WINROCK INTERNATIONAL

FINAL REPORT
FEBRUARY 2015

Winrock International | Improving Lives and Livelihoods Worldwide

Occupational Safety and Health Research for the Rwanda Education Alternatives for Children in Tea-Growing Areas (REACH-T)

Author: Dr Juvenal HATEGEKIMANA MD, Msc-OSH | **Submitted by:** Winrock International

Funding provided by the United States Department of Labor under Cooperative Agreement number IL-24920-13-75-K

WINROCK INTERNATIONAL

Principal Offices

2101 Riverfront Drive | Little Rock, AR 72202-1748 | **T** 501.280.3000 **F** 501.280.3090
2121 Crystal Drive, Suite 500 | Arlington, VA 22202-3706 | **T** 703.302.6500 **F** 703.302.6512

www.winrock.org | information@winrock.org

Title of the report	OCCUPATIONAL SAFETY AND HEALTH RESEARCH FOR THE RWANDA EDUCATION ALTERNATIVES FOR CHILDREN IN TEA-GROWING AREAS (REACH-T)
Contract Number	IL-24920-13-75-K/6580
Project Title	REACH-T
Presented to	Winrock International
Date of Report	22/09/ 2014
Report Number	REACH-T- Report 2
Starting date	15/09/2014
End date	28/11/2014
Contract period	62 days
Name of the client	Winrock International REACH-T project
Address	KG 599 ST - House 42- GASABO- Kigali
Contact person	Mr. Lamech NAMBAJIMANA
Contact details	Telephone: +250 788304167 Email: lnambajimana@winrock.org
Consultant team leader	Dr. Juvenal Hategekimana
Contact details	Telephone: +250 788539678 Email: hajuve@gmail.com
Date of Report	22/09/2014
Author of Report	Dr. Juvenal Hategekimana
Approved by	Winrock Technical team

LIMITATIONS/DISCLAIMER

The source of the primary data in this progress report comes from young workers of different levels of education and cultural background. While every care has been taken in the preparation of the information contained in this report, the author is not able to guarantee complete accuracy of data on young workers aged above 17 years old because of their tendency to exaggerate their age. Identity cards were not available in most of these cases.

ACKNOWLEDGEMENTS

The author of this report appreciates the assistance of the FERWACOTHE management throughout the survey, the assistance of Laurent NDAYAMBAJE to link the enumerators with tea cooperatives, Clement HARUSHYUBUZIMA, Justin MFIZI and NGILIMANA J.B. de la Salle for their support in data collection and data entry, and the managers of SHAGASHA, SORWATHE and RUTSIRO tea factories included in the sample for their collaboration during the onsite OSH inspection within factory premises. This research was supported by Winrock International with funding provided by the United States Department of Labor under Cooperative Agreement number IL-24920-13-75-K.

EXECUTIVE SUMMARY

INTRODUCTION

Research evidence has shown that the tea plantation industry is one of industry areas in which workers are exposed to several occupational health hazards such as exposure to chemical products, climate change, vagaries of terrain and others. On the other hand, Occupational Health and Safety (OSH) in the tea industry is one of the cornerstones for improving working conditions in tea plantations.

In Rwanda, where the tea industry is still growing, OSH-related regulations are yet to be fully employed. Notably, a number of reports show that children are still employed in tea plantations that lack strict implementation of international guidelines and regulations on child labor.

This research therefore seeks to develop and design OSH guidelines and to propose recommendations on how such guidelines would be applied to monitor tea cooperatives and companies, with a particular interest on OSH for children of legal working age (16-17 years).

OBJECTIVES

The overall objective of this research is to assess the compliance of tea factories and tea cooperatives with the national and international OSH standards focusing on particularities of young workers. The research findings will inform national OSH guidelines in the tea sector in Rwanda.

Specific objectives

To examine the overall situation of occupational health and safety (OSH) issues in tea factories, COOPTHE and Thé Villageois cooperatives or individuals.

To examine the production and working environment indicators other than those covered in OSH survey.

To identify case studies including those on legally working youth as examples of good and bad practices of occupational safety and health in the tea industry in Rwanda.

MATERIAL AND METHODS

Using the sampling methodology described in this report, data were collected from three tea factories and 11 tea cooperatives operating within 12 districts of Rwanda. The study consisted of performing a desk review on available information regarding child labor in the tea industry at international and local levels, developing survey/monitoring tools and instruments as well as conducting interviews with key informants. The 312 selected employees from three Rwandan tea factories and 11 tea cooperatives, each from one of the 12 districts involved in the tea value chain in Rwanda. As data collection tools, we used the general audit OSH check list (Annex A.1) for the assessment of OSH conditions

within tea factories and tea plantations. A risk assessment tool (Annex A.2) was used for rating all hazards identified during the general OSH audit. A pretested OSH questionnaire (Annex A.3) was used for individual interviews of all young workers aged 13 to 24 years. Finally, we used the ILO safe work for young workers tool (Annex A.4) particularly for young workers aged 16-17 years to allow comparison with those of 13-15 years and those aged above 18 years.

RESULTS

When assessing the compliance of surveyed tea factories and cooperatives to OSH standards using the Safe Work for Youth questionnaire (see Annex A4), it was observed that many of them do not comply with the OSH standards in many aspects

Of the 312 workers surveyed in tea plantations in Rwanda, females represented the majority of the workers (65%) while males represented around 35%. Fifteen per cent (15%) of the total surveyed population were young workers of between 13-15 years of age, of whom the great majority (85%) were females.

- Out of 312 respondents, 236 (162 females and 74 males) representing 75.6% reported an occurrence of having suffered from any type of injury within the year that preceded the date of interview.

Out of the 236 respondents who reported having suffered from an injury in the year preceding the study, nine people reported occurrence of injury more than 10 times, which indicates that each of them might have suffered an injury almost every month. As well, 75 respondents aged 16-17 years of age reported an injury within the previous year, and 38 respondents aged 13-15 years of age reported the same.

- The most frequent injury reported were minor injuries (88%) while major injuries accounted for about 12% of the total injuries. Minor injuries included those that were managed with first aid on the spot or required minor surgery/procedure at the dispensary or hospital (1 and 2 in the risk rating). Major injuries included those that required major surgery/procedure or referral from the plantation hospital to a larger centre (3 in the risk rating). For those workers who suffered multiple injuries, the response was based on the most severe injury.
- Lower limbs were reported by most respondents as the site of most frequent injury (55%), followed by upper limbs (25%) and both upper and lower limbs (6%). Of note, most of those who reported major injuries had injuries to upper and/or lower limbs (P Value <0.001). Most young workers reported their injury within six hours after the incident and received first aid from their workplace after sustaining an injury using traditional herbs.

Of the respondents who sustained an injury, the mean days of absenteeism was 26.02 days. As shown in the table, most of the respondents had an absenteeism of between 1 to 10 days**.** Out of 312 interviewed people, at least 84 reported having had to change their workplaces due to either work related illness (41), disability (18) or allergy (25). Of them, 56 were females.

Among the respondents, only 24 (representing 0.7%) reported that a first aid kit was available in their place of work. Moreover, of these 24, only 10 reported that the first aid kits were regularly checked and updated. More surprisingly, a total of 29 people admitted to have received first aid training, which probably meant that four people reported having received training on first aid when there were no kits available in their workplaces.

- About 92% (287 out of 312) reported not being exposed to machinery-related hazards on a regular basis. Of the 25 (8%) respondents remaining, only two reported that there are protective measures for machinery at their workplace.
- Out of the total number of respondents, 151 people reported having been exposed to chemicals, especially fertilizers often used in tea plantations. Despite this, only one person reported having been informed about the risks associated with exposure to chemicals. More importantly, more than half of the total study population reported being unaware of those risks.
- Most workers (171) who handled chemicals said that Material Safety Data Sheets (MSDS) were not available at the point of distribution in a language they could follow (Kinyarwanda). A few workers who could not read never received education on safe handling of chemicals by the supervisors.

Only 10% of the workers who handled chemicals said that they practiced handwashing after handling chemicals while almost 67% washed their hands before eating. However, about 9% of these workers said that soap was not available at their place of work.

- Sprains/dislocations, cuts/bruises, eye injury, solar radiation, fire/burns and chemical injuries were assigned an overall perceived risk rating of very low. Other injuries such as exposure to heat, noise, amputations, fractures, dermatitis, vehicular accidents, electrical injuries, and lightning were also categorized as having a very low risk.

- A slightly higher risk rating score was assigned to backache, insect bites and animal attacks which were perceived to have a low risk.

General Conclusion

There is no significant difference in the frequency of injury to young workers aged 16-17 years old compared to other two groups (13-15 years and 18-24 years). However, there is a remarkable difference in the severity of those injuries to young workers aged 16- 17 years because the number of young workers with days of absence between 31 and 40 days is higher 36% (27/75) compared to those above 18 years which is 19% (24/123).

One of the reasons for the severity of the injuries for those aged 16- 17 years is that they work in the same conditions as adults because of distortion of their age. Consequently, they work more hours, sometimes in the dark without proper protection and in most cases without guarantee of their rights.

During individual interviews, some young workers admitted to misrepresenting their age in order to get the job because tea cooperatives will not employ youth under 18 years old. Many tea cooperatives and tea factories managers admitted that their policy is to deny employment to young workers under 18 years of age because businesswise they consider employing them as a loss. Some reasons given were the many legal issues around their employment, and they also consider this age group as less productive because they cannot work night shifts and during overtime whenever necessary. As well, most managers are reluctant to invest in more personal protective equipment suitable to young workers and prefer to buy those for adults instead.

While conducting this research we did not identify any good practices for young workers aged 16 and 17 years because as mentioned above all factories don't employ them completely while at cooperative level they cheat their age to get employed. At the Thé Villageois level, most of parents feel it is their right and responsibility to work with their children in family farms like it is done in many other child chores.

Recommendations

- There is an urgent need to design practical OSH tools that will help to improve OSH conditions in tea plantations and tea factories. These tools should be similar to the **"Safe work for young workers in tea plantations"** translated in Kinyarwanda for those able to read or **"Work Improvement in Neighborhood Development (WIND) manual"** designed with pictures of illustrations for tea sector in Rwanda for illiterate young workers.

- There is also an urgent need to provide first aid kits at tea plantations. This will not only reduce the severity of injuries for young workers but it will also improve the injury recordkeeping process and awareness-raising among managers and policy makers in the tea sector.

- There is an urgent need to have a tripartite forum (all people involved in the tea value chain, workers unions and policy makers) at a high level to discuss the legal working age at the Thé Villageois level. Without this, it will take longer than expected to withdraw Rwandan tea from the ILAB list of products because there

is reason to believe it is made with child labor due to various sources of allegations of child labor. There is some flexibility to adapt the law within international standards like ILO convention 138 and continue maintaining young workers rights.

Other general recommendations are the following:

1. Sustained efforts for the prevention of occupational injuries in the districts surveyed

These efforts need to be sustained and inputs from the working staff need to be considered while making future plans for further improvement of safety conditions, keeping in view the high incidence of injuries reported from these estates.

2. Education and training regarding safe work procedures and preventions of accidents

Special emphasis needs to be given to safety training of female workers, training in first aid, involving more women in first aid training and encouraging the use of protective equipment.

3. Maintenance of records keeping of workplace injuries

Every injury that is brought to the notice of health care providers should be recorded, whether compensable or not. This would also enable future research on the trends of occupational injuries occurring in these estates.

Limitations

The list of hazards for which the perceived risks of the workers were assessed is not an entirely comprehensive one, and some hazards may have been excluded as it primarily reflects the risk perception of the employees interviewed at the outset of the study.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

CESTRAR	Centrale des Syndicats des Travailleurs du Rwanda
COSYLI	Conseil des Syndicats Libres au Rwanda
COTRAF	Congrès du Travail et de la Fraternité
EDPRS	Economic Development and Poverty Reduction Strategy
ILO	International Labor Organization
MIFOTRA	Ministry of Public Service and Labor
MINICOM	Ministry of Trade and Industry
MINIRENA	Ministry of Natural Resources
MINISANTE	Ministry of Health
NAGCAT	The North American Guidelines for Children's Agricultural Tasks
NEBOSH	National Examination Board in Occupational Safety and Health
NGO	Non-Governmental Organization
NISR	National Institute of Statistics of Rwanda
OGMR	National Geology and Mines Authority
OSH	Occupational Safety and Health
PAOT	Participatory Action Oriented Training
PSCBS	Public Sector Capacity Building Secretariat
PPE	Personal Protective Equipment
PRM	Professional Resource Manual
PSF	Private Sector Federation
REACH-T	Rwanda Education Alternatives for Children in Tea-Growing areas
REMA	Rwanda Environmental Management Authority
RHA	Rwanda Housing Authority
RRA	Rwanda Revenue Authority
RSSB	Rwanda Social Security Board
SSFR	Social Security Fund of Rwanda
TOR	Terms of Reference
USDOL	United States Department of Labor
WIND	Work Improvement in Neighborhood Development
WISE	Work Improvement for Small Enterprise

INTRODUCTION

The Rwanda law N° 13/2009 of 27/05/2009 regulating labor strictly prohibits children working below the age of 15, and for youth aged 16 to 17 years, it is strictly regulated, stipulating that the work should be within their capacity and that there should be a rest of at least twelve hours between two working periods.

A survey published in 2010 in Rwanda by the Ministry of Labor and Public Services (MIFOTRA) indicated that 79.3% of children involved in child labor are in agriculture while 12.6% of them are in other activities which include domestic service. In 2012, the child labor indicators published by the National Institute of Statistics of Rwanda (NISR) showed that 41% of child labor is in agriculture followed by domestic service (31%), trade and hotels and transport and other services 14%, and construction 8%.

The research done in the tea industry in Rwanda and some neighboring countries like Tanzania showed that a significant number of children are still involved in tea plantations but due to compliance with the law and awareness raising from key stakeholders in the fight against child labor at national level, there is significant decrease of children below 16 years in large and small holder tea plantations, and factories.

The United States Department of Labor (USDOL) through the Bureau of International Labor Affairs (ILAB) maintains a list of goods and their source countries. For years 2010 and 2011, ILAB put Rwanda tea on the list of products with reason to believe it is made with child labor due to various sources of allegations of child labor[1]. It is from this background that the US Department of Labor (USDOL) decided to fund through Winrock International, the Rwanda Education Alternatives for Children in Tea-growing Areas (REACH-T) project with the main mission to address child labor in the tea industry.

