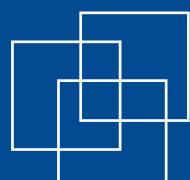




International
Labour
Organization



**Food and agriculture
global value chains:
Drivers and constraints
for occupational safety
and health improvement**

Volume Two

Three case studies



Food and agriculture global value chains: Drivers and constraints for occupational safety and health improvement

Volume Two
Three case studies

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Introduction and methodological note

The *Joint ILO-EU project to improve knowledge base and safety and health in global supply chains to support G20 work on safer workplaces* (i.e. ILO-EU project on OSH in GSCs) aimed to identify drivers and constraints for occupational safety and health (OSH) improvement in global supply chains (GSCs). The project focused on agricultural global value chains (GVCs) in Colombia, Indonesia and Madagascar and had a total duration of 22 months, which included:

- An inception phase (March - June 2016) dedicated to country and sector selection;
- An implementation phase (July 2016 - September 2017) dedicated to the elaboration of a research methodology on OSH in GVCs, implementation in three countries and the publication of three country case studies;
- A closing phase (October - December 2017) dedicated to a final global report and its dissemination through a high-level meeting in Europe and events in the three target countries.

The country case studies displayed in this volume had the following objectives:

- Identify underlying constraints that are preventing improvement and compliance of OSH within the supply chain (systemic constraints);
- Identify incentives and capacities for private and public actors to contribute to a solution (successful experiences and possible points of entry for change);
- Identify pathways for sustainably improving OSH in targeted supply chains (possible intervention models).

Focus on food agriculture

Based on the work carried out during the inception phase of the joint ILO-EU project on OSH in GSCs, it became evident that there would be added-value in selecting a single sector for the research. Doing so would allow for cross-country comparisons as well as the development of sector specific tools and strategies.

Food and agriculture global value chains represent a high percentage of global trade in value and in volume, but are less documented and attract less attention from the public than garment or electronics. Agriculture is estimated to concentrate a third of global employment and over half of total employment in many developing economies. Between 2000 and 2013, the share of GSC-related jobs as a percentage of total employment in agriculture increased over five per cent in emerging economies (against less than 1 per cent for manufacturing) indicating the growing integration of the sector in GVCs (ILO, 2015a).

A number of commodities are strongly integrated in global value chains and production patterns have adapted to the rise of big retailers in the western world. For instance, horticulture and floriculture, tea and coffee, spices and nuts, fresh seafood, among others, are widely consumed and distributed in a just-in-time fashion in supermarkets of western countries. The integration of agricultural commodities in agro-food and retailer's supply chains has also substantially modified employment patterns in the sector. To date, little scientific literature or evidence is available on its impact as it relates to OSH. Additionally, a large number of certification (private compliance initiatives) schemes that include labour provisions are already implemented in the sector, also with little evidence on their impact on OSH.

The agricultural sector is predominantly labour-intensive and poses challenges in terms of legislative coverage, labour inspection and enforcement, as well as poverty alleviation. A large part of the sector remains without access to health care and other basic services. Employment patterns are often characterized by more

vulnerability, using temporary or informal work, often linked with inadequate OSH arrangements and working conditions. This made the agriculture sector particularly pertinent for the study.

Three GVCs of focus

The GVCs of focus are: coffee in Colombia, palm oil in Indonesia and lychee in Madagascar. Those GVCs were selected on the following criteria:

- Strong integration in GVCs and overall market position;
- Large number of jobs in the local supply chain as a share of rural employment;
- Existence of important risk factors for safety and health of workers at different production stages;
- Limited negative social and environmental impact of an intervention in the value chain;
- Existence of organized structures in the value chain (sector organizations, multi-stakeholder platforms, unions and associations) and political importance for the country;
- Good potential for replication (i.e. product involving other developing countries, high global buyer involvement).

Approach

The research question addressed by the project follows: What are the drivers and constraints for OSH improvement in Global Supply Chains? The literature review conducted during the project's inception phase revealed that most of the literature on GSCs adopts a top-down approach, starting with the global buyer and going down the supply chain. This approach created constraints at the lowest levels of supply chains due to the lack of visibility and traceability of global buyers below their tier one suppliers in sourcing countries. Therefore, most of the evidence available focuses on tier one.

The method adopted by the project was adapted from the Market Systems for Decent Work approach (ILO, 2015b) which had been traditionally used by the ILO in the framework of SME development. Adapting this approach by adding an OSH and a global component met a twofold objective: i) adopting a bottom-up approach, to ensure analysis of the situation at the bottom-end of value chains; and ii) adopting a qualitative approach to answer the research question which seeks drivers and constraints for OSH to effectively formulate intervention models. Consequently the methodology developed and used is of a qualitative nature, which helps understand OSH trends, and the evolution of workers' and managements' experience of OSH within a particular market. It is not a methodology designed to extrapolate quantitative

data. The national data on OSH and trade mentioned in the reports is from secondary sources, usually national repositories.

There is evidence that working conditions, including OSH, are closely linked with employment status, which is directly influenced by the dynamics at play within the supply chain and its market system. The research methodology allowed for a better understanding of where deficits and good practices exist in terms of OSH, what drives them and possible incentives and potential areas for sustainable change (i.e. possible intervention models).

The steps listed below were followed in a systematic manner in each country and value chain studied.

Step 1: value chain selection

Objective: select value chain of focus according to project objectives.

Desk review based.

In the framework of the project, we defined indicators by cluster, rated how the value chain was doing for each cluster and then used a scoring to make the final choice between three value chains in each country. We looked at five clusters

- i) market position;
- ii) employment and working conditions;
- iii) environmental and social status;
- iv) sector organization and regulation and
- v) potential for transferability.

Step 2: value chain mapping

Objective: Map the selected supply chain and its market environment,¹ which will be used for sampling.

Desk review of all available sources of information and contact with key players.

The supply chain mapping provides:

- i) A detailed **typology** of actors - describes the structure and flow of the chain in logical clusters (the various actors of the value chain, their connections, and the whole range of operations from pre-production to the consumer – though less detailed information will be provided for the part of the supply chain, which is not located in the country);
- ii) A vision of the **scale** - quantifies the value chain (size and scale of main actors, production volume, number of jobs, sales and export destination and concentration, geographical distribution, existing economic incentives or specific policy and regulatory framework),

¹ This exercise should be performed in consideration of Chapters 1 and 2 of the *Value Chain Development Guide for Decent Work* (ILO 2015b), as well as *Agro-value Chain Analysis and Development: the UNIDO Approach*, 2009.

- iv) An identification of the **supporting functions** - provides a general overview of the market system in which the value chain is operating (main actors, size and type, regulatory framework and responsible authorities (typically but not exclusively Ministry responsible for the sector – i.e. agriculture, industry - Ministry of Labour, Ministry of Health, Ministry of Trade, as well as providers of services as relate to employment, skills, OSH, social protection) with a deeper focus on services affecting OSH outcomes (public and private regulation, responsible authorities for health and social protection, health prevention services, Social Security Institutions, service and training providers, etc.).

Those three elements are the basis for selecting key informants – i.e. establishing a sample of actors to be interviewed and workplaces to be observed. The sample must be:

- Representative of each type of market actor (and possible geographical differences) – a minimum number of interviewees must be included for each type of actor to ensure triangulation of information.
- Include each identified support functions (as step 3 is implemented, the assessment of specific support functions can be more or less in-depth depending of the emerging needs and gaps).

Step 3: value chain analysis and assessment of vulnerabilities to professional risks and their drivers and constraints

Objective: Conduct a Value Chain Analysis (VCA),² which will include a focus on occupational safety and health (risks as well as prevention, promotion, protection and compensation practices).

Qualitative interviews and observation.

The VCA will complete the mapping with an in-depth analysis of the dynamics at play in the supply chain and its institutional and policy framework. It will also identify main risks to safety and health of workers along the chain and areas of performance and compliance issues and their **root causes**.

The VCA will:

- i) Identify key qualitative and quantitative indicators (time, costs, value addition, productivity and profit distribution) within the supply chain,
- ii) Assess firm performance and job quality, and identify **underlying causes** of underperformance on OSH (within the business models of the chain and / or due to policy or institutional gaps), identify linkages, power relationships and value chain governance,
- iii) Identify main safety and health **risks** for each type of actor in the value chain as well as prevention, promotion, protection and compensation practices at each step of the production process,
- iv) Assess the **role of key supporting functions** and rules, how they may be linked to supply chain constraints and identify **gaps and opportunities** (i.e. political or institutional interest in working on issues that have consequences on OSH outcomes in the supply chain).

2 This exercise should be performed in consideration of Chapters 1 and 2 of the *Value Chain Development Guide for Decent Work* (ILO 2015b) as well as *Agro-value Chain Analysis and Development: the UNIDO Approach*, 2009.

Step 4: intervention design to improve OSH outcomes in the supply chain

On the basis of the information gathered through both steps 2 and 3, intervention models are formulated. Intervention models are the set of interventions or actions that can effectively improve OSH outcomes (the health and safety of workers) in the supply chain. One single intervention is unlikely to have such an impact, hence intervention models that likely combine a mix of policy and market interventions are key.

In doing so, specific attention must be paid to the following elements to take out of the analysis:

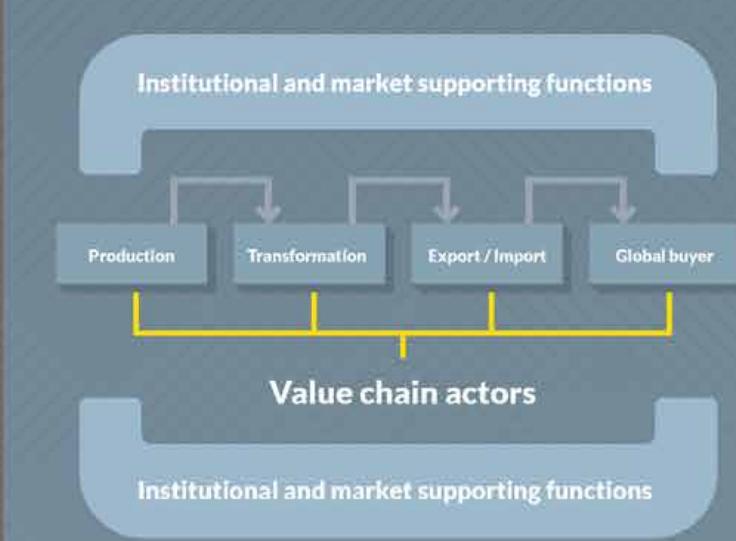
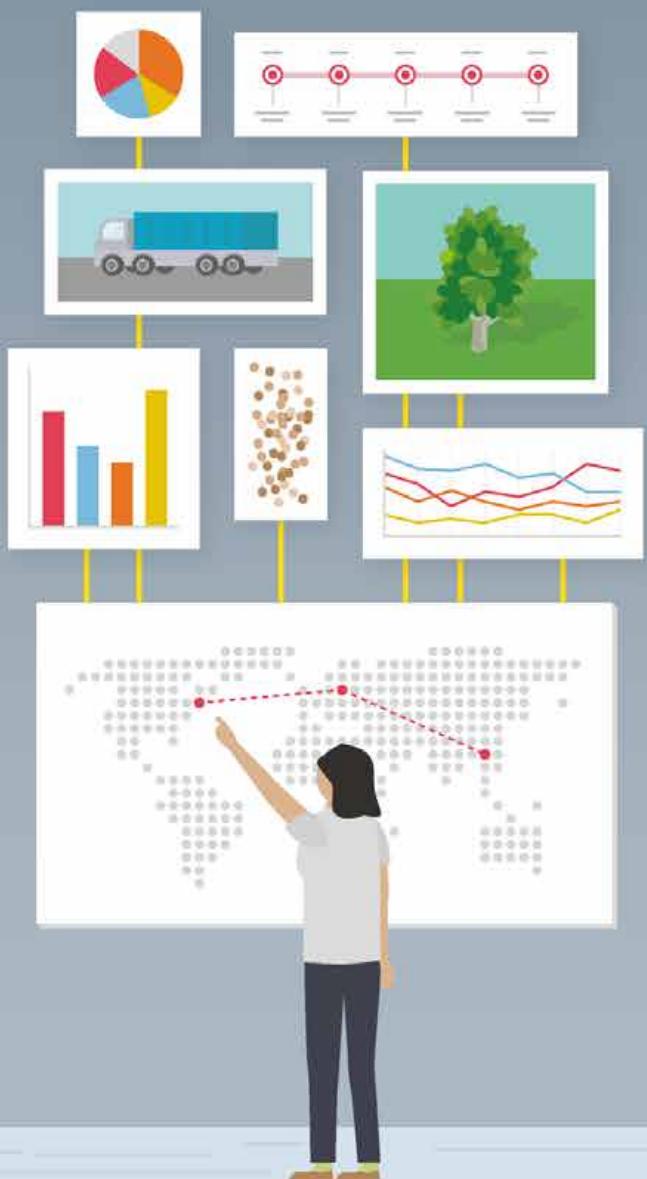
- Concrete vision of **implementation gaps** of existing laws, regulation and policies on OSH in a sector.
- Typology of actors and **vulnerability profile** for each – can help policy makers **prioritize** their support.
- Identification of **channels** to support SMEs (business service providers, public services present on the ground, sectoral organizations, cooperatives, inputs providers, etc.).
- Identification of areas of improvement for which there are existing / potential **incentives** for change and areas for which an external / public intervention / funding is likely to be needed.

Intervention models are a set of interventions for which both a need and an opportunity emerged within steps 2 and 3.

| Step 1: Selection



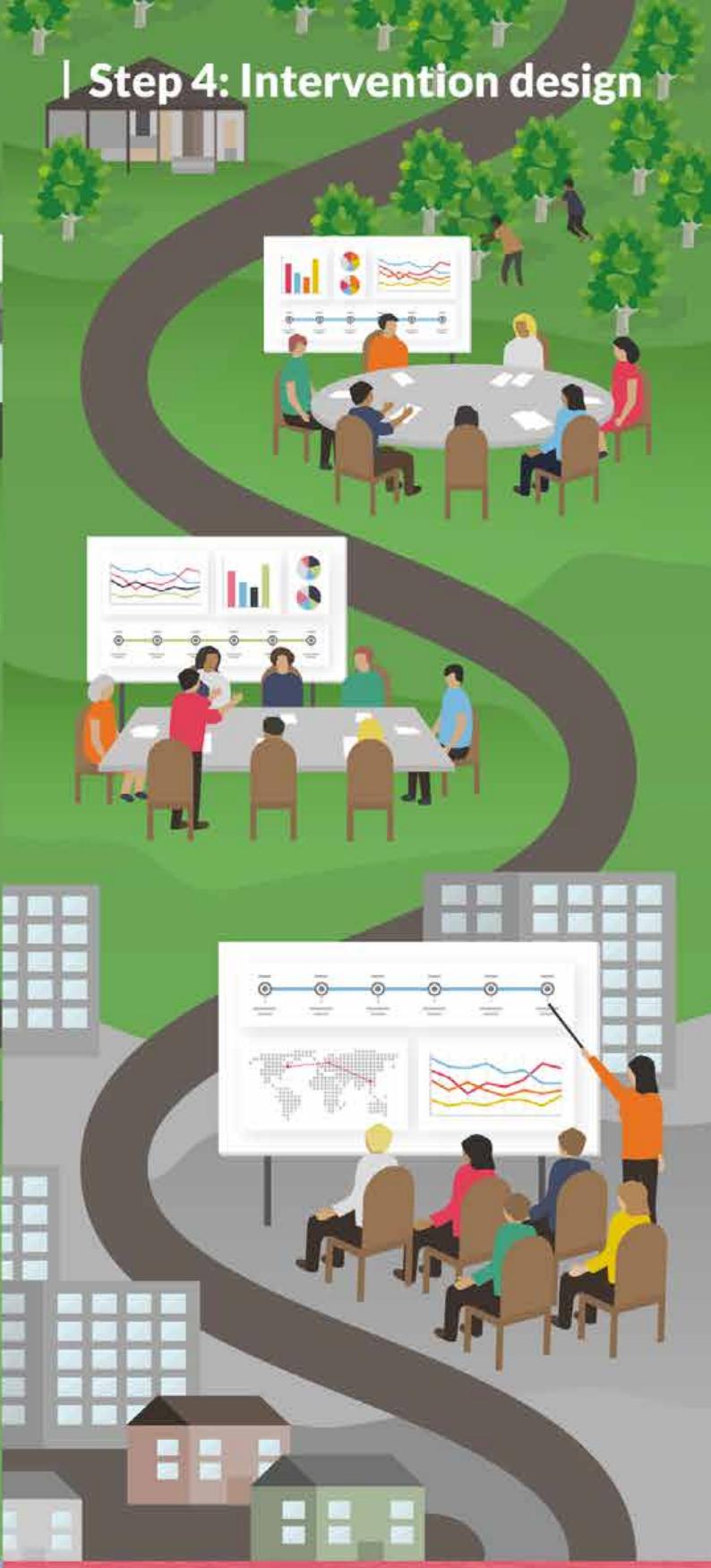
| Step 2: Mapping



| Step 3: Analysis



| Step 4: Intervention design



Interventions for sustainable improvement of occupational safety and health outcomes

- _____
- _____
- _____

Sources of data and information

The following sources of information were used to build the case studies:

- A preliminary literature review included scientific and technical publications, current legislation and relevant policies in the country of production, trade statistics, working conditions and OSH data, as well as local and international press articles and selected websites.
- Field research, based on qualitative semi-directive interviews and focus groups with a sample representative of all actors in the supply chain (producers, agricultural workers, transporters, collectors, processors, exporters, importers, food companies, retailers), as well as their institutional and market environment in the producing country (ministries of labour, health, agriculture, trade, labour inspection services, social welfare services, social partners, sectoral associations, occupational health services, private compliance initiatives, service providers, auditors, input suppliers, development partners, etc.).
- A series of consultations with key actors in the selected supply chains and their institutional and market environment on the basis that field research results in the formulation of intervention models. These models will allow for the improvement of OSH outcomes in the supply chain and opportunities to replicate good practices in other supply chains in the country of production.

The qualitative interviews, focus groups and workplace observations were built around observation checklists and interview and focus group guides for each specific value chain and type of actor interviewed (i.e. workers of different contractual and job arrangements, and management, at each stage of the chain). Those instruments were adapted from the *Market Systems for Decent Work* approach, the different instruments of the ILO on OSH and particularly OSH in agriculture,³ and were further refined with the support of the Cardiff Work Environment Research Centre (CWERC). The research protocol provided for

interviewing workers outside of the workplace as much as possible. In each country, the project worked with an inter-disciplinary research team, composed of local and international researchers.

When relevant, the research was conducted in several regions where conditions were deemed to be different and thus geographical location impacted employment and market patterns. In Colombia, the field research focused on three regions: Caldas, Huila and Nariño. The rational for this choice was to select regions that had a different historical relation with coffee production (some very lengthy, others more recent). Two major coffee producing regions were selected on this basis, as well as a third region with less production, more recent, and which experienced higher degrees of conflicts.⁴

In Indonesia, the field research focused on two regions: North Sumatra and East and Central Kalimantan. The rational for this choice was to select one region that had established plantations and was a long-time producer of palm oil, as well as a second region where establishment was more recent.

In Madagascar, the field research focused on Atsinanana and Analanjirofo regions, which are the regions that are geographically close to the deep sea port of Toamasina and consequently reach the export market.

In each geographical location, a typology of value chain actors was determined on the basis of the literature review and preliminary interviews of key actors, each “type” or cluster of actor was observed and interviewed, and a sufficient number of each type was included so as to ensure triangulation. Observation time varied widely depending on the size of the companies / farms visited and complexity of production processes. Interviews required one and a half to two hours and more time was needed for focus groups. Interview guides covered a range of topics: market position, socio-economic situation, contractual status, training level and training received, work processes, risk factors, OSH awareness, practices and outcomes, buyers' requirements, regulatory requirements, support functions and received support, among others. In addition to value chain actors, supporting functions and regulatory environments were included in the interviews, with a specific interview guide.

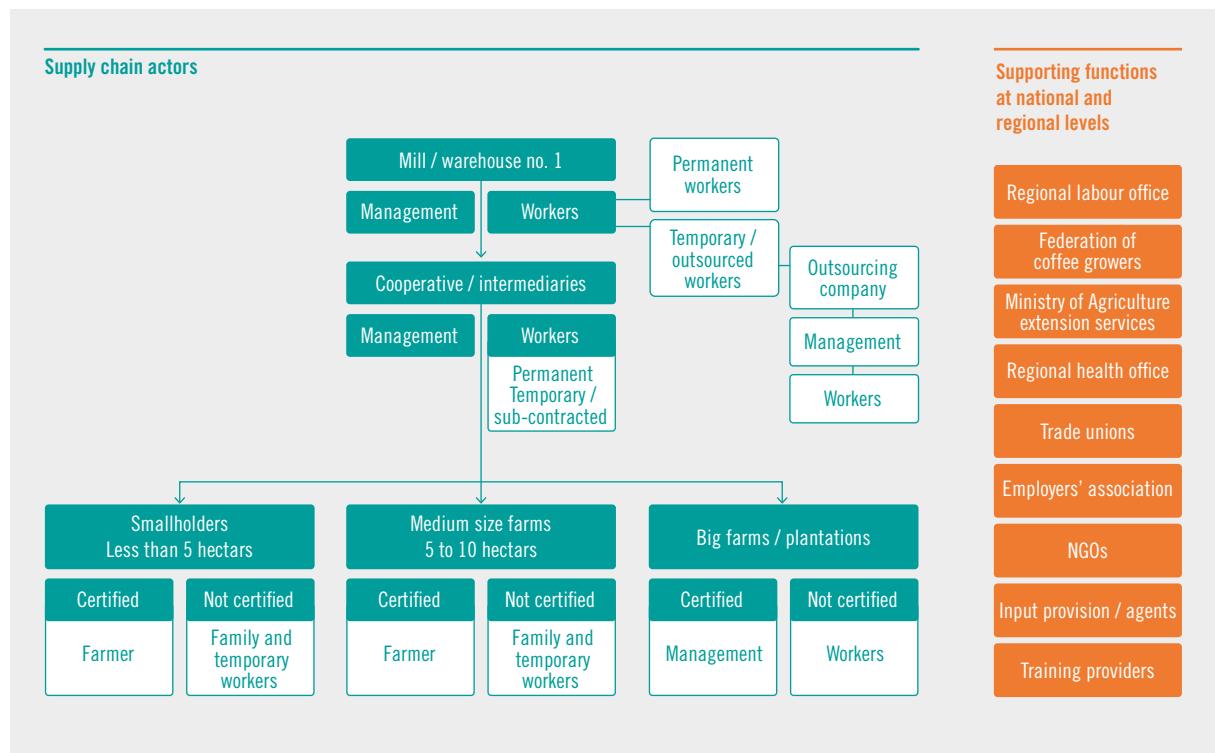
3 In particular the Work Improvement in Neighbourhood Development (WIND) methodology as well as the ILO Code of Practice on Safety and Health in Agriculture (ILO 2014).

4 In the context of the recent peace agreement and the subsequent focus on rural development in the conflict-affected areas it seemed particularly appropriate to take this factor into account.

In Colombia, the review of literature and the field research design took place from October to December 2016. The field research (interviews, focus groups, workplace observations) took place from January to April 2017, and the consultations with value chain actors and their supporting functions on the basis of the results occurred in July and August 2017. About 120

interviews were conducted in Colombia, accounting for focus groups as well. Mills and stock management warehouses were clustered based on type of ownership (linked to the national federation of coffee growers and cooperatives or not). On that basis, the figure below provides an overview of the typology used for the field research below mill level.

Figure 1. Overview of typology used in Colombia below mill level

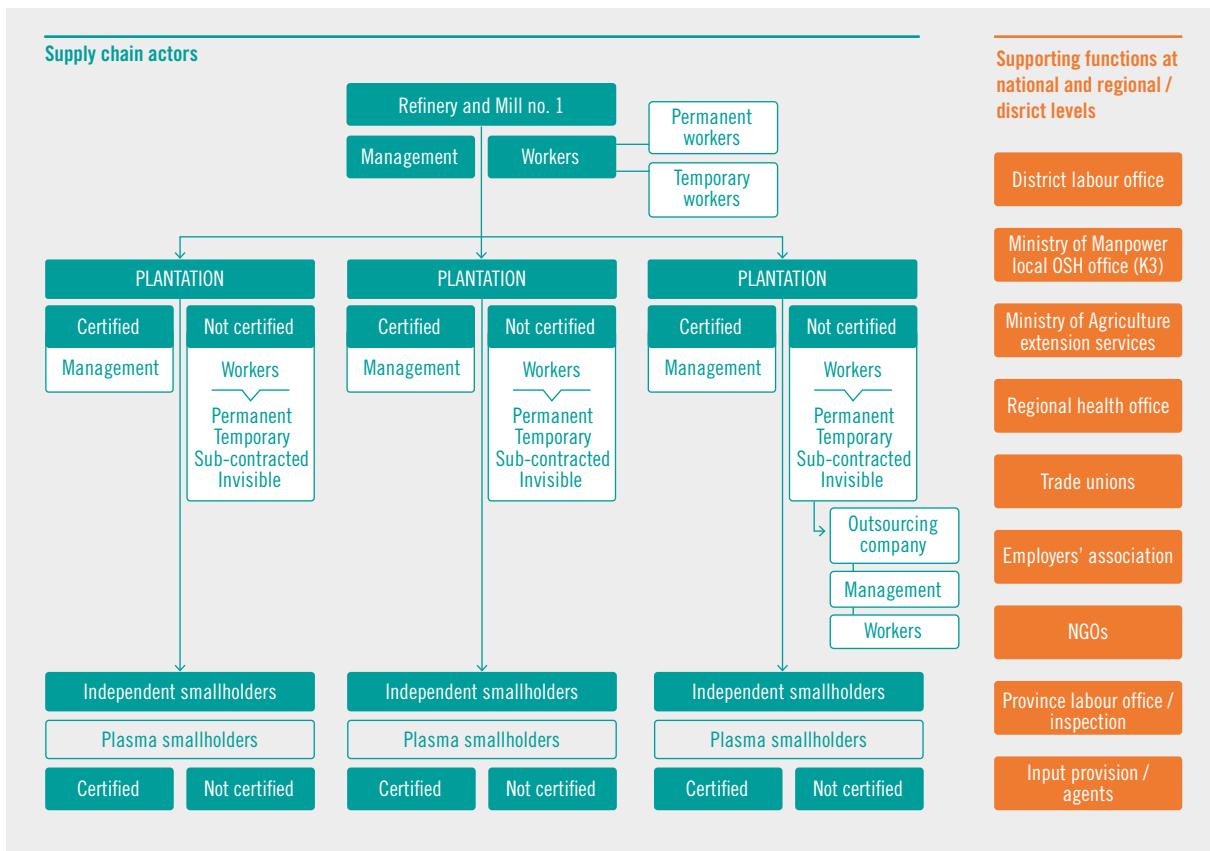


Source: authors.

