteristics of the habitat and the living environment concern mainly housing and amenities (table 4).

Table 4. Characteristics of the habitat and living environment of the heads of household

%	LOCATION						
	AMANIMENOU	AMORIAKRO	BOTINDE	BROUAGUI	GBALEBOUO	KOTOKOSSO	Average
Quality of the roof							
Sheet metal or equivalent	75,0	95,0	80,0	80,0	40,0	90,0	76, 7
No sheet metal	25,0	5,0	20,0	20,0	60,0	10,0	23, 3
Quality of the walls							
Walls in brick or equivalent	0,0	20,0	25,0	0,0	10,0	15,0	11, 7
Walls not in brick	100,0	80,0	75,0	100,0	90,0	85,0	88, 3
Quality of the floor							
Cement floor or equivalent	90,0	80,0	95,0	75,0	50,0	85,0	79,2
No cement floor	10,0	20,0	5,0	25,0	50,0	15,0	20,8
Telephone access	35,0	10,0	35,0	20,0	10,0	5,0	19,0
Possession of a radio	85,0	90,0	50,0	65,0	65,0	85,0	73,0
Possession of a television	45,0	45,0	20,0	35,0	35,0	25,0	34,0
Possession of a refrigerator	10,0	5,0	0,0	0,0	0,0	5,0	03,0
Possession of a bicycle	90,0	80,0	55,0	85,0	75,0	75,0	77,0
Possession of a motorcycle	35,0	25,0	5,0	30,0	20,0	80,0	33,0
Possession of a car	5,0	0,0	0,0	5,0	5,0	0,0	03,0
Electrification of the habitat	45,0	70,0	70,0	0,0	25,0	35,0	41,0

7.2.3.1 Housing

Households living in a house with a sheet metal roof or equivalent are the most numerous (77%). Only 12% of them live in houses with brick walls. Those who live in houses with cement floors or equivalent are very numerous (79%). As far as the number of rooms per house is concerned, the average is around five (5).

7.2.3.2 Amenities

As far as amenities are concerned, 40.8% of heads of household use electricity. Only 3.3% of them possess a refrigerator.

7.2.4 Cocoa production resources

The variables which have drawn our attention concern operating status, production resources and production itself.

7.2.4.1 Operating status

Presentation of the operating status of heads of household is as follows:

Figure 4. Breakdown of heads of household according to their operating status

Caretaker 1,7%

Owner 98,3%
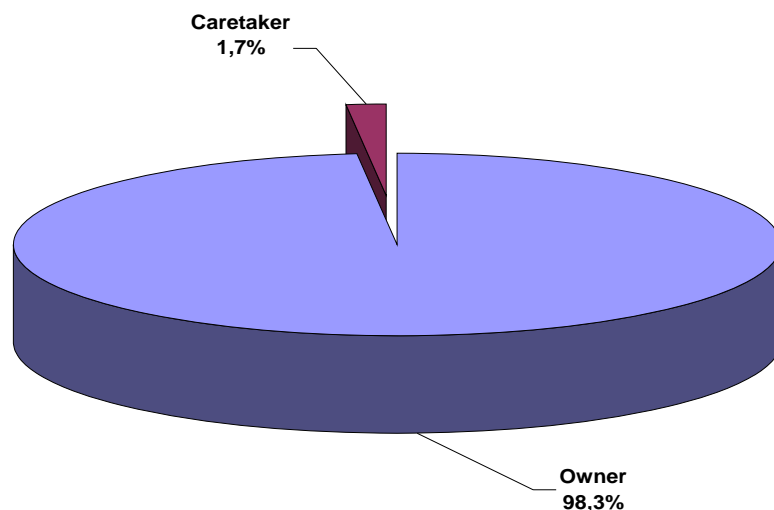
Of the heads of household, 98% are the owners of the plantations which they operate. There are only 2 caretakers among the 120 heads of household surveyed (figure 4).

7.2.4.2 Production resources and production

The surface areas of the plantations are the only indicators available used in this analysis.

❖ **Surface area**

Figure 5 below shows the breakdown per location of the average surface area of the cocoa fields owned by the household (ha).

Figure 5. Breakdown of the average surface area of the cocoa plantations of heads of household (ha)
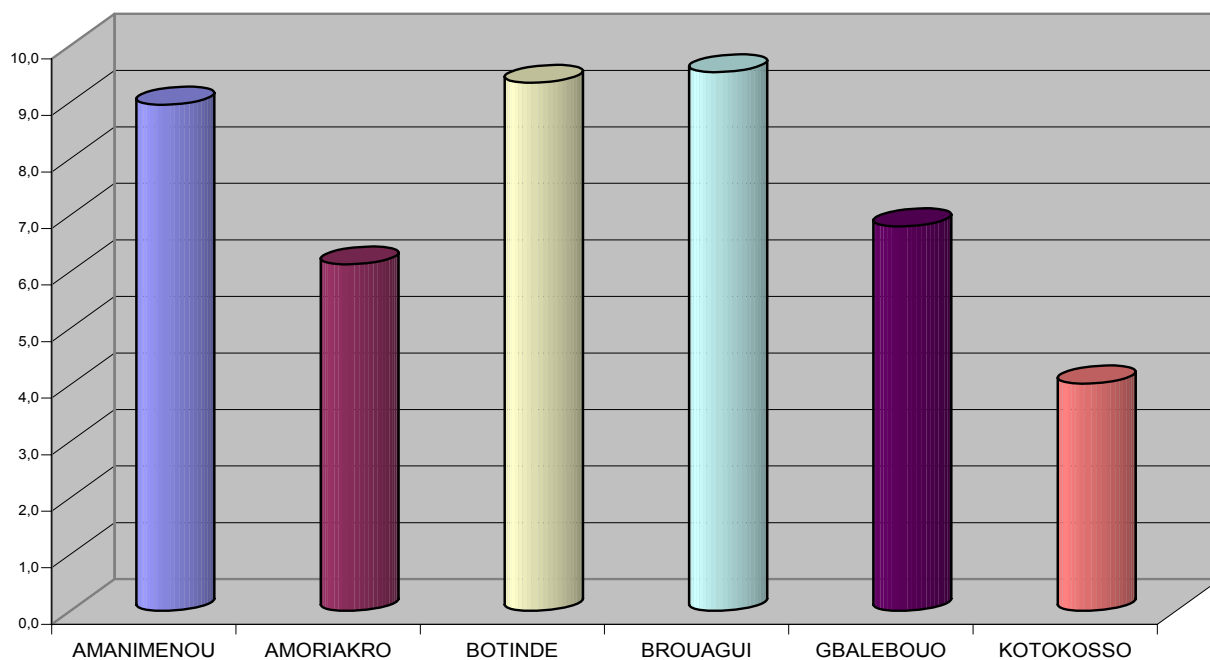
The highest average surface area can be found in Brouagui with more than 9 ha. However, the average surface area noted in Botindé and Amanimenou are relatively near to 9 ha whilst in Gbalébouo, Amoriakro and above all in Kotokosso the average area is noticeably behind on this criterion.

In addition, we see that 41.7% of households have a cocoa plantation of less than 3 ha. Those who have 10 ha or more represent 10.8%. For the sample as

a whole, the average surface area of the cocoa plantation per household is 7.46 ha.

The study into the breakdown of heads of household according to operating size, as shown by table 5 below, is able to give us more information.

Table 5. **Total combined surface area of the cocoa-producing household (ha)**

	Number	**%**
Less than 4 ha	35	29,2
4 -10 ha	68	56,7
11 -15 ha	9	7,5
16 -20 ha	3	2,5
21 ha or more	5	4,2
Total	**120**	**100,0**

The breakdown of heads of household according to the average size of their plantation clearly shows that the majority of these heads of household have less than 10 ha of cocoa (86 %), close to a third of whom have less than 4 ha.

❖ **Cocoa production**.

Table 6 shows the average cocoa production per household.

Table 6. Average production by household

	Number	%
Less than 500 Kg	18	15,0
500-1000 Kg	28	23,3
1000 -2000 Kg	64	53,3
2000-3000 Kg	9	7,5
3000-5000 Kg	1	,8
Total	120	100,0

The breakdown of heads of household who plant cocoa questioned on their production shows that 38% of them produce less than 1 tonne of cocoa beans against only 8% who produce at least 2 tonnes or more of cocoa beans.

In the context of their cocoa production activities, the majority of the heads of household indicated that they suffer from a shortage of agricultural management services.

❖ **Other produce**

In this section, our survey dealt with livestock products. In effect, the survey shows that a tiny proportion of households raise cattle (1%) and goats (4%). As for poultry and sheep, these account for 66% and 27% respectively of the households surveyed.

7.2.5 *Communication and information resources*

Two principal means of communication and information are used by the heads of household in the sample.

7.2.5.1 *Communication resources*

Fixed or mobile telephones are used by only 19 % of the heads of household questioned.

7.2.5.2 *Information resources*

The radio is the most frequent information resource used by heads of household (73%). Television is available in only 34% of households.

In addition to the observations made above, heads of household gave an assessment of their own living conditions. This shows that 61% of them are not satisfied with their living environment. Furthermore, 23% would like to live in better conditions as opposed to 17% who would accept their current living conditions.

7.3   Characteristics of adult workers

Table 7 presents the socio-demographic characteristics and living and working conditions of adult workers.