Occupational Safety and Health (OSH) in the tea industry is one of the major components to address and improve working conditions in tea plantations. This OSH research focuses on developing, designing, and carrying out a research project resulting in a paper on occupational safety and health (OSH) guidelines and working conditions and how these are monitored in Rwanda's tea cooperatives and companies, including research on OSH for children of legal working age (16-17).

[1]The list of goods produced by child labor and forced labor and their source countries is found aton thise link: http://www.dol.gov/ilab/reports/child-labor/list-of-goods/

The methodology included desk review, creating survey tools and instruments, carrying out interviews and gathering data, and writing the paper, with input from project staff and Winrock home office staff.

BACKGROUND

Studies by the International Labor Organization (ILO) have documented how OSH is a serious public health problem in the tea industry. Also, the following have been documented as hazards in the tea industry: sprains/fractures and dislocations, bruises and cuts, poisoning due to snake bites, occupational dermatitis, amputations, burns, chemical hazards/exposures, internal injuries, respiratory injuries, injuries to the nervous system and noise related injuries[2].
Looking at the incidence of work related injuries and OSH hazards, a study done in Uganda demonstrated that almost two thirds of employees had suffered from work-related illnesses or injuries during the study period, while almost 30.3% reported facing occupational safety hazards at least every month[3].

In India, reports from the Center for Education and Communication states that occupational accidents are responsible for more than 1,000,000 deaths in India while about 2 million new cases are added every year. Those reports also claim that the lack of a unified legislation leads to violation of the very basic responsibilities of OSH in the tea plantations.
Given the paucity of data, it is hoped that this study will provide answers to OSH issues in the tea estates and provide guidance on measures to reduce their incidence.

In Rwanda, like in most other parts of the world, workers in the tea plantation industry are still exposed to various occupational health hazards. Worldwide, data pertaining to OSH in the tea planting industry is scarce in the medical/health related research when compared to other subjects pertaining with health research[4]. This indicates therefore, that in most settings, such hazards have not yet been adequately studied or documented.

Moreover, particularly in Rwanda as well as in other regional countries, legislation to take

---

[2] Asian-Pacific regional network on occupational safety and health information. ILO-EFC Plantation Safety and Health Monitoring Project, 2007.

[3] Tayo Fashoyin, Ann Hebert, Paola Pinoargote: Multinational Enterprises in plantations sector: Labor relations, employment, working conditions and welfare facilities (ILO Geneva Working Paper No. 91)

[4] Idem as 2

care and abide by the OSH guidelines in tea plantations remains a subject for improvement.

Of note, lack of proper application of OSH guidelines may lead to various risks as well as safety and health hazards to human beings, particularly those working in the tea industry[5]. The tea planting industry in Rwanda accounts for about 42,261 growers grouped into 14 cooperatives.

The results of the present research will provide more guidance on the application of OSH guidelines in order to provide protection of such a large number of workers/growers. Of particular importance, the study will help to document on the education alternatives of children working in the tea growing areas with particular focus on legally working children.

KEY DEFINITIONS

Under this survey, the following terms have the meanings defined below:

a) **"Occupational Safety and Health"** is an area concerned with protecting the safety, health, and welfare of people engaged in work or employment.

b) **"Occupational Accident"** refers to work or any other related accident that occurs at the work place which may cause injury.

c) **"Occupational injury"** means any personal injury, disease or death resulting from an occupational accident.

d) **"Occupational disease"** means any disease contracted as a result of an exposure to risk factors arising from work activity;

e) **"Occupational fatality"** means a death that occurs while a person is at work or performing work related tasks.

f) **"Hazard"** means any source of/ or exposure to danger.

g) **"Risk"** means the probability that injury or damage will occur in relation to work and workplaces.

[5] idem as 3

h) **"Occupational Health and Safety Committee"** means a joint working team whose primary objective is to improve health and safety, as well as prevent occupational diseases and accidents.

i) **Who is "a child"?** Article2 of the ILO Worst Forms of Child Labor Convention, 1999 (N°.182) states that "the term child shall apply to all persons under the age of 18." This is the definition that is followed in this guidance on policy and practice.

j) **What is "child labor"?** Child labor refers to any type of work that is mentally, physically, spiritually, socially and/or morally harmful to children, and interferes with children's education by denying them an opportunity to attend school, forcing them to leave school prematurely, or limiting their capacity to benefit from instruction.[6]
It is prohibited to employ a child in any company, even as an apprentice, before the age of sixteen (16).[7]
A child between the age of sixteen (16) and eighteen (18), may be employed under the provision of articles 5, 6 and 7 of the Labor Law.

Paid employment is only accepted for 16 years and above. **The minimum age** for admission to employment is in Rwanda 16 years, but only for work which is proportionate to the child's capacity and which does not include nocturnal, laborious, unsanitary[8] or dangerous services for child's health education and morality.[9] In fact, according to ILO Convention 138, the minimum age for work should not be below the age for finishing compulsory schooling, which in Rwanda is generally 15.[10]

1. A child of any age (17 and below) who is economically active for at least 43 hours per week or meets the criteria for HCL or WFCL is considered to be engaged in child labor.[11]

6 Intake form has a part that allows to categorize beneficiaries into CL, CAHR, HCL or WFCL. Community volunteers will be trained to recognize criteria that put a child in CL, CAHR, HCL or WFCL .

7 Law regulating Labor in Rwanda No 13/2009 of 27/05/2009 (art4)

8 The same article 6 is translated into French version as insalubrious. The proxy meaning would be unhygienic, unclean, disease ridden, unsafe. The Ministerial order N°6 of 13/07/2010 provides details on the types and conditions of work a child of 16-17 years is not allowed to perform.

9 Idem

10 According to the MINEDUC policy, 9 years basic education are compulsory and free education, while 12 years are compulsory (but not free).

11 ILO/ Statistical Information and Monitoring Programme on Child Labor (SIMPOC), which is the statistical arm of IPEC. SIMPOC assists countries in the collection, documentation, processing and analysis of child labour relevant data

2. A child aged 15 years or younger who is economically active (in paid work) for 1 or more hours per week is considered to be in child labor.
Exceptions for unpaid light work for children aged 15 years and under is only accepted for work in a family enterprise or household chores, within some specific conditions.
Family labor is understood here as all work carried out within the household by the husband or wife, ascendants, descendants and wards engaged in agricultural, breeding, commercial and industrial activities for the benefit of the family[12]

3. A child aged 13-15 is considered to be in **child labor** if they work in unpaid light work in family enterprise that does not threaten their health and safety, or hinder their education or vocational orientation and training[13]for **more than 18 hours per week.**
Unpaid light work must take place on the family farm and meet the following conditions:

- Child chores within their families and with adult supervision.
- Work that does not place a child's health, safety or morals at risk. Some work may be morally harmful, without being physically or socially qualified as such, neither disturbing a child's schooling.
  - For instance, serving alcohol in a bar outside school hours, while physically easy, would harm a child's morals and hence be qualified as child labor.
- Activities that are not prohibited by law for underage children.
  - Fetching firewood or water is a normal child chore but can be qualified as child labor if it is a heavy load and/or long distance, or causes the child to be late for school.[14]
- Work that is appropriate for their age and maturity and, by doing so, they learn responsibility, gain skills, and add to their family's income and well-being.
- Work that does not affect children's quality learning, including school or vocational training attendance (education).
- Work that does not exceed 4 hours per day on school days or 6 hours per day on non-school days (holidays and weekends).

4. A child below 13 years old is considered to be in child labor if they work in unpaid light work in a family enterprise that does not threaten their health and safety, or hinder their education or vocational orientation and training[15] for **more than 14 hours**

12 Idem

13 ILO convention No. 138 on the minimum age for admission to employment and work .

14 Idem

15 ILO convention No. 138 on the minimum age for admission to employment and work .

per week. Unpaid light work must take place on the family farm and meet the following conditions[16]:

- Children must be engaged in activities according to the conditions in #3 above.
- Children under 13 years old are allowed to perform only child chores within their families and with adult supervision.
- Work does not exceed 4 hours per day on school days or 6 hours per day on non-school days (holidays and weekends).

k) **What are "the worst forms of child labor"?** While child labor for both boys and girls takes many different forms, the elimination of the worst forms of child labor as defined by article 3 of ILO Convention N°.182 is a priority.

These are:

(i) All forms of slavery or practice similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict;

(ii) The use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances;

(iii) The use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties;

(iv) Work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.

l) **What is "hazardous child labor"?** Subparagraph (d) of article 3 cited above describes what is referred to as "hazardous child labor (HCL)". HCL is work in dangerous or unhealthy conditions that could result in a child being killed, or injured (often permanently) and/or made ill (often permanently) as a consequence of poor safety and health standards and working arrangements. Note that "hazard" and "risk" are two terms that are used frequently in these guidebooks. A "hazard" is anything

16 ILO convention No. 138 on the minimum age for admission to employment and work adapted by REACH child labor definition

with the potential to do harm. A "risk" is the likelihood of potential harm from that hazard being realized. For example, the hazard associated with power-driven tools.

m) **Young workers** are female and male adolescents below the age of 18 who have attained the minimum legal age for admission to employment and are therefore legally authorized to work under certain conditions. The ILO Minimum age Convention,1973 (N°.138) stipulates that ratifying States fix the minimum age for admission to employment or work to not be less than 15 years, but developing countries may fix it at 14. A number of countries have fixed it at 16 including Rwanda.

This does not mean that young workers should be engaged in hazardous work. Efforts must be made to ensure that young workers are not engaged in hazardous work and that working conditions remove the hazards to enable this age group to work. .The safety and health in Agriculture Convention, 2001 (N°.184) makes specific reference to young workers and hazardous work which is consistent with the two child labor Conventions N°.138 and N°.182. Article 16 of Convention N°.184 states:

The minimum age for assignment to work in agriculture which by its nature or the circumstances in which it is carried out is likely to harm the safety and health of young person shall not be less than 18 years.

But in article 16 (3):

National laws or regulations or the competent authority may, after consultation with the representative organizations of employers and workers concerned, authorize the performance of hazardous work as from 16 years of age on the condition that appropriate prior training is given and the safety and health of the young workers are fully protected.

In general, girls and boys aged 13-15 are permitted to carry out "light work" under the ILO Minimum age convention N°.138. Article 7 states that:

National laws or regulations may permit the employment or work of persons 13 to 15 years of age on light work which is:

a) Not likely to be harmful to their health or development; and
b) Not such as to prejudice their attendance at school, their participation in vocational orientation or training programs approved by the competent authority or their capacity to benefit from the instruction received.

Article 7, Paragraph 4 of the same Convention allows developing countries to substitute the ages of 12 and 14 for 13 and 15 in Paragraph 1 above.

Clearly, the term "child labor" does not encompass all work performed by girls and boys under the age of 18. Child labor is not children doing small tasks around the house, nor is it children participating in work appropriate to their level of development and which allows them to acquire practical skills. Millions of young people legitimately undertake work, paid or unpaid, that is appropriate for their age and consistent with the level of advice from the government on hazardous child labor activities which should be prohibited stated in the ILO Worst Forms of Child Labor Recommendation, 1999(N°.190), which accompanies Convention N°.182:

Paragraph 3. In determining the types of work referred to under Article 3 (d) of the convention, and in identifying where they exist, consideration should be given, inter alia, to:

a) Work which exposes children to physical, psychological or sexual abuse;
b) Work underground, under water, at dangerous heights or in confined spaces;
c) Work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads;
d) Work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health;
e) Work under particularly difficult conditions such as work for long hours or during the night or work where the child is unreasonably confined to the premises of employer.

Based on the above mentioned article 16, though our sample focused on young workers within legal working age years as per Rwandan law, the interviews revealed that there are still children below 16 years working in the tea sector, which persuaded us to include them in our sample because they are the most exposed to occupational hazards at the work place in tea sector.

TEA SECTOR OVERVIEW IN RWANDA

The tea sector in Rwanda consists of two main growers: the industrial block tea which is grown by tea companies also owning tea factories and the tea grown by growers working under FERWACOTHE[17] (The Federation for Rwandan Tea Growers Cooperatives) which

[17]French acronym for Federation Rwandaise des Cooperatives des theiculteurs

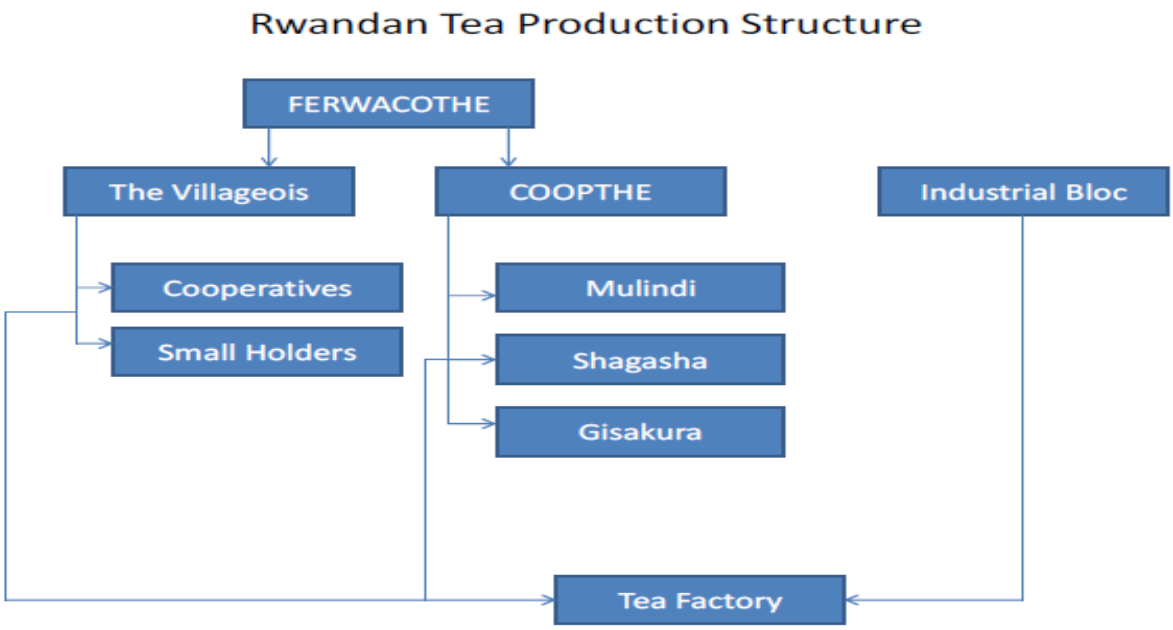
consists of unions of tea growers. These are composed of cooperatives of tea growers that include Coopthés[18] and Thé Villageois[19] growers.