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2017. About 120 interviews were conducted in Indonesia, accounting for focus groups as well. Refineries and mills were clustered according to the following typology: ownership type and certified or non-certified. On that basis, the figure below provides an overview of the typology used for the field research below mill level.

Figure 2. Overview of typology used in Indonesia below mill level

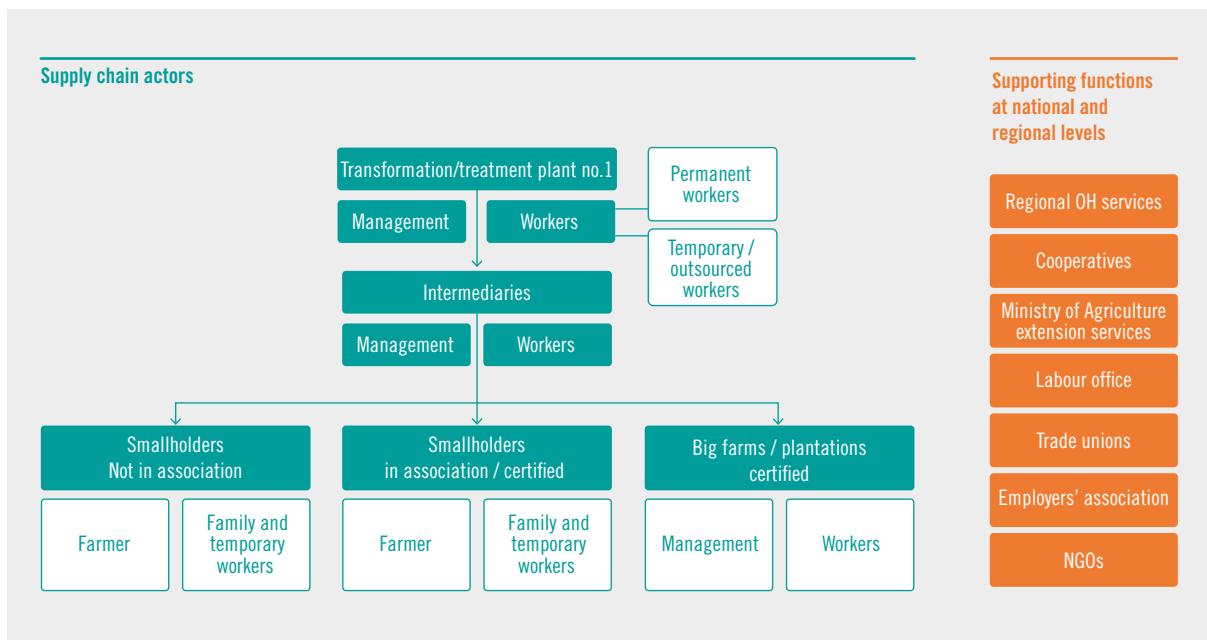


Source: authors.

In Madagascar, the review of literature and design of the field research took place from August to October 2016. The field research (interviews, focus groups, workplace observations) transpired in November 2016 during the lychee harvesting season, and the consultations with value chain actors and their supporting functions on the basis of the results occurred

in May 2017. About 50 interviews were conducted in Madagascar, accounting for focus groups as well. Transformation and treatment stations were clustered according to the following typology: size and certified or non-certified. On that basis, the figure below provides an overview of the typology used for the field research below treatment and transformation level.

Figure 3. Overview of the typology used for the field research below treatment and transformation level in Madagascar



Source: authors.

In addition to the above-mentioned interviews, focus groups and workplace observations in the field, research was also conducted on different types of global buyers (i.e. traders, agro-food companies,

retailers, and other types of companies) and private compliance initiatives (PCIs). Over 50 in-depth interviews were conducted from February to July 2017.

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CAFFÈ
DELL'
COLOMBIA



A case study of drivers and constraints for OSH in the coffee global value chain from three producing regions of Colombia

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Acronyms

ANDI	National Association of Industrialists	GSC	Global Supply Chain
ARL	Occupational Risks Administrator	Ha	Hectare
ASOEXPORT	National Association of Exporters	ICO	International Coffee Organization
BEPS	Periodic Economic Benefits	ILO	International Labour Organization
COP	Columbian Peso	IPS	Healthcare Provider Institution
CRECE	<i>Centre for Regional Entrepreneurial and Coffee Studies</i>	ITC	International Trade Centre
CUT	Central Workers' Union	OSH	Occupational Safety and Health
DANE	National Administrative Department of Statistics	OSHMS	Occupational Safety and Health Management System
DNP	National Planning Department	PDET	Development Programmes with a Territorial Focus
dpc	Dry parchment coffee	RRI	Integrated Rural Reform
EPS	Health Promotion Agency	SENA	National Apprenticeship Service
EU	European Union	SINTRAFEC	Coffee Workers' Union
Fasecolda	Federation of Insurers of Colombia	SINTRAINDUSCAFE	National Coffee Industry Workers' Union
FMM	Manuel Mejía Foundation	SISBEN	System of Selection of Beneficiaries
FNC	National Federation of Coffee Growers of Colombia	UGQ	Usual Good Quality Coffee
FoNC	National Coffee Fund	VSS	Voluntary Sustainability Standards
Fundaseg	Foundation of Insurers of Colombia		

1 | The coffee value chain of Colombia

1.1. Market and product

Market

Over 80 per cent of the coffee produced in the world is traded internationally. Its export value totals 33.4 billion US dollars while retail sales amount to around one billion US dollars (Panhuysen and Pierrot, 2014). World production is over 150 million bags, while world consumption (coffee year 2015-2016) totaled 155.7 million bags, of which 48.3 million (31 per cent) were consumed in the exporting countries and 107.5 million (69 per cent) in the importing countries. Some 50 per cent of world consumption is concentrated in six countries: United States (25 million bags per year); Brazil, the only exporting country with significant domestic consumption (20 million bags); Germany (9.3 million); Japan (7.8 million); France (6 million); and Italy (5 million) (International Coffee Organization, 2016). The European Union consumes 42.9 million bags per year. In Colombia, they consume 1.5 million bags (less than 10 per cent of its output), equivalent to 1.8 bags per head, which is just under a quarter of Brazil's, the country with the highest per capita consumption, at 4.8 kilos per head.

During the last two decades, the market has displayed, on one hand, a growing trend in the niche for lower quality coffees in countries that did not traditionally consume coffee (2.8 per cent), with a stronger dynamic than in the traditional consumer countries (0.8 per cent); and on the other, significant growth in the supply of differentiated and high-quality coffees. Within differentiated coffees, there has been a growing involvement of producers in specialty and sustainable coffees, which has led to compliance with standards that promote social, environmental and economic considerations in production. Currently, around one quarter of Colombian producers achieve a high standard of sustainability.

Product

Coffee (*Coffea*) is the most important genus of the Rubiaceae family, which includes well over 500 genera and over 6,000 species. Two of the most common species of the genus *Coffea* are currently of economic significance: *Coffea Arabica*, which is produced mainly in the temperate and high tropical zones of Latin America and North-West Africa, accounts for approximately 60 per cent of world production; and *Coffea Canephora* (or *coffea Robusta*), which is produced mainly in Asia, Brazil, East Africa and South Africa, and accounts for the remaining 40 per cent. Other species, such as *Coffea Libérica* and *Coffea Excelsa*, are marketed in limited quantities.

Coffee production requires special soil, temperature, and atmospheric precipitation as well as altitude conditions. Altitudes of between 1,200 and 1,800 metres above mean sea level, temperatures ranging between 17 and 23 degrees centigrade and an annual precipitation around 2,000 millimetres, well distributed over the year, are considered suitable. According to Arcila et al (2007), the plant begins to produce fruits on year-old shoots and reaches its maximum productivity between 6 and 8 years, depending on the variety and conditions. Its life cycle can reach up to 25 years in commercial conditions. In Colombia, various varieties of the species *Arabica* are produced, which gives a smooth drink, characteristic of the country. According to the Colombian Coffee

Growers' Federation (FNC)⁵, Colombian coffee has a clean taste, a mild to high acidity and body and a pronounced and full aroma. The quality features are associated with a tradition of selective, bean harvesting, with an emphasis on processing (post harvesting process by the wet method and the drying process) with subsequent grading by threshing.

1.2. Structure of the value chain

Colombian coffee is listed in the market in the "smooth washed" category by the varieties cultivated and the characteristics of the processing. The process consists of collecting raw coffee, pulping, removing the mucilage and then washing and drying until the parchment coffee is obtained. Parchment coffee is then threshed to produce green coffee for export.

Coffee cultivation covers 940,000 hectares, along the Andean Cordillera and from the Caribbean Sea to the Amazon Forest (FNC, 2015). These hectares cover 20 of the 32 departments in 588 of the 1,122 municipalities. In all, 552,000 producers are engaged in coffee growing, with an average of 1.7 hectares of coffee cultivation per farm. In the north, the bulk of the crop is harvested in the second half of the year; in the southern region of the country, the harvest is mainly concentrated in the first half. Meanwhile, the central zone is divided into two parts, a main crop, which produces approximately two thirds of the annual crop, and a smaller, mid-crop (*cosecha traviesa* or *cosecha mitaca*).

The country produces 14 million 60 kilo bags of green coffee, and is the third ranked producer after Brazil and Vietnam. National production has increased in recent years following a comprehensive programme to renovate coffee plantations, recovering from a marked decline of production over four successive years (2009 to 2012), influenced by the combined effect of the El Niño phenomenon, the proliferation of coffee rust (*Hemileia Vastatrix* fungus) and the increase in the price of fertilizers. The country's coffee plantation experienced a rejuvenation (with an average shrub or tree age of

5 See Café de Columbia website

7.1 years), with greater mechanization⁶ (97 per cent of plantations), and with a higher proportion of rust resistant varieties (71 per cent of the planted area).

The country exports around 12 million bags of coffee per year, which represents some 90 per cent of its production. In 2015, 12.7 million bags were exported worth US\$2.788 million. The main export destination is the United States, which receives 42 per cent or the equivalent to 5.3 million bags. An average of 1.2 million bags are exported to Japan (10 per cent), followed by Germany with 1.1 million bags (9 per cent), Belgium, with 900,000 bags (7 per cent) and Canada with 800,000 bags (6 per cent).

The principal form of export is green coffee (94.3 per cent), and, to a lesser extent, extract or soluble coffee (4.7 per cent). Other forms of preparation such as decaffeinated green, roasted grain and roasted and soluble, garner 1.1 per cent of export. The participation of the coffees in Voluntary Sustainable Standards (VSS) is gaining credibility in production and exports. 32 per cent of farms (out of a total of 684,000) currently produce their coffee under a sustainable production standard (FNC, 2015). Specialty coffees account for 15.2 per cent of exports, totaling 2.1 million bags in 2016. In that year, the bulk of exports were sold as conventional coffee (71.1 per

cent) and the rest as processed coffee (5.8 per cent), with a smaller proportion under the label “product of Colombia” (7.2 per cent), which corresponds to approved exports, and with a different level of tolerance for defects. Export standards for Colombian coffee have higher levels of compliance than those required by the Green Coffee Association of New York City.⁷ However, in 2016 the National Coffee Growers’ Committee decided to grant some flexibility, allowing coffee with a greater tolerance of defects and smaller size, but keeping within international quality standards.⁸ The amendment to the quality standards for Colombian Excelso coffee exports was intended to stimulate export, better align with international standards and improve growers’ family incomes, all without putting quality at risk (FNC, 2015).

The Colombian coffee value chain relies on over 500,000 producers who produce the dry, raw coffee beans and an extensive network of domestic marketing companies consisting of 33 coffee farmers’ cooperatives and numerous buyers or intermediaries,⁹ 150 threshers and 173 exporters. The green coffee beans, which result from threshing go to external marketing companies, such as Excelso, or to the domestic market for use in the domestic roasting industry.

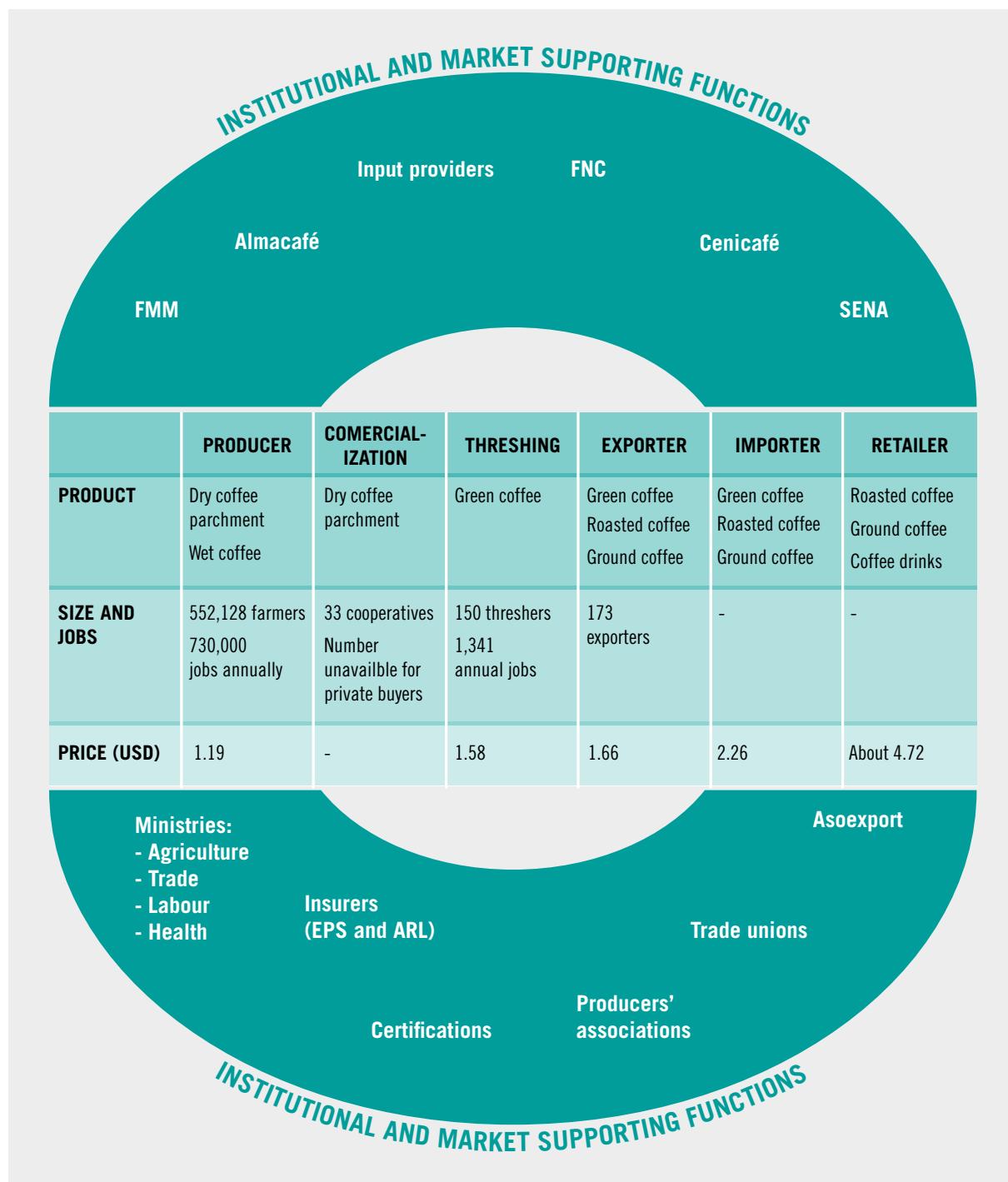
⁶ Mechanizing cultivation has encouraged an increased productivity of the plantations (17.7 bags of green coffee per hectare), placing the country above the average for other producers of smooth coffees, such as Central America with (12 bags per hectare - bags/ha), Peru (12 bags/ha) and Kenya (8.1 bags/ha). However, it is still well below the levels recorded in Brazil (23.9 bags/ha for Arabica and Robusta) and Vietnam (44.7 bags/ha).

⁷ The standards of the Green Coffee Association of New York City, the governing body for the purchase and sale of Arabica coffee in the world, designated Colombian Excelso coffee bean as mesh 14/64 with a tolerance level of 5 per cent. However, internally, Colombia applied a self-imposed tolerance level of 1.5 per cent, which prevented good quality coffees being sold in international markets.

⁸ These so-called “coproducts” or “secondary” products are also subject to phytosanitary and humidity controls by the sanitary authorities.

⁹ Some unofficial FNC estimates consider that there could be around 1,500. Their involvement in coffee buying has been around 70 per cent, an average of 9 million bags, of which 1.3 million come from sales by coffee farmers’ cooperatives.

Figure 4. The coffee value chain and its institutional and market environment



Source: authors.

Production and harvesting of coffee

The country has 552,000 coffee farmers¹⁰ with 686,000 farms (FNC, 2015). Some coffee farmers have several farms. The average farm size is three hectares in total and has an average of 1.7 hectares planted with coffee per farm.¹¹ The coffee institution envisages four sizes of coffee farmer: small-scale producers (divided into two), medium-sized producers and large producers.

Figure 5. Type of producer, contribution to the sector and production

Small	
(Less than 5 hectares or ha of coffee)	(Less than 1 ha of coffee)
<ul style="list-style-type: none">■ 528,000 producers■ 74% of the coffee-growing area■ 73% of production	<ul style="list-style-type: none">■ 274,000 producers■ 19% of the coffee-growing area■ 17% of production
(Between 1 and 5 ha of coffee)	
<ul style="list-style-type: none">■ 254,000 producers■ 55% of the coffee-growing area■ 56% of production	
Medium	
(Between 5 and 10 ha of coffee)	<ul style="list-style-type: none">■ 16,560 producers■ 7% of the coffee-growing area■ 12% of production
Large	
(Over 10 ha of coffee)	<ul style="list-style-type: none">■ 7,440 producers■ 11.7% of the coffee-growing area■ 16% of production

The step in the value chain corresponding to cultivation is known as the production stage. It is where sowing and planting, maintenance and harvesting take place. Seeds are sown in germinators and two months later, when the seeds have germinated, they are sown in nurseries in bags filled with a mixture of soil and organic matter. In this mixture, coffee plants can grow sufficiently for four to six months. At the end of this time, they are planted where they are intended to grow. In mechanized cultivation, between 5,000 and 10,000 bushes are planted per hectare (Reina et al., 2007).

Coffee cultivation requires constant maintenance and efficient management. For this reason, it is necessary to weed, fertilize, and control pests and diseases such as rust (*Hemileia Vastatrix*) and the coffee berry bor-

10 To be a federated or accredited coffee farmer, you must work a farm with a planted area equal to or greater than 0.5 ha and with at least 1,500 coffee bushes. These coffee farmers may participate in elections to elect representatives to municipal and departmental coffee farmers' committees. 377,000 coffee farmers (69 per cent) are currently federated (FNC, 2015). Non-federated coffee farmers must have at least 400 coffee bushes, and, although they cannot participate in coffee farmers' elections, they have access to the organization's services.

11 An average of 60 per cent of the farm is planted with coffee, a proportion which represents 75.7 per cent of the area for farms that are less than one hectare.

er (*Hypothenemus Hampei*). General maintenance at the production stage is an important practice. Plants of different ages are maintained to ensure a maximum, average annual yield. This leads to different types and methods of replanting or pruning. The most commonly used in the country is stumping, which consists of cutting off the stem at a height of 30 or 40 centimetres and removing all branches below the cut, i.e. without the sapwood (Mestre and Ospina, 1994).

Harvesting takes place approximately 32 weeks after flowering. The cherries are harvested only when they are fully ripe, that is, when they take on an intense red colour. Non-selective harvesting (harvesting of green, ripe and overripe fruit) reduces the producers' revenue in both the medium and long term, since they sacrifice flowers which are their future income. Income can also be decreased by picking unripe fruit, which makes passing quality controls required by the system more difficult. Thus, in Colombia, the coffee harvest contains a high proportion of ripe fruit because harvesting is selective and primarily done by hand.

Employment

According to a study by the Centre for Regional Entrepreneurial and Coffee Studies (CRECE) on behalf of the FNC, coffee farms employ an average of 730,000 people annually, including members of coffee farming households, farmworkers and pickers (García, et al, 2016). This means that coffee growing employs an average of 1.1 persons per farm and 0.8 persons per hectare. Given the total labour supply composition, the population of coffee farming households account for 69.4 per cent (some 506,000 persons). The study also highlights that coffee producers themselves account for almost half the supply (45.5 per cent) followed by unpaid family workers (21.7 per cent) and paid family workers (2.2 per cent). It is only on the smallest farms where demand for labour is mainly covered (75 per cent) by family members. On medium-sized farms, family workers contribute only 8 per cent and large farms are almost entirely dependent on hired labour (García et al, 2016). Hired labour makes up 30.6 per cent of the labour supply, most of which consists of daily workers, generally landless, who sell their labour to coffee farms for a daily wage. The wage for one day's work in 2017 was approximately US\$10.95. This population alter-

nates between picking coffee and additional coffee farming duties and, outside harvest time, other activities. Only 2 per cent of these hired workers are permanent workers, in stable formal employment, with a written employment contract and legal benefits (contributory health, pension and employment injury insurance).

Permanent workers commonly work as managers or stewards on medium-sized and large farms and are considered as having formal employment. Their functions include supervising the farm and workers, purchasing inputs and the hiring and supervision of pickers for the harvest. Such workers are normally allocated a house on the farm, benefits provided by the law, and payment of at least the monthly, minimum wage (US\$252.58).

Other work on both large and small farms mostly relies on informal labour, consisting of temporary or seasonal workers, independent workers (the coffee producers themselves) and family workers (paid and unpaid). Picking requires the most workers. According to calculations (García et al. 2016), some 395,000 people work in picking, although not all at the same time, as work is spread over the year depending on regional crop cycles. A small proportion of these people, approximately 10 per cent, are migrant labour (i.e. some 40,000 people travel from their department of origin to other regions for work). A significant part of the labour supply, which does not move between regions, corresponds to the population of coffee-growing households. About 77,000 coffee farmers and 28,000 household members, other than the producer, alternate work between their own and other farms.

I. Small farms

On small farms, up until a few years ago, it was common for coffee farming, outside picking (weeding, pest control, fertilizing, processing) to be done by the coffee farmers themselves. Now, however, the mechanization of coffee-growing has meant that even on these farms, it is necessary to hire workers for this kind of work. In particular, replanting efforts increased productivity, which meant new levels of production, and thus increasing the need for labour. According to the information obtained in the field, the producer is responsible for hiring workers, normally his neighbours, which helps avoid costs related to food and lodging (which would be necessary

for migrant workers). On this type of farm, workers are temporary and the division of family labour is dependent on the demands of each task. Children play little part, sometimes picking coffee in their free time. Women are often tasked with providing meals to harvester and sporadically participate in coffee picking. Although family labour is a considerable proportion (23.9 per cent) of the total, family involvement in farm work is somewhat limited, done as a means of supplementing incomes and supporting the farm.

The lack of participation of young people in coffee-growing work is rooted (Aldanondo, 2007), in part, in increased migration to cities and the growing preference of youth for urban activities. In addition, toughening laws on child labour, fully backed by the VSS, has also contributed to a reduction of young people involved in coffee-growing. The CRECE studies on sustainability initiatives in coffee show that coffee farmers who participate in VSS are more inclined to comply with this type of practice. Moreover, the interviews conducted for this study confirm that there is growing awareness among coffee farmers regarding child labour. However, at the same time, complaints can be heard because the laws and requirements discourage some adolescents from considering rural work. The national list of hazardous work prohibits young people under the age of 18 from working in the coffee sector (the list is currently organized by sector and not by activity).

Women's participation in coffee-growing is limited, both in decision making and in work performed. Only a small proportion of women are farm owners, (22 per cent) according to CRECE statistics, and this, combined with the arduous nature of farm work, hampers participation. On the latter point, CRECE (Garcia et al. 2016) found that 14 per cent of pickers are women. With respect to decision making, as stated in CRECE (Garcia et al. 2015b), a considerable percentage of women are involved in decisions regarding processing and drying of coffee (70.5 per cent), but this participation declines for general, farm management (40.2 per cent), harvesting (37.5 per cent) and record keeping (33.5 per cent). Furthermore, the activities in which women most contribute their labour, as offered in focus groups, are those related to the harvesting and, especially, to coffee processing. Given the unity between house and farm, domestic work performed by women accounts for most of their participation in farm work.

II. Medium-sized and large farms

In medium and large sized farms, tasks performed to include picking, are allocated to workers who are contracted. Most are contracted on a temporary basis. According to the CRECE study mentioned (Garcia et al. 2015b), 97.8 per cent of coffee workers are temporary or seasonal, which means that, given their seasonal status, pay received is exclusively for days worked.

Managers, stewards (who are permanent, farm workers) or the *alimentador* (the individual who hires and supplies food to the other workers) employ various strategies to recruit workers, chiefly pickers for the harvest season. These workers generally come, on their own account, to places designated by Municipal Coffee Farmers' Committees or to the farm. Bargaining for conditions of employment takes place individually. There are no pickers' associations or organizations which bargain collectively. When the *alimentador* is responsible for hiring people, the coffee farmer provides lodging or a farm house with dormitories for the pickers. The *alimentador* distributes pay, paying the worker a "net wage" earned during the week, less a deduction for food.

The temporary nature of coffee farming work, as mentioned by the coffee farmers interviewed, is a limiting factor in hiring a worker with all the statutory social security benefits, especially in those regions where the formal wage labour market is under-developed. For this reason, paying a minimum monthly wage with all the statutory social security benefits is limited to permanent workers. According to the CRECE study (Garcia et al. 2015b), on small farms (less than five hectares), the percentage share of permanent employment is only 0.9 per cent, in medium-sized farms (area planted with coffee between 5 and 10 hectares) it reaches 6.7 per cent and in large farms (over 10 hectares), 11.4 per cent. The information obtained in the three study regions confirms the two systems normally used for remuneration of temporary workers are piece work and day labour.