Table 7. Characteristics of adult workers in the villages

%	AMANIMENOU	BOTINDE	KOTOKOSSO	AMORIAKRO	BROUAGUI	GBALEBOUO	Average
Sex							
Women	00,00	08,3	00,0	16, 7	25,0	16,7	**13,2**
Men	100,00	91, 7	100, 0	83, 3	75,0	83,3	**86,8**
Age	34,9	37,8	23,0	32,1	31,4	33,4	**32,3**
Marital status							
Adults married or with common-law spouse	63,6	75,0	66, 7	83,3	85,0	58,3	**73,7**
Separated or divorced	00,0	00,0	00,0	00,0	00,0	08,3	**01,3**
Single adults	36,4	25,0	33,3	16, 7	15,0	33,3	**25,0**
Widowed adults	00,0	00,0	00,0	00,0	00,0	00,0	**00,0**
Other marital status	00,0	00,0	00,0	00,0	00,0	00,0	**00,0**
Number of children:	2,6	3,0	, 9	2,9	2,2	2,2	**2,3**
Father living in the village	18,0	00,0	00,0	17,0	00,0	08,0	**07,0**
Child living in the village	36,0	42,0	44,0	50,0	50,0	25,0	**42,0**
Ability to read French	18,2	36,4	62,5	00,0	33,3	100,0	**41,7**
Experience in cocoa farming (years)	3, 5	3,1	4,0	3,8	3,1	3, 7	**3,5**
Worked in cocoa farming before arriving in the village	73,0	75,0	78,0	83,0	65,0	75,0	**74,0**
Age at which work in cocoa farming started (years)	33,0	32,7	24,9	30,3	27,9	31,1	**29,9**
Number of meals per day	2,8	2,9	2,4	2,6	2,7	3,0	**2,8**
Number of hours' sleep	8,4	8,8	8,7	8,6	8,8	9,0	**8,8**
Type of healthcare							
No healthcare	54,6	75,0	33,3	58,3	45,0	58,3	**54,0**
Self-medication	36,4	16,7	33,3	08,3	15,0	16,7	**19,7**
By the employer	00,0	00,0	22,2	16,7	10,0	00,0	**07,9**
By the parents	00,0	08,3	00,0	08,3	05,0	00,0	**04,0**
Healthcare services	00,0	00,0	00,0	00,0	00,0	08,3	**01,3**
Obliged to work	00,0	08,0	00,0	17,0	00,0	00,0	**04,0**
Feel safe	91,0	100,0	100,0	92,0	90,0	100,0	**95,0**
Paid work	100,0	92,0	100,0	83,0	75,0	83,0	**87,0**
Salary paid (in F CFA)	101363,6	105125,0	200000,0	68583,3	99700,0	40916,7	**98480,3**
Possession of means of identification	91,0	83,0	56,0	75,0	100,0	92,0	**86,0**

The analysis of the data on adult workers will in the main concern their socio-demographic characteristics, i.e. sex, structure per age, marital status, nationality, level of education achieved, the number of dependent children, their presence on cocoa farming and their living conditions.

7.3.1 Socio-demographic characteristics

7.3.1.1 Sex

A large majority of the adults surveyed (87%) are men (see Appendix 1, table 7).

7.3.1.2 Structure by age

Half of the adults are less than 30 years of age and close to 41% are between 45 and 60 years of age (figure 6).

This structure is significantly different from that of the heads of household and is characterised by the relative youth of this category of the population.

Figure 6. The structure by age of adult workers
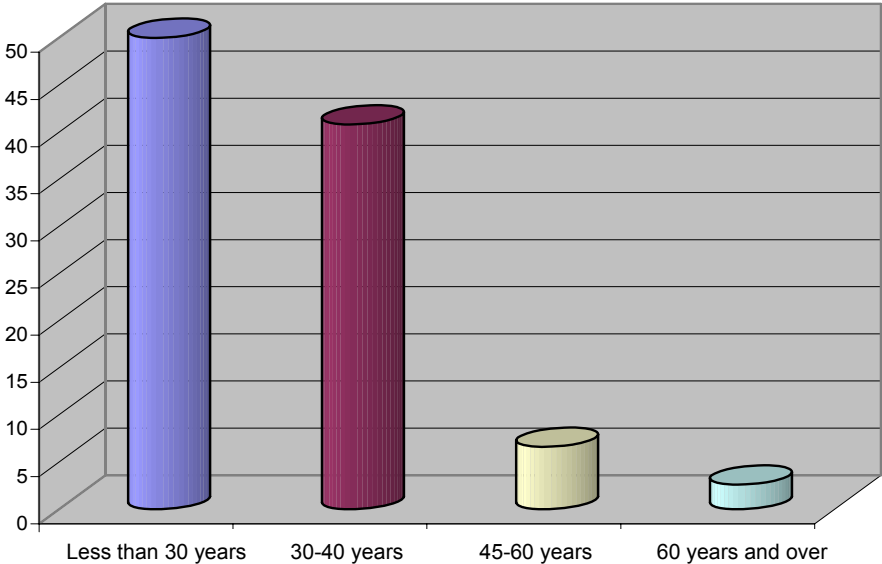
The majority of adult workers are between 18 and 45 years of age (91%). The lowest average age in this category can be found in Kotokosso (23 years of age) and the highest in Botindé (38 years of age).

7.3.1.3 Nationality

Figure 7 presents adult workers according to their origin.

Figure 7. Breakdown of adult workers by nationality
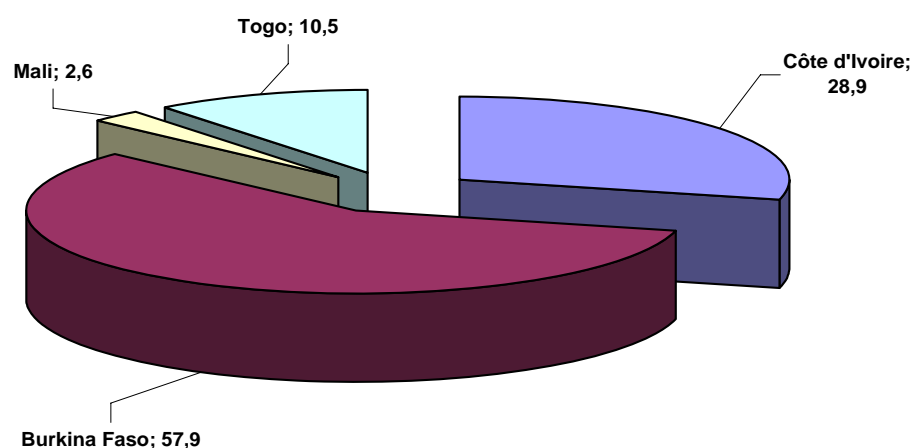
Among adult workers, foreigners are the most numerous at 71% of the workforce of those surveyed. Those from Burkina Faso are predominant with 82% of the non-national workforce.

7.3.1.4 Marital status

The majority of adult workers is married or has a common-law spouse (74%); bachelors represent 25% of this population.

7.3.1.5 Level of education achieved

The level of education achieved by adult workers breaks down as follows:

Figure 8. Breakdown of adult workers according to the highest level of education achieved (%)
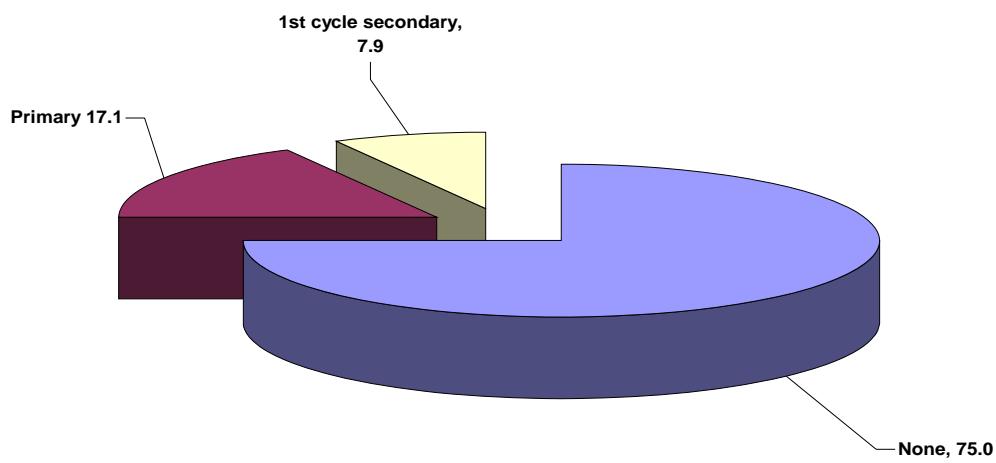
Just like the heads of household, a large proportion of the adult workers surveyed have received no schooling as the graph shows. Only 7.9% stated that they had attended the first cycle of secondary school.

7.3.1.6 Number of dependent children

The number of adult workers according to the number of dependent children breaks down as shown in table 8 below:

Table 8. Breakdown of adult workers according to the number of dependent children

Number of children	Number	%
0	22	28,9
1	9	11,8
2	**16**	21,1
3	11	14,5
4	8	10,5
5	4	5,3
6	2	2,6
8	2	2,6
9	1	1,3
15	1	1,3
Total	**76**	**100,0**

The majority of adult workers have 2 children at most (62 %); they therefore have families of limited size.

7.3.2   Presence in cocoa production

It appears that adult workers have lengthy experience in cocoa farming. In effect, 45% have been working in the sector for between 2 and 5 years, 16% have more than 5 years' experience in cocoa farming. This experience is not recent to the extent that 73% of adults had already worked in cocoa farming before their arrival in the host village. Some started to work in this sector in their youth, from the age of 18 (5%). But the majority situate the age at which they started working in cocoa farming at 25.

7.3.3   *Living and working conditions in cocoa farming*

The adult workers questioned stated that they are not afraid of restrictions on freedom, that they are not obliged to work and that they are not afraid of violence.

Almost all of them own their rooms, all feel safe and 92% of them are satisfied with the state of their diet (Amanimenou and Kotokosso are under 92% with 82% and 78% respectively).

They sleep on average 8 h 45 min a day and have 3 meals a day on average.

Although they have fewer meals in Kotokosso (2.4) and sleep less in Amanimenou, in Gbalébouo they have 3 meals a day and sleep more than 9 h.

7.4   Characteristics of children involved in cocoa farming.

7.4.1   *Reminder of concepts*

In Côte d'Ivoire the reference texts for defining the **child** can be found in the Civil Code and the Electoral Code which fix minors at under 21 and 18 years of age respectively. We must recall, however, that according to the United Nations Convention on the Rights of the Child, a **child** is defined as any individual under the age of 18.

Child labour as defined by the Convention on the minimum age for admission to employment (ILO Convention 138) is the body of activities that deprive children of their childhood, their potential, their dignity and damage their physical and psychological development.

Dangerous work as defined by ILO Convention 182 is among the worst forms of child labour. This is work which, by its very nature or the conditions in which it is carried out, is likely to be harmful to the health, safety and/or morality of the child. The list of dangerous work is determined by the domestic legislation or the competent authority of each country. In Côte d'Ivoire it was defined by Order No. 2250 of 14 March 2005 of the Civil Service and Employment Ministry.

Living conditions refer equally to the environment, the living space, as well as to the moral, dietary, security and physical situation in which the child grows up.

Working conditions are relative to the types of work, their duration, and their arduousness as well as their impact on health, likewise on the schooling of the children who do the work.

7.4.2   General points

This chapter is devoted to the presentation of the socio-demographic characteristics of the children surveyed.