Formed in the early 1960s when tea growing in Rwanda began, Coopthés are officially registered as per cooperative law in Rwanda and are the primary cooperatives of tea growers which came together for collective bargaining purposes. They came emerged as a supplement to industrial block tea to encourage Rwandan farmers to engage in tea growing.

All other tea grown in Rwanda, not under Coopthés or industrial blocks are under the Thé Villageois category. Thé Villageois grow tea as cooperatives, parallel to the Coopthés or individuals.

This study will analyze OSH conditions at each level of tea sector in Rwanda. The organization of tea sector in Rwanda is summarized in the organizational chart as per below figure.

Figure 1. Organization of the tea sector in Rwanda



Source: REACH-Tea Study, 2012

[18] French acronym for Cooperative des Theiculteurs

[19] Individual small scale tea growers not belonging to cooperative

OSH PARTICULARITIES FOR YOUNG WORKERS

Young workers warrant special consideration to foster a safe and healthful entrance to the world of work. While there is consistent evidence that young workers are at increased risk for injury in the workplace, largely due to inexperience, the solutions and path forward are not straight-forward. Efforts to facilitate opportunities for youth to gain meaningful job experiences that foster development of marketable job skills for their future need to be balanced with efforts to protect them from work related injury and illness.

Additionally, work is just one component of youths' lives and their transitions into adulthood. Family and social relationships and education are other important components of young workers' lives that have complex relationships with work that need to be considered. According to a thorough literature review by Salminen[20] , young workers have a higher occupational accident rate than older workers, but these accidents are less likely to be fatal. Young men in particular appear to be a group at risk for safety at work.

The results of this review are shown in Table 1 below, and can be considered fairly universal: they cover a time period of 62 years, 18 countries, and five languages. Most of the studies were peer-reviewed and published in well-respected journals. The majority (56 %) of 63 studies on non-fatal accidents reported that young workers had a higher accident rate than older workers.

Twenty-nine out of 45 studies (64%) on fatal occupational accidents indicated that young workers had a lower fatality rate than older workers. Young men seemed to have a higher accident rate than older men, as compared to young women versus older women. Hence, this

---

[20]Salminen, S., 'Have young workers more injuries than older ones? An international literature review'. Journal for Safety Research 2004, 35, pp. 513–521.For this literature review, Salminen collected studies of fatal and non-fatal injuries based on the following criteria:

- the studies were published, most of them in peer-reviewed journals;
- workers under 25 years of age were classified as young workers;
- there was information about the injury rate or fatality rate of young workers and older workers, or the overall injury rate regardless of age
- there was enough information on the population and the number of injuries on which the calculations of injury rate were based

review confirms that young men are a risk group for occupational safety. The accidents of young workers however, are less often fatal than those of older workers.

Table 1. Literature review on occupational accidents involving young workers (adapted from Salminen 2004)

Type of injury	Result – Percentage of studies confirming			N
	Young workers had a higher rate (%)	No difference (%)	Young workers had a lower rate (%)	
Non-fatal	56	27	17	63
Fatalities	16	20	64	45
Non-fatal				
Men	70	15	15	26
Women	44	26	30	23
Fatalities				
Men	44	12	44	9
Women	17	50	33	6

Salminen provides three explanations for the higher accident rates among young workers:

- accident and fatality rates in most studies is based on the number of workers in full-time work. However, many young people work in part-time jobs;
- young workers are less experienced than older workers;
- young workers sometimes work on more dangerous jobs, even if these are prohibited by law[21]

The fact that young workers seem to have a lower fatality rate is explained by the fact that young workers may have a better resistance to impact than older workers, so that the same impact that could kill an old worker would only injure a young worker. Young workers would also recover better from trauma than older workers.

[21]For example, Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work, Article 7

This OSH study will serve as a foundation for fostering interdisciplinary attention to the complex issues surrounding young workers' safety and health in the tea sector of Rwanda, and serve to inform the many stakeholders involved in tea sector in Rwanda such as safety professionals, unions, business leaders , educators, and policy makers interested in expanding their knowledge about young worker safety and health.

In order to cover young workers of 16 and 17 years, all individual questionnaires (Annex A.3 and A.4) focused on young workers involved in tea plantation as per Salminen's criteria (young workers between 16 and 24 years) but while doing data collection we included also young workers aged between 13 and 15 as per ILO convention 138. This gives an overall overview of all the OSH particular aspect concerning young workers of 16 and 17 years.

MATERIALS AND METHODS

This study consisted in carrying out an independent OSH audit to identify the state of the working conditions of young workers in tea sector in Rwanda. Results from the present study also guided the design of OSH guidelines in tea sector in Rwanda. The OSH guidelines will address all occupational risks found during the research in line with international and national regulations.

STUDY DESIGN

A descriptive study was performed between September 23rd, 2014 and October 23rd, 2014 in three selected tea factories and 12 selected tea growers' cooperatives in Rwanda.

The study covered all 12 administrative districts involved in tea plantations countrywide. Since the study covered all the districts involved in tea plantation in Rwanda and included all categories of the tea industry stakeholders, it firmly reflects reality of OSH in the tea industry in Rwanda.

Although the main focus of the present study was young workers, the obtained results also reflect the OSH conditions of adult people involved in tea sector in Rwanda.

The following figure shows the map of Rwanda showing the administrative districts involved fin tea plantations.

Figure 2. A map of Rwanda showing location of the districts involved in tea plantations

Source: REACH-T 2014

Annex 1 provides current detailed information on the tea sector in Rwanda, including the provinces, districts, number of cells and villages involved in tea plantations as well as the estimated number of the general population per tea growing cooperative. It also highlights the number of people involved in tea growing activities as well as the annual production of each factory.

Of note, among the 12 visited districts, one, Burera district, did not have any single tea growing cooperative. Only one cell from Burera district with tea plantations supplies their production to a cooperative located in a neighboring district.

The table in Annex B shows all selected tea factories and tea cooperatives within the 12 administrative districts. The following table shows the visited cooperatives as well as the age distribution per cooperative.

Table 1. Age distribution per cooperative

COOPERATIVE	13-15 YEARS	16-17 YEARS	18-24 YEARS	TOTAL

ASOPTHE	0	7	26	33
COBACYAMU	6	10	5	21
COOPTHEGA	0	7	11	18
COOTENYA	1	6	6	13
COOTPHUNDA	0	1	9	10
COTHEGIM	2	11	2	15
COTRAGAGI	5	12	9	26
GISAKURA	4	9	41	54
KARONGI	4	4	3	11
KATHECOGRO	10	14	7	31
MULINDI	12	11	11	34
RUTHEGROC	2	2	6	10
SHAGASHA	1	1	16	18
UMACYAGI	0	2	16	18

STUDY OBJECTIVES

Overall objective

The overall objective of the present work is to assess the compliance of tea factories and tea cooperatives with national and international OSH standards focusing on the particularities of young workers. Based on the findings of the results, we will design national OSH guidelines in the tea sector in Rwanda.

Specific objectives

- To examine the overall situation of occupational health and safety (OSH) issues in tea factories, COOPTHE and Thé Villageois cooperatives or individuals.
- To examine the production and working environment indicators other than those covered in the OSH survey.
- To identify a few case studies including those on legally working youth as examples of good and bad practices of occupational safety and health in the tea industry in Rwanda.

Inclusion criteria

The survey was carried out in the 11 districts of Rwanda with tea factories or tea growers' cooperatives. Of the 11 districts, 2 factories (one state co-owned, SHAGASHA, and another private owned, KARONGI) and their industrial block with one additional factory among the one certified, SORWATHE, which was considered as the 'best practices' factory with its own industrial block, were surveyed. Similarly, from each district, one tea plantation (11 tea plantations total) were surveyed and underwent an OSH audit. Among them, two COOPTHE (SHAGASHA and MULINDI) and ten Thé Villageois (listed in Table 1) were randomly

selected to be included in this research study. Among the 11 tea plantations, two case studies were selected, ASOPTHE as a good practice, and KATECOGRO as one with many areas for improvement.

Exclusion criteria

Burera district was excluded from our sample because neither tea factory nor tea cooperative was available at the period of the survey.

Data collection process

The selected factories and tea plantations were approached, and the purpose of the survey explained to the management in order to obtain their consent for participation in the survey. For COOPTHE and the Thé Villageois, 11 cooperatives were randomly selected.

For each tea cooperative, cooperative managers, neighboring health center manager or factory dispensary, tea plantations owners, teachers of school around tea plantations and children involved in tea plantations activities were interviewed.

As for the sampling procedure and sample size calculation, we presumed that 50% of the workers suffer from OSH risks, based on previous records of data pertaining to the health status of workers in the tea estates (…).
The number of workers to be interviewed was then calculated using the following formula:

n = $z2pqd2$

Where:
z (confidence level) = 1.9655
p (assumed prevalence of injuries) = 0.5
q (1 – p) = 1-0.5 = 0.5
d (half of confidence interval) = 0.05

The application of this formula yielded a sample size of approximately 386 workers. The sample was drawn from the universe of permanent workers employed in the 11 cooperatives and three factories.

Since the study pertains to a population of finite size as indicated in the table above, the sample size for this finite population was then calculated to be 312, using the formula:

$s=n1+n$

Where:
s = sample size for a finite population
n = sample size calculated for an infinite population
N = size of the finite population

Table 2. Study population distribution across the surveyed cooperatives

Cooperative	Freq.	Percent	Cum.
ASOPTHE	33	10.58	10.58
COBACYAMU	21	6.73	17.31
COOPTHEGA	18	5.77	23.08
COOTENYA	13	4.17	27.24
COOTPFUNDA	10	3.21	30.45
COTHEGIM	15	4.81	35.26
COTRAGAGI	26	8.33	43.59
GISAKURA	54	17.31	60.90
KARONGI	11	3.53	64.42
KATHECOGRO	31	9.94	74.36
MULINDI	34	10.90	85.26
RUTHEGROC	10	3.21	88.46
SHAGASHA	18	5.77	94.23
UMACYAGI	18	5.77	100.00
Total	312	100.00	

The sample was randomly and proportionately selected across the cooperatives and factories to give a total number equal to this calculated sample size. Stratified random sampling was done to ensure an adequate representation of male and female workers from each cooperative and factory.

Table 3. Male and female distribution, per surveyed tea cooperative

Cooperative	Gender F	M	Total
ASOPTHE	23	10	33
COBACYAMU	18	3	21
COOPTHEGA	9	9	18
COOTENYA	11	2	13
COOTPFUNDA	7	3	10
COTHEGIM	13	2	15
COTRAGAGI	16	10	26
GISAKURA	25	29	54
KARONGI	9	2	11
KATHECOGRO	27	4	31
MULINDI	27	7	34
RUTHEGROC	8	2	10
SHAGASHA	6	12	18
UMACYAGI	4	14	18
Total	203	109	312

Methods of data collection

Review of Records: The only available medical records in the present study were found in SORWATHE factory. Such records could not be found at any other surveyed facility.
The obtained medical records included: a) Outpatient registers b) Occupational accidents reports) Ordinary diseases report and d) Reports on received treatments and transfers.

This process yielded a list of hazards that the workers in the SORWATHE factory are exposed to.
In order to understand the efficiency of the OSH system, analysis of the prevalence and trends of occupational accidents was done for the preceding three years prior to the study.
As for the remaining cooperatives and factories, individual interviews were conducted and focused on workers' perception of the hazards they are exposed to. (The individual interview questionnaire is found in the appendix section).

Deriving the list of hazards:
A checklist of hazards and accidents likely to occur at the work place was derived after reviewing available literature, the medical records of the workers where available, the Rwanda Social Security Board (RSSB) reports and by conducting risk assessments within

cooperatives and tea factories during the site visits. (The risk assessment form is found in the appendix section).

Using the ILO designed Safe Work for Youth checklist (Annex A.4) and the general health and safety audit checklist (both forms found in the appendix section).The particularities for young workers were analyzed within tea factories and cooperatives.

Management interviews: Key Informant Interviews were conducted with the supervisory and managerial cadre, first to elicit their impressions of the hazards, and later to identify the steps that can be taken to prevent them.

Young worker interviews:

The list of hazards identified by review of records along with other hazards as revealed by the literature review was incorporated into a schedule of questions which were administered to the young workers (Annex A).

Figure 3. OSH auditor during survey in Gisovu while interviewing a 15 years old female

Interviewed workers were randomly selected and identified from people who were found in tea plantations or tea factories following Salimen's[22] selection criteria. Due to potential child labor, we included young workers of 13 to 15 years old following the flexibility of the ILO convention and recommendation for developing countries[23].

All young workers were interviewed at their workplace (field or factory) while engaged in their allotted task at the time of the survey.

Risk Assessment:

After obtaining a checklist of hazards, the young workers were asked to provide a *hazard rating* (based on severity of outcome) and *exposure rating* (based on frequency of exposure). This was done for each of the commonly occurring injuries or hazards as identified earlier. The risks were then ranked in order of importance based on a commonly used method of **risk rating.**

The workers were first provided a briefing on what hazards are, with examples in their workplace, hazards being categorized by the perceived severity of the outcome (**severity rating)** (SR) in to following groups:

1 = first aid case

2 = minor injury

3 = major injury

4 = fatality

5 = multiple fatalities

The exposure rating was categorized by the perceived frequency of its occurrence (**frequency**

[22] Young workers include all people between 16 and 24 years

[23]ILO Minimum age convention N°.138.Article 7

rating) (FR) into the following groups:

1 = less than once a year

2 = once a month

3 = once a week

4 = 2-3 times a week and

5 = daily.

The perceived Risk Rating was interpreted as indicated in the following table:

Table 4. Risk Rating Matrix

		Frequency				
		1	2	3	4	5
Severity	1	Very low	Very low	Low	Low	Frequency
	2	Very low	Low	Frequent	Frequency	Frequency
	3	Low	Low	Frequent	High	High
	4	Low	Frequency	Frequent	High	High
	5	Low	Frequency	High	High	High

The risk rating matrix was applied to each of the commonly occurring hazards or injuries in order to identify the injuries which would obtain the highest risk rating scores, separately by the male and female workers. Furthermore, the mean severity and frequency rating for each hazard was calculated separately based on these the perceived risk rating.