For work other than harvesting the coffee, the piece-work payment model consists of setting remuneration for a specific task or agreed volume of work. This model is used for weeding, pest management, fertilization or replanting. In fumigation of coffee berry borers, for example, pay is based on the number of drums applied. Each drum has a capacity of 200

litres and the productivity of each person, depending on the state of the land, is two drums per day. Last year, an average of \$35,000 Colombian Pesos (COP) or US\$11 per drum was paid, which means that the daily wage of a fumigation worker could reach \$70,000 (US\$22). This was above the legal minimum daily wage in 2016 of \$22,982 (US\$7.5), but excludes all social insurance contributions.

This type of remuneration is also widely used in coffee harvesting, where the unit of measurement is the number of kilos of coffee cherries picked per day. This figure varies considerably by region since it depends on the intensity of demand and availability of labour supply. For example, in one of the areas visited in Caldas (municipality of Chinchiná), which is among the highest levels of production in the department, the rate paid last year was COP\$600 per kilo (US\$0.20). In Nariño, the figure was \$350 per kilo (US\$0.11) and in Huila, the rate was \$400 per kilo (US\$0.13). The average productivity of a picker, in the main harvest season, is 120 kilos per day. Therefore, \$72,000 (US\$24) can be earned in a department with high demand like Caldas or around \$45,000 (US\$15) in Huila and Nariño, where the available labour supply is not as limited as in the country's central region.

Under this type of remuneration, daily income depends on time worked and workers' productivity. In the peak harvest season, which in some areas is a two week period, pickers choose to extend their day beyond eight hours, seven days a week, in pursuit of the maximum possible income. At harvest time, pickers have three rest breaks during the working day as follows: picking starts at 6.00 a.m., between 8.00 a.m. and 9.00 a.m. they have breakfast, then continue until 12.00 p.m. They take an hour for lunch and continue working until 4.00 p.m., when they have the last rest break of the day. Those who wish to end their working day at 5.00 p.m. may do so.

Payment is paid per day worked irrespective of the yield of the worker and is based on working an eight hour day. The amount paid may or may not include food, which is a decision made at the employer's discretion. Some coffee farmers interviewed, for example, said that last year the daily wage was some COP \$37,000 (US\$12), including the cost of food. This means that workers must deduct food costs from the amount of the daily wage, equivalent to \$9,000

(US\$3), so that their net daily income might amount to \$28,000 (US\$9).

From the above figures, it may be inferred that Colombian coffee farmers tend to match and even exceed the legal minimum daily wage to pay their workers. However, as informal work, none of the social insurance contributions are included. In practice, according to CRECE's findings (García et al, 2016), the average daily rate in coffee farming exceeds the legal daily minimum by 31 per cent. The vast majority of coffee farmers (81 per cent) pay work at rates equal to or above the minimum daily wage, and the remaining 19 per cent, who pay less than the minimum wage (85 per cent of the legal minimum daily wage) are concentrated in the departments of Cauca and Nariño, where the day wage differential is lower than in the rest of the country.

Certification schemes have contributed to a better remuneration of labour. The same study shows that average remuneration on farms that participate in VSS is 18 per cent higher than on conventional farms, and 20 per cent more farms pay above the legal minimum (García et al, 2016). Also as a result of the requirements, there have been improvements in conditions of work and accommodation.

With the growth of production and mechanization, problems of labour shortage for tasks on coffee farms have been accentuated, particularly for coffee picking, where demand is seasonal. A CRECE study on work in coffee farming (García et al, 2016), concluded that the shortage is a structural problem and it is growing more acute. Although coffee-farming families cover a considerable share of demand, their productivity and remuneration are low. Labour for harvesting, other than family labour, comes from regions neighbouring the production areas and there is little regional mobility – not more than 10 per cent. The vitality of other activities, such as construction and mining, and even illegal activities, compete for labour in some regions. The supply of labour for the coffee sector is low and its growth rate is somewhat fixed, while demand is growing with output. The supply of labour for coffee is growing at an average rate of 1 per cent annually, while demand grew at almost 4 per cent in the years following recovery (García et al, 2016). This imbalance contributes to the payment of higher wages in the regions where production is higher.

Internal commercialization

Intermediaries are agents who engage in the purchase of dry parchment coffee from coffee farmers for sale to exporters, in the majority of cases without any prior transformation process. This aspect of the value chain consists of coffee farmers' cooperatives and buyers who are not members of the FNC system – so-called private buyers. The coffee farmers' cooperatives are formal legal entities and private buyers are a variety of private agents, firms or people, for whom detailed information is not available, ranging from formalized to informal work.

The coffee farmers' cooperatives are organizations that are owned by coffee producers. Its main function is to guarantee the purchase of coffee, acting as "purchase guarantee". The purchase guarantee means that FNC cooperatives are required to buy all the coffee that farmers wish to sell, irrespectively of its quality and at a transparent price. It is considered a public good. The organization publishes a coffee benchmark price daily, calculated based on market variables: the external coffee price on the New York Stock Exchange, the recognized quality premium for Colombian coffee or UGQ, and the exchange rate ruling at the time of publication. This price serves as a benchmark for producers to avoid selling their coffee for less than the international market recognizes. By this policy, the FNC seeks to ensure that the price and payment terms offered by other intermediaries and buyers match the official benchmark price. The daily quoted price is available for consultation by producers at the purchasing points of the coffee farmers' cooperatives, departmental coffee farmers committees, branches of Almacafé and the FNC website.

There are 33 coffee farmers' cooperatives with 488 purchasing points. The cooperatives have 82,000 affiliated coffee farmers, representing 15 per cent of the country's coffee farmers. This does not exclude other producers from the purchase guarantee. In the opinion of some of the people interviewed, the reason for the relatively small number of producers affiliated to the cooperatives lies in the cost of affiliation. This cost is one legal minimum monthly wage, which in 2017 was the equivalent of US\$253. By comparison, for example, this figure represents the annual cost of fertilization for a small producer. Other requirements

of affiliation include supplying a volume of one *arroba* (12.5 kilos of dry parchment coffee) annually, and the commitment to sell a minimum of 500 kilos per hectare per year to the cooperative.

In 2015, the cooperatives bought 5.2 million, 60 kg bags of dry parchment coffee (dpc), which represents 38 per cent of the domestic purchase of the coffee crop. The cooperatives have a line of financing with resources of the National Coffee Fund (FoNC)¹² to purchase dry parchment coffee in the domestic market. This product is then sold to Almacafé S.A., the FNC's logistics company, or to Expocafé S.A., the coffee farmers' cooperatives export company. In 2015, the cooperatives drew down 36 per cent of the resources available under this line. Of the total coffee sold by the cooperatives that year, 51.9 per cent (2.7 million bags) was sold to Almacafé, destined for the FoNC; 23.1 per cent (1.2 million bags) was sent for export through Expocafé; and the remaining 25 per cent (1.3 million bags) was sold to private buyers.

The economic capacity of coffee farmers' cooperatives depends on their participation in the market and their capacity to manage coffee purchasing. Information obtained in the field suggests differences in the institutional capacity and infrastructure of the cooperatives are reflected in the range of services that they can offer coffee farmers. In some regions, for example, cooperatives may have technical teams which can reinforce the training provided to producers by the FNC, while elsewhere, where the cooperatives have less economic capacity, this activity is left entirely to the respective departmental coffee farmers' committee. In addition to the purchase guarantee function, each cooperative decides independently on its own portfolio of services or programmes for its members. These may include sale of fertilizers and inputs, household consumer goods, tools and farm equipment, credit, certain health services such as eye or hearing tests, educational support, funeral assistance, and so on.

There are a number of private coffee buyers and buyers not affiliated to the FNC. Although there are no official statistics on the exact number, it is estimated that there may be over one thousand.

¹² The FoNC grants interest-free subsidies for purchases made by cooperatives for the FNC. This subsidy is a working capital loan at zero interest, provided that the cooperatives deliver the product of the purchase to the FNC within a period fixed at not more than 45 days (CRECE, 2008).

Buyers can be of several types, from individual independent buyers to representatives of medium-sized and large companies, which have their own purchasing points. Their share of coffee buying was around 70 per cent, i.e. they buy some nine million bags of which 1.3 million are purchased from coffee farmers' cooperatives. Their business is based on the margin between the purchase and sale of the coffee, for which they pay slightly higher prices than the cooperatives, although the prices are closely correlated with the benchmark price fixed by the FNC (CRECE, 2008).

At negotiations between the intermediary (whether cooperative or a private buyer) and the coffee farmer, the coffee yield, an indicator representing the quantity of kilos of dry parchment coffee required to obtain a 70kg bag of export type Excelso coffee, is taken into account. The official yield factor indicator is currently 94 kilos dpc. This is determined by a physical analysis of a sample of 250 grams at the time of purchase.

The price per load¹³ the producer considers is based on whether the parchment factor is lower or higher than the established factor. Even though the coffee producer knows in advance that the purchase of his coffee is guaranteed, regardless of quality, the incentive to sell the highest possible quality coffee is based on the premium that can be obtained. In other words, if the coffee sold by a producer achieves a yield factor lower than 94, he will obtain a higher price. For example, based on the price published by the FNC on 30 March 2017, coffee with factor 94 was paying US\$269 per load of 125 kg dpc. Coffee with a 90 factor had a premium of an additional US\$12 per load. In this situation, the price received by the coffee farmer could be US\$281 per load.

The number of agents in the domestic coffee bean market allows the coffee farmer to choose the buyer based on the quality of harvested beans. For this reason, even coffee farmers loyal to the cooperative know that they have a second-choice buyer (the private buyer) who accepts coffee of all qualities. Cooperatives, for their part, are more cautious about accepting lower quality coffee since this can affect their income, particularly if rejected by an exporter or by Almacafé itself.

Threshing and storage

The threshing process uses special machines to remove the husk of the dry parchment coffee and extract the pulp, thereby converting it into green coffee. The coffee is subsequently selected according to the quality of the bean by an electronic coffee sorting machine. A decade ago, selecting size and picking out defective beans was done by temporary workers. Now, green coffee of better quality, for both granulation and cup, and that respects FNC standards, is separated for packing and subsequent export mechanically (Villegas, 2008).

Once the green coffee has been selected, it is packed in 70 kg plant fibre bags with the exporter's mark, which purchasers expect and which also includes the batch number allocated by the shipping agent. This allows it to be identified throughout the rest of the export chain. The coffee is stored in the warehouses of the thresher concerned until it gains port clearance, both by the shipping agent and Almacafé, which is responsible for customs clearance. So-called inferior or defective coffees, which, because of their granulation or relative defects do not fulfil the requirements for export, are sold to the coffee roasting or lyophilization industry for domestic consumption (Villegas, 2008).

The country has 150 coffee threshing firms, nine of which are owned by Almacafé, nine by coffee farmers' cooperatives and the remainder by the larger private exporters. From information provided by the National Administrative Department of Statistics (DANE), the total production of this industry in 2015 was 440 million kilos for a value of US\$1.4 million.

Almacafé, as the logistics operator of the FNC, stores coffee bought by the National Coffee Fund in its warehouses and, at some sites where it has excess capacity, it provides storage services for other clients and products. It is responsible for transport from the warehouses to the ports and carrying out quality control of the products for export. It has 16 storage warehouses in various departments of the country, with 16 regional laboratories, three in the maritime ports and one at its headquarters in Bogotá. It also has four agencies in the ports and a roasting plant in the centre of the country with two distribution centres designated for Juan Valdez stores. In addition, it manages nine

13 The domestic price of Colombian coffee is published in loads of 125 kg of dry parchment coffee.

specialized, industrial threshing plants. In guaranteeing the authenticity of the products catalogued as 100 per cent Colombian coffee, some 32,000 samples per year are examined in its laboratories and it also carries out inspections in the country's three maritime ports.

The employment generated by the cooperative agents, Almacafé, threshers and exporters is formal in nature, supported by written contracts, remuneration based on the minimum wage fixed annually by the Government and the workers are enrolled in the contributory social security system and other statutory benefits. All the companies in these production stages of the value chain have workers on the payroll, sub-contracted workers, and temporary workers that they need to hire during the harvest season, when the workforce may increase by up to 80 per cent. The same conditions apply in the case of private buyers when they are integrated with an exporter. However, with small intermediaries interviewed, it was found that the employment they generate is entirely informal, with remuneration below the minimum wage,¹⁴ without affiliation to the social security system and without contracts governing the employment relationship. Loaders, for their part, are paid piece work (US\$0.49 for each kilo handled).

Exporting (external commercialization)

Exporting is carried on by the FNC (which also fulfils a regulatory function delegated by the Government), by Expocafé S.A. (owned by the coffee farmers' cooperatives) as well as numerous private exporters. The exporters' customers are mostly commodity traders and roasters. Some export companies are vertically integrated, being owned by importer firms. The widespread practice of these agents is to acquire parchment coffee from the intermediaries, thresh and export it as green coffee.

In 2015, there were 173 registered exporters, according to FNC figures. The exported volume is concentrated within 15 of them, accounting for 90 per cent of export volume and revenue. The FNC is the biggest exporter, with a 21.5 per cent share of total shipments and export revenues of some US\$610 million. It is followed by the main private exporters, Racafé (9 per cent), Carcafé (8.6 per cent) and Expocafé (8 per cent). These four exporters together

account for 48.3 per cent of purchases. The others have less than 6 per cent each per year.

Around 20 of the largest private exporters formed the National Coffee Exporters' Association of Colombia (ASOEXPORT), whose purpose is to promote greater efficiency and stability in the regulation of the market. This Association acts as a counterweight to the FNC, which fulfils two simultaneous functions. One is as a regulator of export activity and the other is as an exporter on behalf of the FoNC. Nevertheless, its objectives include working with the FNC to resolve problems that affect the industry.

The FNC has reduced its share of exporting, which dropped from 36 per cent to 22 per cent in the last two decades. In part, this loss of share is due to cooperatives reducing the amount of coffee they supply to the FNC while increasing the amounts supplied to Expocafé and sales to private exporters. Some have also begun to export directly.

The emergence of the VSS has fostered closer connections between coffee farmers and private exporters, and has even eliminated intermediaries from the process of buying and selling coffee. Up to a decade ago, these agents worked exclusively with these intermediaries, who bought the coffee, threshed it and exported it. During the last decade, in particular, the growing demand of coffee roasters for coffees with specific qualities, or one standard in particular, has encouraged exporters to work with producers to achieve the differentiated product demanded by the market. Some private exporters offer cash advances in exchange for future supply of an equivalent quantity in coffee. These exporters have teams of specialists in the field advising coffee farmers and paying incentives for quality.

Importing of green coffee and marketing in consumer markets

The bulk of Colombian coffee is exported as green coffee (94.3 per cent), a small proportion as extract or soluble (4.7 per cent) and the rest (1.1 per cent) in preparations such as decaffeinated green, roasted bean and soluble. Coffee is exported green for two main reasons: i) traditionally, given the journey times from one continent to another, roasting the coffee near the consumer market ensured better quality and

14 The minimum monthly wage in 2016 was fixed at COP\$689,454 (US\$226)

preservation of the bean; and ii) this process allows roasters to blend coffees of different origin, better control the quality, and ensure margins by blending different qualities of coffees (and different prices). The importers are located in the coffee consumer markets. In the case of Colombian coffee, the main importing countries are the United States (41.2 per cent), Italy (9.7 per cent), Australia (9.5 per cent), Canada (6.5 per cent) and the United Kingdom (5.6 per cent), which, in 2016, accounted for a combined total of 72 per cent of purchases from Colombia.

Importers consist of traders, or marketing agents, and roasters, who together control a high percentage of the coffee business in their respective segments:

- Commodity traders: agents specializing in the trading of coffee, who act as agents between Colombian exporters and roasters in the consumer markets. These agents can make importing and sales their sole function or, alternatively, they can have a high degree of vertical integration with private exporting companies in Colombia.
- Roasters: they complete the process of transforming coffee, roast it, blend it and can add additional operations depending on commercial arrangements, such as grinding, packing, or distribution. Some roasters have their own brand and distribution network (e.g. Starbucks) and others sell ground coffee (supermarkets) or as a drink (cafes, restaurants, service companies, etc.).

Coffee intermediaries are dominated by three companies: Neumann Gruppe (Germany), Volcafe (Switzerland) and ECOM (Switzerland). Fifty per cent of green coffee in the world is traded through these companies with whom the majority of roasters work. Their role is to organize the purchase of coffee and its shipping to the roasting company. Depending on the case, traders can buy the coffee themselves and own the product or they can simply act as the link between the company which produces the coffee and the company which needs to buy it. Generally, they do not undertake any processing or transformation of the product. They are only responsible for the logistical organization and their responsibility ends when the green coffee is delivered to the roasting company.

Colombian coffee is in demanding markets for which product quality and consumer demands are critical:

- The importance attached to quality and to the origin of coffee in recent years makes a high degree

of product differentiation (unlike other commodities which have little visibility to the consumer) possible. These factors explain the growth of brands, over the last few decades, that positioned themselves in markets which require specific, coffee qualities and high traceability. These brands were developed to assure the provision of specialty coffees, purchasing policies with higher requirements, as well as the involvement of the final buyer in the initial production stages.

- The evolution of consumer requirements regarding environmental and social sustainability, better conditions of work and higher incomes for coffee farmers has influenced changes in coffee production. Coffee is one of the products which has the most certification marks and the greatest consumption as a certified product. A growing number of supermarkets, traders and roasters have decided to buy/sell only coffee with sustainability marks. Some supermarkets in Europe, for example, sell their own-brand coffee with a mark that reflects their values. Some multinational companies have also incorporated a buying policy of coffee certified 100 per cent sustainable for consumption by their employees. These certifications sold to the consumer reflect the adoption by coffee farmers, cooperatives, threshers and exporters of VSS.

Both these market trends have evolved in the last few decades, changing the structure of the coffee supply chains. Coffee was one of the first products to have a sustainability mark, and Colombia is one of the countries in which the penetration of marks, and sustainable purchasing policies for specialty coffees, is highly advanced. The impacts of these mechanisms over time can be easily observed. In addition, the consumer's propensity to pay a premium for coffees produced under these marks is diminishing with the increase in demand. Interviews with representatives of the marks, agri-food companies and supermarkets in Europe and North America, found that obtaining a mark or sustainable production methods, rather than value added to the product, is increasingly a purchasing requirement on the part of the consumer.

Roasting and grinding, distribution networks

The green coffee that stays in the domestic market (around 10 per cent of the country's annual production) is transformed into roasted, ground and soluble coffee by the domestic roasting industry. Currently,

sales of coffee for the domestic market are estimated at an annual US\$1.3 million. In urban areas, the productive chain generates some nine thousand jobs in transformation, packing and distribution (FNC, 2014b). It is estimated that there are 159 companies involved in coffee roasting (Chaves, 2009) with a high degree of concentration, given that ten of them account for over 90 per cent of total sales and the remaining companies share less than 3 per cent.

In the global roasting industry, three transnational companies stand out: Nestlé, Mondelez and DE Master Blenders 1753, together with some large roasters such as Smuckers, Strauss, Starbucks and Tchibo. The ten biggest roasters process almost 40 per cent of all the coffee consumed in the world. While Nestlé remains the world leader in terms of income, in volumes traded, Jacobs Douwe Egberts (the company formed from the merger of Mondelez with DE Master Blenders in 2015) took first place and became a major competitor for Nestlé in developed and developing markets. Panhuysen and Pierrot (2014) clarify that coffee roasters have gained increased control over the marketing chain in recent years, despite the strong competition from supermarkets and own-brand coffees. In response to the challenge of the specialty coffee chains (e.g. Starbucks) and the proliferation of small-scale roasters with their promotion of high quality coffees, traditional roasters are focusing on the development of more individualized products for their consumers.

In Colombia, the Buencafé factory, set up by the FNC, exports 97 per cent of its production to over 63 countries worldwide, including in Eastern Europe, North America and Asia. Some 9,000 tonnes of coffee were invoiced for a value of US\$109 million (FNC, 2015). The raw material for this comes from the FoNC which, through Almacafé, purchases co-products in the domestic market, including defective beans and consumables. In 2015, purchases of co-products totalled 13.1 million bags.

This factory is one of the largest and most modern in the world, and it is the only lyophilization plant in Colombia. The lyophilized coffee retains its aroma by a freeze-drying process. The factory has 400 direct employees and 284 sub-contracted workers. In the production stage, most workers are men, because of the physical strength required and the shift work (sometimes not fully adapted to the fact that women juggle with additional care responsibilities). In other areas, some 35 per cent of the workers are women.

In the consumption stage of the value chain, Procafecol S.A. is a company owned by the FNC. It was formed in 2002 with the goal of generating added value business for the coffee farmers with its Juan Valdez® brand. The company has four business lines: Specialist shops, supermarkets, institutional channel and e-commerce portal. It has 226 shops nationwide and 108 abroad with a presence in 15 countries.

Support organizations and services

The country's coffee sector enjoys support in the value chain, through the participation of the Government in the budget and support for programmes aimed at coffee farmers, training programmes through the National Apprenticeship Service (SENA), the presence of VSS and certification organizations, health service providers and training and other services related to identification and control of occupational risk factors.

Government services

Among government agencies at the national level, the Ministry of Agriculture and Rural Development and the Ministry of Finance have the closest relationship with the coffee industry. Through agreements, financing programmes or grant of subsidies, the Government helps connect coffee farmers with various programmes which are executed by the FNC. These include programmes to support coffee farmers' incomes, the rural housing subsidy programme, provision of resources for fertilization and programmes for re-financing of the coffee farming portfolio, among others. In terms of transfers of resources from the National Budget to the FoNC, Act 1485 of 2011 defines eligible expenditure as including that designed to give an incentive to cooperatives to transfer a higher price to the coffee farmer, or are aimed at the extension service to develop credit, business management, technology transfer and specialty coffee programmes. In addition to the ministries which have a direct mandate to intervene in the production stage of the supply chain, the Ministries of Labour and Health have a central role in the development of occupational safety and health legislation and monitoring its application.

The Colombian occupational safety and health system originates in international standards such as the Recommendations and Conventions of the International Labour Organization (Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187) and Promotional Framework for Occupational

Safety and Health Recommendation, 2006 (No. 197) as well as through the Andean Community (Decision 584 and Resolution 957 of 2005). The legislation on OSH in Colombia applicable up to 2015 was set out in the Single Labour Regulatory Decree, No. 1072 of 2015 (Ministry of Labour, 2015). This decree defines the Occupational Safety and Health Management System (OSHMS) as the development of a logical process based on constant and phased improvement, which modified the traditional occupational health programme. The Ministry of Labour (Decree 052 of 2017) extended the period of transition to the new system, in the face of the limited ability of the actors concerned to respond and fulfil all the requirements and meet the deadlines for each phase. Subsequently, it established the minimum OSHMS standards (Ministry of Labour, Resolution 1111 of 2017), which contain a set of standards, requirements and procedures to ensure that employers execute the activities in the general occupational risks system.

The OSHMS is to be developed in five phases of adaptation and transition, over the period from June 2017 to April 2019, the date from which it will continue with its annual cycle. The phases are as follows: (i) initial evaluation to identify OSH priorities and needs (June-August 2017); (ii) improvement plan, to correct the weaknesses identified in the self-evaluation (September to December 2017); (iii) execution, including formulation of the annual improvement plan 2019 (during 2018); (iv) monitoring and follow-up and improvement plan, development and implementation of OSHMS, and preventive surveillance by the Ministry of Labour and the Occupational Risk Administrator (ARL) (first quarter of 2019); (v) Inspection, surveillance and control, verification of compliance with the rules by the Ministry of Labour (from the second quarter of 2019).

The legislation delegates responsibility to the Ministry of Labour for inspection, surveillance and control of compliance with the requirements to implement the OSHMS and, to the ARL, responsibility for providing advice, assistance and technical support to small and medium-sized enterprises on implementing the OSHMS:

- Training in carrying out the initial OSHMS evaluation
- Formulation of the OSH policy
- Preparation of the annual work plan
- Preparation of the legal framework

- Identification of hazards
- Evaluation and assessment of risks of the economic activity
- Definition of intervention priorities
- Formulation of control and protection, prevention, emergency preparedness and response measures
- Investigation of accidents, incidents, occupational diseases
- Measurement and evaluation of management.

The current social security system in Colombia (Act 100 of 1993) is part of the Social Protection System. Social security is the responsibility of the State and is provided by public and private entities. The Comprehensive Social Security System is composed of the health, pensions and occupational risks systems, as well as supplementary social services. The General Health Social Security System is operated by Health Promotion Agencies (EPS) and the services are provided by Healthcare Provider Institutions (IPS). The contribution per employee is 12.5 per cent of salary (8.5 per cent by the employer and 4 per cent by the employee). The General Pension System consists of two schemes: the primary scheme, with defined benefit, which is a public scheme, administered by the firm Colpensiones; and the individual mutual savings scheme, which is private, operated by the Pension and Severance Fund Administrators. The contribution is 16 per cent of salary (12 per cent by the employer and 4 per cent by the employee). The General Occupational Risks System is financed by a compulsory contribution, determined by level of income and classification of risk. The Occupational Risk Administrators (ARL) are the entities responsible for affiliation, registration and collection of contributions. The supplementary social services are economic subsidies aimed, through the *Colombia Mayor* programme, for vulnerable older persons, who do not have a pension or live in poverty and/or extreme poverty.

Other supplementary systems are severance benefit, family allowance and Periodic Economic Benefits (BEPS). Severance benefit is a social benefit to allow workers to build up savings for unemployment; it may also be used to pay for higher education or a house purchase. The scheme is administered by private insurers and by the National Savings Fund in the case of State workers. The Family Allowance is provided to workers in the form of goods, services and cash assistance; it is administered by family compensation

banks. The BEPS is a voluntary savings programme for old age for those who do not have the possibility of contributing to a pension or who have reached retirement age but have not paid sufficient contributions. It is a voluntary and flexible savings scheme throughout working life which may be drawn down in old age as a form of income.

The Periodic Economic Benefits (BEPS) scheme was set up in 2005 and regulated in 2009, with the objective of helping to supplement personal savings of those who at the end of their working life had not managed to obtain a pension, either because their income was below the minimum wage or because they had not achieved the required contribution record. This is a relatively recent instrument, so its impact has not yet been recognized, but it would seem to be a useful device for workers in the rural sector where contributions are not constant and wages do not reach the minimum. In 2014, the FNC found that 18,350 coffee farmers were eligible, so it began a process of training its local representatives to publicize and educate coffee farmers and their families about the programme.