7.4.2.1   Distribution of children questioned by village

The breakdown of the children questioned per village presents as shown in table 9 below:

Table 9. Distribution of children questioned by location

Location	Frequency	%
AMANIMENOU	29	15,8
BOTINDE	24	13,0
KOTOKOSSO	45	24,5
AMORIAKRO	31	16,8
BROUAGUI	32	17,4
GBALEBOUO	23	12,5
Total	**184**	**100,0**

7.4.2.2 *Sex*

As many male (50%) as female (50%) children were questioned (Appendix 1, table 12).

7.4.2.3 *Relation to the head of household*

The majority of the children are related to the head of their household (93%). In effect, the majority of them are children of the head of the household (71%). Others are nephews or nieces (10%), grandchildren (9%) or brothers or sisters (2%) of the latter. Only a few have no precise family relationship with the head of household (other). Just 3% have no relationship with the head of household, as shown by table 10 below.

Table 10. Family relationship between child and head of household

		Child	Wife's child	Brother/sister	Niece/nephew	Grandchild	Other relationship	None	Total children
Age	[6;9]	22,3%	0,5%	0,5%	1,6%	2,2%	0,5%	1,1%	**28,8%**
	[10;13]	31,5%	0,0%	0,5%	4,3%	4,9%	2,2%	0,5%	**44,0%**
	[14;17]	17,4%	0,0%	1,1%	4,3%	2,2%	1,1%	1,1%	**27,2%**
Total		**71,2%**	**0,5%**	**2,2%**	**10,3%**	**9,2%**	**3,8%**	**2,7%**	**100,0%**

A significant group, 70% of these children, lives in their father's household. However, others have fathers who live elsewhere (16%) or who are deceased (5%).

As far as the mothers of these children are concerned, the majority also lives in the household (69%). However, some of them do not live with their children who live elsewhere (19%) or in the village (12%) (see Appendix 1, table 10).

7.4.2.4 *Schooling*

The children's access to schooling and their level of literacy in the villages are presented in table 11 below:

Table 11. Access to schooling and assessment of level

Schooling	Amanimenou	Botindé	Kotokosso	Amoriakro	Brouagui	Gbalebouou	Total
Has never been to school	8,2%	5,4%	6,5%	6,0%	3,8%	4,3%	**34,2%**
Been to school	1,6%	1,6%	0,5%	1,1%	3,8%	2,7%	**11,4%**
Is currently at school	6,0%	6,0%	17,4%	9,8%	9,8%	5,4%	**54,3%**
Total	**15,8%**	**13,0%**	**24,5%**	**16,8%**	**17,4%**	**12,5%**	**100,0%**
Ability to read French							
Cannot read	6,8%	5,1%	10,3%	8,5%	12,0%	7,7%	**50,4%**
Has difficulty reading	3,4%	1,7%	5,1%	4,3%	5,1%	2,6%	**22,2%**
Has no difficulty reading	1,7%	2,6%	12,8%	3,4%	4,3%	2,6%	**27,4%**
Total	**12,0%**	**9,4%**	**28,2%**	**16,2%**	**21,4%**	**12,8%**	**100,0%**

Out of the children interviewed, more than half are currently attending a school whilst more than a third has never been to school, with peaks in Amanimenou, Botindé, Amoriakro and Gbalébouo. The highest drop-out rages are concentrated in the villages of the Soubré department. The general level of illiteracy is significant, with 50% of the children not being able to read the French language. However, more than a quarter (27%) of children has no difficulty reading, which offers potential for development.

The child's ability to read is by far the highest in the village of Kotokosso.

It is interesting to examine access to schooling according to age, as shown in table 12 below:

Table 12. Access to schooling according to age

		Has never been to school	Been to school	Is currently at school	Total children
Age	[6;9]	13,0%	0,5%	15,2%	**28,8%**
	[10;13]	10,3%	3,8%	29,9%	**44,0%**
	[14;17]	10,9%	7,1%	9,2%	**27,2%**
Total		**34,2%**	**11,4%**	**54,3%**	**100,0%**

One examination of the table we see that the numbers of children who have never been to school is almost equally spread across all age categories whilst 10-13 year olds attend school the most and 14-17 year olds form the majority of children who have dropped out of school.

We can see that 98% of children attending school would like to continue schooling (see Appendix 1, table 15).

With regards children who have already attended school, table 13 below illustrates the situation and shows the explanatory factors for dropping out of school.

Table 13. Factors explaining school dropout

	Frequency	% Children
Did not like school	4	19,0
Did not work well	9	42,9
Illness	2	9,5
School too far away	3	14,3
School too expensive	2	9,3
Had to work	1	4,8
Difficult conditions	2	9,5
Poor treatment	0	0
Work for the tutor	0	0

In terms of children who have left school, we can see from the table that the low school return for each child (of not working well at school) is the primary reason (43%) way above the reason of not liking school (19%) and distance from school (14%). No child claimed that they were ill treated or that they had to carry out work for the teacher.

7.4.2.5   *Means used to get to school*

The children attending school usually go there on foot (97%). Very rarely do children go by bike; these children only represent a tiny proportion of children questioned (2%) (see Appendix 1, table 15).

7.4.2.6   *Safety on the way to school*

Practically all children attending school that were surveyed (93%) claim that they feel safe on their way to school (see Appendix 1, table 15).

7.4.3   *Involvement of children surveyed in household life*

Outside of cocoa farming which will be the subject of a specific study, the children questioned actively participate in household life. 40% of them are involved in perennial crops of the household, other than cocoa. 95% of them work on plots for growing food crops and 67% help looking after cattle. With regards household chores, 90% of children are involved in these.

We should also note that 41% of children carry out work outside of the household (see Appendix 1, table 14).

7.4.4   *Children and (hazardous) work for the household in cocoa farming*

7.4.4.1   *Involvement of children in dangerous work*

The involvement of children in dangerous work returns to the fact that children are directly carrying out this work.

❖ **General picture**

Out of the 184 children questioned, 160 children are involved in at least one dangerous type of work, therefore an 87% rate of involvement.

The study on the involvement of children in dangerous work in cocoa farming will be based on an analysis of figure 9 below:

Figure 9. Dangerous work undertaken by children (%)
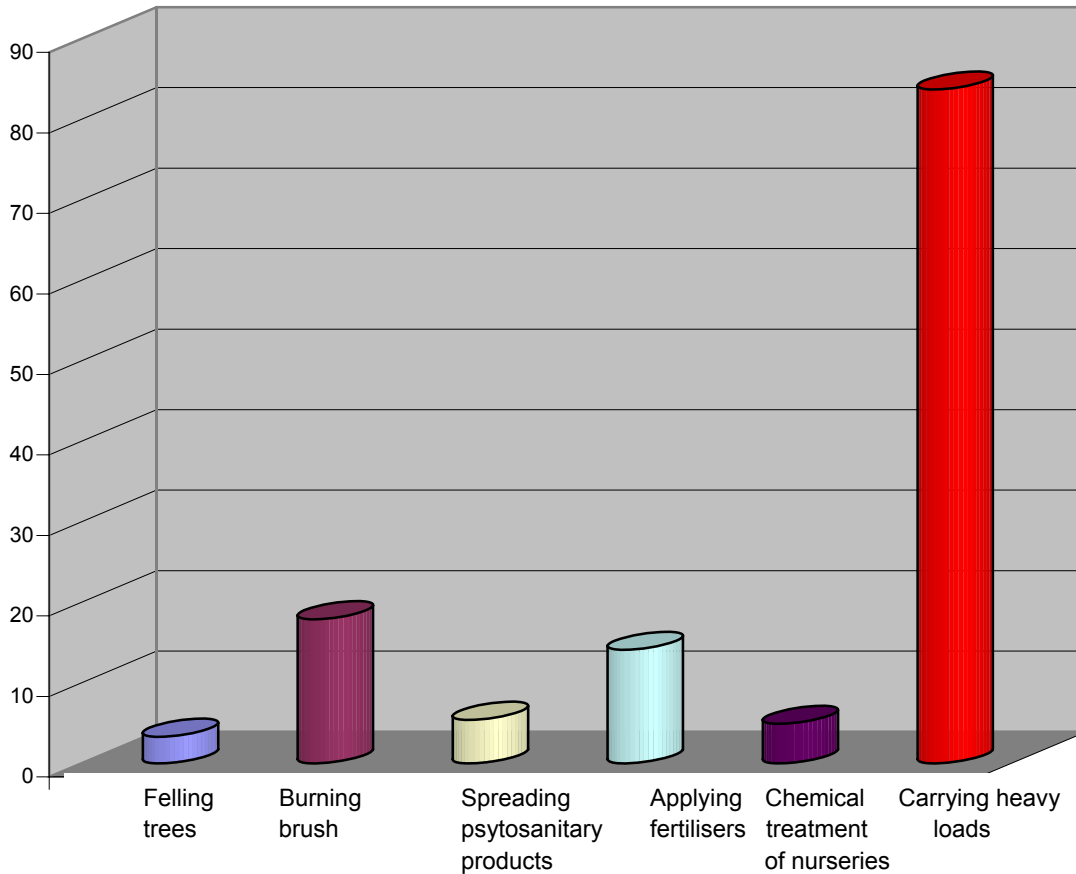
Carrying heavy loads is the activity carried out the most (84% of children questioned), far ahead of burning and spreading of chemical fertilisers (18 and 14% of children questioned respectively). Spreading pesticides, chemical treatment of nurseries and felling appear to be residual activities (less than 6% of children questioned).

Such work affects girls (52%) just as much as it does boys (48%).

Figure 9 therefore shows that the dominant area of work in which the children are directly involved is the carrying of heavy loads. This activity is very widespread in Amanimenou (93%), Gbalébouo and Botindé (87%) respectively. However, we should note that close to half of the children (47%) in the village of Brouagui are directly involved in fertiliser spreading operations.

Nevertheless is it more interesting to carry out a detailed analysis into the involvement of children in dangerous work. The detailed analysis into the involvement of children in dangerous work shall be made on the basis of:

- Family relationship with the head of the household;

- Schooling status of the children involved;

- Period of involvement;

- Frequency of involvement;

- Age categories.