Finally, we conducted field visits and work spot inspections in tea factories and tea plantation to identify some hazards unknown by young workers or their supervisors

Study instruments

A pre-coded and pre-tested technical OSH audit kit of questionnaires (Annex A.1) had the following parts:

- Demographic details of the worker interviewed, namely age, gender and occupation and whether the worker had suffered from any work-related injury in the past year including the frequency of the same.
- Details of the injury, such as the type, site, reporting of injury and the treatment provided.
- Reasons of absenteeism from work in the past year.
- Details of personal protective equipment (PPE) used by the worker
- Training received in safety and first aid, and facilities available for first aid at the work place.
- Details about the work environment including exposure to chemicals and nature of machinery being used.

Other instruments used in data collection are summarised in the table below:

Table 5. Data collection toll per target group

Tea Organization	Target group	Data collection tool
Tea factories and their industrial block	• Factory manager • Industrial block growers • Factory processing workers and system	• General OSH check list • Individual OSH questionnaire for industrial block growers • Risk assessment form for factory processing unit and industrial block
COOPTHE	• Manager of cooperative • Tea growers • Health center manager • Secondary school teachers	• Risk assessment form for tea plantation • Individual OSH questionnaire for growers • General OSH Check list for managers of cooperatives
Thé Villageois	• Owners or parents • Owners children above 16 years	• Risk assessment form for tea plantation • Individual OSH questionnaire for owners and their children

Data management and analysis

The data collected was entered into Excel spreadsheets and analyzed using STATA 12. Proportions (percentages) were used to describe occurrence and distribution of work-related injuries. The Chi-square test was applied to demonstrate associations between injuries and related factors. The risk rating matrix was used to obtain scores for perceived risk rating for each injury listed.

OSH STANDARDS USED DURING THE STUDY

We reviewed the ILO conventions relevant to the protection of young workers and the following were our key findings:

- **Freedom of association, collective bargaining and industrial relations:** the young workers has the freedom of association and the right to protection[24] the right to Organize and Collective Bargaining[25] and the right to be among the Workers' Representatives[26]
- **Forced labor:** the young workers are protected against forced labor direct or indirect[27]
- **Elimination of child labor and protection of children and young person:** the Minimum Age and Worst Forms of Child labor Conventions were established for this purpose[28] supported by industrial and non-industrial Medical Examination of Young Persons Conventions[29],
- **Equality of opportunity and treatment: the young workers has the right to** Equal Remuneration and he is protected against employment and occupation discrimination[30]
- **Labor inspection and administration:** the young workers are prone to particular attention during labor inspection and the labor administration policy and

[24] Convention No.87(1948)

[25] Convention No. 98, (1949)

[26] Convention (No. 135), Recommendation 1971 (No. 143)

[27] Convention, 1930 (No. 29), Convention 1957 (No. 105) Recommendation, 1930 (No. 35)

[28] Convention (No. 138 and No. 182) and Recommendation (No. 146 and No. 190), 1973

[29] Conventions, 1946 (No.77and No 78) and Recommendation, 1946 (No. 79)

[30] Convention (No. 100 and No 111), Recommendation 1951 (No. 90 and 111)

procedures[31]

- **Employment policy and promotion:** being disabled or not, the young workers have the right to vocational rehabilitation, employment in both public and private and the right to job creation in small and medium sized enterprises[32]

The Human Resources Development Convention, 1975 (No. 142) and its related Recommendation, 2004 (No. 195) discusses the vocational guidance and training while wages issues for young workers are discussed in Protection of Wages Convention (No. 95) and Recommendation (No. 85), 1949, Minimum Wage Fixing Convention (No. 131) and Recommendation (No. 135), 1970, Minimum Wage Fixing Convention, 1928 (No.26) and Equal Remuneration Convention, 1951 (No. 100).

The working time guidelines for young workers are found in Hours of Work (Industry) Convention, 1919 (No. 1), Hours of Work (Commerce and Offices) Convention, 1930 (No. 30), Night Work Convention (No. 171) and Recommendation (No. 178), 1990 and Part-Time Work Convention (No. 175) and Recommendation (No. 182), 1994 while Holidays with Pay is discussed in the revised Convention, 1970 (No.132)

Occupational safety and health, Social security, Work/Family and Maternity protection for young workers are discussed in specific conventions and recommendations. The international standards also highlight the working conditions for special group such as migrant workers, indigenous and tribal peoples[33]

The Rwandan Labor Law set the working conditions of young workers based on ILO Recommendation 190. The ministerial order 2010-06 also gave the list of worst form of labor. The table below shows the international convention ratified by Rwanda to date regarding child labor and education.

---

[31] Convention (No. 81,No 129 and No 150) and Recommendation (No. 81, No 133 and 158), 1947 and 1969

[32] Conventions No. 122, No 159, No.181 and No. 88 with recommendations No. 122, No. 169, No.188, No. 83 and No. 189 (1964,1983,1984,1997 and 1998)

[33] Convention (Revised) (No. 97) and Recommendation (Revised) (No. 86), 1949, Convention, 1975 (No. 143), Recommendation, 1975 (No. 151) and Convention, 1989 (No. 169)

Table 6. International convention and selected laws on child labor in Rwanda

International Conventions and Selected Laws on Child Labor and Education

	C138, Minimum Age	✓
	C182, Worst Forms of Child Labor	✓
	CRC	✓
	CRC Optional Protocol on Armed Conflict	✓
	CRC Optional Protocol on the Sale of Children, Child Prostitution and Child Pornography	✓
	Palermo Protocol on Trafficking in Persons	✓
	Minimum Age for Work	16
	Minimum Age for Hazardous Work	18
	Compulsory Education Age	16
	Free Public Education	Yes

'… ILO Conventions recommend that children below 18 should not be engaged in …'

Source:USDOL 2012

Recommendation 190

Section 2.
(c) (iv) hidden work situations, in which girls are at special risk;

Section 3.
(a) work which exposes children to physical, psychological or sexual abuse;
(b) work underground, under water, at dangerous heights or in confined spaces;
(c) work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads;
(d) work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health;
(e) work under particularly difficult conditions such as work for long hours or during the
night or work where the child is unreasonably confined to the premises of the employer.

Apart from Mimuri Sector guidelines created by the sector authorities in Nyagatare district to fight against child labor in agriculture, to our knowledge there is no other specific law to fight child labor in agriculture in Rwanda.

Hours and days youth can work

Some countries provide the following restrictions concerning the working times for youth[34]. These may be used as references because Rwanda's laws and hazardous list do not provide guidance of this sort apart from those discussed in the child labor definition

Table 7. Hours and Schedules Minors are Permitted to Work in Non-Agricultural Job

Hours and Schedules Minors are Permitted to Work in Non-Agricultural Jobs					
	Hours/day	**Hours/Week**	**Days/Week**	**Start time**	**Ending time**
14–15 year-olds					
School weeks	3 hoursrs (8hoursSat-hrsonSat& SunSun)	16 hours	6 days	7a.m.	7p.m.
Non-school weeks	8hours	40 hours	6 days	7a.m.	7p.m.
16–17 year-olds					
School weeks	4hours(8hoursFri–Sun)	20 hours	6 days	7a.m.	10p.m. (Midnight Friday–Saturday)
School weeks with special permission	6hours(8hoursFri–Sun)	28 hours	6 days	7a.m.	10p.m. (Midnight Friday–Saturday)
Non-school weeks	8hours	48 hours	6 days	5a.m.	Midnight

Note: The above are examples of what some countries require; they are not ILO recommendations. However, although there are not designed for agricultural jobs they

[34] ILO Safe work for young workers

can lead discussion while setting working time for young workers in agricultural jobs.

RESULTS AND DISCUSSION

GENERAL FINDINGS FOR COOPERATIVES

The present study was carried out to assess the compliance to national and international OSH standards among tea factories and tea cooperatives in Rwanda.

A total of 11 tea cooperatives (two COOPTHE and nine THE VILLAGOIS) and three tea factories industrial blocks were included in the analysis as per presented in the methodology section.

To investigate on the compliance to the OSH standards with regard to young workers, the Safe Work for Youth questionnaire (form to be found in the appendix section) was used to document such standards in every visited tea factory/cooperative.

Therefore, among the study sites, all except ASOPTHE and COOPTHEGA reported having some of their workers under the legal age while only five sites (COTHEGIM, SHAGASHA, ASOPTHE, COTRAGAGI and RUTHEGROC) reported their young workers to have completed compulsory schooling. Moreover, young workers showed signs of deprivation in a total of six visited sites, while intimidation or fear was observed in three sites.

On the other hand, in only two sites (SHAGASHA, ASOPTHE), it was reported that supervisors and co-workers have been informed through training about what is safe work on their work places. Although in five sites, young workers have been trained on what to do during an accident or emergency, an occupational safety and health plan has been developed in only three sites namely SHAGASHA, ASOPTHE and UMACYAGI.

With regard to the working time, six sites (KARONGI, MULINDI, COTHEGIM, GISAKURA, UMACYAGI and RUTHEGROC) reported that, sometimes, their young workers work at night and go home in the dark or work overtime. Indeed, in two of those (COTHEGIM, RUTHEGROC), young workers get allowed to work in isolated areas which is not compliant with the Rwandan law.

As for policies related to harassment, violence and stress, only two sites (SHAGASHA, ASOPTHE) reported having developed/written a policy against harassment and violence,

particularly addressing the risks that young girl workers may face. However, such anti-harassment policy is posted in only two sites (SHAGASHA and ASOPTHE). In addition, in only three sites (COOTPFUNDA, SHAGASHA and ASOPTHE), each new young worker is assigned to answer questions and keep an eye out for safety.

With regard to materials storage and handling, COOTPFUNDA was the only study site where young workers get trained on correct lifting techniques and supervisors do periodic checks to make sure lifting is correct. Nonetheless, no cooperative/factory reported that young workers do jobs that require lifting or carrying heavy loads.

When asked about work stations, however, three sites (KARONGI, MULINDI and GISAKURA) said that young workers may squat or kneel for long periods of time, but know and use the "elbow rule[35]".

Concerning the machine and tool safety, four study sites (SHAGASHA, UMACYAGI, ASOPTHE and COOTPFUNDA) agreed that young workers are only allowed to use machines and tools that have potential for causing injuries or closely supervised if they use power equipment.

With regard to hazardous substances, four sites (SHAGASHA, UMACYAGI, ASOPTHE and COOTPFUNDA) reported that some of their young workers work around hazardous substances. On the other hand, at least seven cooperatives/factories said that chemicals, including containers into which chemicals have been poured, are labeled. Indeed such labeling is not done in at least four sites (UMACYAGI, COBACYAMU, COOPTHEGA and COOTPFUNDA) which represents a serious hazards exposure, particularly to young workers.

Moreover, in five sites which include ASOPTHE, UMACYAGI, COBACYAMU, COOPTHEGA and COOTPFUNDA, chemical safety data sheets are not kept on file for each chemical or mixture.

SHAGASHA, ASOPTHE and COOPTHEGA are the only sites which reported that young workers have a place to wash and change clothes at workplace; while it is only at SHAGASHA, ASOPTHE, COOPTHEGA and COOTPFUNDA where young workers wash their hands with soap before eating or drinking. More surprisingly, COOTPFUNDA was the only site where it was reported that young workers wash themselves and change clothes before going home.

[35] It is a technique used while lifting heavy weight to prevent back borne injuries

As for lighting and noise, three sites (SHAGASHA, ASOPTHE and CCOTPFUNDA) reported that skylights and windows get cleaned regularly, ceilings and walls are painted white or in light colors and kept clean, workstations are adequately lighted with no glare in the young worker's field of vision, noisy equipment and areas marked with warning signs and young workers trained on noise protection measures and noise levels low enough that young workers do not need to shout to communicate. On top of the three mentioned, COTRAGAGI also reported that the noise levels are low enough.

With regard to the welfare facilities, safe drinking water was reported to be available at SHAGASHA, ASOPTHE, COTRAGAGI and COOTPFUNDA while it was not in any other sites. Also, the same sites are the only ones which reported availability of regularly cleaned toilets, closed to their working area and have soap for washing while it is only at COOTPFUNDA where there are separate toilets for girls and women. On the other hand, all the sites reported no availability of clean and comfortable places for the workers to rest and eat.

Concerning record keeping and accidents investigation, none of the 14 site showed such data. However, the SORWATHE site is considered as good practice and we analyzed the records for the last three years. For 2014 it is not possible to compare with the previous years because this year had yet to end while the study was being conducted.

As listed in the table below, at SORWATHE records are kept by department and they always separate occupational accidents and diseases. It is obvious that over the last two years tea plantations were the first most hazardous workplaces followed by tea manufacturing places and maintenance services. Another important remark is the trend of the occupational accidents occurrence which shows the significant reduction of accidents for following years.

Table 8. Records of occupational accidents at SORWATHE for year 2012 and 2013

No	Department	Year 2012			Year 2013		
1		Accident	Diseases	Total	Accidents	Diseases	Total
2	Maintenance	32	141	173	16	107	123
3	Administration	1	18	19	0	28	28
4	Tea Plantations	80	35	115	63	134	197
5	Garden	5	29	34	1	43	44
6	Account	0	13	13	0	38	38

7	Tea manufacturing	52	89	141	38	196	234
8	New Cases	10	70	80	-	-	-
9	TOTAL	170	425	595	118	546	664

The records from SORWATHE shows the incidence of diagnosis from SORWATHE. Though there were no data per age group, physical trauma including occupational accidents are the first cause of consultation in the coverage area of KINIHIRA Health Center. Due to weather conditions in tea plantations there was a relatively higher prevalence of upper and lower respiratory tract infection compared to the remaining population near tea plantations.

Table 9. Prevalence of occupational accident at SORWATHE for year 2012 and 2013

No	Diagnosis	Year 2012	Year 2013
1	Suspected Malaria	68	64
2	Confirmed Malaria	0	1
3	Upper Respiratory Tract Infection (URTI)	57	79
4	Lower Respiratory Tract Infection (LRTI)	27	37
5	Skin infection	16	26
6	Physical trauma (Suffering)	219	227
7	Diarrhea	14	20
8	Intestinal Parasite	30	37
9	Mouth and Dental affection	10	16
10	Sexual transmitted Diseases (STD)	0	1
11	High pressure	3	12
12	Diabetes	1	3
13	Tuberculosis (TB)	0	0
14	Others	176	133

FINDINGS FROM YOUNG WORKERS INDIVIDUAL INTERVIEWS

Demographic Details from the Surveyed Population

Of the 312 workers surveyed in the tea plantations, females represent the majority of the workers in tea plantations in Rwanda (65%) while males were around 35%. 15% of the total surveyed population were young workers of age between 13-15 years, of whom the great majority (85%) were females. In addition, 31% of the surveyed population were young workers of age comprised between 16-17 years, of whom 68% were females. In fact, the young workers of age below 18 years represented almost a half of the studied population.