The Occupational Risks Administrators (ARL), Public Health Agencies (EPS) and pension funds are organizations, mainly private, charged by the Ministry of Labour with implementing the Social Security System. In Colombia, the Occupational Risks Subsystem is designed as a social insurance scheme in which the employer is the policyholder, the workers are the insured, and they and their families are the beneficiaries, and the ARL is the insurer also responsible for prevention services. The nature of occupational risks insurance means that the employer is responsible for transferring the risk of occupational accidents or diseases of his workers to the ARL (Fasecolda, 2016). When this happens, the affiliated workers are entitled to two types of benefit, assistance services (medical assistance, hospitalization, supply of medicines, physical rehabilitation) and economic benefits (temporary incapacity allowance, disability pension and survivors' pension).

As part of their functions, the ARL must provide advice and support to companies in implementing prevention programmes through occupational health services, safety and industrial hygiene and occupational health. They must also guide them on assessment of occupational risks and how to prevent them in the workplace. This support must be provided without any kind of discrimination, preference for number of workers or the company's level of contributions.

Employers are required to contribute for their workers and independent workers must contribute according to a base income, equivalent to 40 per cent of monthly income and in keeping with the scale of contributions by class of risk in which the company is classified by the legislation. The contribution rate for occupational risks is determined by the risk to which the workers is exposed and depends on the company's workplaces. Depending on the classes of risk defined by the legislation, the tariffs are: 0.522 per cent for Class I, 1.044 per cent for Class II, 2.436 per cent for Class III, 4.350 per cent for Class IV; and 6.960 per cent for Class V. According to statistics of the Department of Occupational Risks in the Ministry of Labour, the risks scheme has 10,037,875 members, of whom 95 per cent are employed workers and 5 per cent independent. Certified accidents at work represent 7 per cent of the membership or some 702,000 cases.

A process of voluntary membership of the contributory social security occupational risks scheme is currently being developed for formal workers who do not fall within the compulsory scheme. In addition, Colombia has a scheme called "*Programa Microseguros*" aimed at workers in the informal economy which offers protection in the case of disability or death for any cause. Although this scheme is not aimed at occupational risks specifically, it offers a possible way of extending coverage of these risks to an informal population that is self-employed.

Since 2012, the compulsory health plans in the General Social Security Health System were merged into two schemes. In the contributory scheme, there is a link between payment of a contribution, individual or family, and payment paid on behalf of the workers or jointly with the employer. The non-contributory scheme or "subsidized scheme" facilitates access of the population without the ability to contribute to the health insurance scheme through a State subsidy. The EPS are the bodies to which the Ministry of Health delegates management of the scheme (membership, monitoring, contracting health services and payment of benefits).

The National Federation of Coffee Growers of Colombia (FNC) works towards its objective of creating a stronger quality of life for coffee growers and to support their wellbeing via collaboration, participation and promotion of coffee-related economic, scientific and technological advances. It seeks to maintain the character of Colombian coffee farming as strategic social capital. By delegation of the Government, it designs and executes policies and programmes to advance the coffee

sector and which benefit coffee farmers, as well as regulates and encourages decisions that affect coffee policy at all stages of the value chain. As an industry organization, it is made up of different bodies of a national, regional and local order in which accredited coffee farmers participate. The National Government (Ministries of Finance, Trade, Agriculture and National Planning Department (DNP)) have a seat on the National Coffee Farmers' Committee, one of the central decision-making bodies. For its operation, the organization has an extensive network of approximately 1,500 local representatives in the coffee growing regions, with a National Coffee Research Centre (Cenicafé) and the Manuel Mejía Foundation (FMM) to provide training programmes for coffee farmers, officials, for the coffee farmer's federation staff.

With regards to the institutional framework, coffee farmers have the National Coffee Fund (FoNC) as a source of financing the FNC's public policy functions, as well as its operating costs (departmental and municipal committees and FNC offices throughout the country). FoNC funds promote and publicize activities, and partially cover costs associated with the FNC's commercial activity. The FoNC is an account of the National Treasury created in 1940, administered by the FNC, and chiefly funded from coffee farmers' contributions. This funding system, established in 1991, provides coffee farmers with collective benefits such as the guarantee to purchase policy, scientific research, technical assistance, quality control and promotion of Colombian coffee and social programmes, among others. In 2009, the contribution amount was set as a fixed sum per pound of green coffee exported, equivalent to US\$0.06. The coffee contribution is paid entirely by the coffee producer, but collected by agents who, when the beans are loaded in port, transfer the amount owed to the FoNC. The administration of FoNC is clarified by a renewable contract FNC signs with the Government every ten years. As part of its arrangement, the Government pays the FNC a management fee. The existence of the FNC and the FoNC means that the majority of the services and functions which support the value chain are provided through this institutional framework.

Local extension services and research are two of the most important for producers. The local extension service consists of a network of 1,500 technicians who are the point of contact between the coffee federation and the country's coffee farmers. The technical assistance provided by this team ensures the quality of the production processes, and the transfer of cultivation

and agronomic practices generated by Cenicafé. To that end, they employ one on one activities, such as farm visits or office appointments, and group methods such as meetings, field days, and practical demonstrations. As offered by the local technicians interviewed, on average, one technician is assigned 700 coffee farmers, but in districts with a significant number of smallholders, this ratio can rise to 1,500 coffee farmers per technician.

Training themes are set out in an Annual Operating Plan, stemming from the guidelines of the Coffee Farmers' Congress, the FNC Strategic Plan and consultations with coffee farmers about their principal training needs. Among the most recurrent training themes are those related to good farming practices and, although OSH is not a specific subject in the plan, interviewee's replies indicate that it is addressed on a cross-cutting basis.

Scientific research is the responsibility of the Coffee Research Centre (Cenicafé). Cenicafé is charged with studying scientific issues related to production, harvesting, processing, bean quality, handling and use of coffee by-products. It also considers issues related to conserving natural resources in the Colombian coffee growing area and, more recently, adapting coffee production to climate change. It currently has eight experimental stations with environmental conditions that mimic the main coffee producing regions, as well as its main centre, and a staff of 213 workers, including administrative staff. Among Cenicafé's scientific developments, since 1993, are the introduction of parasitoids responsible for the success in controlling the spread of the coffee bean borer, improvement in environmental aspects related to water pollution and its impact on production, reducing productivity costs through efficiency processes, genetic improvement of coffee, increased productivity, resistance of plants to various diseases, and the preservation of biodiversity in coffee producing zones. This work is done in conjunction with the Ministry of the Environment and the Alexander Von Humboldt Institute (Lora et al, 2014).

Certification and verification of good production practices

By certifying producers who comply with good farming practice standards, the certifying companies guarantee that coffee farmers are registered with the VSS (see the annex) and comply with sustainable practices in coffee production and marketing. These companies operate as independent verification agencies of certification marks (UTZ Certified, USDA Organic, Fairtrade and

the Sustainable Agriculture Network (RAS)/Rainforest Alliance) and the Nespresso AAA Sustainable Quality Programme, the Starbucks C.A.F.E. Practices and the 4C Code of Conduct. The certifying companies with a presence in Colombia are NaturaCert, an initiative of the Natural Foundation; CERES, with its headquarters in Happurg, Germany, with scope in the domestic market for the certification of ecological farming products; Biotropico, a Colombian certifier; and Biolatina, whose head office is in Lima, Peru. Audits of compliance with the standards are carried out each year on a random sample of farms in the respective cooperatives or groups belonging to the VSS.

Education and training providers

National Apprenticeship Service (SENA) and Manuel Mejía Foundation (FMM). The SENA is an entity belonging to the Ministry of Labour whose function is to provide free training to Colombians with limited resources through technical, technological and supplementary programmes designed in line with employers' needs. The training processes in the coffee sector are the responsibility of the FMM, an institution created by the FNC to promote training programmes for coffee farmers, association leaders, adults with limited education and colleagues in the coffee association, mainly through virtual training. The FMM provides free education and is financed primarily from FNC services. It contracts its services for specific aspects of the training programmes. It provides training for some 40,000 students a year with a presence throughout the country through distance learning programmes and certain projects in collaboration with other higher education institutions.

The FMM runs educational partnerships in the coffee sector with the SENA, notably: (i) structuring of technical and technological programmes, with specific content such as production of specialty coffees, management of coffee companies, quality assurance of coffee on the farm, coffee production and management and implementation of good farming practices in coffee production; (ii) evaluation and subsequent certification of coffee workers occupational skills, based on the Professional Competence Standards, agreed with the Coffee Sector Committee; and (iii) co-financing of organic coffee technology transfer projects and obtaining international quality certifications, such as C.A.F.E. Practices and UTZ Certified, for coffee farmers in different coffee regions.

Their participation in the value chain varies according to the region and depends on the initiatives of each

of the Departmental Coffee Farmers' Committees. Of the three regions visited, the least interaction was observed in Nariño, a region in which the support by the SENA was at the request of the Coffee Farmers' Committee, chiefly in the design of technical and technological courses and programmes for coffee farmers and their children, and certification of professional competencies of coffee workers. In Caldas and Huila, the relationship is closer, with a broader collaborative agenda. The National Coffee School is in Huila, and is a space where various trainings regarding coffee production are implemented, including threshing and roasting.

Sector associations

In the regions visited, there was little to no knowledge of the organization of workers on coffee farms, nor did workers understand initiatives to protect their rights. Indeed, although almost all the standards provide for freedom of association and collective bargaining as a requirement for producer certification, it seemed that the application of these principles in the rural coffee sector is lacking. The absence of organizing workers in associations could be explained by reasons such as ongoing, worker mobility, insufficient institutional support and a general lack of knowledge about their rights and how to claim them. For these reasons, at harvest time, pickers have little bargaining power over their remuneration and it remains a process dominated by agreements between producers. CRECE (Garcia et al. 2016) found that only in 7.1 per cent of cases is there direct bargaining with the picker.

There are employers' and trade union associations related to the sector. ASOEXPORT is the national exporters' association which, as mentioned above, comprises the twenty biggest private coffee exporters by market share. The National Employers' Association (ANDI), is made up of companies in the industrial, financial, agri-industrial, food, commercial and services sectors, among others. In the coffee value chain, SINTRAFEC and SINTRAINDUSCAFÉ, are two trade unions and both are associated with the Central Workers' Organization (CUT). SINTRAFEC's members include workers in the FNC and its related companies: ALMACAFÉ, Cenicafé, Buencafé and coffee inspectors in the ports of Buenaventura and Santa Marta. SINTRAINDUSCAFE (National Coffee Workers Union), consists of workers in industries involved in coffee, but who do not belong to the FNC, such as, for example, coffee farmers' cooperatives.



Vulnerability profile

Smallholders and their family members working on farms

Temporary agricultural workers

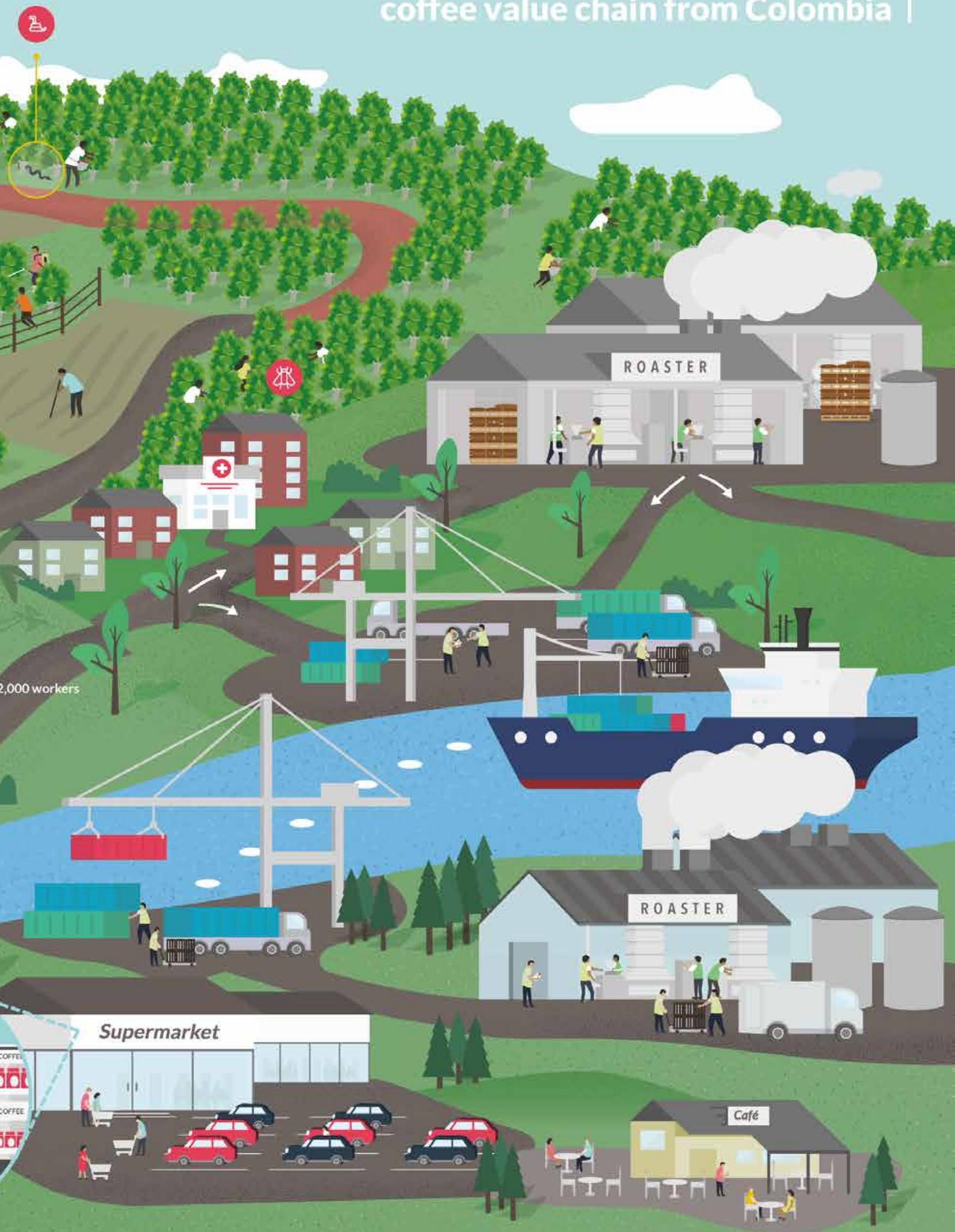
Subcontracted workers at the threshing station

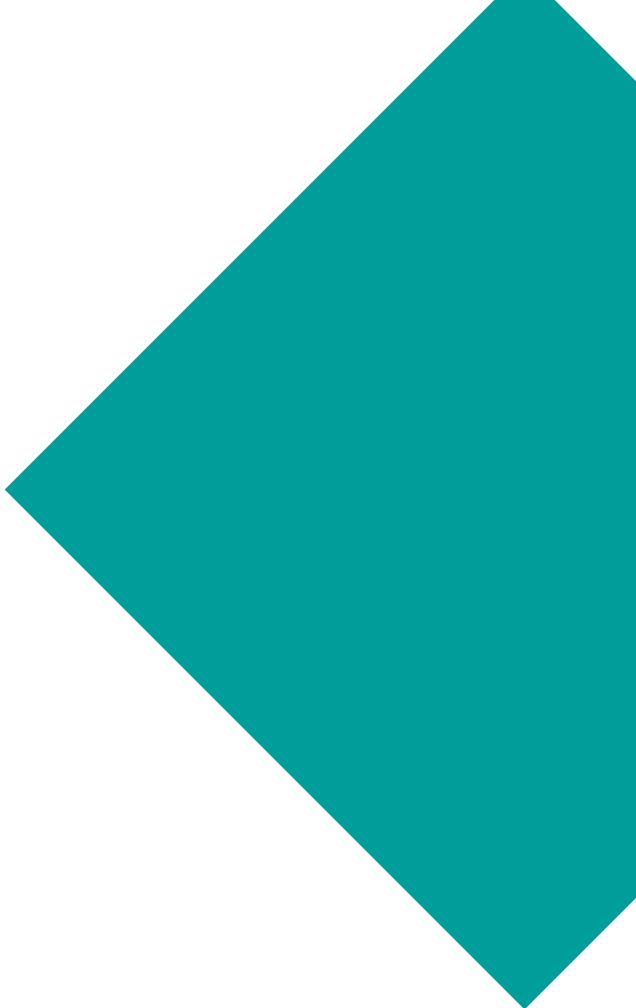
Associated main OSH risks

Awkward posture	Snake bites	Pest exposure
Chemical exposure	Heat exposure	Cuts
Noise and vibration exposure	Fire	Heavy lifting
Inhalation of particles	Slip and fall	



Occupational Safety and Health vulnerabilities in the coffee value chain from Colombia





2 | Drivers and constraints for OSH improvement

2.1. Institutional framework

The strength of the institutional framework in the coffee sector is critical to strengthening OSH in the coffee value chain. In this respect, the FNC has been advancing various activities aimed at adopting standards and promoting OSH management in the sector, especially among coffee farmers. The FNC formulated an internal social protection policy for coffee farmers which include five elements or pillars that structure the FNC's work in support of decent conditions of work at the production stage:

- Occupational safety and health: Includes development of tools and training to promote health and identify and prevent risks at work.
- Minimum social protection floor.¹⁵ Its objective is to propose solutions to the Government to ensure coffee farmers' access to health services, accident and occupational disease protection and old age pensions.
- “Integrated daily salary”: A proposal developed by the FNC to address the informal situation of harvesters and the overall issue of scarcity of labour for this task.
- Generational link: Relates to the FNC's proposals regarding employment of adolescents and the generational relay in coffee farming.
- Colombian sustainable coffee programme: This pillar seeks to reflect principles of environmental and social sustainability, including conditions of work, within coffee marketing. Like in other countries and products, the FNC is trying to develop an inclusive system of sustainability (which does not exclude those who cannot deliver).

¹⁵ The concept adopted by the FNC is inspired by, but distinct from, the concept of social protection floor defined in ILO Recommendation 202.

The impact of this strategy is notable in the following respects:

- Information on OSH in the coffee production stage. An agreement signed with the Ministry of Labour promoted self-management by vulnerable populations, in the framework of the National Survey of Occupation Safety and Health in coffee farms (FNC – Ministry of Labour, 2013 and FNC, 2014a). With resources from the Ministry of Labour's occupational risks fund, the FNC carried out an OSH survey in Colombian coffee farms within 25 municipalities in the country. Over 7,000 coffee farmers participated. Informational workshops on OSH were held and promoted linkages to coffee farmers' cooperatives.
- Training of coffee farmers. The FNC played an active role in the formulation of control measures for the country's coffee sector, by contributing to the definition of safe working standards, starting with the construction of a risk matrix and an evaluation of hazards. The FNC has put in place an OSH strategy for both its 2,700 rural extension workers and coffee growers. It aims to support both small and large coffee farmers in implementing the law, through the development of four components:
 - Construction of a self-assessment model, so that 2,000 coffee farms fulfil the first requirement of the Minimum Standards legislation.
 - Development of a 50-hour course in OSH in accordance with the requirements of the legislation.
 - Production and dissemination of 2,000 information booklets.

- Design of a train the trainers' course for 200 extension coordinators across the country, who will be responsible for disseminating the content.

This will be a gradual process, starting with a pilot scheme, and then coverage will be progressively extended. Considering that this initial effort reaches well under 1 per cent of the population, it is clear that it will require much more time than stipulated in the legislation to reach the entire population of coffee farmers.

- Certification of coffee farmers. The coffee cooperatives have facilitated the VSS reaching small producers in various ways: (i) for a period of time, some cooperatives financed the cost of certification (audits); (ii) by supplying, as required by certification, personal protective equipment and training regarding its use; (iii) support for financing changes and upgrades in the workplace (storage of agrochemicals and recycling of containers,¹⁶ investment in more modern machinery, etc.).
- Participation in the formulation of policies. The organization has formulated a number of proposals in coordination with the Ministry of Labour. These include clarifying definitions of the categories of coffee farming activities in national laws, concepts making participation of minors in coffee farming more flexible (by specifying permitted low-risk activities with exclusion criteria), and proposals that support coffee farmers as they implement OSH requirements.

¹⁶ Under the regulations, the agrochemical industry is obliged to collect containers. There are three companies in the country which engage in this activity, with collection targets of around 60 per cent of the containers that they sell. The activity of these companies tends to be geographically concentrated in easily accessible areas. The FNC has intervened to help put things in order by coordinating actions of the Departmental Coffee Farmers' Committees with the companies themselves.

2.2. Legislation and institutional capacities

Colombia has ratified 61 ILO Conventions (including 54 that are in force)¹⁷ which impact the current legislation on labour rights. The following table lists the instruments most closely related to OSH in agriculture and agri-industry.

Convention	Date	Status
C182 – Worst Forms of Child Labour Convention, 1999 (No. 182)	Jan 28 / 2005	In force
C081 – Labour Inspection Convention, 1947 (No. 81) Excluding Part II	Nov 13 / 1967	In force
C129 – Labour Inspection (Agriculture) Convention, 1969 (No. 129)	Nov 16 / 1976	In force
C003 – Maternity Protection Convention, 1919 (No. 3)	Jun 20 / 1933	In force
C012 – Workmen's Compensation (Agriculture) Convention, 1921 (No. 12)	Jun 20 / 1933	In force
C017 – Workmen's Compensation Convention, 1925 (No. 17)	Jun 20 / 1933	In force
C018 – Workmen's Compensation (Occupational Diseases) Convention, 1925 (No. 18)	Jun 20 / 1933	In force
C025 – Sickness Insurance (Agriculture) Convention, 1927 (No. 25)	Jun 20 / 1933	In force
C136 – Benzene Convention, 1971 (No. 136)	Nov 16 / 1976	In force
C159 – Vocational Rehabilitation and Employment (Disabled Persons) Convention, 1983 (No. 159)	Dec 7 / 1989	In force
C161 – Occupational Health Services Convention, 1985 (No. 161)	Jan 25 / 2001	In force
C162 – Asbestos Convention, 1986 (No. 162)	Jan 25 / 2001	In force
C170 – Chemicals Convention, 1990 (No. 170)	Sep 6 / 1994	In force
C174 – Prevention of Major Industrial Accidents Convention, 1993 (No. 174)	Dec 9 / 1997	In force

¹⁷ The complete list is available at: http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:102595

The General Occupational Risks System is intended to coordinate the various actors involved in prevention, mitigation and compensation related to occupational accidents and diseases. All the functions are supervised by the National Occupational Risks Council, while each function is performed by different actors. The principal functions are:

Promotion and prevention

Prevention of workplace risks, at the company level, are the employer's responsibility. The Technical Directorate of Occupational Risks provides guidance on the best forms of OSH promotion and risk prevention, and is supported by the secretariat of the National Occupational Risks Council. The National Occupational Health Council is a tripartite committee and formulates national policies related to risk prevention and promoting safer practices. The Occupational Risks Fund is financed partly by social security contributions and by a combination of other public funds, for instance, fines paid by companies not in compliance with OSH policies. Its principal objective is to prevent occupational accidents and diseases through independent studies and awareness campaigns. The studies consider fundamental causes of accidents and diseases and help generate recommendations with appropriate prevention measures. The occupational accident and disease insurer, the ARL, also has a role in providing prevention services to their members.

Control of compliance

The labour inspectorate is responsible for ensuring compliance and had 904 inspectors in 2014. In that year, 477 inspections were carried out in agriculture (which represents just over 3 per cent of all inspections).

Compensation

The social security scheme for occupational risks is part of the General Occupational Risks System.¹⁸ Affiliation is compulsory for a wide range of workers (wage workers, members of cooperatives, occasional workers with a contract of one month or more, among others.), and agriculture is included. However, registration is not compulsory for independent employers and workers if they are not involved in dangerous work. Agricultural workers represent only 3.6 per cent of affiliated workers in 2015.¹⁹ The benefits include medical expenses directly related to occupational injury or disease, temporary income replacement or pension in the case of permanent disability or death, and funeral assistance.

The laws on OSH applicable in Colombia up to 2015 are set out in the Single Regulatory Decree for the Labour Sector, Decree 1072 of 2015 (Ministry of Labour, 2015).²⁰ Chapter Six of the decree, in its 42 articles, sets out the definitions, regulations and procedures related to OSHMS. It establishes the parameters for the formulation of the OSH policy; the obligations and responsibilities of employers, workers and ARL. It requires training of technical staff; specifies the documentation that must be prepared and retained; and communication of regulations. With respect to risk management and hazards, it states that hazards must be identified,²¹ and risks must be assessed and evaluated; control, prevention and emergency preparedness and response measures must be formulated. In terms of planning, it requires the preparation of an annual work plan, with formulated objectives and indicators. To support the law and encourage change, senior management should be committed to the OSHMS. This means carrying out compliance audits, an annual review of the system, obtaining and allocating resources

¹⁸ Implemented by insurers accredited by the Banking Supervisory Authority under Decree 1295, 1994.

¹⁹ The contribution rate ranges between 0.348 per cent and 8.7 per cent, depending on the level of risk associated with each occupational category. Contributions are paid by employers for all categories of worker, except independent or self-employed workers.

²⁰ This decree defines OSH as "the discipline that deals with prevention of injuries and diseases caused by conditions of work, and protection and promotion of workers' health", the purpose of which is to improve conditions and the environment in the workplace. It also defines OSHMS as the development of a logical process based on constant and phased improvements, "... which includes policy, organization, planning, application, evaluation, audit and improvement measures with the object of anticipating, recognizing, evaluating and controlling risks that might affect safety and health at work".

²¹ The law provides that, to identify hazards, assess and evaluate risks, the employer must apply "a methodology that is systematic, and which covers all processes and activities". To that end, an employer must undertake a planning process which involves the following activities:

- Define the company's OSH priorities
- Define OSHMS objectives in line with the company's OSH policy
- Design and implement an annual work plan
- Define indicators to evaluate the structure, process and results of the OSHMS
- Allocate the necessary resources for the implementation of the OSHMS

needed to investigate incidents, workplace accidents and occupational diseases. It also means promoting worker participation in implementing preventive and corrective actions to ensure constant improvement.

Decree 1072 provided for a transition period in which all employers should replace the occupational health programme with a new OSHMS no later than 31 January 2017 (the deadline established in Decree 171 of 2016). However, this time limit had to be amended by the Ministry of Labour, in recognition of the limited response of agents within deadlines initially set. Indeed, as was found in the interviews with various agents, neither the employers nor the institutional framework itself, were fully prepared to implement the OSHMS. Employers still did not have sufficient information nor did they have the necessary resources required, and some regional institutions did not have the capacity or sufficient resources to fulfil their role.

In consequence, at the beginning of January 2017, the Government, through the Ministry of Labour, granted an extension of the transition period, increasing the time allowed for implementation of the OSHMS by six months for all employers (Decree 052 of 12 January). In the light of the difficulty of fulfilling all the requirements, the Ministry also took into consideration that a phased process was necessary to complete compliance and monitoring. The phases are: (i) initial evaluation, (ii) improvement plan, (iii) execution, (iv) monitoring and follow-up, and (v) improvement plan.