❖ **Family relationship of children involved in dangerous work with the head of the household**

Table 14. Family relationship of children involved in dangerous work with the head of the household

Relationship head of household	Felling	Burning	Spreading pesticides	Spreading chemical fertilizers	Chemical treatment of nurseries	Carrying heavy loads
Child	2,7%	11,4%	4,4%	7,1%	3,3%	59,8%
Shared child						0,5%
Brother/sister				0,5%		1,6%
Niece/nephew		2,2%	0,5%	1,6%	1,1%	8,2%
Grandchild	0,5%	2,7%	0,5%	2,7%	0,5%	7,1%
Other relationship		1,1%		1,1%		3,8%
None		0,5%		1,1%		2,7%
Total	**3,3%**	**17,9%**	**5,5%**	**14,1%**	**4,9%**	**83,7%**

The analysis of the relationship of children involved in dangerous work with the head of the household shows that, regardless of activity, the majority of these children are the children of the head of household or other types of relations. The categories "other relationship" and "none" are very minority.

❖ **Schooling status of children involved in dangerous work**

The study into status of children involved in dangerous work shall be based on the following graph:

Figure 10. Schooling status and level of involvement in dangerous work (%)
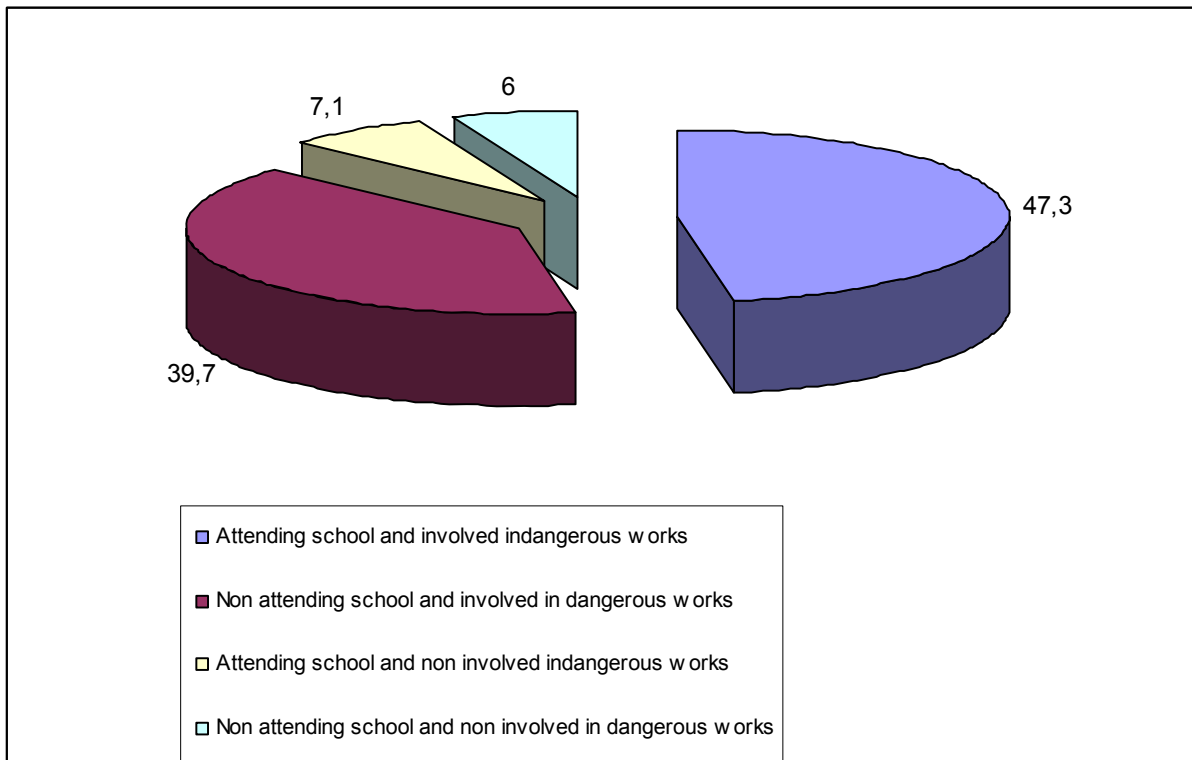
Figure 10 above clearly shows that almost half of the children surveyed are involved in dangerous work and attend school, and that only a small proportion of children attend school and avoid dangerous work. These children have an average age of 11 and are therefore mainly in the primary cycle. This date shows that in the current situation, schooling does not prevent children from being involved in dangerous work.

❖ **Period of involvement in dangerous work**

The cocoa season is divided into three distinct periods: the peak season, the mid-crop season and the off-season. Children may be involved in dangerous work during just one of these periods, during two of these periods or even during all three periods, that is to say the entire cocoa production campaign.

The analysis into the periods of involvement of children in dangerous work will be based on table 15 below:

Table 15. **Period of involvement of children in dangerous work**

	Felling	Burning	Spreading pesticides	Applying chemical fertilizers	Chemical treatment of nurseries	Carrying heavy loads
Peak season		64%		8%	33%	5%
Peak and mid-crop seasons				4%	33%	1%
Peak and off seasons			50%	4%		
Peak, mid-crop and off seasons	17%			4%		92%
Mid-crop season	67%		30%	31%	22%	1%
Mid-crop and off – seasons		21%	20%	38%	11%	1%
Off season	17%	15%		12%		
Total children	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The study into the involvement of children in dangerous work shows that:

- The majority of work sees the involvement of children in just one or two periods in the cocoa farming campaign. However, the involvement of children in felling during the mid-crop season, in burning during the peak season and in spreading pesticides during the peak and mid-crop seasons is worrying.

- Only tree felling, burning and carrying heavy loads are activities which children are involved in throughout the entire cocoa production cycle even if the rate of involvement in carrying heavy loads is worrying: 92% of children who carry heavy loads do so during the entire cocoa production cycle (compared to 17% and 4% for the first two types of work cited).

- Involvement in spreading chemical fertilisers, even if it covers all combinations of periods, is most worrying during the mid-crop and off-seasons.

❖ **Frequency of involvement in dangerous work**

The frequency of involvement stems from evaluating the number of times a child is involved in work during a given period of the cocoa production season.

Table 16. Frequency of involvement of children in dangerous work

	Felling	Burning	Spreading pesticides	Applying chemical fertilizers	Chemical treatment of nurseries	Carrying heavy loads
Rarely	67%	33%	50%	50%	44%	
Sometimes	33%	64%	50%	46%	56%	65%
Regularly		3%		4%		35%
Total children	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The study into the frequency of involvement of children in dangerous work shows that few children are regularly involved in dangerous work. It is only the job of carrying heavy loads that is carried out regularly by 1/3 of children and less so burning and spreading chemical fertilisers.

❖ **Involvement in dangerous work according to age category**

Table 17. Involvement of children in dangerous work according to age category

		Felling	Burning	Spreading pesticides	Spreading chemical fertilisers	Carrying heavy loads	Chemical treatment of nurseries
Age	[6;9]	0,0%	1,6%	1,6%	1,0%	26,1%	0,5%
	[10;13]	2,7%	15,2%	1,6%	5,0%	32,1%	4,4%
	[14;17]	0,5%	1,1%	2,2%	9,0%	25,5%	0,0%
Total		**3,3%**	**17,9%**	**5,5%**	**15,0%**	**83,7%**	**4,9%**

Examining table 17 above shows us that:

▪ By a large majority, children in the 10-13 age brackets are most involved in dangerous work;

▪ Age categories 6-9 and 14-17 have similar levels of involvement.

To conclude, the study into the involvement of the children questioned in dangerous work shows us that even if more than 90% of children that are

involved in dangerous work have a close family relationship (children, nieces, nephews, grand children) with the head of the household and attend school, 3 children that do not attend school and do not have a direct family relationship with the head of the household are directly involved in dangerous work (see Appendix 1, table 17).

7.4.4.2 *Exposure of children to dangerous work*

The exposure of children to dangerous work comes back to their presence in places where these jobs are carried out, so that they are submitted to the inherent hazards of this work.

28% of the children questioned stated that they were exposed to tree felling. As for burning, 39% claim exposure. As far as phytosanitary treatment is concerned, 47% of children are exposed to it. Exposure to applying chemical fertilisers affects 26% of children. Exposure to chemical treatment of nurseries affects 9% of children. Exposure to carrying heavy loads affects 81%. (see Appendix 1, tables 18 and 19).

Once again, carrying heavy loads is the type of dangerous work that children are exposed to the most.

Generally speaking, the proportion of children exposed to dangerous work seems greater than those who are directly involved. Thus, in Kotokosso, half are exposed to felling, whilst close to 70% are exposed to burning operations and 62% to the application of phytosanitary products. After this village, Brouagui is the second-ranking village where the rate of exposure of children to dangerous work is greatest. Thus, 69% of children are exposed to the application of phytosanitary products and 59% are exposed to the spreading of fertilisers.

7.4.4.3 *Health consequences of involvement in or exposure to dangerous work*

In carrying out this work children are victims of certain illnesses. First of all we shall study these illnesses in a general sense before moving on to study the frequency of their occurrence and the period of their occurrence.

❖ **General picture**

Table 18. General illustration of illnesses suffered

		Fracture	Skin irritation	Respiratory problems	Eye irritation	Cough	Migraine	Body Pain
Age	[6;9]		8,2%	1,1%	9,8%	2,7%	14,2%	21,2%
	[10;13]	0,5%	20,7%	5,5%	16,8%	9,3%	25,1%	31,0%
	[14;17]	0,5%	15,2%	5,5%	14,1%	7,1%	18,6%	20,7%
Total		**1,1%**	**44,0%**	**12,0%**	**40,8%**	**19,1%**	**57,9%**	**72,8%**

Analysis of illnesses suffered by children involved in or exposes to dangerous work shows that:

- Body pains, migraines and irritations respectively are the illnesses most suffered by children which corroborates the dominance of carrying heavy loads and, to a lesser degree, work involved in spreading chemical products (pesticides, fertilisers);

- The 10-13 age category is most affected, regardless of illness;

- Illnesses due to felling are quantitatively marginal.

❖ **Frequency of occurrence of illnesses**

Table 19. Frequency of occurrence of illnesses

	Fracture	Skin irritation	Respiratory problems	Eye irritation	Cough	Migraine	Body Pain
Rarely	100,0%	48,1%	90,9%	60,0%	61,8%	34,9%	23,1%
Sometimes		45,7%	9,1%	38,7%	38,2%	61,3%	66,2%
Regularly		6,2%		1,3%		3,8%	10,8%
Total children	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**1000%**	**100,0%**

Analysis of the frequency of occurrence of illnesses show that apart from body pains and migraine, and to a lesser degree skin irritations, illnesses suffered are rare and not regular.