Table 10. Age and gender distribution of the surveyed population

Age group in years	Gender		Total
	Male	Female	
13-15	7	40	47*(15%)*
16-17	31	66	97*(31%)*
18 - 24	71	97	168*(53.8%)*
Total	109*(34.9)*	203*(65%)*	312*(100%)*

(Note: Figures in parentheses indicate percentages).

Details of the Reported Workplace Injuries in the Last Working Year

Incidence of workplace injuries

Out of 312 respondents, 236 people (162 females and 74 males) representing 75.6% reported occurrence of /having suffered from any type of injury within the year that preceded the date of interview. (See the following table).

Table 11. Distribution of reported injury, per gender

Gender	Report of Injury			
	Yes	**No**	**Don't know**	**Total**
Female	**162**	37	4	203
Male	**74**	27	8	109
Total	**236**	64	12	312

Figure 4. More females are involved in the tea sector

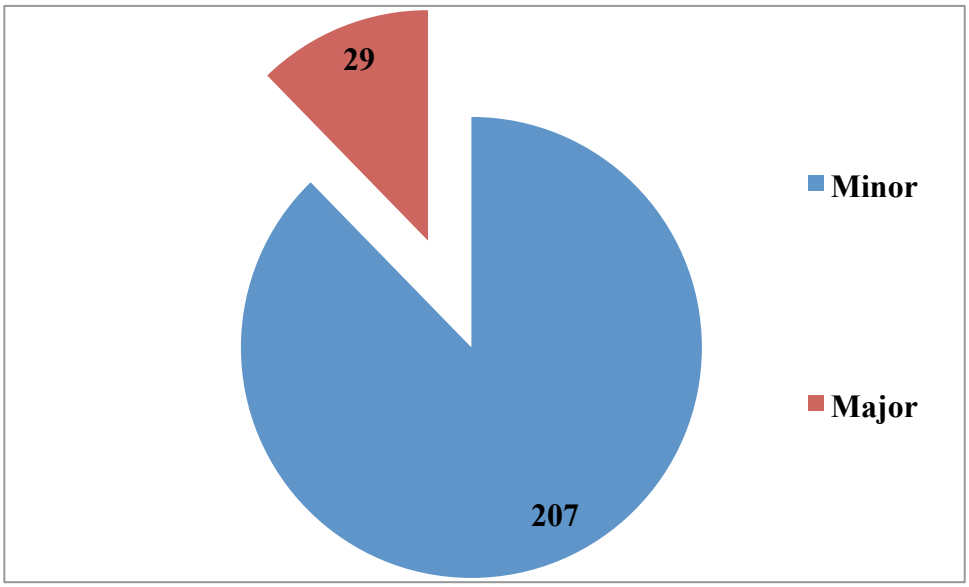
Table 12. Frequency of workplace injuries among the population who reported injuries, per age group

Frequency of injury	13-15	16-17	18-24	Total
1-3 times	26	36	75	137
4-6 times	9	28	37	74

7-10 times	1	9	6	16
>10 times	2	2	5	9
Total	**38**	**75**	**123**	**236 (100%)**

Out of the 236 respondents who reported having suffered from an injury in the year preceding the study, nine people reported occurrence of injury more than 10 times, which indicates that each of them might have suffered an injury almost every month. On the other hand, 75 people aged between 16-17 years reported an injury, while 38 people are aged 13-15 years.

Figure 5. Type of workplace injury



The most recorded injuries were minor injuries (88%). Major injuries accounted for about 12% of the total injuries. Minor injuries include those that were managed with first aid at the spot or required minor surgery/procedure at the dispensary or hospital (1 and 2 in the 'riskrating'). Major injuries include those that required major surgery/procedure or referral from the plantation hospital to a higher centre (3 in the 'risk rating'). For those workers who suffered multiple injuries, the response was based on the most severe injury.

Table 13. Site of injury

Site of injury	Gender		
	Females	Males	Total
Head and neck	8	2	10
Upper limbs	35	24	59
Trunk and abdomen	1	0	1
Low back	7	2	9
Lower limbs	96	33	129
Upper and lower limbs	8	7	15
Trunk/abdomen and lower limbs	0	1	1
Low back and lower limbs	1	0	1

The lower limbs were reported as the most frequent site of injury (55%), followed by upper limbs (25%) and both upper and lower limbs (6%). Of note, most of those who reported major injuries had injuries to upper and/or lower limbs (P Value <0.001).

Out of 236 people who suffered from an injury, only 144 (61%) reported having reported the occurrence of injury to someone. In fact, 83 reported to their supervisors, 41 to their supervisors, 11 to a health personnel and nine reported the injury to someone else. Of note, of those who reported injury occurrence, most had major injuries (P value < 0.001).

Table 14. Time of report after injury

Time of report after the injury	Gender

	Female	Male	Total
Within six hours	76	35	111
Within six to 24 hours	11	7	18
After several days	3	0	3

Most young workers reported their injury within six hours after accident.

Table 15. Treatment received after injury

Treatment received after injury	Gender		
	Female	Male	Total
First aid	45	14	59
Minor surgery/procedure at dispensary	35	16	51
Major surgery/procedure at hospital	3	2	5
Referral to higher center	8	1	9

Most respondents reported to having received first aid from their workplace, after sustaining an injury.

Table 16. Days of absence to work

Days of absence to work	Age range			
	13-15	16-17	18-24	Total
1 – 10 days	20	40	80	140
11 – 20 days	2	4	8	14
21 – 30 days	2	4	11	17

31 – 40 days	14	27	24	65
>40 days	0	0	0	0
Total	38	75	123	236

Of the respondents who sustained an injury, the mean days of absenteeism was 26.02 days. As shown in the table, most of the respondents had an absenteeism of between 1 to 10 days**.**

Table 17. Reported reasons for changing workplace

Reason forto changing workplace	Gender		
	Female	Male	Total
Work related illness	26	15	41
Disability	12	6	18
Allergy	18	7	25
Total	56	28	84

Out of 312 interviewed people, at least 84 reported having had to change their workplaces due to either work related illness (41), disability (18) or allergy (25). Of them, 56 were females.

Table 18. Use of Personal Protective Equipment (PPE) by workers

Reason to changing workplace	Gender		
	Female	Male	Total
PPE supplied by employer	40	22	62
PPE currently used	43	20	63

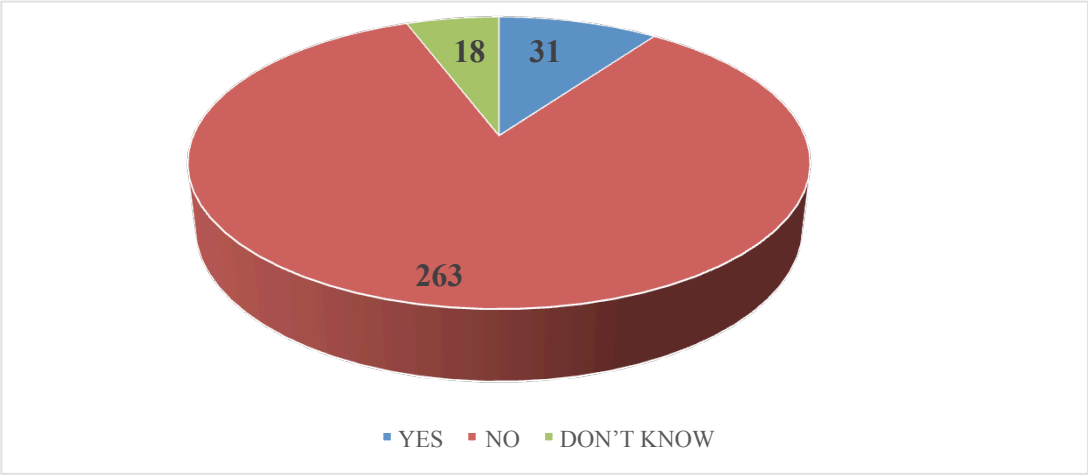
PPE regular use	29	14	43

Only sixty-two respondents, representing around 20% of the total surveyed population, reported having been supplied with PPEs by their employers. All of those wore PPE during the interviews, with one additional respondent who wore his own PPE. Of 63 respondents with PPEs, 43 (68%) affirmed regular use of the PPEs.

Of note, around 80% of the interviewed population do not use PPEs during their daily work. Nevertheless, the regular use of PPE was statistically associated with occurrence of major injury occurrence (P value: 0.001), which indirectly signifies that people involved in highly risky work related injuries are given PPEs by their employers.

The PPE provided by the employers included coats, masks, goggles, and earplugs as per the responses of the workers surveyed.

Figure 6. Report of training in safety measures to be used in the workplace



Most young workers denied any training in safety measures to be used in their workplaces.

Table 19. Availability and training on first aid

First aid	Gender		
	Female	Male	Total
Kit available	17	7	24
Trained in use	20	9	29
Regular check and update of box	8	2	10

Among surveyed people, only 24 (representing 0.7%) reported that a first aid kit is available in their working institution. Moreover, of 24, only 10 reported that the kits are regularly checked and updated. More surprisingly, a total of 29 people admitted to have received first aid training, which probably meant that four people reported having received training on first aid while there were no kits available in their workplaces.

Table 20. Satisfactory working conditions at workplace

Satisfactory conditions	Gender		
	Female	Male	Total
Temperature	129	45	174
Ventilation	163	73	236
Lighting	163	72	235

More than half of the interviewed people reported satisfactory working conditions with regard to temperature (56%), ventilation (76%) and lighting (75.3%).

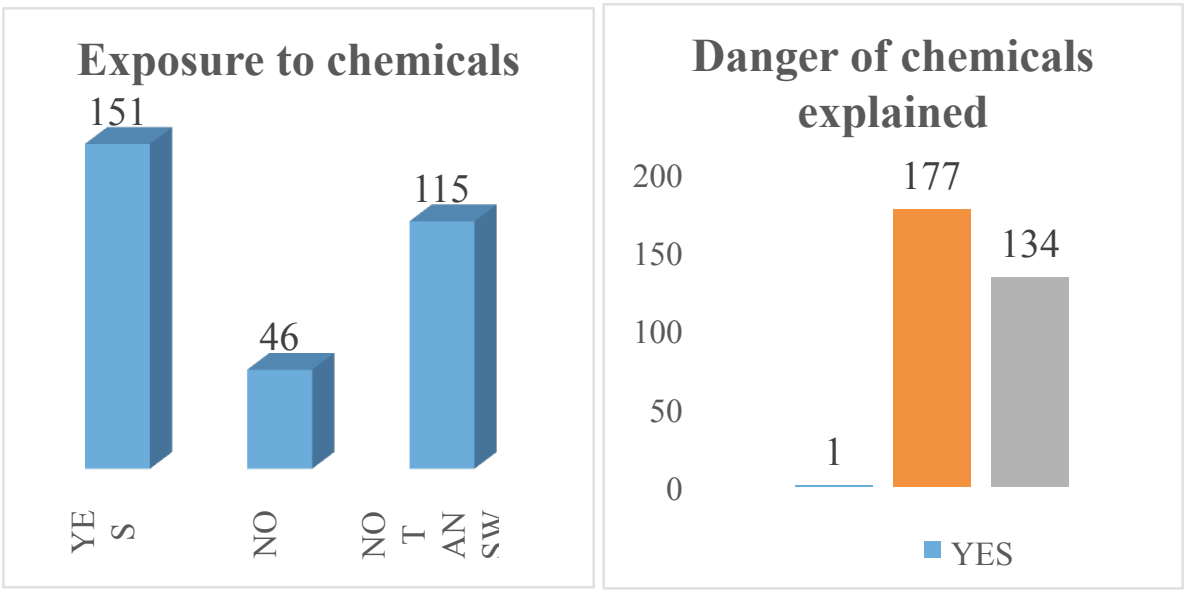
Table 21. Availability of machinery at workplace

Machinery available	Gender

	Female	Male	Total
Machine guarded	2	0	2
Machine unguarded	11	12	23
Not applicable	190	97	287
Total	203	109	312

About 92% (287 out of 312) reported not being exposed to machinery related hazards on a regular basis. Of the 25 (8%) respondents remaining, who actually reflect interviewed people working in tea factories, only two reported that machinery at their workplace is guarded.

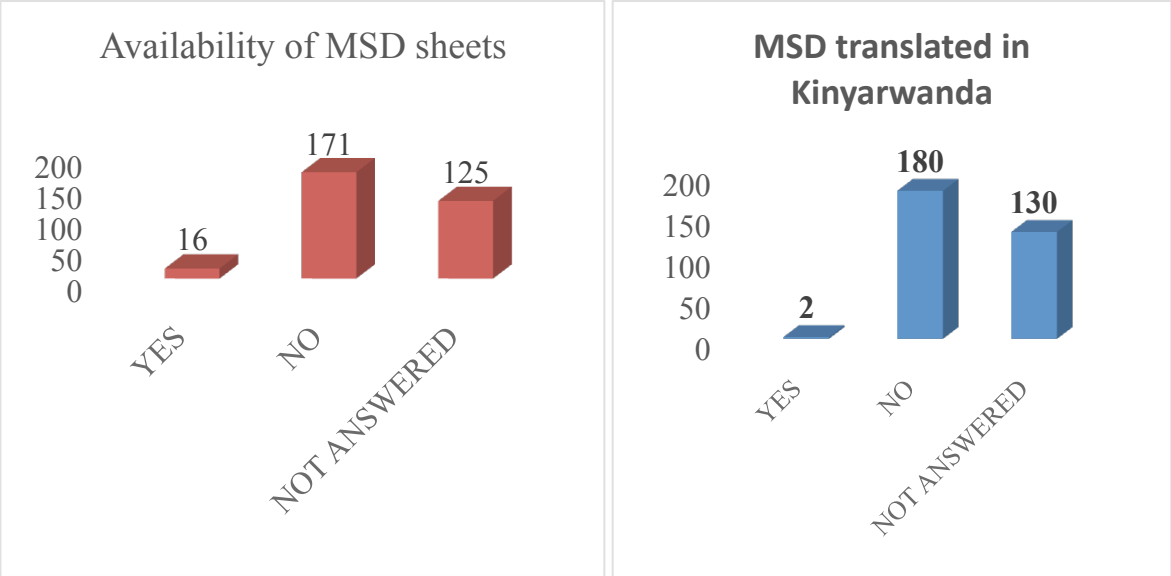
Figure 7. Exposure to chemicals



Out of the total number of respondents, 151 people reported having been exposed to chemicals, especially fertilizers used in tea plantations. Nevertheless, only one person reported having been informed about the risks associated with exposure to chemicals. More importantly, more than half of the total study population reported being ignorant about those risks.