Further to the decree extending the transition period, on 28 March 2017, the Government issued Resolution 1111, in which it established the Minimum OSHMS Standards. These standards contain the set of rules, requirements and procedures for compulsory compliance by employers and contractors, in performance

of the essential activities of the General Occupational Risks System. The philosophy of the Minimum Standards Regulation is flexibility in implementation, in the sense that it seeks to adapt to the conditions of each company, depending on the economic activity, number of workers and work performed. It is up to the ARL to provide advice, assistance and technical support to small and medium-sized enterprises for implementation of the OSHMS.²²

With this law, the Government granted a period of 22 months, from June 2017 to April 2019 for employers to formulate and implement their OSHMS progressively (in five phases) to allow time to adjust and make the transition.

- Phase one, initial evaluation: Between June and August 2017, employers must undertake a self-evaluation to identify their OSH priorities and needs.
- Phase two, improvement plan: Between September and December 2017, an improvement plan must be prepared to correct weaknesses identified in the self-evaluation, and thus formulate the annual work plan for 2018.
- Phase three, implementation: This will take place throughout 2018, including the formulation of the annual plan for 2019 in the final month.
- Phase four, monitoring and follow-up and improvement plan: During the first quarter of 2019, monitoring and follow-up and preparation of the improvement plan will take place, considered as the preventive surveillance phase, under the responsibility of the Ministry of Labour and the ARL and development and implementation of the OSHMS.
- Phase five, inspection, surveillance and control: from the second quarter of 2019, verification of

22 Which includes:

- Training in carrying out the initial OSHMS evaluation
- Formulation of OSH policy
- Preparation of the annual work plan
- Preparation of the legal framework
- Identification of hazards
- Assessment and evaluation of risks of the economic activity
- Definition of intervention priorities
- Formulation of control, prevention and protection measures and emergency preparedness and response.
- Investigation of accidents, incidents and occupational diseases
- Measurement and evaluation of the management

compliance with the provisions in OSHMS by the Ministry of Labour will commence.

For the evaluation, companies must apply the criteria set out in the law in the technical annex.

As can be seen in the Table of Values and Scoring of the OSHMS Minimum Standards (see annex), the greatest weight is attached, in general, to standards which relate to change management: management of hazards and risks, management of health and the overall management of OSH, which together represent 65 per cent of the weightings in the scoring. The regular cycle of Minimum Standards and the Occupational Safety and Health Management System will start in January 2020, and will be updated and adjusted by the Ministry of Labour every five years from 2025. The minimum standards for employers or contractors with workers, cooperative members, on secondment or contractors, are listed in the annex. The legislation contemplates seven standards: resources, overall management of OSH, management of health, management of hazards and risks, management of threats, verification of the system and improvement.

The legislative framework has the virtue of having an integrated approach, but actors in the coffee value chain reported that it was little suited to the reality of the rural environment. The current OSH legislation is constructed with an approach that links the different functions of a National Occupational Safety and Health System, i.e. it does not only focus on controlling compliance, but also includes the functions of prevention and compensation when occupational risks materialize. However, the law continues to be formulated in terms alien to the activities, language and possibilities of rural agents, especially small coffee farmers. For example, article 15 of Resolution 1111 on minimum indicators of occupational safety and health provides that “with effect from December 2018, for indicators of the occupational safety and health management system, companies shall produce a list annually of occupational safety and health indicators which will determine, among other things: the severity, frequency and mortality of accidents at work; the prevalence and incidence of occupational diseases and absenteeism”. Moreover, the System’s support functions have limited resources to address the needs of the rural sector, especially concerning occupational health services. As will be considered in the next section, the response capacity of institutions in remote regions and zones is insufficient to fulfil the entirety of requirements under the new regulations.

The legislation on social protection establishes a comprehensive social security system. Act 100 of 1993 provides that “The comprehensive social security system shall organize the institutions and the necessary resources to achieve the following objectives:

1. Guarantee economic benefits and healthcare to those who have an employment relationship or sufficient economic capacity to join the system.
2. Guarantee the provision of supplementary social services as provided by law.
3. Guarantee the extension of coverage until the entire population has access to the system, through mechanisms which, pursuant to the constitutional principle of solidarity, allow sectors without sufficient economic capacity, such as farmers, indigenous peoples and independent workers, artists, sportspersons and community mothers, to access the system and full benefits.”

The comprehensive social security system was established to consolidate social security legislation and planning, and to coordinate the provider agencies in achieving the intended objectives.

There are several social protection programmes to fulfil this mandate. The contributory scheme includes guarantees in matters of health, pensions and occupational risks following a social security model. They are implemented through insurance institutions (ARL, EPS). The non-contributory scheme includes a large number of programmes of an assistance or subsidized nature with varying levels of contribution (none for health, some for pensions through the BEPS programmes and compensation in the event of incapacity, disability or death through the *Programa Microseguros*). The health system is integrated and has mechanisms to guarantee continuity in affiliation to the system. Membership was 96 per cent of the population in 2014 (Valverde, 2014).

Legislation on social security and prevention of occupational risks is not easily adaptable to the diversity of contractual relations in the rural sphere. According to some of those interviewed in the Coffee Farmers’ Committees and ARL, access of producers (coffee farmers) and workers to the three components of the contributory social security system (health, pension and occupational risks) is limited by the lack of adaptation of the legislation to the coffee sector, in particular, and rural environment in general. A widespread ignorance of this legislation remains. In particular, the affiliation of tem-

porary workers or the coffee farmers themselves as independent workers comes up against limits in terms of existing affiliation procedures and costs. This situation is partially offset by the existence of a fairly well-developed non-contributory (subsidized) social protection system in Colombia compared with other countries. For example, CRECE figures state 88 per cent of coffee pickers²³ are registered in the non-contributory or “subsidized” scheme, for health and according to the National Survey of Occupational Safety and Health (FNC – Ministry of Labour, 2013 and 2014), 68 per cent of producers are registered in this scheme.

The subsidized scheme is designed to guarantee access to healthcare for the poorest segment of the population, which lacks the ability to pay. However, if workers under this option wish to contribute as independent workers to a pension fund and/or ARL for the duration of the harvest, they cannot do so without losing the subsidized health benefit. Moreover, while the law allows a worker to return to the subsidized scheme once his employment contract, and thus his period as contributor, has ended, a lack of knowledge of this benefit means that workers are reluctant to become formalized and join the contributory option. Many mistakenly believe they would be required to give up benefits related to their affiliation to the subsidized health system, such as government subsidies for vulnerable populations. Furthermore, although there are the BEPS and *Programa Microseguros*, affiliation to these programmes is limited to the production stage in the value chain. According to a survey carried out by Remolina Estrada, 2007 and Fasecolda, 2014 in Colombia, the population affiliated to *Programa Microseguros* scheme is only 8.4 per cent, and there is ignorance among the population about insurance as a mechanism of protection against adverse shocks. Indeed, only 10 per cent of the lower strata know about funeral assistance, 14 per cent about life insurance and 58 per cent about home insurance. According to the same survey, 28 per cent of the population in the 2nd and 3rd strata consider insurance as an unattainable necessity, 13 per cent a luxury and 4 per cent, something they do not understand. The lack of information, and the cash contribution required to join these programmes, are barriers to their adoption.

Information obtained suggests the ARL provides these services at a company's request, but they do not have

staff specialized in specific sector risks, e.g. the coffee sector, and their scope reaches only as far as urban companies, which is where their affiliation is concentrated. The companies and entities consulted which are part of the coffee value chain described the ARL's support in positive terms. However, given the lower level of affiliation for occupational risks in the rural sector, coffee farmers and their workers are detached from schemes for promotion of and prevention in occupational health.

Although members of both schemes should have the same level of care, in reality there are barriers to access for members of the latter, either for reasons of geographical location, economic conditions that prevent them from paying the additional costs (co-payments and subsidized contributions) or the limited supply of services in rural areas, which in most cases is public with minimal capacity to cope with highly complex procedures. Private providers have few incentives to offer services in rural areas because of the high operating costs in relation to the number of users, especially in remote areas with a low population density. In general, health service provisions do not have special models for workers in rural areas, where most of the coverage is available through the subsidized system.

Limited capacity of the average producer to respond effectively to the legislation. Small producers, in particular, have described their difficulty in introducing and maintaining an OSHMS in operation themselves. They find it especially difficult to understand subjects such as self-evaluation of risks on the farm, the preparation of risk matrices and the records that they need to keep. In this respect, some CRECE studies have shown that the majority of coffee farmers have difficulty in or do not want to keep records of activities on the farm. In the same vein, there are requirements under the law which are beyond the capacity of coffee producers, or which seem unreasonable to them. A recurrent example among several actors in the sector is regulation of work heights. To mention one example, the Safety Regulation on protection against falls when working at heights (Ministry of Labour, 2012) states that “*it shall be compulsory for any work where there is a risk of falling from a height of 1.50m or more above a lower level*”. In the set of protection mechanisms that must be provided, it contemplates aspects such as anchor points certified by a national body, safety lines

²³ Affiliation to the subsidized health scheme is open to the population classified in levels one and two of the System of Selection of Beneficiaries (SISBEN), based on the results of a socioeconomic survey. This survey, according to the Ministry of Health “is the entry point to the social programmes provided by the State for persons with more needs. These programmes include health through the Subsidized Health Regime, which allows them to benefit from the services provided by the Compulsory Subsidized Health Plan”.

and protection devices. The average level of education of the coffee farmer, four years on average, can be a constraint for those responding individually in the preparation and implementation of the various OSHMS phases. In addition, as most coffee farmers are not affiliated to the contributory social security scheme, including occupational risks, they cannot benefit from the prevention services provided by the ARL.

The application of OSH legislation faces challenges that vary along the value chain. In medium-sized and large companies, for instance, the internal capacity to implement legislation exists. Many have multiple workplace certifications (ISO, SA 8000, etc.) and are dedicated to the safety and health of staff (compilation and analysis of data, identification of risks, proposals for control measures, training, etc.). At the production stage, challenges vary, depending on the coffee farmer. By law, coffee farmers fall into the category of employers, while the conditions of small producers require additional support to achieve compliance (and beyond compliance, a level of wellbeing at work) compared with medium-sized and large companies in urban environments. By law, all employers are obliged to implement OSHMS. In the coffee production stage of the value chain, the large farms have contract conditions, a greater volume of work and the use of machinery, which make them employers in the strictest sense. This type of farm accounts, at most, for 5 per cent of the total. Most farms, by comparison are small and is where the producer combines hiring of workers, exchange of labour, or employing family labour, but is also generally their own worker. Unpaid family workers, in contrast, have a less clear identification of risks and control measures, and also access to prevention, protection and compensation. Given that they are the least visible workers and not organized, improving their OSH conditions will need attention.

The institutional capacity of the Government to implement the legislation. The Government, through the Ministries, has advanced legislation and has been receptive to the requests of the coffee sector regarding time limits for application. The philosophy of the law on Minimum Standards is based on flexibility in its implementation. It seeks to adapt to the conditions of each enterprise, depending on the number of workers, economic activity and work performed. It has delegated to the ARL the task of providing advice, assistance and

technical support to small and medium-sized enterprises for the implementation of OSHMS, which must also include recommendations for an improvement plan. However, these entities only advise their members, so coverage for the vast majority of coffee farmers remains limited. Delegating prevention, protection and compensation in health and occupational risks to external agencies by the Colombian Government has created a degree of disconnect between the original intention and an effective access to support services, especially in rural areas. The insurers have limited incentives to guarantee effective access to health services, occupational health services, and support in the formulation and application of the OSHMS.

Signature of the Peace Agreement between the Government and the FARC. This is seen in the coffee sector as a great opportunity to hold discussions with the Government on economic and social guidelines adapted to the challenges of rural populations. It is also seen as a means to encourage programmes and projects in the coffee-growing regions, and, in particular, to support the initiatives for implementing OSH among target populations. On 24 November 2016, the Government signed with the armed group FARC-EP the *“Final Agreement to End the Conflict and Build a Lasting Peace”*.²⁴ In the framework of this Agreement, the Development Programmes with a Territorial Focus (PDET) were created (Decree 893 of May 2017) with the aim of developing participatory actions in zones affected by the conflict. Integrated Rural Reform (RRI) seeks to lay the foundations for changes that create conditions of wellbeing for rural populations. The PDET are, in short, a planning, management and implementation tool derived from the *Final Agreement* in the priority zones. To the extent that these plans will be implemented, the coffee sector positions itself as a potential actor in their design and application in the coffee-growing municipalities.

Among other subjects in the Final Peace Agreement, the fundamental role of farming, family and the community economy in rural development is recognized, as is the employment and incomes it generates. As such, it plays a role in dignifying and formalizing work. The following mechanisms are in the agreement on health and work in rural areas:

- Creation and implementation of the National Rural Health Plan, with the aim of “bringing the provision

24 For the full text of the Agreement, see <http://www.altocomisionadoparalapaz.gov.co/procesos-y-conversaciones>

of health services closer to communities, especially vulnerable groups and persons, strengthening the infrastructure and the quality of the public network in rural areas and improving access and affiliation to healthcare provision.

- The creation of a special public health model for remote rural areas, with emphasis on prevention, which can provide healthcare in the home or the workplace.
- Promotion of associative forms of work among small and medium-sized producers through the National Plan for the promotion of the solidarity economy and rural cooperatives.
- Creation and implementation of the Progressive Plan on social protection and guarantee of rural workers' rights. This plan focuses on the formalization of rural labour and social protection, for which the Government is committed to strengthening the system of social security and protection of the rural population.

Within coffee sector institutions, many feel a favourable climate exists with the Government and that now is the time to act together to support the peace agreement. There also appears to be greater openness on the part of the Government to discuss with the private sector, subjects related to decent work. The close relationship with trade associations, for example, can help facilitate the adaptation of an OSH framework more relevant to rural environments. The institutional structure of the FNC is a strength and can support the implementation of the peace agreement in rural areas.

2.3. Market trends and incentives

The trends in the market for Colombian coffee favour responsible production. The preferences of European, North American and Japanese consumers for coffee produced in socially, economically and environmentally sustainable conditions have created conditions of access for producers to specialty and sustainable coffee markets, in compliance with a growing number of production standards (*Memorias de Café Sostenible*, 2010). With a view to obtain pricing for differentiated products, the flow of pro-

ducers into VSS programmes has grown significantly. According to the International Institute for Sustainable Development (ISSD, 2014), some 40 per cent of global production (2013) is subject to some standard or certification, equivalent to some 60 million bags in 2016 production. However, there is a big difference between the volume produced and the volume marketed under these schemes, so that actual exports account for barely 12 per cent per year on average. Nevertheless, the standards are a powerful market force which help to transmit awareness from the consumer to the industry and the producers themselves regarding the need to invest in improving conditions of work. The loss of certification for an individual would mean that all the members of the group, association or cooperative to which the producer belonged would lose their certification. At the same time, without certification, the producer would not be able to sell coffee at a premium.

Colombia is one of the leaders in production of coffee under sustainable standards, with an 18 per cent share of the segment of verified or certified volumes. At the end of 2015, the country had 209,081 coffee farms, 30 per cent of the total, linked to at least one certification or verification programme. These farms are owned by 165,385 coffee farmers and total 391,619 hectares planted with coffee (FNC, 2015). This figure is higher if certification/verification programmes that directly promote private exporters (without the involvement of the FNC are included, but for which consolidated statistics are not available). Specialty coffees in general account for a fifth share of the country's exports. According to the FNC, around 70 per cent of the volume exported is standard or conventional coffee (not certified/verified), 24 per cent specialty coffees (coffees of origin, sustainable and preparations) and 6 per cent industrialized coffee (roasted and ground, as extract and soluble).

The VSS promote the adoption of OSH practices on coffee farms. The evaluation of the adoption of sustainability practices in coffee production in Colombia by the CRECE (Garcia et al., 2012) provides evidence that producers who participate in the various VSS, and their households and workers who work on their farms, tend to adopt good practices to a greater extent than conventional producers. These differences were found in evaluating compliance with seven VSS (UTZ Certified, FLO, Rainforest Alliance, Café Orgánico,

Starbucks C.A.F.E. Practices, Nespresso AAA and 4C). OSH is always one chapter of the requirements, which lists the best conditions of work in the market. Among the producers who participate in the VSS, greater awareness of occupational risks has been noted, which in turn are related to policies in the sector. The fact that producers are organized as a federation and through cooperatives has fostered the penetration of standards among small producers in a more efficient manner compared with the other value chains studied.

Maintaining the perspective of development of standards and with a view to promoting sustainable development, the FNC is formulating the strategy known as "Sustainable Colombian Coffee". A Code of Conduct and Good Practices to advance towards sustainable coffee growing by 2027, which it is proposed to incorporate, more extensively and progressively, all the country's coffee farmers, taking into account the economic, social, environmental and institutional dimensions. This strategy is thus an incentive to producers to continue to increase their stock and flow of information and create awareness of the implementation of good safety practices in the workplace. It is also an opportunity for producers who are not part of any VSS to begin to incorporate sustainable practices.

With the exception of standards linked to specific purchasing policies of certain companies (Nespresso AAA, Starbucks CAFE Practices, etc.), VSS are schemes based only on regulatory verification²⁵ of compliance by the farms. In other words, the auditor verifies the control points to assess compliance. Consequently, the positive impact of these VSS schemes on OSH is concentrated on (i) the adoption of protection and control measures for the most obvious risks (i.e. prohibition of child labour, handling and storage of agrochemicals, use of personal protective equipment, documentation of identification of risks and visual signs of major hazards on the farm, etc.); and (ii) awareness and identification of these risks. These two points have been reinforced in Colombia by the combination of the VSS with the services of the FNC and extension workers of private exporters. However, the impact on less obvious risks, with subsequent effects, continues to be limited, and likewise the elimination of risk factors, which would require considerable investment.

The VSS forms part of a purchasing policy in which the company at the head of the value chain is directly

involved and seems to have a scope which goes beyond the process of verification at the producer level. Here there is greater self-investment by the producer. These standards are accompanied by agronomic support for good practices and an above-market price and with additional services. For example, one of these schemes is piloting co-financing of the affiliation to the BEPS for producers who form part of the supply base.

The market incentives are also limited by the entry of new producers and the fact that a number of others remain outside of those schemes. The continuing rise of standards in the country has probably reached levels such that it will be hard to keep growth at the same historic pace. The operation of the schemes suggest that the model could become saturated. On the one hand, the standards over a period of more than ten years have absorbed the "lower fruits on the tree" by including producers more inclined to fulfil their requirements. Secondly, phenomena such as the downward trend in price premiums paid, the cost of participation in the standards and the tightening of requirements in a market which buys an increasingly smaller proportion of the volumes of certified coffee produced, are disincentives to the entry to and keeping up with standards.

The incorporation of coffee farmers in a VSS involves incurring additional costs which are not always offset by the price premiums obtained. According to the results of a study by CRECE (Garcia et al. 2015a), the cost of applying a standard per farm can range from US\$178 to US\$1,347, depending to a large extent on the initial infrastructure of the farm and the requirements of each VSS. The producer pays on average 58 per cent of the investment and maintenance costs and the rest is usually financed by various organizations such as the FNC, coffee farmers' cooperatives, NGOs and exporters. By participating in a VSS, the average producer can obtain profits 30.7 per cent higher than the costs, although this varies considerably depending on the conditions on the farm. Productivity is the determining variable in producers successfully capturing these profits, so that actions to promote it contribute to strengthening them. However, producers with smaller farms and in disadvantageous conditions require differential attention, primarily concerning their standards of living, which allows them to reach a situation where they may become more receptive to these farming practices.

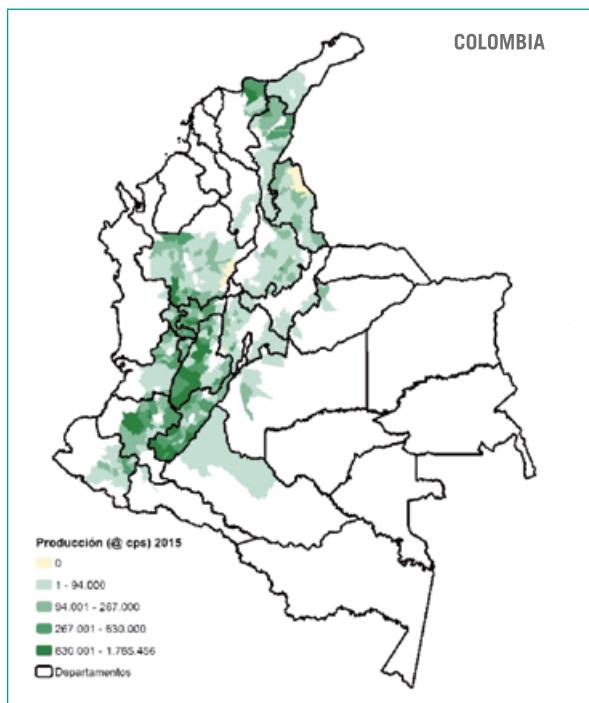
²⁵ To conduct audits, the square root of the number of producers belonging to the group or cooperative is taken, selecting a random sample of farms that the auditor will visit.

2.4. Regional perspectives

Coffee cultivation covers 3.3 million hectares, of which 940,000 are planted with coffee, along the Andean Cordillera and from the Caribbean Sea to the Amazon Forest, covering 20 of the 32 departments in 588 of the 1,122 municipalities (FNC, 2015). Some 552,000 coffee farmers depend on this crop, and, on average, own 1.7 hectares planted with coffee, concentrated in the hands of small producers.

In Colombia, coffee is harvested all year round, depending on the region. In the north of the country, the bulk of the crop is harvested in the second half of the year, while two crops are obtained in the central zone: a main crop, and a smaller crop, (*cosecha traviesa* or *cosecha mitaca*), which produces approximately one third of the annual yield. Meanwhile, in the southern zone, the crop is mostly harvested in the first half of the year.

Figure 6. Coffee production in Colombia

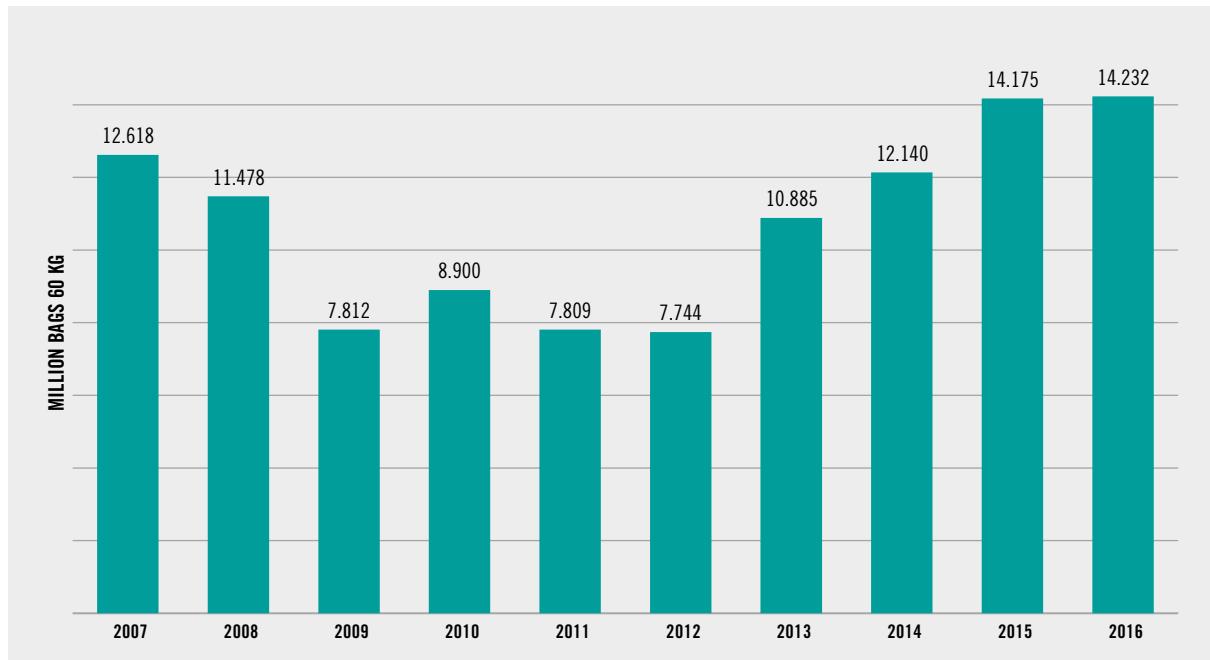


Source: CRECE (Garcia et al.2015a).

According to the FNC, the country produces 14 million 60-kilogram bags of green coffee annually, which ranks it as third place in the world, after Brazil and Vietnam. Among producers of Arabica, it occupies second place after Brazil. At the domestic level, 39 per cent of the production is concentrated in the central zone, consisting of the departments of Antioquia, Caldas, Risaralda, Quindío and Valle del Cauca. These five departments have traditionally been the biggest coffee producers in the country. However, in recent years, the expansion of coffee growing in the south, which now has a 31 per cent share of national production (Huila, Nariño and Cauca) has gradually been displacing the central zone, as an area that produces specialty and high-quality coffees. Approximately 16 per cent of the coffee production is concentrated in the western zone (Cundinamarca and Tolima), 8 per cent in the east (Boyacá, North Santander and Santander), 4 per cent in the north (Cesar, Guajira and Magdalena) and 1 per cent in departments which are only just beginning to emerge as coffee producers, among them, Bolívar, Chocó, Meta, Putumayo and Casanare.

The country's production is now rising, following a sharp fall during four consecutive years (2009-2012) due to the combined effect of the El Niño phenomenon, proliferation of rust and increase in the price of fertilizers. Production recovery was marked by a significant effort by coffee institutions, as well as producers, to renew the country's productive stock. Currently, the planting density is 4,484 bushes or trees per hectare averaging 7.1 years. Plantations continue to be restructured; 83 per cent are young, 85 per cent are of productive age (over 2 years) and 71 per cent are planted with rust resistant varieties of coffee trees. In future years, the increase in productivity will depend on maintaining and optimizing the replanting practices, which have shown significant results (FNC, 2015).