❖ Period of occurrence of illnesses suffered

Table 20. Periods of occurrence of illnesses suffered

	Fracture	Skin irritation	Respiratory problems	Eye irritation	Cough	Migraine	Body Pain
Peak season	50,0%	7,4%	9,1%	13,3%	17,6%	8,5%	4,5%
Peak and mid-crop seasons		18,5%	13,6%	16,0%	17,6%	10,4%	1,5%
Peak season and off-season				1,3%			
Peak, mid-crop and off-seasons		53,1%	22,7%	46,7%	44,1%	73,6%	91,7%
Mid-crop season	50,0%	12,3%	36,4%	16,0%	14,7%	6,6%	2,3%
Mid-crop and off-seasons		1,2%	4,5%	1,3%	5,9%	0,9%	
Off season		7,4%	13,6%	5,3%			
Total children	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**

Analysis of the periods of occurrence of illnesses suffered shows that:

▪ Body pains (as is the case for carrying heavy loads), migraine, cough and irritations are the predominantly occurring illnesses across the entire cocoa production campaign;

▪ Fractures and respiratory problems only occur during one or two cocoa production campaign periods.

7.4.4.4 *Living and working conditions of children involved in dangerous work*

90% of children involved in dangerous work have 3 meals per day. 95% are satisfied with their meals. A large majority of these children (91%) regularly have fish with their meals, but meat and poultry rarely appear in their diet (see Appendix 1, tables 21, 22).

The majority of children involved in dangerous work sleep at home (55%) or at the cocoa encampment (35%) (See Appendix 1, table 24).

Despite the illnesses suffered from carrying out dangerous work the majority of children surveyed do not receive medical care (64%). All children receiving care do so from their parents.

Only 3% of children involved in dangerous work claim that they are obliged to work even if they are ill or injured. 6% claim that they have already been a victim of violence at work (whilst only 4% claim to have witnessed violence) and 19% do not feel safe (see Appendix 1, table 26). The study into the reasons of insecurity shows that the majority of children who indicated that they do not feel safe did not specify why. However, four responses were given: fear of being shouted at (6%), fear of not being sufficiently nourished (3%), fear of being punished (3%) and deceiving families (3%) (See Appendix 1, table 27).

This leads us to conclude that the insecurity felt by these children is not closely related to their poor living conditions.

At this stage it is important to recall that the majority of children involved in dangerous work are related to the head of the household. However, out of the 184 children interviewed, suspicion of a case of trafficking is revealed by the fact that a child of 14 years of age said that he was obliged to work, the victim of violence, did not feel safe and had no clear family relationship with the head of household[5].

[5] Checks carried out following sindication of this situation were not able to conclude that this was a case of trafficking, according to the classification and pre identification criteria used during the pilot study to detect cases of trafficking.

8. Study into the factors determining the involvement of children in dangerous work

8.1 Factors determining the use of children in the plantations (see Appendix 2)

The analysis of the various variables shows that three significant factors influence the use of children in cocoa farming. These are the age of the child, the rindex of cohabitation with the parents and sex.

The older the children are, the greater the tendency to take them into the plantations. This can be explained by the fact that, for the parents, the child is needed more in the fields as a family help than when he gets bigger and becomes useful in carrying out field work. However, we will see below that the use of the child does not significantly influence production.

With regards the rate of cohabitation, we see that the more the child lives with his two parents, therefore in a family environment, the greater the probability that he will find himself working in the fields. For certain parents, this is part of their concern to remove their children from the bad influence of the village and not necessarily to use them in field work. This practice is independent of the household's living conditions.

With regards sex, the probability of working on a cocoa farm is greater if the child is female. A plausible explanation is that nearly half (49%) of the girls surveyed have never attended school, as opposed to 29% of boys. We thus observe that the parents in the villages surveyed tend not to send their daughters to school to the profit of their sons. However, the zero rate of abandonment of schooling among girls, as opposed to 13% among boys, shows that, when girls do attend school, they stay at school.

In addition, the model built shows that the surface area and production do not determine the use of children in the plantations. In effect, the use of a certain number of children on cocoa farms is not a function of the growth in surface area. Likewise, production does not increase because heads of

household use more children. From this point of view, the children surveyed in the six villages cannot be qualified as a workforce in cocoa farming.

9. Recommendations

In the chapter of recommendations, suggestions are made in relation to:

- The collection and processing of data;

- The living conditions of the households;

- The living conditions of adult workers;

- The living and working conditions of children.

9.1 Collection and processing of data

9.1.1 Sampling

- Improve the sampling technique with a combination of random and quota selection techniques. To this end, the following stages must be respected:

    o Update the list of households by carrying out a census of all households in the village;

    o Categorise the households;

    o Select 20 households proportional to their typology;

    o All members of households which are part of the sample are systematically interviewed.

9.1.2 Questionnaire

- The questionnaire must integrate certain pertinent variables related to the work and the standard of living of the children (water supply, means used to cook foodstuffs, means of lighting, etc.);

- Ask simple questions to solicit simple answers which are non-compound questions like question C53 in the children's questionnaire. In effect, this question uses a unique method to bring up a certain number of variables related to four (4) aspects of the state of health of the children:

    ❖ The answer to the question (2 options)
    ❖ The type of morbidity (9 options);
    ❖ The period (3 options);
    ❖ The frequency (3 options).

- It would be desirable to rework the question as follows:

  ❖ C53-a: "When carrying out or indirectly exposed to…, what are the morbidities of which you have been the victim?" (then list all the options);
  ❖ C53-b: If yes to C53-a, in which period? (list the periods);
  ❖ Idem frequency in C53-c;

- It is easier, for the computer processing of these questionnaires, that they be entirely pre-coded. This must also apply to the qualitative variables and the open questions. This will be possible through the judicious use of data from the first two surveys if we establish a list of recurrent options;

- The variables relating to the carrying of heavy loads by children must be fleshed out with a view to determining the nature of the load, the distance covered by the child carrying the load, the context in which the load is carried, etc.

- The "village" questionnaire must make it possible to assess the suitability ratio of the scholastic infrastructure available per number of children of school age;

- In terms of the actual presence of the children attending school, the usual admissible period of reference is taken to mean 15 days to exclude certain accidental cases.

9.1.3   Administration of questionnaires

- With an eye on capitalising on what we learn, we could again use the same people who carried out previous surveys; however, it would then be necessary to reinforce supervision in the field;

- With a view to optimising the training of agents, it is desirable to do it in the capital of the department, even if it means the instructors having to establish a flexible timetable with a view to performing this task sequentially;

- With a view to the effective processing of cases of suspected child trafficking, it is vital that future training insist on the indicators which bring the phenomenon to light and the urgent actions to be taken by the person conducting the survey.

9.1.4 *Exploitation*

- The absence of the important link of archiving in the data processing chain is regrettable. This function must be integrated given the considerable volume of questionnaires related to the number of departments which will be the subject of the forthcoming phases (18 departments);

- It is customary to separate collection in the field from the computer processing phase for the questionnaires, particularly archiving collection media, codification and input.

9.1.5 *Input*

- As far as input is concerned, it must be done progressively based on collection speed in the interests of saving time and maintaining the archives in optimum conditions;

- The new database must be designed using ORACLE software given the sheer volume of data to be processed;

- It is desirable to devote more time to analysis by reducing the time allocated to collection by increasing the number of collection agents.

- It is also equally necessary to move onto auditing the database as we go along to develop the surveys in order to draw up an optimum period for analysing and using the data.

9.2 Living and working conditions in surveyed cocoa production zones

The design and implementation of social protection, in response to the results of the survey, is in line with a global logic and stems directly from the lessons drawn from the survey. The recommendations made with regards social protection will be divided into two types of actions: immediate measures and medium term measures.

9.2.1 Immediate measures

Measure 1: **Locate cases of trafficking for immediate action.**

Target: 14-year old child in the ninth household surveyed in the village of Brouagui (Soubré).

Resources: more detailed survey[6]

Period: immediate.

Measure 2: **Immediately stop children being involved in dangerous work**

Target: households surveyed in the cocoa production zones (including therefore the heads of households, adult workers and children).

Resources: raising of awareness.

Theme: child labour and health, child labour and schooling.

Channel: rural radio, local campaigns.

Period: radio campaign: during the entire cocoa farming season;

local campaigns: during the mid-crop and off seasons.

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[6] Check already done and non conclusive.

Measure 3: improve access to schooling for girls on a sustainable basis.

Target: heads of households in surveyed cocoa production zones.

Resources: campaigns to raise awareness.

Channel: local and national radio.

Period: after the first literacy cycles for the heads of household.

Measure 4: improve access to the work force on a sustainable basis.

Target: households in surveyed cocoa production zones.

Resources: promote and manage self-help groups and service provision groups.

Period: as soon as possible.

9.2.2 *Medium-term measures*

Measure 5: improve access to education and training on a sustainable basis.

Target: children not attending school involved or not in dangerous work in the surveyed cocoa production zones.

Resources: create Community Education Centres (CEC) accompanied by revenue generating activities to support their performance;

create literacy centres or activities;

create apprenticeship centres or activities;

Measure 6: improve access to health on a sustainable basis.

Target: households in surveyed cocoa production zones.

Resources: touring consultation and primary health care campaigns; rehabilitation or fitting out of existing sanitary infrastructure; construction of additional sanitary infrastructure.

Period: as soon as possible.

Measure 7: **improve access to education on a sustainable basis**

Target: children in surveyed cocoa production zones.

Resources: rehabilitation or fitting out of existing school infrastructure; construction of additional school infrastructure.

Period: as soon as possible.

Measure 8: **improve access to drinking water on a sustainable basis**

Target: households in surveyed cocoa production zones.

Resources: rehabilitation of existing hydraulic infrastructure; construction of additional hydraulic infrastructure.

Period: as soon as possible.

Measure 9: **improve village access and product outflow on a sustainable basis.**

Target: households in surveyed cocoa production zones.

Resources: reprofile rural tracks

Period: as soon as possible.

10.   Conclusion

Once again Côte d'Ivoire has demonstrated a long term commitment to combat child labour, particularly in cocoa farming. The surveys in the departments of Agnibilékrou, Soubré and Tiassalé, like the previous one in Oumé, are the very expression of this determination.

The pilot phase of the initial diagnostic survey, the subject of this report, gives information aimed both at improving the methodology and the search for ways to remedy the phenomenon of child labour in cocoa farming.