Of note, a good number of respondents did not answer this question. This might simply imply that the number of people not informed about the risks associated with chemicals is underestimated.

Figure 8. Availability of MSD sheets



Most workers (171) who handled chemicals said that Material Safety Data Sheets (MSDS) were not available at the point of distribution of chemicals in a language they could follow (Kinyarwanda). Except one, the workers handling chemicals had received instruction on the features/dangers of each chemical before spraying. Availability of MSDS was checked at the time of the field visits and was found only in English without translation in Kinyarwanda. A few workers who could not read never received education on safe handling of chemicals by the supervisors.

Table 22. Hand washing practices

Hands washing practices	Gender

	Female	Male	Total
After handling chemicals	21	12	33
Before eating	145	64	209
Soap available at workplace	20	8	28

Only 10% of the workers who handled chemicals said that they practiced handwashing after handling chemicals while almost 67% washed their hands before eating. However, about 9% of these workers said that soap was not available at their place of work.

FINDING FROM RISK ASSESSMENT AND OSH AUDIT

Occupational hazards within tea plantations

Accidents and injuries occurring at the workplace vary in type and severity from year to year and within a year itself. The work-related ailments and injuries on tea plantations in this study are from the past year. The detailed risk assessment report is in Annex B.1

- Flying insects and tea leaves which can cause damage to eyes
- Biological hazards due to poor hygiene
- Sharps and uneven pathway which can cause bruising, wound or sprain
- Insect bites (such as tick bites, wasp sting)
- Leech bites
- Falls, fractures
- Chemicals from fertilizers can cause burns or skin damage.
- Foot injuries due to wood and stone pieces
- Snakes bite can cause wound and poisoning.
- Injury due to lightning
- Heat and cold can result illness.
- Nearby river can cause flood and drown.
- Manual lifting and carrying of heavy loads can result injury or fracture
- Working time and system can result in occupational diseases.
- Lack of toilets can results the spread of infections.

- Lack of drinking water which can result infection or dehydration

Upper and lower limb injuries were the most common, followed by eye injuries and insect bites. Snake bites were extremely rare but relatively frequent in the tea plantations around NYUNGWE National Park (GISAKURA, GISOVU and KITABI). Most injuries were not severe and could be managed by first aid alone. Because first aid is not available onsite at most tea plantations, traditional herbs are a common means used as first aid.

Other cases required hospitalization but no fatality had occurred. Some cases of fractures needed referral to higher centres and such cases were reported at Gisakura, Shagasha, ASOPTHE and Mulindi. Most injuries occur in the rainy season when visibility is reduced and the ground is slippery. In COPTHE Mulindi, one case of immersion happened but it was not fatal. Injuries due to falls included a case of multiple fractures of the forearm, fracture hip, and shoulder dislocation. A case of injury with a porcupine quill required hospital admission. Such cases were reported in Gisakura, Karongi, Mulindi, and Shagasha.

Occupational hazards within tea factories

Contrary to tea plantations, accidents and injuries occurring in tea factories vary in severity but remain within the same type category. The work-related ailments and injuries in tea factories in this study are from the past year. The detailed risk assessment report is in Annex B.2.

- Slips/Trips and fall caused by spills or uneven floor.
- Chemical and biological hazards can cause injury or skin damage
- Electrical Hazards can result fire and electrocution
- Noise can result hearing loss or work related stress
- Heat can result stress.
- Poor lighting can result injury by contact with stacking objects or sight problem.
- Manual lifting and carrying of heavy loads can result injury or fracture
- Working time and system can result in occupational diseases.
- Lack of adequate personal protective equipment which can result in injury or diseases.
- Lack of drinking water which can result infection or dehydration
- Lock out procedures which can result damage or accident.

- Fire hazards can result burns/death and property damage.
- Lack of formal emergency preparedness plan which can result in mass destruction in case of a disaster.
- Lack of first aid in place which can increase the severity of injury.
- Lock out procedures which can result damage or accident.
- Lack of formal emergency preparedness plan which can result in mass destruction in case of a disaster.
- Fire hazards can result burns/death and property damage.
- Lack of first aid in place which can increase the severity of injury.

According to the medical assistant interviewed in SORWATHE, the most common work-related injuries/accidents that occur in the tea estates apart from those mentioned earlier are skin allergies and injuries due to animal attacks.

The Kinihira hospital is well equipped to handle emergencies with facilities including anti-snake venom and 24 hour ambulance service for referral. There have been no mortalities in SORWATHE in the past year; serious cases including complicated orthopedic cases are referred without delay to the University Teaching Hospital of Kigali. In addition, some work-related accidents/ailments observed by the management are:

- Shoulder pain (due to shearing; each shear weighs)
- Respiratory problems (URTI and LRTI) due to exposure to dust and chemicals
- Insect bites (especially in organic farms - tick bites are more common as insecticide sprays are not used in the organic farms)

DISCUSSION

The present study investigated the compliance to national and international OSH standards among three tea factories and 11 tea cooperatives in Rwanda.

The obtained data showed that the majority of the young workers in tea plantations in Rwanda, who were included in the study, were females (60%) and only slightly more than half (53.8%) belonged to the 18-24 years age group. This therefore signifies that tea

plantations in Rwanda employ a good number of children (workers of age below 18 years). Table 2 shows that most of the child labor in the research is found in Thé Villageois while some young workers found in Coopthe admitted to have misrepresented their age to get the job. Indeed, although the majority of the later are in the legal working age range (97 out of 144 workers are in the 16-17 years old range), there was a significant percentage of children aged between 13-15 years (44 out of 144) who are working in the tea plantations found entirely in Thé Villageois (see Table 2). In fact, this represented about 15% of the total study population.

Comparing the overall general findings from this study with other published data, similar studies done in India[36] and in Sri Lanka[37] showed that the number of children below the age of 16 years old who are engaged in tea plantations is about 1.8% in both countries. Therefore, this shows that Rwandan tea plantations have a very higher number of children involved in tea growing activities, compared to other countries. The picture below shows young worker under 16 years during an interview at a tea collection center in Karongi.

The 15-year-old girl (one shown below in blue school uniform) is a second year high school student who did not attend school and joined the tea plantations work because of parental poverty.

[36] Christie M et al. Occupational safety and health risks in selected estates of a tea planting company in India, 2007

[37] Asian-Pacific regional network on occupational safety and health information. ILO-EFC Plantation Safety and Health Monitoring Project, 2007.

Figure 9. Young workers under working age during the interview at Karongi

Such figures also clearly indicate violations of national OSH standards, particularly with regard to child labor within all except two of the surveyed cooperatives and all three factories. It is also evident that despite government efforts to eradicate child labor in the tea sector, only factories are being compliant with the national regulations while tea plantations still have steps to take especially in Thé Villageois. According to the law regulating labor in Rwanda, it is prohibited to employ a child in any company, even as an apprentice, before the age of sixteen (16).[38]

Nevertheless, the Thé Villagois are known as cooperatives for families of tea growers. Yet, the ILO laws as per defined earlier stipulate that children aged between 13-15 years may

38 Law regulating Labor in Rwanda No 13/2009 of 27/05/2009 (art4)

carry out light jobs within regulated conditions in the context of works that are organized in their families' enterprises but which should not threaten their health and safety, hinder their education or require them to work more than 18 hours per week.

On the other hand, findings from the focus groups discussions carried out with parents and children in the visited Thé Villagois cooperatives show that parents' views were that their children should not be denied light jobs in tea plantations, as long as this would not hinder their rights to go to school or affect their physical and psychological development and wellbeing. Indeed, most parents believed that working in tea plantations for children is comparable to farm chores, particularly because, by doing so, they learn how to take responsibility, gain skills, and add to their family's income and well-being.

Similar to ILO conventions and recommendations and to interviewed parents' views, the Rain Forest, a tea plantations certifying company also recommends in its standards that children may be employed in the above cited conditions if the respective countries abide by such recommendations[39].

Whether tea plantations regulations in Rwanda should continue to be guided by the current law governing child labor in Rwanda, or whether this should be revised to adapt it to the ILO and other international guidelines is an open question. Therefore, there is a need for a forum at the national level that will gather all concerned groups of people (tea growers representatives, law makers, NGOs, etc.) and discuss the conventional practical legal framework that will be applicable in Thé Villageois in Rwanda.

As mentioned in the introduction section, most other countries comply with the ILO conventions and recommendations for non-agricultural jobs by fixing a number of hours a child may work during school weeks and/or during non-school weeks. Some countries use the flexibility of the ILO conventions to adapt their child labor law by including time limits in

[39] idem

their regulations. This may explain why tea plantations in Rwanda are reported as having a high rate of child labor violations compared to other countries. So Rwanda needs to define hours for children of legally working age 16-18 years old in tea in order to be better compliant with international regulations

From an OSH point of view, and in consideration of "The North American Guidelines for Children's Agricultural Tasks" (NAGCAT) guidelines[40] which are based on an understanding of childhood growth and development, agricultural practices, principles of childhood injury, and agricultural and occupational safety, we suggest a thorough review of the current child labor law in Rwanda in order to include light jobs for children aged between 13-15 years and acceptable work conditions for children 16-18.

When assessing the compliance of surveyed tea factories and cooperatives to OSH standards using the Safe Work for Youth questionnaire, it was observed that many of them do not comply with OSH standards. Of particular note are reports of young workers who have not completed basic schooling, those who show signs of being intimidated, work over night or those who are exposed to machines or other hazardous substances. This indicates that the currently available law is neither respected nor helpful, since children working in tea plantations appear to be working in the same conditions as adults, which thus exposes them to more risks and hazardous working conditions.

There is a need to develop practical OSH tools followed by training adapted to the complexity of tea value chain in Rwanda with a clear monitoring and evaluation framework which will lead tea factories and cooperative to follow OSH conditions on a regular basis. By doing so the labor inspector, after undergoing proper training to use the designed OSH tools, will have an efficient way to monitor and enforce the law in the tea sector.

[40]The North American Guidelines for Children's Agricultural Tasks" (NAGCAT) guidelines

With regards to injuries, as high as 75.6% of all interviewed tea workers reported having sustained an injury at least once in the year preceding the data collection period. This figure is much higher compared to the one reported by Christie M et al. in a study conducted in India[34], where only 22.3% reported having had an occupational related injury, and significantly higher than the reportedly estimated worldwide prevalence of occupational related injuries, which is 17%[41].

In view of such high reports of injury occurrence in the present study, the interpretation of this figure should be viewed with caution, particularly because the interview was administered individually between the worker and the investigator, allowing for the possibility of information bias.

With regard to the nature and sites of the injury, about 12% of the reported injuries were major ones, while the rest were minor injuries that only required first aid or minor treatment in the great majority of cases. On the other hand, the lower limbs were the body parts reported by most respondents as the most site of injury (55%), followed by upper limbs (25%) and both upper and lower limbs (6%). This might be explained by the fact that most workers carry out their tasks in the fields/tea growing areas; indeed the preponderance of injuries on the upper and lower limbs was also reported in other similar studies[4243]

On the other hand, about 41% of respondents who reported injury occurrence had an injury at least four times in the preceding year. Nine people reported to have sustained an injury more than 10 times in the preceding year, a fact which would indicate that each of them might have suffered an injury every month.

---

[41]National program for control and treatment of occupational diseases, burden of occupational diseases and injuries. 2007

[42]Christie M et al. Occupational safety and health risks in selected estates of a tea planting company in India, 2007

[43]Asian-Pacific regional network on occupational safety and health information. ILO-EFC Plantation Safety and Health Monitoring Project, 2007.

In the present study, only 61% reported the occurrence of injury to someone. Most of them reported having done so in the six hours after the injury. Of note, there was a statistical significance between having a major injury and reporting an injury, which may imply that a person would be likely to report an injury if it was a serious one.

Nevertheless, these figures are lower compared to other previous reports (at least 85% of reports of injury in the study done in India[38]) and manifest as another area of lack of compliance to OSH standards and a sign of a lack of an adequately established reporting system and/or a protocol for management of the injuries.

In the same context, from the already mentioned observations on reasons of medical consultations in some particular tea growing areas (SORWATHE data 2012, 2013), it appeared that the injuries reported by the respondents during the present survey were much less than an extrapolation of the reasons of consultations, which were predominantly represented by physical trauma and other reasons in keeping with occupational exposure.

In order to minimize the morbidity due to work-related hazards, tea plantations in Rwanda will be required to establish a proper health and safety management system including better reporting system and protocol for management of injuries, which will motivate workers to report injuries more regularly and in due course. The availability of first aid at tea plantations level will also improve reporting and record keeping.

Nonetheless, underreporting of the occupational related injuries has been documented in several other research studies[44], the main reasons being a reflection of cultural differences

[44]Daniels C. Marlow P., Literature review on the reporting of workplace injury trends. Health and Safety laboratory. 2005.

and variations in reporting systems as well as legislation.

With regard to PPEs usage, only 20% of the total surveyed population reported having been supplied with PPEs by their employers, although only about 68% affirmed regular use of the PPEs. Interestingly, regular use of PPEs was statistically associated with occurrence of major injury occurrence.

This might be an indirect sign that people involved in high-risk work-related injuries are given PPEs by their employers. Considering that 80% of respondents do not use PPEs, while some of those who were given them do not use them on a regular basis, this might imply that unavailability and inadequate use of PPEs might contribute to the incidence of occupational injuries in our settings among other reasons as mentioned in the previous sections.

PARTICULARITIES OF YOUNG WORKERS AGED 16-17 YEARS

There is no significant difference in the frequency of injury to young workers aged 16-17 years old compared to other two groups (13-15 years and 18-24 years). However, there is a remarkable difference in the severity of those injuries to young workers aged 16-17 years because the number of young workers with days of absence between 31 and 40 days is higher 36% (27/75) compared to those above 18 years which is 19% (24/123).

One of the reasons for the severity of the injuries for those aged 16- 17 years is that they work in the same conditions as adults because of distortion of their age. Consequently, they work more hours, sometimes in the dark without proper protection and in most cases without guarantee of their rights.