Figure 7. Coffee production in Colombia, 2007-2015



Source: FNC, 2015

The three coffee growing regions selected for the case study are contrasted by their social and economic environments and production. Caldas is one of the departments with the strongest coffee growing tradition. It is characterized by its entrepreneurial approach to coffee farming, a large production volume that contributes about 8 per cent of the country's crop, and to the development of its labour market. A high demand for labour, mechanization of coffee growing and the higher level of remuneration offered to coffee workers compared with those of other departments, makes the region highly attractive to workers, especially from the south. The department of Nariño is characterized by its coffee smallholdings and family-run farms, and it is one of the coffee growing zones with the greatest expansion of specialty and sustainable coffees. Due to the increase of small coffee farmers, mutual help between neighbours for the harvest is a well-entrenched practice, avoiding as much as possible hiring labour from outside the farm. These characteristics have made the department an exporter of coffee farm labour and led to a wage labour market that is not well developed. The department of Huila is half way between the other two. Until a few years ago, it shared the productive characteristics and

labour market of the south of the country, but the stimulus provided by the mechanization of coffee growing, the expansion of the coffee farming frontier and the production and export of high quality coffees have positioned Huila as one of the country's most important coffee growing departments (contributing 17 per cent of total production). It also led to a transition towards a more competitive and highly labour-intensive form of coffee farming.

These specific regional conditions mean the labour market has different levels of development, an aspect which influences the conditions of employment in the value chain, as well as varying levels of capacity to respond to the agents involved in it. In the department of Caldas, for instance, there is a deficit of labour for harvesting the coffee crop, a demand which must be satisfied by paying higher daily wages to attract pickers from the south of the country. Huila, because of its geographical location and distribution of its coffee harvest, has traditionally been self-sufficient in meeting its own labour needs, although recently problems of shortages have emerged. Meanwhile, Nariño has traditionally been a department which provides labour to the central coffee growing region.

As with the coffee growing conditions, the institutions that support OSH in the regions share common features, but also differences in their allocation of resources and capacity to respond to national legislation and the needs of the coffee sector. There are some regional OSH promotion initiatives in the sector, but which are not connected centrally; entities that support the system with little reach in remote areas where the majority of coffee-growers are located; lack of initiatives aimed at coffee farmers; limited institutional capacity to respond to national policy; limited access to health protection and healthcare schemes; and lack of organization of the workers.

Sectoral OSH initiatives and regional response. As commented above, the FNC at the central level has implemented various initiatives with extensive regional coverage to promote self-management and OSH among coffee farmers. In interviews with staff from the Departmental Coffee Farmers' Committees, a certain degree of appropriation of the central initiatives was found, complemented by regionally inspired actions. For example, in Caldas, the Committee established contact with hospitals, insurers, health institutions or emergency institutions to organize extension activities. The goal was to advise coffee farmers and their workers on safety at work, health, pensions, accident prevention, and other issues, some of which are delivered through the specialty coffee programme. In Huila, the proliferation of VSS programmes has been a channel for OSH practices. In Nariño, an action was implemented by the Departmental Secretariat of Health to characterize health conditions and the working environment of coffee farms within one of the municipalities. Despite the importance of these initiatives, there is still a lack of coordination, more in some regions than others, between the coffee sector and support institutions in the regions, as well as a lack of symmetry in the information generated centrally, in one region and in others.

Support functions with limited reach in rural areas. The support functions have limited human and financial resources at the regional level, especially for supporting the rural population. Entities such as departmental secretariats of health, regional labour offices, SENA and the EPS and ARL themselves, in some cases, do not have the necessary capacity to support agents in the value chain or deliver their resources to rural areas. The department of Nariño

has over 400 occupational health professionals, including sanitary engineers, chemists, industrial staff, business managers and technologists to cover all the sectors. The department has almost 40,000 coffee farmers, many of them in remote areas. Other factors external to the institutions, such as precarious communication channels, more severe in some regions than others, are an obstacle to the proper provision of services and generate occupational risks for rural extensions.

Scarce financial and human resources for inspection and control entities. The country has a total of 958 labour inspectors, who, in accordance with the administrative organization, mainly concentrate their action in urban areas. Act 23 of 2015 sets out the powers and duties of Labour and Social Security Inspectors as follows: labour relations, prevention of occupational risks, social security, employment, migration and technical assistance.²⁶ The regional labour directorates are responsible for overseeing compliance with OSH legislation, receiving complaints, processing cases and carrying out inspections. These offices make preventive visits, ex officio, and reactive visits, in response to a complaint. As could be verified in the field, these visits tend to be concentrated in highly accident-prone urban activities such as construction, and visits to rural areas are almost non-existent. The directorates lack sufficient financial resources to carry out inspections. They have a very small number of technical staff, they lack their own means of transport and the few technical staff or inspectors are not always trained in occupational safety and health. In Huila, for example, they have only 19 labour inspectors, none of whom are trained in OSH, and over 80,000 coffee farmers. The budget is insufficient to allow officials to travel to make visits or fulfil a workplan. In these conditions, it is difficult for them to reach rural and remote areas where coffee farms are located.

Limited access to social health protection schemes and healthcare services. The lack of accessibility of producers and workers to healthcare providers and services in isolated areas can undermine affiliation to occupational risks systems, even where it can be realized independently of health and pensions. For the population living in these areas, it is all a challenge to not only to access healthcare for accidents but also to obtain treatment or medicines or return for health check-ups. According to the National Survey

26 For details of labour inspection in Colombia, see Molina, (2008)

of Occupation Safety and Health in the Rural Sector (FNC-Ministry of Labour, 2013 and 2014) 17 per cent of coffee farmers suffered at least one accident, but over half did not report it. For the institutions, it is also a challenge to provide attention to these areas with the required continuity, due to lack of infrastructure and staff. The ARL have staff who travel to rural areas, but their attention is limited to the affiliated population, and it has little coverage of areas where the farms are located.

Rural workers in general are not organized in associations or trade unions. In the regions visited, nothing was known related to the organization of workers on coffee farms, nor initiatives aimed at protecting their rights. Indeed, although almost all the certification

systems have chapters on social and employment requirements, which envisage freedom of association and collective bargaining as requirements for certification of coffee producers, it seems that these requirements are not yet actively applied in the rural coffee sector. On the one hand, the lack of organization of workers may be due to their constant mobility, the lack of leadership among this group of workers, varying, but little overall support of the coffee sector and governmental institutions, and a lack of information on their rights and how to claim them. For this reason, at harvest time, the pickers do not have any bargaining power over their remuneration, a process dominated by agreements between producers. CRECE (Garcia et al 2016) found that only in 7.1 per cent of cases is there direct bargaining with the picker.

3

Opportunities for OSH improvement and scale-up of good practices

3.1. OSH vulnerability profiles

Field research revealed two key findings:

- Exposure to occupational risks and low demand for prevention are highly correlated with vulnerability of employment.
- A number of related precarious working conditions (contract, remuneration, working hours, access to social protection, etc.) increases exposure to occupational risks and its consequences.

It is necessary to assess occupational safety and health risks in context to apprehend the degree of vulnerability different categories of workers are experiencing, and further understand what drives these vulnerabilities. This case study explored the following dimensions to assess safety and health vulnerabilities:²⁷

- Exposure: identify occupational risks by activity and provide and assessment of the severity and probability of occurrence.
- Sensitivity: identify the employment situation of workers. The specifics characteristics of which are linked to risk exposure and influence its nature and frequency. The following factors are identified and analysed: access to a workplace risk management system; access to personal, collective and social protections that help prevent occupational risks; status in employment if linked to differential access

²⁷ This framework takes stock of various risk assessment methodologies, from both an OSH perspective (Alli, B. O. 2008; ILO, 2013) and a business and human rights perspective (Chan, M-K. 2012; Tromp, 2016 and European Investment Bank, 2013).

to prevention, promotion and protection against occupational risks; company or holding status, if linked to a differential access to compliance checks by relevant institutions (labour inspection, social security inspection, etc.).

- Coping capacity: identify the strategies and resources that workers have to address consequences of risk occurrence. In particular, assessing access to care and compensation services in the event of an occupational accident or illness. Such incidences incur possible sanctions for the employer.

These three dimensions aim to capture a holistic view to occupational risk vulnerability by looking at underlying factors. In particular, enforcement and access to prevention, promotion, protection (individual, collective, social) and compensation services were considered. This gives a greater understanding of the concept of vulnerability related to OSH risks.

The profiles of employment identified as particularly vulnerable to OSH risk factors were:

- At the production stage of the value chain: (i) small producers, (ii) family workers, and (iii) temporary workers or subcontracted workers on farms, especially pickers and workers specialized in fumigation with agrochemicals.
- At the industrial stage, workers engaged in providing subcontract loading and unloading services of coffee, mainly in threshing shops and warehouses.

Principal occupational hazards of coffee farmers. The National Survey of Occupational Safety and Health in the Rural Sector (FNC-Ministry of Labour, 2013 and 2014), which covered a broad range of coffee farmers in several regions, found that between 16 per cent and 17 per cent had had an accident at work at one time. The most commonly reported injury was knocks, osteomuscular injuries and wounds. The main cause in 50 per cent or more of the cases was falls, related to uneven ground and slopes affected by weather conditions. Hand injuries were often reported (32 per cent of cases). In addition, a CRECE study (García et al, 2013) which included a sample of small coffee farmers in the department of Caldas, noted that coffee picking involves the greatest risk and is the activity to which the coffee farmer, with the participation of household members, devote the most time (88 per cent). Coffee picking has the

highest frequency of accidents reported in the main harvest involving environmental, mechanical, slips and falls and osteomuscular risks. The greatest probability of accidents, greater than 50 per cent, were in activities that involve mechanical or environmental risks, while accident prevention measures were adopted most frequently for activities which generate mechanical risks (80 per cent), chemical risks (65 per cent) and environmental risks (62 per cent).

How producers perceive occupational hazards. Producers usually know, and describe in detail, the occupational risks specific to the activity, although the vast majority of those interviewed were unaware of the current legislation on OSH in the country, despite its dissemination by the trade association to its members. The large coffee farmers or producers who belong to the institutional organization, as representatives of the Departmental or Municipal Coffee Farmers' Committees, are usually better informed of the new legislation, and the requirement to have an OSHMS. The information was disseminated by the coffee institutions through the Coffee Industry Congress, in self-management promotion campaigns and through internal communication mechanisms.

Small producers

The majority of small coffee producers are also workers on their own farms, so they run the same risks as their workers. Small producers, and their families, devote a large part of their time to work on the farm, generally combining their work with that of other farms, or working in other rural or urban activities. Consequently, coffee farming households, working on their own farm or as workers on other farms, face the same occupational risks as sub-contracted workers. In their area of work, there are risks of falls and slips (locational risk), the presence of animals, plants or substances (biological risk), temperature conditions, sun exposure and noise (physical risk), exposure to contact with products such as fertilizers, pesticides and herbicides (chemical risk), prolonged bending, standing or kneeling, repetitive movements and motions (biomechanical risk), frequent use of manual tools (mechanical risk) and exposure to long working days, physical effort and working environment issues (psychosocial risk) (FNC-Ministry of Labour, 2013 and FNC, 2014b).

Small producers usually do not think of themselves as workers. By engaging in labour activities on self-owned or family-run farms, the producer faces the

same risks as any farmworker, although many seem unaware of this potential. As such, managing personal occupational risks does not appear to be a consideration. They tend to adopt some prevention measures which relate to the probability of the risk they face, but they are not accustomed to using all the recommended protective gear. To cite one example, in a sample of over two thousand farms in different VSS constructed by CRECE, it was found that around 70 per cent of the farms had protection equipment at the end of four years of participation. However, less than half made effective use of personal protective equipment such as a mask (49 per cent), gloves (46 per cent) boots (41 per cent) and overalls (38.4 per cent). Among the reasons given by producers for not using the equipment are chiefly their lack of conviction over the need to use it and the inconvenience the use of some of it creates while doing their work.

Low level of affiliation to the social security and employment injury insurance scheme. Coffee farmers in the country are presented with a fairly well developed social protection system, but with few solutions that take account of the rural environment, its restrictions and the seasonal nature of coffee farming. Employment on the farms is informal, with little affiliation of the workers to the social security system by the employer, including the coffee farmers themselves. Several studies (Sarmiento, 2013; Rocha, 2014, García, et al., 2016) agree that less than 10 per cent of coffee workers are affiliated to the contributory health scheme, and that affiliation to pension schemes (old age, workplace accidents) is extremely low, with only 2 per cent of coffee workers affiliated, the lowest rate of coverage across all economic sectors. Small producers and farmworkers are mainly covered under the subsidized scheme. The programme of Periodic Economic Benefits (BEPS), a voluntary old age savings programme aimed at vulnerable populations and driven by the Government, reports over 500,000 members, which is equivalent to around 10 per cent of the rural population. The statistics available in a survey by Fasecolda (2017) report a population affiliated to *Programa Microseguros* of some three million people in 2007.

Well under 10 per cent of coffee producers are affiliated to occupational risk schemes. In rural areas, there are no technicians or doctors specializing in occupational diseases, so occupational accidents are treated like ordinary diseases or accidents. This means that a coffee producer or worker does not have the required coverage for occupational risks, as in the case of a

serious accident or disease. Only assistance benefits would be received, but not economic, or incapacity benefits or compensation. According to the National Survey of Occupational Safety and Health in the Rural Sector (National Federation of Coffee Growers of Colombia, 2013 and 2014), when an occupational accident occurs, in 80 per cent of cases, producers do not, in practice, seek medical treatment.

Limited access to services on occupational safety and health as well healthcare services. The coffee growing population faces geographical, cultural and economic barriers in access to services. Their location, scattered across rural and remote areas, means that they have to travel long distances to seek initial treatment. The higher costs of transport and stays reduces the likelihood of obtaining services. Traditionally, some coffee farmers treat accidents with home remedies, or simply do not pay proper attention because the injury is considered minor. The effect of this is that actual demand for services is insufficient and makes supply unfeasible. In general, producers and workers on farms do not have adequate information on their rights, duties and actions with respect to health. Under the current system, health coverage is universal, although guarantees of access to services are ineffective given the existing barriers. Due to the almost total lack of affiliation of the coffee farming population to occupational risks coverage, access to information and advice on OSH matters is also very limited. This stems primarily from the campaigns undertaken by the FNC or the promotion by some VSS. The legal framework is far removed from the reality of the farmworker, who faces problems of access, equity and quality of service.

The social security system is not ready to respond to the conditions of the independent worker. The fact that the producer is an independent worker creates a barrier to his affiliation to the social security system, especially with regard to occupational risks, which was primarily designed for permanent employed workers. Two principal barriers were identified in the interviews: (i) the lack of clarity of the administrative process of affiliation of independent workers to the occupational risks scheme and its cost; and (ii) the incompatibility between affiliation to the occupational risks scheme and affiliation to the subsidized health scheme, which creates a major disincentive to small coffee farmers to join. Both the level of income they receive and the instability and seasonal nature of their work affect the economic capacity of small producers to pay into the contributory social security

scheme. As independent workers, payment of some 12 per cent of their gross income is required. Affiliation to partially contributory schemes is also low, considering the level of incomes (BEPS, *Programa Microseguros*).

The VSS have a positive influence on the adoption of OSH measures. During the field work, differences were confirmed between conventional producers and producers who participate in sustainability initiatives with respect to compliance requirements relating to conditions of work. Due to training and technical assistance to promote applying the different standards, producers who adhere to sustainability standards tend to be more aware and more inclined to adhere to OSH regulations, including the use of protective equipment or the adoption of better conditions of employment. According to those interviewed, the developments in OSH observable on the farms (use of protective equipment, good practices in the application of agrochemicals, provision of proper accommodation for workers, among other things) can be attributed mainly to the VSS requirements. The requirements are more likely to be met because the standards require it and there is an established verification process, and not because the legal framework demands it.

Consequently, on the farms that participate in the VSS, it is common to observe that signage, first aid kits and protective equipment is available and better training in occupational safety exists. However, the requirements are not always followed. Although the number of producers who apply the practices is gradually increasing, there is some decline in following the standards or some comply only partially. The VSS normally ask producers, for instance, to have an annual medical exam, which is difficult to obtain due to the lack of occupational health professionals near the farms. This is a limitation for both large and small producers. Given that both training and subsequent support have focused on producers participating in the VSS, conventional producers have little or no knowledge of the management of occupational risks and even less availability of protective gear.

The testimony of some workers and coffee farmers report that VSS influence the use of protective gear and that coffee farmers are becoming increasingly aware of using this kind of gear. However, it also

shows that some standards are not widely accepted because they are not perceived as reasonable by the farmers in relation to the type of work and working environment. As mentioned above, the impact is greater on identification, documentation and control of visible hazards with immediate effects and that require little investment. This is especially true of small farms where resources and training is limited.

Temporary workers and pickers

Lack of formal workers' organizations. Workers on coffee farms are mainly small coffee farmers or daily workers who live in areas fairly close to the farms where they work. They are likely to live on the same road as the farm or within the same municipality. Only a small proportion of the labour supply migrates between regions or departments, and this is generally during the harvest season. According to the CRECE studies, of a total of 400,000 people who pick coffee, not more than 10 per cent migrate between departments. According to coffee sector representatives, there are no known cases of formal workers' organizations for coffee pickers. The lack of organization is probably due to the seasonal nature of the work, which prevents ongoing contact. The lack of association and formalization is a powerful constraint on access to training, prevention and information about their own occupational risks and how to address them. There are a few workers' associations for farm work other than picking, such as the application of agrochemicals, sowing, coffee processing or fertilization, which mainly provide services to the FNC and certain large farms. These companies are organized formally. It was noted during interviews that some large farms were beginning to outsource agrochemical application and maintenance to specialized firms and daily workers. While that represents a small proportion of labour in the coffee sector, it deserves special attention because this type of arrangement has an impact on OSH: it is an opportunity to have workers trained in the safe application of products, but it also means that exposure is much higher than it would be for a coffee farmer applying agrochemicals only four times a year.

The nature of contractual relations and temporary work limits access to contributory social security and statutory benefits, which enables prevention services.

By engaging in activities that last only days or weeks, generally without a written contract, daily workers and pickers are not affiliated to the social security system. For the producers who hire them, affiliation is a cost that most cannot afford because of the consequent increase in costs of production. Producers are aware of the importance of work being covered by social security, as was confirmed by the interviews conducted. Some large producers even express their willingness to contribute economically to initiatives that incentivize social protection of coffee workers. Others say that both the instability of the workers and the increased costs of production that this would involve are disincentives to assuming this labour cost (for their workers and for themselves). Workers, too, are cautious about this possibility, as by joining the occupational risks scheme, they could lose some of the benefits associated with the subsidized scheme, in the form of State subsidies and access to social programmes. Limiting access to social security under the contributory scheme limits the possibilities of temporary and seasonal workers (daily workers and pickers) benefiting not only from treatment in the case of occupational diseases or accidents, but also information campaigns and training on OSH issues.

Low incomes prevent access to protection against accidents and old age. Both the amount of the incomes that they receive, and the instability and temporary nature of their work, affect the economic capacity of farmworkers to pay individual social security contributions under a contributory model, including schemes partially subsidized by the BEPS and *Programa Microseguros*. Workers have difficulty in paying from their own resources for health, risks, pension and other benefits, which ultimately undermines the guarantee of their rights to social protection. The majority have health cover through the subsidized scheme, but none are affiliated to the BEPS or *Programa Microseguros*.

High rates of labour informality. The participation of family labour, mainly in harvesting and processing, means that, as well as small farmers, women and children are also exposed to occupational risks. However, they do not have benefit coverage or training in prevention. Given that the vast majority of family labour is unpaid, there is little likelihood that they will be affiliated to the system through their work. Furthermore, the increase in the participation of women in picking work puts them at the same level of risk as other workers.

Loaders

Exposure to ergonomic hazards. Loaders are charged with handling, moving, loading and unloading bags of coffee (70 kg) in the industrial stage of the value chain. This work is done mainly by men, due to the physical effort required. Their level of education is frequently quite low, given that the work requires unskilled labour. Perhaps for this reason, until a few years ago, it was a completely unprotected and informal group of workers. However, the process of workplace certification in international standards, combined with regulations related to outsourcing of services, drove institutional actions. In the case of Almacafé, it promoted the organization of loaders into associated labour cooperatives. According to the information shared by companies in the industrial stage of the value chain, loading and unloading are operations with a higher accident rate, which are difficult to control and reduce.

Subcontracting: Loaders are not contracted directly by the companies that use their services, but through their associated labour cooperatives formed to provide services to companies in the coffee sector. These include, for example, the Braceros Buga Associated Labour Cooperative (COOASOBRAB), BracerosCoop S.A. or the company Acciones y Servicios, which also provides coffee-related services to the farms. These cooperatives are constituted as legal entities and, in the cases seen in the fieldwork, comply with the requirements of the law in the labour sphere.

Little support by specialized firms or ARL in training: According to the people interviewed, the training received by loaders organized in cooperatives is quite inadequate, bearing in mind the high occupational risk inherent in the work performed. As they do not have specialized firms or the ARL, to support them in this process, it was found that some of the more experienced workers provide spontaneous training to their fellow workers. It was also not possible to identify any significant support by the companies that contract these groups, confining themselves to requiring affiliation and payment of social security and checking that the manual workers have the personal protective equipment required in their facilities. In some cases, items of protective equipment are supplied by the company, but in the majority of cases, it is purchased by loaders in shops selling farming goods or other suppliers in the municipality.

3.2. Opportunities for intervention

Improving occupational safety and health in the coffee value chain in Colombia

To improve OSH of the most vulnerable workers identified in the profiles of vulnerability to occupational risks, several types of intervention can be envisaged, involving various actors in the value chain.

The limitations faced by the smallest actors in accessing information and training on the new OSH legislation could be remedied by the intervention of the rural extension services, of both the FNC and exporters/responsible buying programmes. The key is to mobilize forces on the ground around this subject. In this respect, the FNC has developed an informational package adapted to the reality of coffee growing, which it plans to pilot at the beginning of 2018. The evaluation of this pilot will be crucial in further adapting the material and mobilizing the implementation plan at the national level. This will help identify appropriate tools to disseminate information on the law and suggestions on how to comply with it. This process could serve as the basis for development in other rural value chains in the future. On the largest farms, which could have the economic capacity, providing appropriate training services could also be evaluated and improved so that farm managers or administrators can be given targeted training.

In addition to training, to improve sustainable practices, both small and large farm owners have a responsibility to include improvement of OSH practices in their good farming practices, which in turn translates into productivity and access to certificated markets. In this process, it would help to carry out a study of the economic logic accepted by producers in adopting good OSH practices and their dissemination. This work requires piloting of OSH interventions, evaluation of their impact in terms of productivity, costs, and access to incomes, services or other enhanced benefits. This process requires a strategy to better disseminate information, not only through traditional OSH channels, but also through support services for business management in the coffee-growing sector.

Companies, especially the largest, which operate in the domestic marketing, threshing and storage stag-

es in the value chain, have advanced OSH management systems and procedures and trained personnel. It might be that a programme to standardize experiences and validate the knowledge could be shared, so that these entities can share their knowledge with smaller entities in their supply chain. Particular attention should be paid to management of sub-contracting and existing obligations and strategies for protection of sub-contracted workers. With regard to sub-contracting farmworkers specialized in the application of agro-chemicals, the information could be improved to give an idea of the number of workers and level of training, socioeconomic conditions and contractual relationship. This information would be useful in designing protection measures and monitoring occupational health.

Considering the limited availability of labour for harvesting, a strategy for attracting workers could be developed at the coffee sector level. This strategy would have to consider wellbeing at work and social protection coverage as key elements to compete with other sectors and migration to urban areas. This strategy could be inspired by initiatives that already exist in the sector to extend social protection coverage. For example, in 2014, the FNC found that 18,350 coffee farmers were eligible to access the BEPS programme, so it initiated a process of training for its extension workers to promote its dissemination to coffee farmers and their families. An initiative was found in the municipality of Aguadas, Valdá, in which Nespresso, on identifying that the majority of coffee farmers belonging to the AAA programme did not have old age protection schemes, formed a partnership with the Ministry of Labour. It now contributes to Colpensiones (the entity that administers the BEPS programme's resources) the social premium it obtains on selling its coffee under the Fairtrade initiative.

To measure the evolution of wellbeing in the value chain, especially for coffee farmers and their workers, the National Survey of Occupational Safety and Health in the Rural Sector, initiated by the Ministry of Labour and the FNC, could be conducted at regular intervals. The following phase of the survey could include additional indicators to identify and measure risks, following the categories adopted by the 16th International Conference of Labour Statisticians (1998)²⁸ and indicators of wellbeing.

As mentioned, the legal framework of occupational safety and health in Colombia is well developed. Stra-

²⁸ ■ Indicators of results: number of occupational injuries and diseases, number of workers affected and number of working days lost;
■ Indicators of capacity and competence: number of inspectors or health professionals concerned with occupational safety and health;
■ Indicators of activities: number of days of training, number of inspections.

tegic reflection on the services and capacities which need to be strengthened in the rural sphere could help to fulfil the legislator's intention that wellbeing at work should improve for all, including rural workers. In particular, the following activities could be considered:

- In-depth analysis of the legal framework to identify gaps in the current legislation or its relevance to rural reality, specifically the coffee sector, with the objective of evaluating whether it would be appropriate to propose a revision of the decree on minimum standards recently approved by the Ministry of Labour.
- Mapping support services which are present in the country's regions and feasibility of extending them to the rural environment. Accessibility of occupational health services was a crucial point mentioned by coffee farmers, especially in the context of implementing the new legislation, which provides for an annual medical exam. A feasibility project on its implementation could accompany the progressive application of the new legislation, as well as that for manuals and other tools for disseminating information adapted to the rural sector.
- A study on coverage options for independent and temporary workers, which takes account of incentives for affiliation to existing social protection schemes, and which are compatible with their specific contractual situation, especially in terms of incapacity, disability and death. This work could take place in the framework of the proposals by the ILO on extension of coverage of social protection to the rural sector. A starting point for evaluating the adjustments that could be made in a useful and informed manner, with a view to extending coverage to the rural environment, is the potential progress around the proposal to include coverage of independent workers in the occupational risks scheme in the legislation, as well as adjustments *that* could be made to the coverage of the *Programa Microseguros*;
- Consideration could also be given to a mechanism to coordinate existing OSH services at the local level, especially to facilitate extension efforts by each service and to share knowledge generated.

Potential to transmit experience in the Colombian coffee value chain to other value chains

The experience of the coffee sector has reached a point where it could serve the development of other supply chains. The emphasis placed on the peace process on rural development agenda is an important space for the promotion of good practices to strengthen decent conditions of work.

The Peace Agreement signed with the FARC Guerrilla places an important rural emphasis on government policies in Colombia. This is an opportunity to improve conditions of work in the rural environment, and combine it, among other things, with a strategy for commercial competitiveness.