To conclude this study, we will remember that:

The phenomenon of child labour is a socio-cultural reality; it is traditional, when one lives in the village, to go to the fields with the children, especially when they do not go to school. In implementing this social reproduction model, we must first concern ourselves with the type of work carried out and improving the ability of apprenticeships to provide a framework for children in order to reduce their exposure to and involvement in dangerous work.

To extend the initial diagnostic surveys to other departments, it will be necessary to take account of the observations made on the collection methodology. This will make it possible to extrapolate and carry out the necessary causal analyses. This approach will make it possible to suggest suitable social protection solutions where needed.

In addition, certain concepts used, such as the "carrying of heavy loads", should be more accurately defined, as they do not always allow an objective assessment of the heaviness of such loads and, even better, to associate them with cocoa farming.

The recommendations for social protection measures, in response to the results of the survey, fall into two major types of action:

- Urgent measures in the surveyed cocoa producing departments:

    o Raising awareness of heads of household to put an immediate stop on the involvement of children in dangerous work;

    o Make heads of household aware of the schooling of children in general and the girls in particular;

    o Promote and manage self-help groups and service provision groups.

- Medium-term actions:

  o Create Community Education Centres accompanied by income-generating activities to support their performance, create literacy centres, create apprenticeship centres for children not attending school;-{}-

  o Organise touring consultation and health care campaigns aimed at households.

  o Rehabilitate or fit out existing school infrastructure, conduct studies into building additional school infrastructure;

  o Rehabilitate or fit out existing sanitary infrastructure, build additional sanitary infrastructure;

  o Rehabilitate existing hydraulic infrastructure, build additional hydraulic infrastructure;

  o Reprofile rural tracks.

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APPENDICES

Appendix 1: Tables

Table 1: Breakdown of heads of household per age group

Age category	Number	%
20-24 years	2	1,7
25-29 years	13	10,8
30-34 years	12	10,0
35-39 years	22	18,3
40-44 years	13	10,8
45-49 years	11	9,2
50-54 years	10	8,3
55-59 years	14	11,7
60-64 years	7	5,8
65-69 years	8	6,7
70-74 years	3	2,5
75-79 years	5	4,2
Total	120	100

Table 2: Breakdown of heads of household by sex

Sex of the head of household

	Number	%
Men	116	96,7
Women	4	3,3
Total	120	100

Table 3: Breakdown of heads of household per level of education

Level of education of head of household

	Number	%
Has never been to school	85	**70,8**
Did not complete primary level	16	13,3
Completed primary level	5	4,2
Did not complete secondary level	11	9,2
Completed secondary level	2	1,7
Others	1	0,8
Total	**120**	**100**

Table 4. Marital status of heads of household

Marital status

	Number	%
Married	108	90,0
Single	7	5,8
Widowed	5	4,2
Total	**120**	**100**

Table 5. Average surface area of plantations by village

Location	Average surface area
AMANIMENOU	9,0
AMORIAKRO	6,1
BOTINDE	9,3
BROUAGUI	9,5
GBALEBOUO	6,8
KOTOKOSSO	4,0
Total	**7,5**

Table 6: Breakdown of adult workers by sex

		Number	**%**
	Female	10	13,2
Sex	Male	66	86,8
	Total	76	100,0

Table 7: Breakdown of adult workers by age group

		Number	%
	Under 30 years	38	50,0
	30-45 years	31	40,8
Age group	45-60 years	5	6,6
	60 years and over	2	2,6
	Total	76	100,0

Table 8: Breakdown of adult workers by nationality

	Number	%
Ivorian	22	28,9
Burkina Faso	44	57,9
Mali	2	2,6
Togo	8	10,5
Total	**76**	**100,0**

Table 9: Breakdown of adult workers by level of education

Level of education	Number	%
None	57	75,0
Primary	13	17,1
1st cycle of secondary	6	7,9
Total	76	100,0

Table 10. Socio-demographic characteristics of children by village

	Village						
	AMANIMENOU	BOTINDE	KOTOKOSSO	AMORIAKRO	BROUAGUI	GBALEBOUO	Average
Relationship between child and household							
Child	,6552	,6250	,8222	,5806	,7500	,7826	,7120
Wife's child	,0000	,0000	,0000	,0000	,0000	,0000	,0000
Brother or sister	,0000	,0000	,0000	,0968	,0000	,0435	,0217
Nephew or niece	,0345	,1250	,1333	,1290	,0938	,0870	,1033
Grandchild	,1724	,0833	,0222	,1290	,1250	,0435	,0924
Other relationship	,1034	,0417	,0222	,0323	,0313	,0435	,0435
None	,0000	,0000	,0000	,0000	,0000	,0000	,0000
Father's place of residence							
In the household	,6207	,6667	,8222	,5806	,6875	,7826	,7011
In the village	,0345	,2083	,0444	,1935	,0000	,0870	,0870
Deceased	,0345	,0417	,0000	,1290	,1250	,0000	,0543
Elsewhere	,3103	,0833	,1333	,0968	,1875	,1304	,1576
Mother's place of residence							
In the household	,6552	,7083	,8444	,6129	,5313	,7391	,6902
In the village	,0345	,2083	,0667	,1613	,1875	,0870	,1196
Deceased	,0000	,0000	,0000	,0000	,0000	,0000	,0000
Elsewhere	,3103	,0833	,0889	,2258	,2812	,1739	,1902

Table 11. Breakdown of children by sex

		Number	**%**
Sex	Male	92	50,0
	Female	92	50,0
	Total	**184**	**100,0**

Table 12. Relationship between children and the head of the household according to age category

		Child	Wife's child	Brother/sister	Niece/nephew	Grand child	Other relationship	None	Total children
Age	[6;9]	22%	1%	1%	2%	2%	1%	1%	29%
	[10;13]	32%	0%	1%	4%	5%	2%	1%	44%
	[14;17]	17%	0%	1%	4%	2%	1%	1%	27%
Total		71%	1%	2%	10%	9%	4%	3%	100%

Table 13. Breakdown of children according to their relationship with the head of the household

Relationship	Number	%
Child related to head of household	171	92,9
Child not related to head of household	13	7,1
Total	**184**	**100,0**

Table 14: Working conditions for children

				Village			
	AMANIMENOU	BOTINDE	KOTOKOSSO	AMORIAKRO	BROUAGUI	GBALEBOUO	Average
Works in cocoa farming	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Works in other perennial crops	,14	,46	,44	,97	,06	,17	,39
Works on food-producing plots of land	1,00	,87	,96	,94	,94	1,00	,95
Looks after cattle	,62	,79	,43	,81	,81	,70	,67
Household work	,97	,87	,93	,90	,84	,87	,90
Works outside of the household	,32	,39	,27	,58	,44	,52	,41
Involved in felling	,00	,00	,07	,03	,03	,04	,03
Involved in burning operations	,07	,04	,29	,45	,06	,04	,18
Involved in the application of phytosanitary products	,07	,04	,05	,03	,06	,09	,05
Involved in spreading fertilisers	,03	,00	,13	,03	,47	,13	,14
Works in nurseries	,03	,00	,07	,16	,00	,00	,05
Carries heavy loads	,93	,87	,71	,71	1,00	,87	,84
Indirectly exposed to felling	,14	,38	,51	,39	,03	,13	,28
Indirectly exposed to burning operations	,21	,33	,69	,58	,09	,22	,39
Indirectly exposed to the application of phytosanitary products	,31	,21	,62	,42	,69	,43	,47
Exposed to spreading fertilisers	,10	,08	,31	,16	,59	,17	,26
Indirectly exposed to work in nurseries	,03	,00	,20	,13	,03	,04	,09
Exposed to the carriage of heavy loads	,93	,96	,68	,77	,87	,74	,81

Table 15: Breakdown of children currently attending school

		Is currently at school
Age	[6;9]	15%
	[10;13]	30%
	[14;17]	9%
Total		54%

Table 16. Breakdown of children according to dangerous work

Type of work	Answers			
	Yes		No	
	Number	%	Number	%
Works in felling	6	3,3	177	96,2
Involved in burning operations	33	17,9	151	82,1
Involved in the application of phytosanitary products	10	5,4	173	94
Involved in spreading fertilisers	26	14,1	158	85,9
Works in nurseries	9	4,9	174	94,6
Carrying heavy loads	154	83,7	30	16,3

Table 17. Breakdown of children according to schooling status and their involvement in dangerous work

Schooling status and involvement in dangerous work	Number	%
Attending school and involved in dangerous work (status 1)	87	47,3
Not attending school and involved in dangerous work (status 2)	73	39,7
Attending school and not involved in dangerous work (status 3)	13	7,1
Not attending school and not involved in dangerous work (status 4)	11	6,0
Total	**184**	**100,0**

Table 18. Frequency of exposure to dangerous work

	Felling	Burning	Phyto spreading	Spreading fertilisers	Nursery work	Heavy loads
Rarely	67%	44%	45%	56%	53%	5%
Sometimes	29%	49%	52%	44%	47%	67%
Regularly	4%	7%	3%			28%
Total children	100%	100%	100%	100%	100%	100%

Table 19. Period of exposure to dangerous work

	Felling	Burning	Spreading Phyto	Spreading fertilisers	Nursery work	Heavy loads
Peak season	12%	1%	11%	6%	73%	3%
Peak and mid-crop seasons	8%	4%	7%	8%	13%	2%
Peak and off seasons	6%	4%	26%			
Peak, mid-crop and off seasons	4%		8%	4%		93%
Mid-crop season	48%	65%	20%	22%	13%	2%
Mid-crop and off -seasons	12%	15%	16%	34%		
Off season	12%	10%	11%	26%		
Total children	100%	100%	100%	100%	100%	100%

Table 20. Number of meals per day

Number of meals	Frequency	%
2	16	10,0
3	144	90,0
Total	160	100,0

Table 21. Satisfaction with meals

Satisfaction		Frequency	%
Valid	No	8	5,0
	Yes	152	95,0
	Total	160	100,0

Table 22. Frequency of quality meals

	% meals with meat	% meals with fish	% meals with poultry
Rarely	34	1	56
Sometimes	64	8	44
Regularly	2	91	
Total	100	100	100

Table 23. Period of quality meals

	% meals with meat	% meals with fish	% meals with poultry
Peak season	6		13
Peak and mid-crop seasons	1	6	1
Peak and off seasons	3		
Peak, mid-crop and off seasons	3		
Mid-crop season	1	1	1
Mid-crop and off - seasons	87	94	85
Total	100	100	100

Table 24. Place of residence

	%
At home	55
In another house	10
At the cocoa encampment	35
Total	100,0

Table 25. Medical care

	Frequency	%
No	103	64,4
Yes	39	24,4
Total	142	88,8
No response	18	11,3
Total		100,0

Table 26. Work situation

	% Obliged to work	% Victim of violence	% Feel safe
Yes	3	6	81
No	97	94	19
Total	100	100	100

Table 27. Reasons for feeling unsafe

Reasons	% Children
Violence	0
Theft	0
Being shouted at	6
Illness	0
Injury	0
Accidents	0
Snakes	0
Under-nourished	3
Not being paid	0
Restricted freedom	0
Punishment	3
Disappointing family	3
Other	0

Appendix 2: Modelling the determining factors for using children in cocoa plantations.