During individual interviews, some young workers admitted to fabricating their age in order to get the job because tea cooperatives will not employ youth under 18 years of age. Most

well- organized tea cooperatives and tea factories managers admitted that their policy is to not employ young workers under 18 years of age because they consider employing them as a loss businesswise. Some reason given are the many legal issues around their employment, as well as being considered less productive because they cannot work night shifts and overtime whenever necessary.

While conducting this research study we did not identify any good practices for young workers aged 16 and 17 years because as above all factories don't employ them completely while at cooperative level they cheat their age to get employed. At Thé villageois level, most of parents feel it is their right and responsibility to work with their children in family farms like it is done in many other child chores.

CONCLUSIONS

Findings from the present study show that females represent the majority (60%) of workers in tea plantations in Rwanda (60%) and that only slightly more than a half (53.8%) belonged to the 18-24 years age group while the remainder were aged between 13-17 years. Of note, the study observes that there is a significant percentage of children aged between 13-15 years (44 out of 144) who are illegally working in the tea plantations. In fact, this represents about 15% of the total study population, which clearly indicates lack of compliance to national OSH standards with regard to child labor.

In the same context, findings from data collected using the Safe Work for Youth questionnaire show poor adherence to most aspects of OSH standards within most visited cooperatives.

The most striking finding from this study is that about 75.6% of the study population reported

having suffered from an injury during the year preceding data collection, with more than 40% having had injuries more than four times in the same year. The areas of the body most affected were the lower and upper limbs. Most respondents were said to have received either first aid or simply minor treatment/procedures, probably because most of the reported injuries were minor ones. Reported major injuries were only about 12%.

Although reporting an injury was only done in 68%, most of the respondents who had any kind of major injury reportedly had informed either his/her supervisor, colleague at work or medical officer. The reasons for poor injury reporting among the respondents, although not thoroughly studied, would be that there is no clear reporting system and no protocol for management of occupational related injuries in most of the visited tea factories and cooperatives.

Another finding that worthy of mention is that only 20% of the respondents have been provided with PPEs. The lack of regular use, even among those who have been provided with them, seems to be one of the causes of the many injuries reported earlier, and should be focused on when addressing ways of improving safety and health and preventing morbidity related to occupational hazards among tea industry growers in Rwanda.

RECOMMENDATIONS

- There is an urgent need to design practical OSH tools that will help to improve OSH conditions in tea plantations and tea factories. These tools should be similar to the "**Safe work for young workers in tea plantations"** translated in Kinyarwanda for those able to read or "**Work Improvement in Neighborhood Development (WIND) manual"** designed with OSH pictures of illustration for tea sector in Rwanda for illiterate young workers.

- There is also an urgent need to provide first aid kits at tea plantations. This will not only reduce the severity of injuries for young workers but will also address injury recordkeeping processes and awareness raising amongst managers and policy makers in tea sector.

  There is an urgent need to have a tripartite forum (tea growers, tea cooperative managers and policy makers) at a high level to discuss the legal working age the Thé Villageois level. Without this, it will take longer than expected to withdraw Rwandan tea from the ILAB list of products because there is reason to believe it is made with child labor due to various sources of allegations of child labor. There is some flexibility to adapt the law within international standards like ILO convention 138 and continue maintaining young workers rights.

Other general recommendations are the following:

1. Sustained efforts for the prevention of occupational injuries in the districts surveyed

- ✓ The focus group discussions and key informant interviews conducted during the course of this study point towards the fact that prevention of occupational injuries and dealing with work-related diseases is not well known by the management and the workers of tea cooperatives. Awareness raising about OSH would change most of these behaviors if done regularly under a clear monitoring and evaluation plan.

  The SORWATHE example showed that safety conditions both in the field and factories have shown improvement over the years, mostly owing to the establishment of safety committees. These efforts need to be sustained and inputs from the working staff need to be considered while making future plans for further improvement of safety conditions in other tea factories and cooperatives.

- ✓ The usage of protective equipment should be promoted within most tea cooperatives, and regular inspections should occur to ensure proper usage. Continued motivation, surprise checks and penalization of defaulting workers are some of the steps that could be followed regularly.

2. Education and training regarding safe work procedures and preventions of accidents

The following should be the focus areas for health education and training in safe work procedures:

- ✓ As more females were found to have suffered injuries at the workplace, training on safe work procedures should provide adequate emphasis on tasks that female workers are involved in, namely: spraying of pesticides, shade lopping, and pruning as well as other tasks in the field and factory.
- ✓ Although the incidence of injuries sustained at the workplace was high, most injuries were simple in nature and could be managed by simple first aid. However, there is no first aid at most tea plantations, and young workers use natural herbs as first aid that can cause more infection in the wounds. Hence, more young workers should be trained in first aid procedures and cooperative managers should provide first aid kits to the supervisors (MONAGRI) at tea plantations.
- ✓ The managers should provide PPEs at work places because they were available only in 20% of the cases. The workers should be encouraged to use protective footwear while working, as most injuries had affected the lower limbs.
- ✓ Sustained education on the need, benefits and maintenance of PPEs is important to ensure regular usage of the equipment provided.
- ✓ More women workers should be given training in first aid. Women are primarily employed in plucking activities and are less prone to injure themselves. Training them in first aid would mean that any injured worker, whether male or female, would get immediate attention at the workplace itself.

- ✓ Training in first aid would need to focus on management of cuts and bruises. MSDS are not available in Kinyarwanda, but for those workers who cannot read, education could be provided by the field officers/ supervisors or even by the other workers themselves. Safety signs should also be used and explained to workers.

3. Record keeping of occupational injuries

- ✓ While most workers responded that their injuries had been recorded after they reported them to the concerned authorities, review of records showed that 1.8% of the male workers and 1.1% of female workers had visited the hospital as a consequence of an occupational injury. Therefore, the system of recording workplace injuries needs to be updated. Every injury that is brought to the notice of health care providers should be recorded, whether compensable or not. This would also enable future research on the trends of occupational injuries and more importantly help in planning for safety management in these estates.
- ✓ Regular monitoring of the humidity and temperature in the factories would enable the management to take corrective steps, if indicated.

4. Using regularly risk assessment tools to improve employee health

- ✓ Continued monitoring of risk assessment by the workers could help in a planned reduction by agreeing on a specified risk limit for certain commonly occurring injuries. For example, it could be incorporated into the safety policy of the estates that the perceived risk rating of sprains and dislocations should at no point of time be allowed to exceed 'very low'.

Reasons why occupational injuries / ailments such as backache and insect bites have been assigned a higher risk rating score should be looked into and corrective steps taken. Adequate periods of rest between prolonged works hours could help alleviate backache in these workers. Encouraging the use of protective clothing, provision of protective creams or anti-irritant creams in the fields would help tackle the problem of insect bites

ANNEXES

ANNEX A: DATA COLLECTION TOOLS

Annex A. 1: General Audit OSH Checklist

Hazard management			**Comment**
Have all practicable steps been taken to ensure that systems are in place to systematically identify all:			
○ Existing hazards?	Yes	No	
○ new hazards	Yes	No	
○ potential hazards	Yes	No	
Does the hazard identification method identify hazard by?			
○ Area?	Yes	No	
○ Process analysis?	Yes	No	
○ Task analysis?	Yes	No	
Are employees advised of all hazards that may affect them while working?	Yes	No	
Are all hazards recorded?	Yes	No	
Are all hazards assessed with respect to risk?	Yes	No	
Are significant hazards identified?	Yes	No	
Are all practicable steps taken to eliminate significant hazards?	Yes	No	
Are all practicable steps taken to isolate significant hazards if they cannot be eliminated?	Yes	No	
Are all practicable steps taken to minimize significant hazards if they cannot be isolated?	Yes	No	
Hazard monitoring			
Is monitoring of the employee health the result of:			
○ An assessment of a significant hazard?	Yes	No	
○ The requirement of regulatory control?	Yes	No	
○ The requirement of an OSH, department of labour, medical practioner?	Yes	No	
Where there is a requirement to monitor employee health has:			
○ Consent been obtained from employees before monitoring was started?	Yes	No	
○ The results of monitoring been given to those employees who were monitored?	Yes	No	
○ The results of employee monitoring been provided when requested?	Yes	No	
○ Has the privacy of individual employees being monitored been protected?	Yes	No	
Legislation and codes of practice	Yes	No	
Is all relevant legislation being complied with?	Yes	No	
Are codes of practice being followed?	Yes	No	
Are preferred methods being followed?	Yes	No	
Are Rwanda standards being followed?	Yes	No	

Protective clothing, equipment and safety devices			**Comment**
Is appropriate protective clothing being worn to minimize the possible effects of hazards?	Yes	No	
Is protective clothing in good order?	Yes	No	
Is appropriate equipment being used to minimize the possible effects of hazards?	Yes	No	
Is safety equipment in good order?	Yes	No	
Is safety equipment being used correctly?	Yes	No	
Are appropriate safety devices being worn to minimize the possible effects of hazards?	Yes	No	
Are safety devices being used correctly?	Yes	No	
Are safety devices in good order?	Yes	No	
Is all equipment and protective clothing being adequately stored and maintained?	Yes	No	
New equipment and Machinery			
Have all practicable steps been taken to ensure that plant and machinery has been:			
○ Set up with safety in mind?	Yes	No	
○ Designed with safety in mind?	Yes	No	
○ Manufactured with safety in mind?	Yes	No	
Information and training			
Are all employees provided with adequate training and clear information to ensure that when they are doing their job they can:			
○ Operate plant and machinery safely?	Yes	No	
○ Handle chemicals and other substances safely?	Yes	No	
○ Perform all designated other tasks safely	Yes	No	
○ Use protective clothing, equipment and devices correctly and when required?	Yes	No	
○ Identify report and take appropriate action to protect themselves from hazards in their working place?	Yes	No	
Are all employees provided with adequate training and clear information to ensure that when they are doing their job they can:			
○ What to do in the event of an emergency while working?	Yes	No	
○ The effects of the hazards that they may be exposed to?	Yes	No	
○ The effects of any hazards that may be created while working	Yes	No	
○ How to minimize the likelihood of a hazard injuring people	Yes	No	
Are employees being given effectively supervised when they lack knowledge and/or experience in the work that they are undertaking?	Yes	No	

Emergency plans and procedures			**Comment**
Have all practicable steps been taken to ensure that emergency plans and procedures are in place for:			
○ Flood?	Yes	No	
○ Fire?	Yes	No	
○ Storm?	Yes	No	
○ Equipment failure?	Yes	No	
○ Power failure?	Yes	No	
○ Bomb threat?	Yes	No	
○ Explosion?	Yes	No	
○ Structural collapse?	Yes	No	
○ Radiation leak?	Yes	No	
○ Earthquake?	Yes	No	
○ Chemical spills?	Yes	No	
Do emergency plans take into account the following matters?			
○ Appointment of an accident controller?	Yes	No	
○ Alarm signal?	Yes	No	
○ Search and rescue procedures?	Yes	No	
○ Back-up systems?	Yes	No	
○ Warning systems?	Yes	No	
○ Emergency procedure training?	Yes	No	
○ Media liaison?	Yes	No	
○ Action in specific cases, such as chemical spills?	Yes	No	
○ Means of communication?	Yes	No	
○ Notification of emergency services?	Yes	No	
○ Personnel checking?	Yes	No	
○ Process shut-down procedures?	Yes	No	
○ First aid equipment and training	Yes	No	
○ All clear and re-entry procedures?	Yes	No	

Incident/accidents			**Comment**
Do incident/accident records show:			
○ Details of incident/accident which harmed employees?	Yes	No	
○ Details of incident/accident which harmed other persons?	Yes	No	
○ Is OSH, Department of labour being notified of serious harm accidents as soon as possible?	Yes	No	
○ Is OSH, Department of labour being sent written details of serious harm accidents?	Yes	No	
○ Are all practicable steps being taken to investigate accidents?	Yes	No	
○ Do investigation determine if the accident were the result of a significant hazards?	Yes	No	
○ Do systems ensure that accident sites are not interfered with?	Yes	No	
Employee involvement			
Are all employees given the opportunity to be fully involved at all times in:			
○ The development of procedures for hazards management as it may affect their job?	Yes	No	
○ The development of procedures for dealing with emergencies or imminent dangers that may affect their jobs	Yes	No	
Are all employees given the opportunity when required to be involved in:			
○ Attending the health and safety surveys and questionnaires?	Yes	No	
○ Participating in health and safety projects?	Yes	No	
○ Participating in health and safety surveys and questionnaires?	Yes	No	
○ Are records kept of meetings, surveys, questionnaires and consultants	Yes	No	
Duties of employees			
Are employees aware of their responsibilities to:			
○ Take all practicable steps to ensure their own safety?	Yes	No	
○ Ensure that they do not cause harm to any other persons?	Yes	No	
○ Wear the protective clothing which the circumstances of the situation require?	Yes	No	

Annex A. 2: Risk Assessment Tool

				Assessment No:				
Location:				**Date undertaken:**				
Job or Task:				**People involved:**				
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**		**5. Further action to control the risk?**
						P **S** **R**		

Produced by: **Signature** **Date: Action by:**
Start

Date for actions: **Date actions due to be completed:**

Annex A. 3: Individual OSH Questionnaire

Field and factory workers

Name:

Age:

Gender:

Occupation:

1) Did you have any injury at the workplace in the last one year?

a) Yes [ ]

b) No [ ] -----

2) How many times?

_____ (Number of times)

3) What was the

a) Type (i) Minor [ ] (ii) Major [ ]

b) Site of injury

(i) Head and neck [ ]

(ii) Upper limbs [ ]

(iii) Trunk/abdomen [ ]

(iv) Lower back [ ]

(v) Lower limbs [ ]

(Also record exact nature of injury)

4) Did you report it?

a) Yes [ ]

b) No [ ] -----

5) To whom did you report it?

a) Colleague

b) Supervisor

c) Medical officer

d) Other

6) How long after the injury did you report it?

a) Within six hours

b) Six hours to one day [ ]

c) After several days [ ]

7) Was it recorded?

a) Yes [ ]

b) No [ ]

c) Don't know [ ]

8) What was the treatment provided?

a) First aid [ ]

b) Minor surgery/ procedure at dispensary or hospital (e.g. dressing, suturing, application of plaster cast [ ]

c) Major surgery/ procedure at hospital [ ]

d) Referral to higher center [ ]

9) How many days were you absent from work in the last one-year? (Record number of days) _____ days.