In addition, the agreement envisions in its recommendations two fundamental initiatives to fill gaps identified in relation to the protection system and the labour inspection function:

- i) Formulation of a progressive social protection plan and guarantee of rural workers' rights,
- ii) Strengthening of the static labour inspection system and creation of a mobile inspection system in rural areas, which allows workers to advance and exercise their rights at work and properly resolve labour disputes.

This context creates opportunities for exchange and for a spread of goods practices related to OSH in rural value chains. Consideration might be given to mechanisms for the transmission of the coffee sector experience to other rural chains in Colombia that have many small producers. Particularly in terms of organization of producers, rural extension services which train in OSH, link producers to existing social protection mechanisms. It also connects institutional dialogue with government support functions, capitalization of sustainable policies and VSS to strengthen access and living standards of small producers, and the creation of a competitive global value chain. In relation to the second point mentioned above, identification of hazards and provision of control measures, the technical advice function of the inspectorate could be reinforced, especially with dedicated and trained human resources.

Moreover, the experience generated in the coffee chain in Colombia could benefit coffee supply chains in other producer countries. The international buyers consulted have a positive perception of the implementation of OSH in Colombia in comparison with other countries from which they buy. This is proof that the conditions of work of in the value chain are recognized in the market. The scope of certification and responsible supply policies is greater in Colombia than in the other countries studied. The experience of the actors in terms of verifying farm compliance to OSH is more advanced in Colombia than in other countries in the project. Understanding of the requirement of the OSH legislation, which is also widespread in Colombia, is greater among the producers interviewed in comparison with producers in other supply chains.

The institutional arrangement in Colombia is quite specific compared with the other two value chains.

Collection of export tax has had a certain redistributive effect towards the lower levels of the value chain. This arrangement has built up a network of extension workers at the rural level. This is of crucial importance for OSH, as this network plays a key role in the adoption of good farming practices, and has led to the dissemination of safer productive processes.

The experiences and tools relating to OSH mentioned here apply at various levels. Examples include the collaboration with the Ministry of Labour on a national survey of OSH in coffee growing, the collaboration around collection of agrochemical containers which has a good legal basis, the training tools and risk identification booklets for coffee farms developed by the FNC, buyers who contribute to affiliation to social protection schemes and buyers who help finance protective equipment and training.

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| Annexes

Annex 1

Principal standards for sustainable coffee production

VSS	Objective	Type	Aspects	OSH-related principles
Rainforest Alliance	Promoting the rational use of natural resources, fair treatment of workers, conservation of forest life and good relations with farms	Certification	Economic Social Environmental	<ul style="list-style-type: none"> 1. Fair treatment and good conditions for workers <ul style="list-style-type: none"> • Compliance with labour legislation • No discrimination • Direct contracting of labour • Clear remuneration policy • Working hours • Child labour 2. Occupational safety and health <ul style="list-style-type: none"> • Correct use of PPE • Emergency procedures • Handling of agrochemicals • Storage, signage
UTZ	Setting standards for the production and supply of coffee in a responsible way with regard to good practices and efficient farming methods	Certification	Economic Social Environmental	<ul style="list-style-type: none"> • Risk management • Safety training • Accident procedures • Correct use of PPE • Wages and contracts
FLO	Improving access to markets on commercial terms based on respect and mutual benefit of the parties, especially small producers and farmworkers who are at a disadvantage.	Economic Social Environmental		<p>Fairtrade criteria for contracted work:</p> <p>Occupational safety and health</p> <ul style="list-style-type: none"> • Safety in the workplace • OSH Committee • OSH risk assessments • Visible safety instructions • Training in OSH, dangerous work, first aid • Use of PPE
Organic	Promoting a sustainable, environment-friendly production system that respects, improves and protects natural resources and the ecosystem to the maximum (without the use of chemically synthesized inputs)	Certification	Economic Social Environmental Traceability (agri-inputs)	Not found

Annex 1 – Principal standards for sustainable coffee production

VSS	Objective	Type	Aspects	OSH-related principles
4C	Promoting sustainability as a process of continuing improvement in the three dimensions of ODM throughout the green coffee value chain (mainstream)	Verification	Economic Social Environmental	Discrimination Right to childhood and education Freedom of association Right to collective bargaining Conditions/contract of work Working hours Wages Equal treatment of temporary/permanent workers Occupational safety and health
Nespresso	Building long-term commercial relations with its suppliers based on principles of sustainable quality	Verification	Economic Social Environmental Quality	Safety and good conditions of work Child labour Minimum wage Discrimination Correct use of PPE Proper storage of agrochemicals Training for workers First aid
				Access to drinking water
C.A.F.E. Practices	Ensuring that the coffee that Starbucks buys has been grown and processed in a sustainable way, for which it examines various economic, social and environmental aspects related to coffee production	Verification	Economic Social Environmental Quality	Minimum wage Working hours Child labour Non-discriminatory policies Forced labour Access to housing and drinking water Occupational safety and training Management systems

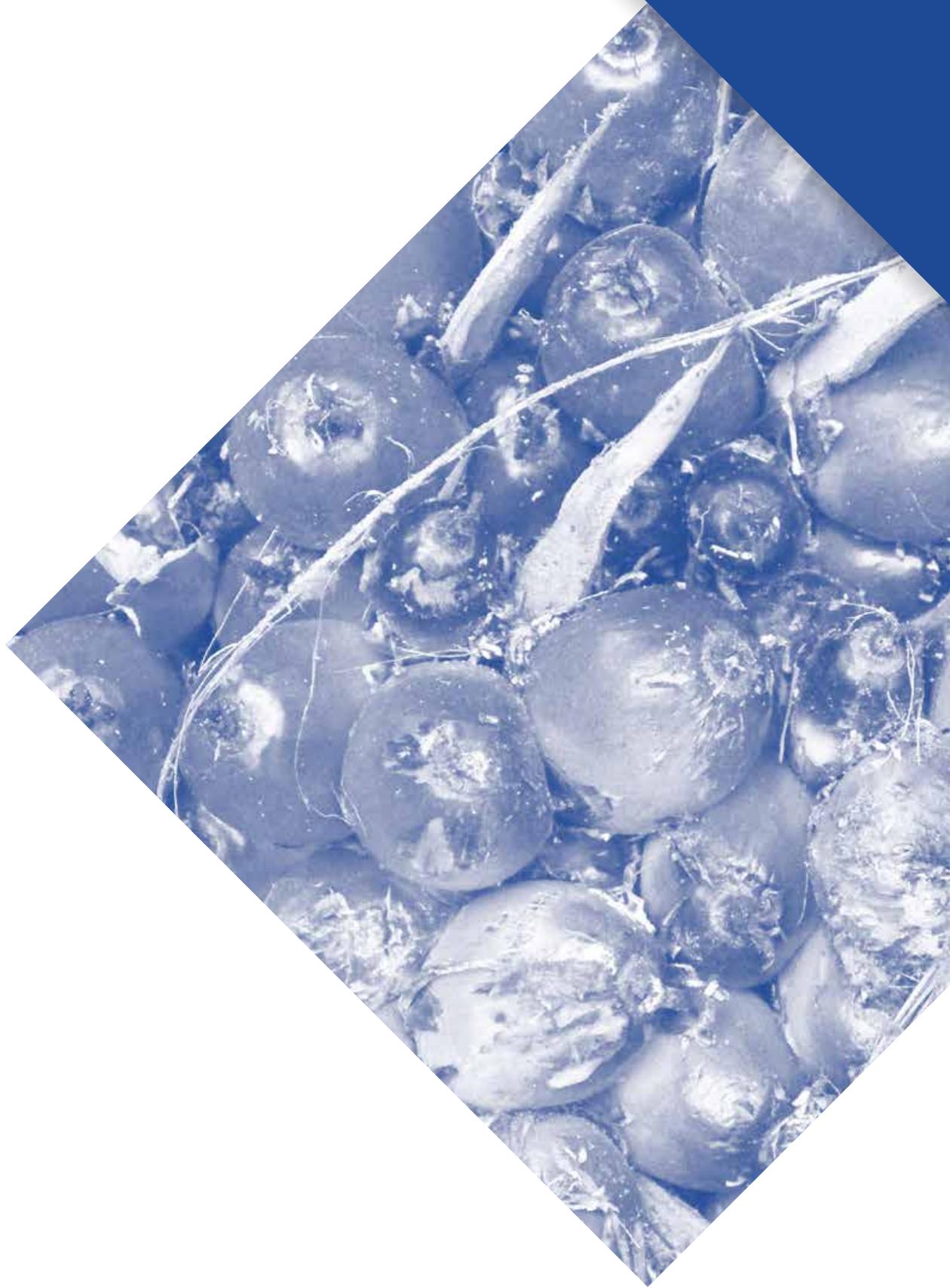
Source: CRECE (2017)

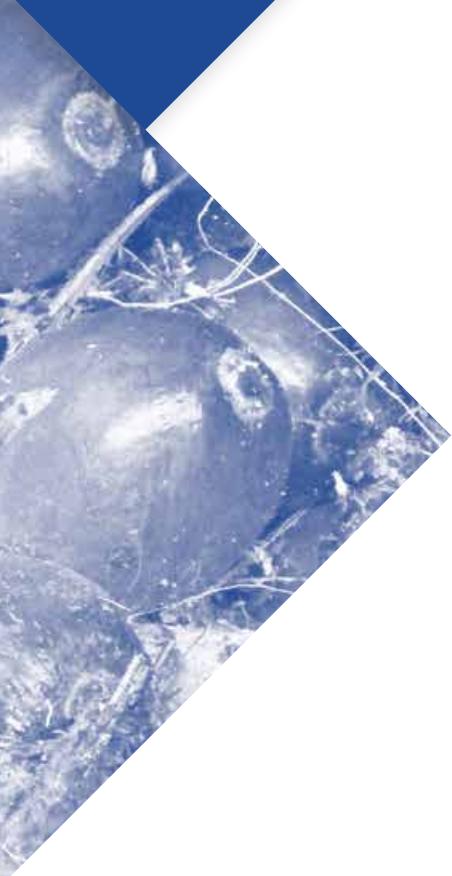
Annex 2

List of “minimum OSH Standards” as per Decree 052 of 2017 (Decreto 052 de 2017)

STANDARD		WEIGHTING	
E1 RESOURCES			
E1.1	Financial, technical, human and other resources	4%	10%
E1.2	Training in OSHMS	6%	
E2 INTEGRATED MANAGEMENT OF OSHMS			
E2.1	OSH policy	1%	15%
E2.2	OSHMS objectives	1%	
E2.3	Initial evaluation of the OSHMS system	1%	
E2.4	Annual work plan	2%	
E2.5	Keeping of documentation	2%	
E2.6	Reporting	1%	
E2.7	Current national legislation applicable to OSH	2%	
E2.8	Communication mechanisms	1%	
E2.9	Acquisitions	1%	
E2.10	Contracting	2%	
E2.11	Change management	1%	
E3 HEALTH MANAGEMENT			
E3.1	Occupational health conditions	9%	20%
E3.2	Recording, reporting and investigation of occupational diseases, incidents and accidents	5%	
E3.3	Mechanisms of supervision of workers health conditions	6%	
E4 MANAGEMENT OF HAZARDS AND RISKS			
E4.1	Identification of hazards, evaluation and assessment of risks	15%	30%
E4.2	Prevention and control measures relating to hazards/risks	15%	
E5 MANAGEMENT OF THREATS			
E6 VERIFICATION OF OSHMS			
E7 IMPROVEMENT			
E7.1	Preventive and corrective actions based on the results of the OSHMS	10%	100%
		100%	

Source: Ministry of Labour, Resolution 1111 of 2017





A case study of drivers and constraints for OSH in the palm oil global value chain from two producing provinces in Indonesia

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Lou Tessier, ILO

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Acronyms

AADB	Asian Development Bank	ILO	International Labour Organization
APKASINDO	Assisi Petani Kelapi Sawit Indonesia	ISPO	Indonesian Sustainable Palm Oil
ASAs	Annual Surveillance Assessments	KHL	kebutahan hidup layak
ASI	Accreditation Services International	KLK	Kuala Lumpur Kepong Bhd
BPPD-KS	Indonesian Palm Oil Estate Fund	LTA	Lost Time Accident
BPJS	Badan Penyelenggara Jaminan Sosial	LTF	Labour Rights Task Force
CPKO	Crude Palm Kernel oil	MSPO	Malaysian Sustainable Palm Oil System
CPO	Crude Palm Oil	MT	Metric Ton
CPOPC	Council of Palm Oil Producing Countries	MVO	Netherlands Oils and Fats Industry
CSPO	Certified Sustainable Palm Oil	NGOs	Non-government Organization
DASPO	Dutch Alliance on Sustainable Palm Oil	OSH	Occupational Safety and Health
DK3N	The National Occupational Safety and Health Council	PCI	Private compliance Initiatives
EPOA	European Palm Oil Alliance	PISAgro	Partnership on Indonesian Sustainable Agriculture
ESG	Environment, Social, and Governance	PPE	Personal Protection Equipment
ESPO	European Sustainable Palm Oil	PPP	Public Private Partnerships
EU	European Union	PTP	Perseroan Terbatas Perkebunan
FFA	Free Fatty Acid	PTPN	PT Perkebunan Nusantara
FFB	Fresh Fruit Bunches	PKM	Palm Kernel Meal
GAP	Good Agricultural Practices	PKWT	Fixed Term Contract
GAPKI	Indonesian Palm Oil Association	PKWTT	Non-fixed Term Contract
GMP	Good Manufacturing Practices	POME	Palm Oil Mill Effluent
GSCs	Global Supply Chains	RSPO	Roundtable on Sustainable Palm Oil
HCV	High Conservation Values	SMART	Sinar Mas Agro Resources and Technology
HIPERKES	Center for Development of Occupational Safety and Health	SPKS	Serikat Petani Kelapa Sawit
IDH	Sustainable Trade Initiative	TPP	Trans-Pacific Partnership
		UNICEF	United Nations Children's Fund

1 | The value chain of palm oil from Indonesia

Palm oil is Indonesia's third largest export commodity after oil/gas and coal. Export revenues from palm oil are likely to become more important in the future given that coal and gas are non-renewable resources. The palm oil sector also provides a basis for local economic development and significant employment generation.

In 2015, Indonesia produced about 33 million metric tons (MT) of crude palm oil, which was about 53 per cent of the total global production of 62 million MT. Forecasted production for 2020 is about 41 MT against which the Indonesian government is aiming to operate a biodiesel blending mandate of 30 per cent.

Indonesia is also an important player to achieve global market transformation towards sustainable palm oil production. The country is the biggest certified sustainable palm oil producer contributing 56 per cent or 6.52 million MT of the 11.71 million MT Certified Sustainable Palm Oil (CSPO) world production. The economic, social, and environmental benefits of the sector, in general, and the working conditions including the safety and health of workers, in particular, are significantly influenced by the nature and structure of the industry. This includes the behaviour and relationships among the different actors across the supply chain. This section provides an overview of the Indonesian palm oil supply chain and the market to which it responds.

1.1. Product and market

Product

Oil palm is the world's highest yielding oil crop, with an output five to ten times greater per hectare than other leading vegetable oils. This makes palm oil the least expensive vegetable oil to produce. Oil palms generally begin to produce fruits 30 months after being planted with commercial harvest commencing six months later. While a tree can live up to 50 years, it is usually replaced at 20 to 25 years because of declining yields and because their height makes harvesting difficult.

The fruit is reddish in colour and grows in a large bunch or Fresh Fruit Bunch (FFB). Each FFB weighs between 10 and 25 kilograms with 1,000 to 3,000 oval-shaped fruitlets per bunch. FFBs are harvested every 15 days which makes it attractive to smallholders. Harvesting is labour intensive and, as such, even smallholders contribute to job generation in their communities.

Each fruitlet contains a single seed (palm kernel), surrounded by a soft oily pulp or mesocarp. FFBs contain about 18 to 22 per cent crude palm oil and 3 to 5 per cent palm kernel oil. Palm oil is obtained from the fleshy mesocarp of the fruit which contains a maximum of 24 per cent oil depending on the quality and variety of fruit. Palm kernel oil is obtained from the kernel which contains about 45 to 50 per cent oil and 40 to 45 per cent meal. It is lauric oil, which is similar to coconut oil. FFB must be processed by a mill within 24 to 48 hours after harvest. This is important to maintain the oil content and prevent the build-up of free fatty acids (FFA), which reduces the quality of the oil. A third product is palm kernel meal (PKM), derived from the crushed kernel. It is mainly used as a component of animal feed for livestock.

Palm oil and palm kernel oil are used in a wide range of products, from margarine and chocolate to ice cream, soaps, cosmetics, and fuel for cars and power plants. The four main traditional uses of palm oil in food products are for cooking/frying oil, shortenings, and margarine and confectionary fats. Palm oil is regularly used in both solid fat products as well as in the liquid cooking oil sector especially in industrial frying applications. The food industry is the biggest user of palm oil accounting for about 72 per cent of

the world wide usage. Palm oil is used in about 60 per cent of the products sold in supermarkets.

As a non-food ingredient, palm oil is utilized in the production of cosmetics, toiletries, soaps and detergents. It is also used in the oleo-chemical industry, as a base material for the production of surfactants (washing active substances) for laundry detergents, household cleaners and cosmetics. Personal care, cosmetics, and cleaning materials account for about 18 per cent of palm oil utilization. More recently, the biofuels market has provided a significant new non-food use for palm oil where it is used as the feedstock for the production of biodiesel and as an alternative to mineral oils for use in power stations. About 10 per cent of the palm oil supply is absorbed by the biofuel industry.

Markets

Export Markets

Palm oil is the single largest consumed vegetable oil in the world. Share of palm oil to world vegetable oil consumption in 2015 to 2016 was about 34 per cent or 60.30 million MT. This was followed closely by soybean, which comprised 29 per cent of vegetable oils consumed. Soybean oil and palm oil are considered "substitute goods". Users such as food processing companies often switch between palm oil and soybean oil as the prices fluctuate. Palm oil competes directly with other oils and fats in most of its applications and demand is therefore determined by its competitive position within the overall world market price for these products. Stiff price competition between palm oil producing countries and alternative oil crops usually affects plantation margins which then require companies to embark on cost reduction practices. Exposure to volatile commodity prices and price competition are a constant feature of the business environment within which the Indonesian palm oil industry operates.

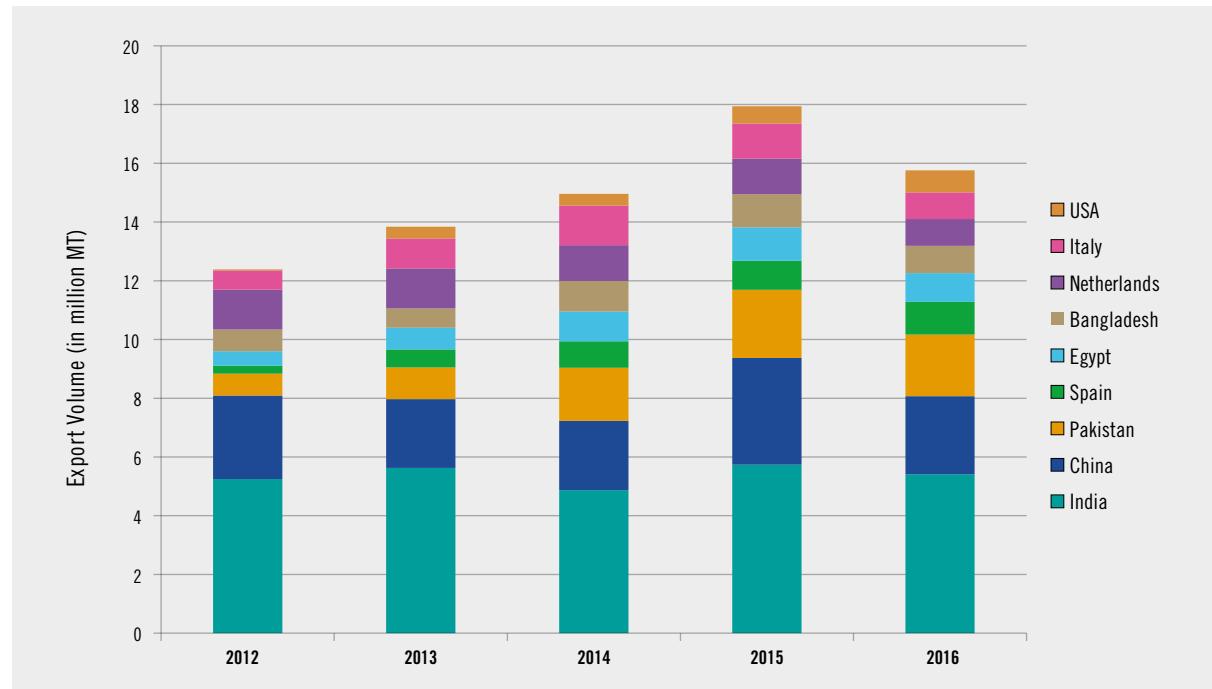
Indonesia is not yet positioned in the organic palm oil market, which offers less opportunities for product differentiation and accessing markets with high product quality requirements (SSI Review, 2014). Product differentiation is, thus, limited for Indonesian palm oil, with most of the focus remaining on volume and price.

In fiscal year 2015 over 83 million MT of oils and fats were exported worldwide. Palm oil and palm kernel oil accounted for the largest individual export total at

almost 50 million MT. Palm and palm kernel oil also had the highest ratio of export to production at 74 per cent. Indonesia is the largest producer and exporter of palm oil globally. In 2016, the country account-

ed for about 52 per cent of the total global export sales of US\$27.8 billion. On the average, about 70 per cent of Indonesia's palm oil production is geared towards the export market.

Figure 8. Top 10 export markets for palm oil from Indonesia (HS 1511), 2012 to 2016



Source: Trade Map, International Trade Centre.

India is the largest global importer of palm oil and is the largest market of Indonesia. India's import of vegetable oil has trebled due to a consistent rise in demand and slow growth of domestic oil production. About 90 per cent of the total volume of palm oil in India is used for edible, food-based products and 10 per cent goes towards non-food based usage. About 90 per cent of the food products are sold in loose forms which infers little reputational risks. Only about 10 per cent of the products are branded and packaged (Center for Responsible Business, 2014). Companies with branded products typically take stronger measures to assess environment and social risks across their supply chain to reduce vulnerability to criticism.

Although price sensitivity appears to take over environmental and social concerns for a majority of the supply chain players and consumers in India, there are now ten companies managing 18 different facil-

ties with supply chain certifications from the Round-table on Sustainable Palm Oil (RSPO). Multinational companies operating in India and large domestic companies have all made time-bound commitments to sustainable palm oil.²⁹

The European Union (EU) (mostly Netherlands, Spain, Italy, and Germany) is Indonesia's second largest market comprising about 15 to 20 per cent of its total palm oil exports. According to Oil World, Indonesia was the largest single exporter of palm oil to Europe, accounting for more than 5 million MT out of 7 million MT total imports. Of Europe's total palm oil imports in 2016, approximately 3.1 to 3.2 MT were used for biodiesel production. About 2.5 million MT of the palm oil exported by Indonesia to EU was used for biodiesel production.

The EU is a major consumer of sustainable palm oil and the market is meant to increase due to re-

²⁹ Hindustan Unilever is one of the primary drivers of sustainability policies to Indian suppliers. The company's Sustainable Living Plan includes a goal for all palm oil to come from traceable, sustainably certified sources by 2020.

cent policy and trade developments.³⁰ In addition, in response to environment activists' and consumer groups' pressures, many of the companies that are large users of palm oil in the European Union have adopted some type of commitment to sustainable palm oil. About 57 per cent of the physical palm oil that entered Europe in 2015 was certified as sustainable palm oil (Sustainable Palm Oil in Europe, 2016). Compared to 2014, this represented an increase of 11 per cent.³¹ On the other hand, biodiesel companies have established the European Sustainable Palm Oil (ESPO) initiative with its commitment toward 100 per cent sustainable palm oil in 2020.³²

China is the world's third largest importer of palm oil with average annual imports of 5.9 million MT. It is the third largest market for palm oil from Indonesia. China, like India, is a price-sensitive market. The uptake of sustainable palm oil has generally been slow among Chinese buyers since a significant percentage of the palm oil is for domestic consumption. An important factor in purchasing decisions is the discount between crude palm oil and soybean oil. In November 2016 though, large China-based palm oil buyers visited Indonesia to better understand the efforts being made to achieve sustainable palm oil production. Some of the key buyers, particularly those using the oil in export-oriented products, have already started buying CSPO in response to buyer demand for ethically and environmentally sound products.³³

Pakistan has an annual consumption of edible oil at four million tonnes with an average growth of about four per cent. Palm oil accounts for a 65 per cent share in total edible oil consumption. Refined palm oil accounts for about 98 per cent of Pakistan's total edible oil imports, but imports of soybean oil are expected to increase as importers look to alternative supply sources based on pricing. Palm oil though is still preferred since cost of processing and modification of palm oil products for downstream uses is lower compared to other vegetable oils such as soybean,

sunflower seeds, canola, and cottonseed. About 90 per cent of the palm oil supply in Pakistan is utilized for Vanaspati (a thick vegetable oil) or for frying and cooking. The remaining 10 per cent is used for other food products with special requirements.

Indonesia's palm oil exports to the United States in 2016 increased by 27 per cent over 2015 figures. The significant increase was attributed to a change in edible oil usage in the United States. The US Food and Drug Administration announced in mid-2015 that it would ban the use of (artificial) trans-fat in food products. Companies only have until 2018 to eliminate trans-fat from their food products.

In major markets such as India and China there is not yet much demand for sustainable palm oil. Most of the demand for CSPO comes from Europe, but this is mainly for palm stearin, which is the solid fraction of palm oil and is widely used in food products. However, palm stearin represents only 20 per cent of the palm oil volume. The remaining 80 per cent is palm olein, but there is currently no demand for CSPO olein. Most of the olein is sold as cooking oil in China and India, where the call is for the cheapest supply and sustainability is not a priority. To compensate for the loss incurred on the sale of CSPO olein to Asian markets, the premium for producing CSPO olein as well as stearin is passed on to the European market, which further increases the price of CSPO in Europe (SPOTT).

In essence, Indonesia is dealing with two different markets – a market such as the European Union where buyers and governments mandate compliance with certain social and environmental standards and another market such as India, China and Pakistan where the emphasis is put primarily on price competitiveness.