The study presented hereafter first estimates the probability that a child in the charge of a head of household is involved in cocoa production processes, and then analyses the factors determining this involvement of children in the production system.

1 Modelling the choice of labour force

For the purposes of our analysis, we consider that the heads of household in cocoa production areas are economic units which have the fundamental objective of maximising their profit or utility functions in the selection of their production factors. In the interests of simplifying notation and analysis, whilst remaining in line with the spirit of the current study, we are going to consider that land is the only cocoa production factor.

In order to determine the choice of heads of household regarding the use of a child labour force in a number I of available labour (or labour force) based on its socio-economic and demographic characteristics, we are going to represent each available labour force with the vector $\check{z}_i \equiv (z_i, \theta_{i,c})$, $i=1,2,\ldots,I$. z_i is the productivity of the work load exercised by labour i, available within the household, $\theta_{i,c}$ is a vector of variables grouping the socio-economic and demographic characteristics of adult or child workers.

The production function of given labour i is defined by the function $z_i \equiv f(t_i, \theta_{i,s})$, where f is the production function of a worker; t_i is the plot of cocoa taken in charge and $\theta_{i,s}$ a vector of variables describing the state of physical and mental health of the worker (see Diagne, Abi, Kouamé, 2001).

Of course $f_i(0_i, \theta_{i,s}) = 0$ if no plot of cocoa is allocated to a worker as his productivity in the operation is zero despite the fact that he may be in a good state of health. Furthermore, if $t_i \neq 0$, signifying that a portion of land is

allocated to a worker and the vector θi,s ~ 0 (indicating a precarious state of health of the individual), fi ~ 0 where the worker is free to rest when he is in ill health, fi must be a strictly positive constant value where forced labour occurs and cannot in this case be negative since if someone is forced to work then there has to be a positive result in terms of production. In other words the vector fi is a positive function of land (single production factor considered) with a discontinuity to a value of zero. Vector θi is a constant function if the period considered is relatively short.

The choice of labour i from that available is closely linked to its utility, translated by the equation $u_i(ž)_i \equiv u_i(z_i, \theta_i, c)$. Thus, the resultant of the total utility (or profit) procured by the household's workforce as a whole ži ≡ (ž1, ž2, …, žl) is the function Ũ ≡ U(u1(ž1), …,ul(žl)) (see Deaton and Muellbauer, 1980, Varian, 1984).

Finally, the decision by a head of household to employ given labour can be resumed in the following maximisation equation:

$$Q(\theta_c, \theta_s, T) \equiv \max_{t_1 \cdots t_t} \left\{ U(u_1, u_2, \dots, u_I); \sum_{i=1}^{I} t_i \le T; t_i \ge 0, i = 1, 2, \dots I \right\},$$

Where T represents the total surface area of the cocoa plots of the household, θc ≡ (θ1,c,…, θl,c), and θs ≡ (θ1,s,…, θl,s).

The optimum Kuhn-Tucker condition describes the optimum conditions of allocating plots of land to labour which is a function of θc , θs and T.

We have

$$t_I^* = h_I(\theta_c, \theta_s, T) > 0 \; si \; \frac{\partial U}{\partial u_I} \cdot \frac{\partial u_I}{\partial z_I} \cdot \frac{\partial f_I}{\partial T_I} = \lambda(\theta_c, \theta_s, T)$$
,

and

$$t_I^* = 0 \; si \; \frac{\partial U}{\partial u_I} \cdot \frac{\partial u_I}{\partial z_I} \cdot \frac{\partial f_I}{\partial T_I} < \lambda(\theta_c, \theta_s, T)$$
, with i=1,…,l

Where hl is a function of actual values and $\lambda(\theta_c, \theta_s, T)$ the Lagrange multiplier associated with the constraint of land assumed to be limited. The Lagrange multiplier essentially measures the land opportunity cost, bearing in

mind that a unitary portion of land is acquired at a certain cost (purchase, rental or clearance of virgin forest).

Thus the optimum condition according to Khun-Tucker stipulates that the parcel of land must be allocated to an individual exactly at the level where the gain in marginal profit obtained from additional allocation of land to this individual compensates exactly the opportunity cost of the allocated land. Furthermore, no parcel of land will be allocated to an individual if the desired profit is less than the opportunity course of this land.

The optimisation condition of khun-Tucker therefore gives a complete description of the use or otherwise of children in the cocoa production process.

It should be noted here that the profit resulting from attributing an activity to a child in the cocoa production cycle is the result of three factors, namely: the marginal effect of the plots allocated to a child on his/her productivity, the marginal effect of his/her socio-economic and demographic characteristics on his/her utility and the marginal effect of his/her profit on the global productivity of the work force.

2. Calculation of the probability of utilising children in the labour force

For this study we will distinguish between three categories of minors in the household j. We will consider children working in cocoa plantations, C_j^w, all children living in the household C_j^m and all children for which the head of the household is responsible C_j^c.

The probability that a child i is used in the production processes is a conditional probability $p(i \mid i \in C_j^w)$ which is calculated using the

highest   stated   optimisation   condition   with   a   marginal

probability $p(t_i^* > 0 \mid i \in C_j^w)$. This conditional probability on the use of children in cocoa farming derives from derived from the optimum Khun-Tucker condition should not be seen together with the unconditional probability of using children on plantations.

We have at the level of each household $C_j^w \subseteq C_j^m \subseteq C_j^c$. Resulting in

$C_j^w \cap C_j^m = C_j^w$ and $C_j^m \cap C_j^c = C_j^m$. The unconditional probability that a head of household j uses a child i in his plantations is:

$$p(i_j > C_j^w) = p(C_j^w \cap C_j^m) = p(i_j \in C_j^w \mid i_j \in C_j^m) \cdot p(i_j \in C_j^m)$$
$$= p(i_j \in C_j^w \mid i_j \in C_j^m) \cdot p(i_j \in C_j^m \mid i_j \in C_j^c) \cdot p(i_j \in C_j^c).$$

This equation translates the fact that the probability of using a child in cocoa farming depends on the probability that this child is the responsibility of the head of the household, the probability that the child lives in the producer's household and the optimum Khun-Tucker condition.

3. Measuring the determining factors for using children

In order to identify the factors determining the use of a child labour force by the household, estimated according to the number of children used by the head of household considers $q_{ji} \equiv 1_{\{t_{ji}^* > 0\}} \, avec \; : i = 1,..., \; i_{jc}$ which is the conditional utilisation indicator for children within cocoa farming households.

In other terms, $q_{ji} = 1 \, si \, t_{ji}^* > 0 \, et \, q_{ji} = 0$ in the opposite case. Thus the number of children by household involved in the cocoa production process is

obtained by $r_j = \sum_{i=1}^{i_{jc}} q_{ji}$ which is the sum of the random and independent Bernoulli   ijc   variables   with   mathematical   expectancy:

$$E r_j = \sum_{i=1}^{i_{jc}} E q_{ji} = \sum_{i=1}^{i_{jc}} p(i_j \in C_j^w) = p(i_j \in C_j^w \mid i_j \in C_j^m) \cdot p(i_j \in C_j^m \mid i_j \in C_j^c) \cdot p(i_j > C_j^c).$$

In order to estimate the marginal likelihood of a head of household using children, we estimate the marginal impact of the variation $p(i_j \in C_j^c)$ which is the conditional probability that a child in the charge of the head of household, living with the latter, is involved in cocoa production processes. The marginal effect of this probability can be obtained from the following equation:

$$\frac{\partial E\, r_j}{\partial p(i_j \in C_j^c)} = p(i_j \in C_j^w \mid i_j \in C_j^m) \cdot p(i_j \in C_j^m \mid i_j \in C_j^c)$$

The number of children involved in the household production processes will be estimated using the following function:

$$r_j = E\, r_j + \varepsilon_j = \sum_{i=1}^{i_{jc}} p(i_j \in C_j^w) + \varepsilon_j, \; j = 1,\dots,\; n$$

Assuming that the rj binomial variables follow the law of Poisson parameter μ equal to the mathematical expectancy of r. The probability of using a number k of children in plantations:

$$p(r_j = k) = \frac{\mu^k e^{-\mu}}{k!}$$

We can deduce from this the probability of using at least one child in plantations by:

$$p(r_j > 0) = 1 - p(r_j = 0) = 1 - e^{-\mu} = p(i_j \in C_j^w)$$

This equation shows that all variables that have an impact on the number of children used have equal effect on the probability of this phenomenon. If we are able to estimate the Poisson parameters μ=Er the latter equation will allow us to calculate the probability of using children, as well as the determining factors for such use. The Poisson Ordinary Least Squares method (Poisson OLS) is used to this effect.

Allowing a linear form for the probability of use, the equation to be determined takes the form:

$$p = \alpha + \beta\theta + \varepsilon$$

with α an unknown parameter, β a vector of unknown parameters, θ is the vector of variables and ε the term of error.