10) What was the cause?

a) Work spot injury [ ]

b) Work related illness [ ]

c) Other illness [ ]

d) Other causes [ ]

11) Have you had to change your job or workplace due to any of the following?

a) Work related illness Yes[ ] No[ ]

b) Disability Yes[ ] No[ ]

c) Allergy Yes[ ] No[ ]

12) Are Personal Protective Equipment (PPE) supplied to you?

a) Yes [ ]

b) No [ ]-----

13) Are you currently using any PPE?

a) Yes [ ]

b) No [ ]-----

14) Do you use it regularly?

a) Yes [ ]

b) No [ ]

15) Have you received any training in safety measures to be used at the workplace?

a) Yes [ ]

b) No [ ]

16) Have you received any training in First Aid?

a) Yes [ ]

b) No [ ]

17) Is a first aid kit available at your work site?

a) Yes [ ]

b) No [ ]-----

18) Are you or any others at the site trained to use it?

a) Yes [ ]

b) No [ ]

19) Is the first aid box checked and updated regularly?

a) Yes [ ]

b) No [ ]

c) Don't know [ ]

20) Is there a regular replacement of outdated tools/ equipment at your workplace?

a) Yes [ ]

b) No [ ]

21) Is the machinery at your workplace?

a) Guarded [ ]

b) Unguarded [ ]

c) NA [ ]

22) Have you received any training concerning operating of the machines you handle and its safety procedures?

a) Yes [ ]

b) No [ ]

c) NA [ ]

23) Are the conditions at your workplace satisfactory with respect to

a) Temperature Yes [ ] No [ ]

b) Ventilation Yes [ ] No [ ]

c) Lighting Yes [ ] No [ ]

d) NA [ ]

24) Have you been exposed to chemicals such as pesticides and fertilizers either directly or indirectly

a) Yes [ ]

b) No [ ]

c) NA [ ]

25) Are MSD sheets (this will be explained to the interviewee in the local language) Available at the point of distribution of chemicals?

a) Yes [ ]

b) No [ ]-----

c) NA [ ]-----

26) Is it in a language you can follow?

a) Yes [ ]

b) No [ ]

c) NA [ ]

27) Are the features/dangers of each chemical explained to you before spraying?

a) Yes [ ]

b) No [ ]

c) NA [ ]

28) Do you wash your hands

a) After handling chemicals? Yes [ ] No [ ]

b) Before eating? Yes [ ] No [ ]

c) NA [ ]

29) Is soap available for hand washing at your worksite?

a) Yes [ ]

b) No [ ]

c) NA [ ]

30) Have you undergone a health check up in the last one year?

a. Yes [ ]

b. No [ ]

31) How many times?

_____many times

Annex A. 4: ILO Safe Work for Young Workers Tool

Question				Action notes
General principles				
There are some workers under the legal age in the workshop				
All your young workers have completed compulsory or basic schooling				
A young worker is showing signs of deprivation (not enough sleep, food, clothing)				
A young worker is showing signs of intimidation or fear				
Supervisors and co-workers have been informed what is safe for young workers to do				
All young workers have been trained on what to do during an accident or emergency				
An occupational safety and health plan has been developed for this workshop				
Working time				
A young worker sometimes works at night, goes home in the dark, or works overtime				
A young worker is allowed to work in an isolated area				
Harassment, Violence, and Stress				
A written policy against harassment and violence, particularly addressing the risks that young girl workers may face, has been developed				
The anti-harassment policy is posted in the workshop where all can see it				
Each new young worker has an assigned "buddy" to answer questions and keep an eye out for safety				
Materials storage and handling				
All young workers have been trained on correct lifting techniques				
Supervisors check periodically to make sure they are lifting correctly				
Some young workers do jobs that require lifting or carrying heavy loads				
Work-stations				
Some young workers squat or kneel for long periods of time				
Your young workers know and use the "elbow rule"				
Machine and tool safety				
Your young workers are only allowed to use machines and tools that have low potential for causing injuries or are closely supervised if they use power equipment				

Safe Work for Youth

ANNEX B: RISK ASSESSMENT REPORT

Annex B. 1: Risk Assessment Report Within Tea Plantations

			Assessment No: OSH RESEARCH/REACH-TEA							
Location: TEA PLANTATIONS			**Date undertaken:**							
Job or Task: FARMING&HARVESTING TEA			**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**							
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Flying insects and tea leaves which can cause damage to eyes.		Harvester and farmers can experience eye injury by flying insects or contact with tea leaves		Risk is not controlled		5	**3**	**15**		Provide eye goggles
Sharps and uneven pathway which can cause bruising, wound or sprain.		Harvester and farmers can experience cuts dry tea tree or fall when crossing the garden.		Risk is not controlled		**5**	**2**	**10**		Provide gown and boots

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Snakes bite can cause wound and poisoning.		Harvester and farmers can experience wound or asphyxiation when bitten by snake.		Not controlled		3	**5**	**15**		Fumigate and boots to farmers and harvesters
Chemicals from fertilizers can cause burns or skin damage.		Harvester and farmers can experience skin rushes or finger buns by handling fertilizer with hands.		Not controlled		**5**	3	15		Provide gloves

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Heat and cold can result illness.		Harvester and farmers can experience skin or other transmissible diseases		Not controlled		2	**3**	**6**		Provide hut and coats
Nearby river can cause flood and drown.		Harvester and farmers can experience asphyxiation when drowning in water.		Not controlled		**2**	5	10		Isolate nearby river and stagnate water

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Manual lifting and carrying of heavy loads can result injury or fracture		Harvesters can experience fracture, strain or injury by falling of heavy loads or fall when transporting tea leaves.		Not controlled		4	**5**	**20**		Training on hazards and control of manual lifting.
Working time and system can result in occupational diseases.		Harvester and farmers can experience strains and fatigue to excessive demand.		Not controlled		**2**	3	6		Respect working time and review the system.

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Lack of toilets can results the spread of infections.		Farmers and harvester can get infected by contact with disseminated faeces		No control		5	**2**	**10**		Provide latrine nearby plantations
Lack of drinking water which can result infection or dehydration		Farmers and harvester can get sick of infection by drinking stagnate water or suffer from dehydration		No control		**3**	4	12		Provide drinking water and cups

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Lack of hand washing material which can result in infection diseases.		Farmers and harvester can get sick from infection by eating without washing hands or disseminate infection.		No control in place		5	**2**	**10**		Provide hand wash equipments
Lack of personal protective equipment which can result in injury and diseases.		Farmers and harvester can experience wound by contact with sharp object, animal bite of infectious disease.		No control		**3**	3	9		Provide adequate PPE

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA PLANTATIONS				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Lack of knowledge which leads to high risk exposure.		Farmers and harvester can experience injury due to contact with unknown hazards substance of object.		No control in place		5	**2**	**10**		Provide trainings
Lack of first aid in place which can increase the severity of injury.		Farmers and harvester can experience too much pain or blood loss due to lack of quick assistance.		No control		**3**	3	9		Provide adequate first aid treatment in plantation.

Produced by: **Signature** **Date: Action by:**
Start

Date for actions: **Date actions due to be completed:**

Annex B. 2: Risk Assessment Report Within Tea Factories

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA FACTORY				**Date undertaken:**						
Job or Task: TEA PRODUCTION UNITS				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Slips/Trips and fall caused by spills or uneven floor.		Workers can get fracture and wound by slipping or tripping in wet or uneven floor.		Risk is not controlled		2	**5**	**10**		Remove spills and put awareness signs.
Chemical and biological hazards can cause injury or skin damage.		Workers can be damaged by handling chemical substances.		Risk is controlled		**2**	**5**	**10**		Provide appropriate PPE

			Assessment No: OSH RESEARCH/REACH-TEA							
Location: TEA FACTORY			**Date undertaken:**							
Job or Task: FARMING&HARVESTING TEA			**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**							
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Electrical Hazards can result fire and electrocution		Workers can got burnt and property can be damaged when fire raise in place or by contact with unprotect wires/switches		Not controlled		3	**5**	**15**		Protect all electrical wires and sockets
Noise can result hearing loss or work related stress		Workers can experience hearing loss due to excessive noise or stress		Not controlled		**3**	5	15		Provide ear muphs and isolate noise area or machine

			Assessment No: OSH RESEARCH/REACH-TEA							
Location: TEA FACTORY			**Date undertaken:**							
Job or Task: FARMING&HARVESTING TEA			**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**							
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Heat can result stress.		workers can be stressed or sweating due to exposure on high humidity or temperature.		Aeration		2	**3**	**6**		Provide ventilator and air conditioner.
Poor lighting can result injury by contact with stacking objects or sight problem.		Workers can fall or trip on stacking object or suffer sight		Not controlled		**3**	5	15		Disseminate lighting and training

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA FACTORY				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Manual lifting and carrying of heavy loads can result injury or fracture		workers can experience fracture, strain or injury by falling of heavy loads or fall when transporting tea leaves.		Not controlled		4	**5**	**20**		Training on hazards and control of manual lifting.
Working time and system can result in occupational diseases.		workers can experience strains and fatigue to excessive demand.		Not controlled		**2**	3	6		Respect working time and review the system.

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA FACTORY				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Lack of adequate personal protective equipment which can result in injury or diseases.		Workers can experience wound by contact with sharp object, or handling of hazardous substances.		No control		**4**	4	16		Provide adequate PPE
Lack of drinking water which can result infection or dehydration		Farmers and harvester can get sick of infection by drinking stagnate water or suffer from dehydration		No control		**3**	4	12		Provide drinking water and cups

				Assessment No: OSH RESEARCH/REACH-TEA						
Location: TEA FACTORY				**Date undertaken:**						
Job or Task: FARMING&HARVESTING TEA				**People involved: Dr. Juvenal HATEGEKIMANA/Justin MFIZI & Coop. Managers**						
1.Hazard and effect of the hazard		**2. Who/what may be harmed and how**.		**3.Is the risk adequately controlled**		**4.Risk rating**				**5. Further action to control the risk?**
						P	**S**	**R**		
Lock out procedures which can result damage or accident.		Workers can be injured by machine.		Controlled		2	**4**	**8**		Training on lockout procedure
Fire hazards can result burns/death and property damage.		Workers can get burnt/death or damage to the property due to insufficient fire protective system.		Fire extinguisher in place		**3**	5	9		Provide adequate fire fighting and detection system. Training and drill

1.Hazard and effect of the hazard	2. Who/what may be harmed and how.	3.Is the risk adequately controlled	4.Risk rating			5. Further action to control the risk?
			P	S	R	
Lack of formal emergency preparedness plan which can result in mass destruction in case of a disaster.	Workers, employers and property can be damaged in case of disaster	No control in place	5	**5**	**20**	Design formal disaster preparedness plan
Lack of first aid in place which can increase the severity of injury.	Workers can experience too much pain or blood loss due to lack of quick assistance.	No control	**3**	3	9	Provide adequate first aid treatment in plantation.

Produced by: **Signature** **Date: Action by:**
Start

Date for actions: **Date actions due to be completed:**

ANNEX C: LIST OF TEA FACTORIES AND COOPERATIVES

Province/Districts	Population Total	Population Female	Population Male	Living under poverty line	Employ-ment rate	Chronic Malnutrition	Nbr of Sectors	Sectors with tea plantations	Nbr of Cells	Nbr of Cells with TEA plantations	Nbr of Villages	Factory/Company	Cooperative	Tea growers' coop members	Tons of tea-2012
Nyaraguru	293,424	153,906	139,428	61.6%	85.0%	1.90%	14	9	72	34	332	Mata Tea Factory	COOTHENYA	4 881	2 792,618
												Nshili-Kivu Tea Factory	COTHENK		
												Muganza Tea Factory	COOTHEMUKI		
Nyamagabe	342,112	180,472	161,640				17	7	92	27	536	Kitabi Tea Company	KOBACYAMU	5 824	4 732,102
												Mushubi Tea Factory	COOTHEGAB		
TOTAL	**635,536**	**334,378**	**301,068**				**31**	**16**	**164**	**61**	**868**			**10 705**	**7 524,7**
Karongi	331,571	175, 684	155, 887	39.8%	86.4%	0.77%	13	7	88	38	538	Karongi Tea Factory	KATECOGRO	6 494	5 451,063
												Gisovu Tea Factory	COOTHEGIM		
Ngororero	334,413	179,586	154,827	29.5%	87.9%	53.40%	13	6	73	23	419	Rubaya Tea Company	COTRAGAGI	1 941	3 144,868
Rubavu	423,000	228,420	194,580	19.0%	84.0%	23.00%	12	3	80	18	525	Pfunda Tea Company	COOTPFUNDA	1 305	8 160,228
Rutsiro	323,251	171,020	152,231	26.1%	86.3%	0.80%	13	9	62	15	483	Rutsiro Tea Factory	RUTEGROC	1 304	-
Rusizi	404,712	210,402	194,310	24.5%	87.9%		18	6	106	22	630	Shagasha Tea Factory	-UMACYAGI -COOPTHE SHAGASHA	7 387	15 342,081
Nyamasheke	383,138	204,115	179,023	40.6%	80.7%	9.40%	18	9	68	14	588	Gisakura Tea Company	-COOPTHE GISAKURA	3 570	
													-COOPTHEVIGI		
												Gatare Tea Factory	COOTHEGA		12,123
Nyabihu+	295,580	157,536	138,044	11.9%		51%	12	5	73	7	473	Nyabihu Tea Company	COOPTHEGA	168	176,153
TOTAL	**2,495,665**	**1,482,650**	**1,013,015**	**2**	**5**	**1**	**112**	**45**	**550**	**137**	**3656**			**21 992**	**32 286,5**
Gicumbi	397,871	208,559	189,312	33.9%	85.0%		21	11	109	88	630	Mulindi Tea Factory	COOPTHE MULINDI COTHEVM	4 814	12 012,207
Rulindo	288,452	152394	136058	19.8%	88.5%		17	8	70	19	494	SORWATHE	ASSOPTHE	4 573	8 399,187
Burera+	336,455	175,974	160,481	23.4%	82.6%		17	1	69	1	571		-	-	-
	1,022,778	**536,927**	**485,851**	1	3	-	**55**	**20**	**248**	**108**	**1,695**			**9 387**	**20 411,4**
TOTAL	**4,153,979**	**2,353,955**	**1,799,934**				**198**	**81**	**962**	**306**	**6219**			**42 261**	**60 222,6**