The marginal effect of a variable on the probability of use of children is:

$$\frac{\partial p(r_j > 0)}{\partial \theta} = \beta(1 - p)$$

Furthermore, if N denotes the total number of households in the village, the distribution of the N series of measures of rj , j=1,...,N describes perfectly the phenomenon of utilisation of child labour force in the cocoa production system in agricultural exploitation. The scale of the phenomenon by household can be obtained by $\mu_{rj} = \frac{1}{Nj} \sum_{j=1}^{Nj} r_{ji}$ and the scale of the phenomenon in the village is estimated by its variance

$$\sigma_b = \frac{1}{N} \sum_{j=1}^{N} r_j^2 - \frac{1}{N^2} \left(\sum_{j=1}^{N} r_j \right)^2$$

Regression 1: Calculating the probability of children being used

Model Summary				
Model	R	R-two[a]	R-two adjusted	Standard estimation error
1	,978[b]	,957	,949	,15377

a. For regression at source (model without constant), R two measures the proportion of variability in the dependent variable around the source determined by regression. This CANNOT be compared with R two for the models that include a constant.

b.: Predicted values: Total area of household cocoa plantations, amount of assistance received, level of education of head of household, distance of farm from household, percentage of girls, level of satisfaction with living environment, nationality, number of children, perception of the head of the household as to cost of schooling, rate of relation with parents, marital status, distance from cocoa plantations, religion, number of household cocoa plots, average age of cocoa plantations, perception of head of household as to distance of schools, average age of children, age, quality of living environment, sex of head of family

ANOVA[c,d]

Model		Sum of squares	ddl	Average	F	Meaning
1	Regression	52,965	20	2,648	112,001	,000[a]
	Residual	2,364	100	,024		
	Total	55,329[b]	120			

a. Predicted values: Total area of household cocoa plantations, amount of assistance received, level of education of head of household, distance of farm from household, percentage of girls, level of satisfaction with living environment, nationality, number of children, perception of the head of the household as to cost of schooling, rate of relation with parents, marital status, distance from cocoa plantations, religion, number of household cocoa plots, average age of cocoa plantations, perception of head of household as to distance of schools, average age of children, age, quality of living environment, sex of head of family

b. This total of squares is not corrected by the constant since this is worth zero for the regression at source

c. Dependent variable: POISS

d) Linear regression at source

Factors determining the tendency for children to be involved in cocoa farming. [ab]

Model		Non standardised coefficients		
		B	t	Meaning
1	Number of children	,003	,810	,420
	Sex of the head of the family	-,054	-,620	,536
	Level of education of head of household	-,001	-,090	,928
	Marital status	,018	,630	,530
	Nationality	,002	,119	,906
	Religion	-,005	,377	,707
	Amount of assistance received	,037	,456	,649
	Level of satisfaction with living environment	-,014	-,425	,671
	Quality of living environment	-,002	-,401	,689
	Perception of head of household as to distance of schools	-,001	-,072	,943
	Perception of head of household as to cost of schooling	,012	1,129	,261
	Age of the head of household	,001	,655	,514
	Number of cocoa plots in household	,026	1,622	,108
	Average age of cocoa plantations	,001	,458	,648
	Distance from cocoa plantations	-,002	-,429	,669
	Average age of children	,045	11,224	,000
	Rate of cohabitation with parents	,102	4,072	,000
	Percentage of girls	,002	4,026	,000
	Distance of farm from household	-,002	-1,735	,086
	Total area of household cocoa plantations	-,001	-,637	,525

a. Dependent variable: Proportion of children involved in cocoa farming

b. Linear regression at source

Regression 2: Factors determining plantation production

Model recap

Model	R	R-two	R-two adjusted	Standard estimation error
1	,824 [a]	,679	,646	1868,59666

a. Predicted values: (constants). Amount of assistance received, level of education of head of household, total area of household cocoa plantations, sex of the head of family, active children by household, village code, nationality, religion, age, average age of cocoa plantations, marital status

ANOVA[b]

Model		Sum of squares	ddl	Average square	F	Meaning
1	Regression	796380334	11	72398212,1	20,735	,000[a]
	Residual	377098577	108	3491653,494		
	Total	1,173E+09	119			

a. Predicted values: (constants). Amount of assistance received, level of education of head of household, total area of household cocoa plantations, sex of the head of family, active children by household, village code, nationality, religion, age, average age of cocoa plantations, marital status

b. Dependent variable: Cocoa production during the last campaign (kg)

Factors determining production[a]

Model		B	t	Meaning
1	(constant)	-1595	-1,078	,283
	Total area of household cocoa plantations	293,5	13,977	,000
	Village code	,000	2,660	,009
	Age	-8,209	-,612	,542
	Average age of cocoa plantations	19,47	,877	,382
	Number of children working in household	26,47	,218	,828
	Sex of head of household	26,92	,020	,984
	Level of education of head of household	-55,6	-,339	,735
	Marital status	38,04	,111	,912
	Nationality	51,26	,229	,820
	Religion	282,3	1,599	,113
	Amount of assistance received	1088	1,210	,229

a. Dependent variable: Cocoa production during the last campaign (kg)

Regression 3: Factors determining the exposure of children to dangerous work

Model recap

Model	R	R-two	R-two adjusted	Standard estimation error
1	,908[a]	,824	,795	,18644

a. Predicted values: (constants). Percentage of girls, total area of household cocoa plantations, sex of the head of family, distance from cocoa plantations, distance of farm from household, level of education of head of household, religion, village code, age, nationality, average age of cocoa plantations, quality of living environment, rate of relation with parents, number of cocoa plots in household, marital status, average age of children

ANOVA[b]

Model		Sum of squares	ddl	Average	F	Meaning
1	Regression	16,648	17	,979	28,172	,000[a]
	Residual	3,546	102	,035		
	Total	20,193	119			

a. Predicted values: (constants). Percentage of girls, total area of household cocoa plantations, sex of the head of family, distance from cocoa plantations, distance of farm from household, level of education of head of household, religion, village code, age, nationality, average age of cocoa plantations, quality of living environment, rate of relation with parents, number of cocoa plots in household, marital status, average age of children

b. Dependent variable: Exposed to work

Impact of characteristics of head of household on the exposure of children to dangerous work[a]

Model		B	t	Meaning
1	(constant)	,128	,734	,465
	Village code	,000	-,538	,592
	Age	-,002	-1,129	,261
	Sex of head of household	,081	,578	,565
	Level of education of head of household	,011	,637	,526
	Marital status	-,013	-,371	,712
	Nationality	-,033	-1,387	,168
	Religion	-,015	-,812	,419
	Amount of assistance received	,120	1,233	,220
	Quality of living environment	-,004	-,658	,512
	Total area of household cocoa plantations	,003	1,244	,216
	Distance of farm from household	,000	-,182	,856
	Number of cocoa plots in household	,010	,478	,634
	Average age of cocoa plantations	-,001	-,311	,756
	Distance from cocoa plantations	,002	,407	,685
	Average age of children	,045	9,201	,000
	Rate of relation with parents	,159	5,260	,000
	Percentage of girls	,000	-,732	,466

a.

Regression 4: Factors determining the practice of dangerous work by children

Model recap

Model	R	R-two	R-two adjusted	Standard estimation error
1	,813[a]	,661	,604	,22684

a. Predicted values: (constants). Percentage of girls, total area of household cocoa plantations, sex of the head of family, distance from cocoa plantations, distance of farm from household, level of education of head of household, religion, village code, age, nationality, average age of cocoa plantations, quality of living environment, rate of relation with parents, number of cocoa plots in household, marital status, average age of children

ANOVA[b]

Model		Sum of squares	ddl	Average	F	Meaning
1	Regression	10,222	17	,601	11,686	,000[a]
	Residual	5,248	102	,051		
	Total	15,471	119			

a. Predicted values: (constants). Percentage of girls, total area of household cocoa plantations, sex of the head of family, distance from cocoa plantations, distance of farm from household, level of education of head of household, religion, village code, age, nationality, average age of cocoa plantations, quality of living environment, rate of relation with parents, number of cocoa plots in household, marital status, average age of childrenb.   Dependent variable: Participates directly in work

Impact of characteristics of head of household on the involvement of children in work[a]

Model		B	t	Meaning
1	(constant)	-,179	-,844	,401
	Village code	,000	,064	,949
	Age	,000	,248	,804
	Sex of head of household	,012	,071	,944
	Level of education of head of household	-,003	-,150	,881
	Marital status	,024	,569	,571
	Nationality	-,025	-,868	,388
	Religion	,038	1,734	,086
	Amount of assistance received	,070	,588	,558
	Quality of living environment	,000	,047	,963
	Total area of household cocoa plantations	,001	,351	,726
	Distance of farm from household	,001	,695	,488
	Number of cocoa plots in household	,023	,893	,374
	Average age of cocoa plantations	,003	1,031	,305
	Distance from cocoa plantations	-,003	-,472	,638
	Average age of children	,040	6,748	,000
	Rate of relation with parents	,068	1,849	,067
	Percentage of girls	,000	,380	,705

a. Dependent variable: Directly involved in work

Regression 5: Impact of working conditions on the health of children

Model recap

Model	R	R-two adjusted	R-two	Standard estimation error
1	,879[a]	,773	,730	,23132

a. Predicted values: (constants). Direct involvement in work, sex of the head of family, total area of household cocoa plantations, religion, distance from cocoa plantations, amount of assistance received, distance of farm from household, level of education of head of household, village code, age, nationality, percentage of girls, average age of cocoa plantations, quality of living environment, number of cocoa plots in household, rate of relation with parents, marital status, average age of children, exposed to work

ANOVA[b]

Model		Sum of squares	ddl	Average	F	Meaning
1	Regression	18,202	19	,958	17,904	,000[a]
	Residual	5,351	100	,054		
	Total	23,553	119			

a. Predicted values: (constants). Direct involvement in work, sex of the head of family, total area of household cocoa plantations, religion, distance from cocoa plantations, amount of assistance received, distance of farm from household, level of education of head of household, village code, age, nationality, percentage of girls, average age of cocoa plantations, quality of living environment, number of cocoa plots in household, rate of relation with parents, marital status, average age of children, exposed to work

b. Dependent variable: Number of illnesses experienced

Impact of the household characteristics on the health of children[a]

Model		B	t	Meaning
1	(constant)	,065	,296	,768
	Village code	,000	-2,664	,009
	Age	,001	,598	,551
	Sex of head of household	,014	,080	,936
	Level of education of head of household	,003	,151	,880
	Marital status	-,010	-,222	,825
	Nationality	-,007	-,220	,826
	Religion	-,016	-,696	,488
	Amount of assistance received	,111	,915	,363
	Quality of living environment	-,002	-,289	,773
	Total area of household cocoa plantations	-,001	-,313	,755
	Distance of farm from household	,000	,267	,790
	Number of cocoa plots in household	,000	,014	,989
	Average age of cocoa plantations	,005	1,699	,092
	Distance from cocoa plantations	-,006	-,846	,399
	Average age of children	-,001	-,112	,911
	Rate of relation with parents	-,103	-2,437	,017
	Percentage of girls	,001	1,579	,118
	Exposed to work	,643	4,564	,000
	Directly involved in work	,533	4,609	,000

a. Dependent variable: number of illnesses experienced