Certified sustainable palm oil is a phenomena historically pushed by the EU market and, to some extent, other high-income countries. Palm oil certification under the RSPO has reached a 21 per cent penetration of the global market (press release from the SCS

³⁰ Last 4 April 2017, the EU parliament called for a single certification scheme for palm oil entering the EU market. The non-binding resolution suggested that only palm oil supplied through sustainable methods could enter the bloc after 2020. The Parliament's report, while not binding, could pave the way for binding legislation in Europe that could reshape the palm oil industry.

Indonesia started negotiating a trade agreement with the European Union. In the framework of those negotiations, a number of topics are scheduled to be at the agenda, those will seemingly include a "trade and sustainable development" chapter, as it is the case for most new EU agreements.

³¹ The reported share is equivalent to 2.1 million MT of sustainable palm oil consisting of around 80 per cent Segregated and Identity Preserved and 20 per cent Mass Balance supply chain models.

³² The agreement is supported by an alliance of refineries, food and feed manufacturers and retailers in the Netherlands, Denmark, France, Belgium, Germany, the UK, Italy, and Sweden.

³³ Since 2013, Chinese RSPO membership has grown from 17 to 52 companies as of 30 June 2016.

Global Service dated 5 June 2017). Nevertheless, palm oil production currently destined for Indonesian consumers and for export to markets such as India, China, and Pakistan is largely left outside of those sustainability initiatives.

Domestic Market

Indonesia is the second largest consumer of palm oil after India with an average annual consumption of about 8.19 million during the period 2012-13 to 2015-16. Domestic consumption represents about 25 to 30 per cent of Indonesia's total production, of which cooking oil alone accounts for 50 to 60 per cent. Palm oil certified by RSPO is mostly destined for export. Local demand remains limited.³⁴

The government has several systems in place to increase or decrease local demand and this has a great influence on local palm oil prices. One of the most important support systems is the biodiesel

mandate. Indonesia Regulation 12/2015 sets a target blending rate of 20 per cent for the transportation sector. Regulation 12/2015 also targets 30 per cent blending for electricity generation. In times of surplus and low palm oil prices, the government has the possibility to increase the biodiesel mandate and increase demand. Biodiesel is a new market opportunity for palm oil, it also increases the correlation of the market with the fossil fuel market.

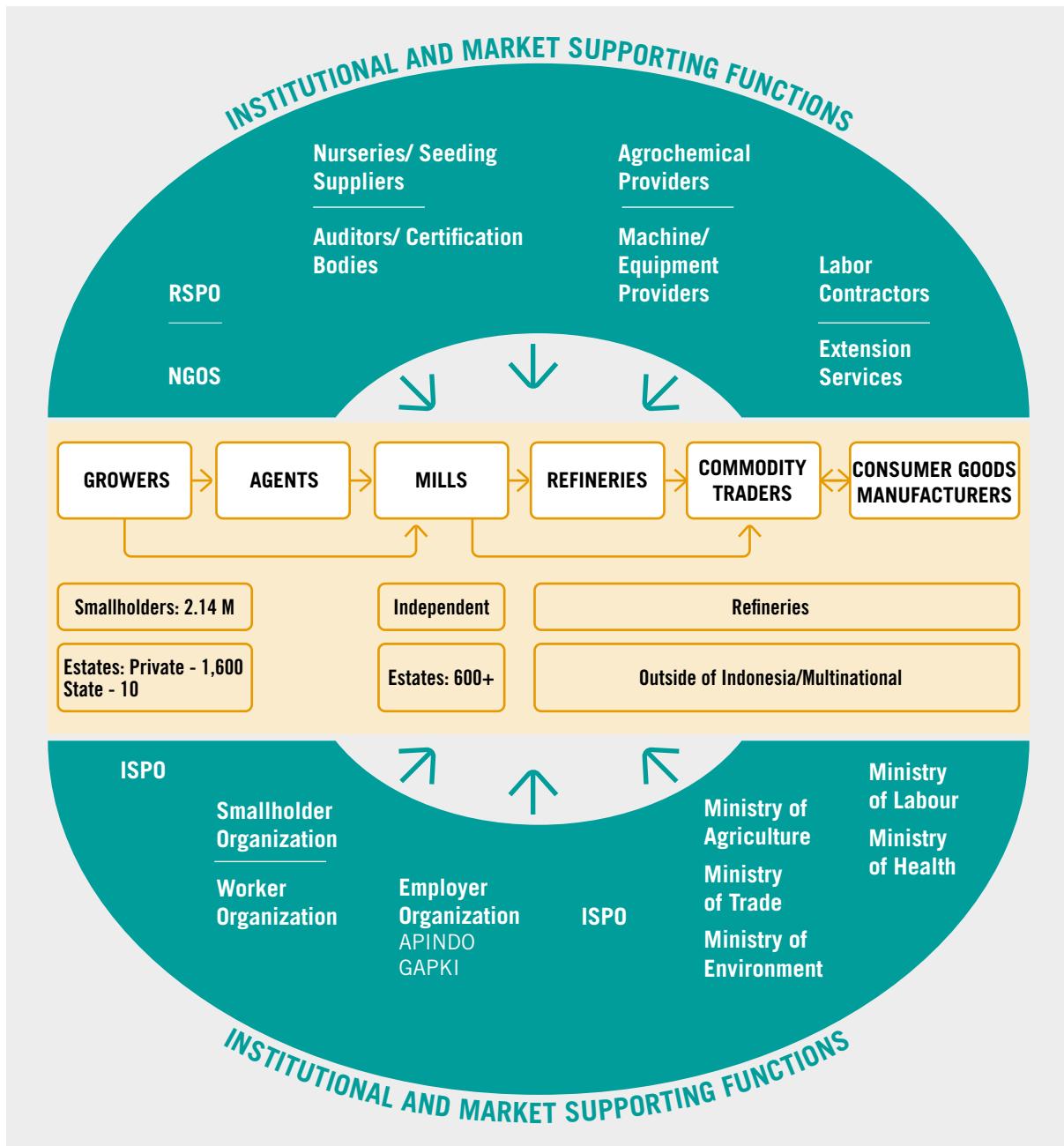
Rapid growth in Indonesia's biodiesel blending and consumption is directly attributable to the country's biodiesel subsidy, which is financed through a levy on palm oil and palm oil product exports. More than 1 billion litres of biodiesel were consumed under this program between January and June 2016, using the revenues generated by the levy to cover the difference between the cost of biodiesel and fossil fuels. The fund was established based on regulations 24/2015 and 61/2015. It is being managed by the CPO fund agency Indonesian Palm Oil Estate Fund (BPDP-KS).

³⁴ A market survey commissioned by the RSPO in 2015 showed that about 8 million Indonesian consumers are ready to support and shift to sustainable palm oil products. Some of the key findings of the study point to the challenges inherent to promoting sustainable palm oil in Indonesia:

- Consumers have difficulty in understanding the concept of sustainable palm oil. After hearing about it, half of respondents either described this as the government's problem, or were of the opinion that consumers could only make a small impact.
- Consumers are unaware of how versatile palm oil is. When respondents were prompted about the first product that came to mind regarding palm oil, they could only identify it as cooking oil – whereas it is found in a much broader range of products they use daily.
- Only a minority of respondents (16 per cent) think that it is their responsibility to do something about possible, negative impacts of palm oil. When it comes to who they consider responsible for promoting and ensuring sustainable palm oil products, respondents feel that in addition to the government (93 per cent) and oil palm plantations (66 per cent), consumer goods manufacturers (52 per cent) also play an important role.
- Only 11 per cent of respondents claim to recognize the RSPO logo (more than most sustainability Trademarks), but they don't know what it means.

1.2. Value chain structure

Figure 9. Representation of the market system



Source: authors.

Upstream production, which covers the series of activities from cultivation to milling, takes place in Indonesia. Midstream and downstream processing including trading of palm oil and its derivatives are distributed globally and also within Indonesia. Palm oil is traded in the following forms: a) Crude Palm Oil (CPO) and Crude Palm Kernel Oil (CPKO); b) Refined palm oils to be further processed in Indonesia and importing countries; and c) Manufactured products to be marketed in Indonesia and importing countries.

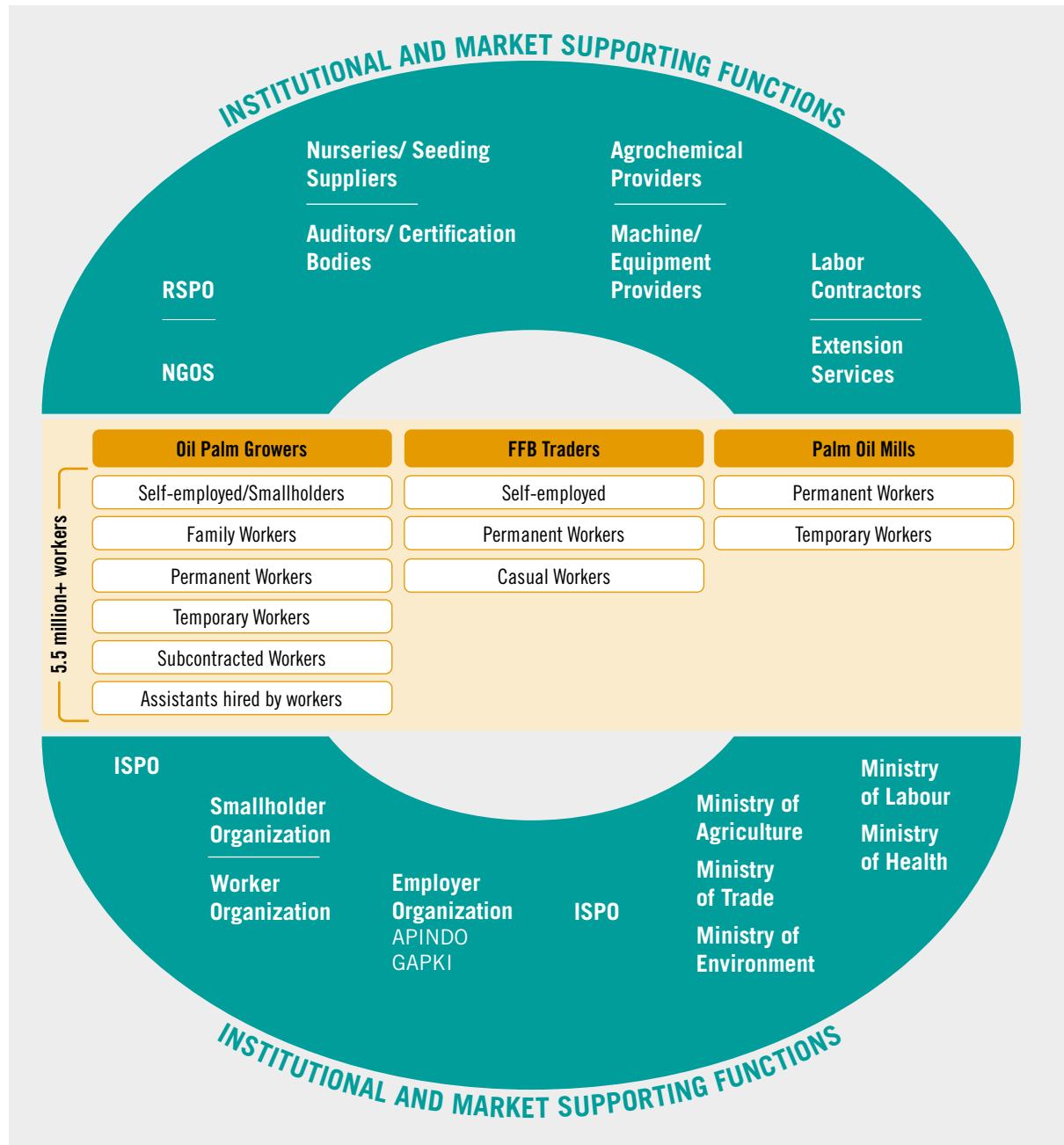
Many of the commodity traders are vertically integrated (from plantations to refinery) and have their own refineries located strategically in major markets and, thus, are able to capture bigger margins. During recent years though, Indonesia has increasingly built up its refining capacity and allowed firms located in the country to benefit from additional revenues from this value added activity. Refineries and traders sell refined palm oil and its derivatives to manufacturers or directly to end retailers such as food service operators, grocery stores, and oil vendors. The wide range of buyers of palm oil reflects the myriad of palm oil uses. The consumption of palm oil can be segmented into palm oil sold as cooking oil, palm oil in manufactured and processed goods, and palm oil used for biodiesel production.

The Indonesian palm industry is regulated by a number of ministries including: Agriculture, Industry, Trade, Manpower, and Environment and Forestry. There are also industry organizations representing the interests of the upstream and downstream producers as well as workers. Public and private compliance initiatives such as the Indonesian Sustainable Palm Oil (ISPO) and the Roundtable on Sustainable Palm Oil (RSPO) together with various non-government organizations (NGOs) and international development agencies provide support to the industry, particularly in the promotion of sustainable production.

As can be gleaned from the flow and number of actors in the value chain map, the industry has an hour glass structure. The raw material supply base of palm oil is made up by more than two million growers with a majority comprised of smallholders. As one moves up the value added processing stage, the number of companies becomes smaller. There are about 600 palm oil mills in Indonesia. Large companies (private and state owned) that operate milling facilities as part of an integrated plantation business model dominate the crude palm oil production. The refining and palm oil trade stages are concentrated in the hands of a few corporate groups. Six companies³⁵ account for over 90 per cent of the global trade (Elias et al, 2016). The aggregators (refiners, commodity brokers, bulking facilities) control the flow of majority of the world's palm oil production. Although these trading companies are vertically integrated, they collectively source a significant percentage of their supply from thousands of plantations and hundreds of mills. On the demand side, hundreds of thousands of companies across the globe buy palm oil or palm oil fractions to include in a wide variety of products. Consumer brands with a high utilization of palm oil are inclined to actively address sustainability, which includes labour and working conditions. Doing so offers marketing benefits, helps minimize reputational damage, and secures a long-term supply. These companies are now increasingly putting pressure on aggregators to positively transform their supply chains.

³⁵ Wilmar, Musim Mas, Golden Agri (GAR), Cargill, IOI, and Bunge.

Figure 10. Representation of employment in the value chain



Source: authors.

Oil palm cultivation accounts for much of the job creation associated with the palm oil industry. The industry, with its large plantation companies and mills,

is an important provider of formal employment in rural settings where this type of opportunity is much less common than in urban areas.³⁶

³⁶ One hectare of immature plantation requires about 56.50 person days of labour excluding administrative staff or a fulltime equivalent employment of 0.18 at 312 working days per year. A mature plantation with an annual yield of 20 MT of FFB generates 0.19 fulltime equivalent employment per year. In high input plantations with all operations done manually and those located in peatland and difficult terrains, FTE can reach as high as 0.26 or about 80 person days per year. For every hectare of mature plantation, an equivalent of .03 fulltime job is generated at the mill level. Milling is a highly automated process and generates less number but generally better paying jobs compared to oil palm cultivation. Labour inputs in smallholder plantation range from 30 to 60 days per hectare. Independent smallholders, using a mix of certified and uncertified seeds and only about 50 per cent of recommended fertilizer and pesticide dosage, had the lowest labour requirements ranging from 30 to 40 person days. Some smallholder farms that were interviewed by the team appeared to have higher FTE than plantations primarily because of their location (e.g., peatland), non-contiguous areas, problems with flooding, and general lack of efficiency.

The profit margin of mills is very narrow and tight especially when price at the international market is weak.³⁷ Given that many of the large estates in Indonesia operate as vertically integrated firms, the general tendency is to try to lower production cost at the plantation level to improve overall profitability. Mills and refineries generally depend on volume to generate profit and are among the hardest hit when the market price is low. The traditional explanation for the lower marginal returns for CPO and its derivatives is because it is not “visible” to the consumers and therefore has less value added to it than soft commodities such as cocoa or coffee.

Input Suppliers

Seeds/Seedlings. The main suppliers of germinated oil palm seeds in Indonesia are subsidiaries of large palm oil companies and the Indonesian Oil Palm Research Institute. Cost of seed ranges from US\$0.60 to 1.00 per piece. Medium and large plantations usually have their own nurseries.

In the oil palm seed market, there are difficulties for buyers to guarantee the identity of the germplasm offered. In this respect, a high level of confidence between the producer and the buyer is of paramount importance. A strategy among large plantations without their own seed production facilities is to diversify supply sources in order to guarantee their plantations an “average” yield.

The varieties under production are a critical function of the long term productivity and financial sustainability of oil palm plantations. The most preferred variety by oil mills is the Tenera as it has a high oil concentration.³⁸

Another criterion that is important to plantations in the selection of germplasm or variety is the vertical growth or height of the palm at maturity as this has

implications on safety and ease of harvesting. Vertical growth of oil palm differs substantially depending on genetic origins, some of which have their own reputations.³⁹ As trees grow taller, the risk of developing musculoskeletal disorders among workers increases.

Growers, especially smallholders, have considerable difficulty judging, *a priori*, the quality of the planting materials offered to them. Large scale oil palm growers generally have access to information and means of buying directly from registered seed producers. Smallholders, on the other hand, depend on intermediaries and/or plantation they are affiliated with for their planting material requirements. Interviews with independent smallholders in North Sumatra indicate that many of the farmers did not know the specific variety or germplasm of the seedlings, the primary origin of the planting materials, and the quality at the time they bought it.⁴⁰

Legally, farmers cannot purchase certified planting material without land documentation (Jelsma and Schoneveld, 2016). Farmers reported during the interviews that access to inputs was often impeded by the legal status of farms (*i.e.* access to secure inputs via regular channels were somewhat inaccessible to farmers who often cannot justify legal entity status). This is strongly reinforced by limited organization of farmers in comparison to other sectors and countries (*i.e.* cooperatives are not the norm).

The findings from the interviews conducted in North Sumatra and Kalimantan are also consistent with the results of the survey conducted by the German Development Institute (Brandt et al, 2013) covering smallholders in North Sumatra and Jambi. The survey indicated that key sources of planting materials among smallholders are salesmen, relatives/friends, and plantations/mills (for tied or supported smallholders/plasma). Seedlings from intermediaries were in many cases of dubious and inconsistent qual-

³⁷ An analysis of the distribution of costs, profit, and unit margin in the upstream segment of the palm oil supply chain showed that total added unit costs in the trade of one MT of CPO comprise about 35 per cent of the selling price. Plantation accounts for about 79 per cent of the value added costs to the product. The mill has about 21 per cent of the total value added costs in the chain. Gross profit (excluding indirect costs) comprises about 65 per cent of the selling price of CPO. About 84 per cent of the profit generated from production and trade of one MT of CPO accrues to the plantation. The mill gets only about 16 per cent of the profit.

³⁸ The Tenera, is a hybrid cross of the Dura and Pisifera oil palm varieties. The Dura line is the mother line, while pollen is used from the Pisifera. The fruit of the Tenera variety contains 25 per cent oil, by weight. Other varieties such as the Dura contain only 18 per cent oil. The same amount of Tenera can yield 30 per cent more oil than the equivalent fruit of the Dura. As such, mills generally do not accept FFB of the Dura variety. When accepted, the farmer receives a discounted price.

³⁹ “Avros”, for example, is known for being very tall and “La Me” for being among the shortest. It is, however, difficult to predict the height of “Yangambi” or “Nifor” as this trait varies.

⁴⁰ Smallholders said that they were only able to assess the quality of planting materials when these reached fruiting stage. Key issues faced by smallholders particularly those who bought seeds from intermediaries were low germination rate and yield. Some of the smallholders interviewed indicated that they used seeds gathered from their own palm (F2 hybrid). Use of seeds from existing plantation to set-up another plantation or replanting almost always results in a loss of two-thirds of the potential yield. In many cases, smallholders buy planting materials ready for replanting as they have limited land for the set-up of a pre-nursery and nursery.

ity. Intermediaries, however, are the most accessible sources of seedlings among smallholders and usually the cheapest both in terms of unit cost and savings in transportation cost. Additionally, the use of inferior planting materials is in conflict with governmental seed regulations and reduces productivity significantly. Likewise, occupational safety of harvester and efficiency in harvesting can be improved by deliberately planting oil palm known for their short height at maturity.

Fertilizer and Pesticides. Crop productivity in oil palm is largely influenced by effective fertilization beginning with planting and until maturity. The Government of Indonesia provides subsidized fertilizers to smallholders farming various commodities including oil palm (Samosir et al. 2013). Distribution of fertilizer in Indonesia follows a 'regionalization policy', in which suppliers are assigned to geographical areas.⁴¹ The regionalization of fertilizer distribution has, to some extent, resulted in a lack of competition for market share and customers and has removed incentives to innovate and invest in producing and distributing fertilizer more efficiently.⁴²

Based on interviews in North Sumatra and Kalimantan, smallholders have difficulty in obtaining the correct quantity of subsidized fertilizer and at the right time. Aside from the above challenges cited in the study conducted by Daemeter, the volume of subsidized fertilizer appears to be insufficient for that required by smallholders. Likewise, many of the smallholders are not members of farmer groups, which means that they do not benefit from subsidized fertilizer as purchases must be made via the farm group leader, extension officers, and village heads.

Indonesia's pesticide industry is highly dependent on importation. In 2012, Indonesia's pesticide market was valued at approximately US\$2 billion with 64 per cent of

the market controlled by multinational corporations.⁴³ In terms of product category, herbicides had the highest consumption at 42.5 per cent with glyphosphate and paraquat reaching almost 120 thousand MT. Insecticide ranked second and accounted for 37.5 per cent of consumption. The most used active ingredient was carbofuran (40,000 MT). Fungicide accounted for about 18 per cent of the consumption with mancozeb and propineb as the most active ingredients (Chem-linked, 2015).

Paraquat⁴⁴ is classified as T+ /very toxic under the Globally Harmonized System of Classification and Labelling of Chemicals.⁴⁵ When used under poor conditions and without proper personal protective equipment (PPE), exposure to paraquat can cause a range of symptoms, including: localized skin damage (dermatitis and burns), eye injuries, finger and toenail damage, nose bleeds, excessive sweating, nausea and vomiting. The mode of action of paraquat toxicity and lack of an antidote leads to many cases of acute poisoning, both suicidal and unintentional. Damage to the lungs may occur if paraquat is absorbed over time, and long-term exposure is associated with Parkinson's disease (Watts, 2011). Based on the research team's interviews with smallholders, they indicated they do not receive any information or training on chemical handling from their input provider (which can be a further consequence of going through intermediaries for input provision). Plantation workers reported mixed information about chemical handling, where training and PPEs seem to be highly correlated with status in employment. What workers did systematically report, though, is that they did not know what chemicals they were spraying. Most of the time preparations were already mixed before being distributed to workers to use.

41 Each of the area producers, for example, is responsible for several provinces and tasked with identifying and monitoring distributors in each of the provinces, which are made responsible for organizing distribution at the village level.

42 In a study conducted by Daemeter Consulting (Samosir et al, 2013) for Solidaridad Network, the following were the key challenges faced in the fertilizer subsidy program for oil palm:

- Delay of fertilizer delivery based on the 'Definitive Plan of the Farmer Group Needs' (DPGN) report, which is required for fertilizer distribution to farmer groups
- Fertilizer sold at a higher price than the recommended retail price
- Competition for fertilizer usage and leakage to other crops
- Leakage of subsidized fertilizer from the system throughout the supply chain away from smallholders

43 The leading companies in Indonesia include BASF SE, Bayer CropScience, Dow AgroSciences, Monsanto, and Syngenta. In 2012, the largest pesticide consumers were rice sector (41 per cent) and palm plantations (27 per cent).

44 In Indonesia, paraquat is sold under the trade name Gramoxone.

45 In China where many of the paraquat manufacturers are located, the use of herbicide has been banned by the Ministry of Agriculture effective June 2016. The production of paraquat though is still allowed provided it is intended for export. (Multiwatch et al., 2016).

The Indonesian government recognizes the level of hazard associated with exposure to paraquat. Eighteen products are classified for limited use in Indonesia, and three of these contain the active ingredient paraquat. With the limited use classification, paraquat can technically be used only by certain estate crops by professional applicators possessing a special permit.

Under the RSPO principles and criteria, paraquat can only be used in ways that do not endanger health or the environment. Individual growers must work towards minimizing and eliminating the use of paraquat and document that they are actively seeking alternatives. In addition, the RSPO has strict requirements on the safe handling, storage, and disposal of pesticides. Over recent years, a growing number of RSPO grower members have voluntarily phased out the use of paraquat.⁴⁶ As paraquat is becoming more restricted, glyphosate is reported to be taking its place (Chemical Safety Card - Glyphosate). Its environmental and health impacts are unclear.⁴⁷ Although glyphosate is much less toxic than paraquat, some of the surfactants included in the preparation for spraying it are highly toxic. There were also issues raised about water pollution associated with paraquat and glyphosate.⁴⁸

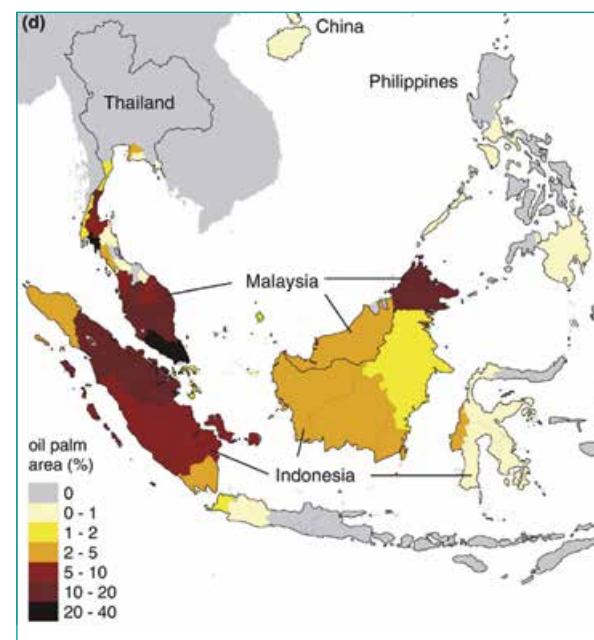
Ease of access to affordable, safe, and high-quality inputs and technologies especially among smallholders is a crucial precondition to securing higher yields and reducing work hazards related to use of chemical inputs and harvesting tasks. Likewise, in well-functioning input markets, input distributors and retailers can be expected and relied upon to provide information and advice on proper handling of chemical inputs, tools, and equipment to reduce risk of work-related injuries and accidents. Lastly, during interviews, it seemed that smallholders did not have access to recycling services for empty

agro-chemical tanks, and consequently reused them at work and sometimes at home.

Oil Palm Growers

Oil palm is cultivated in 24 provinces. The largest oil palm producing island in the country is Sumatra which accounted for about 68 per cent of the total national output. At the provincial level, top producers in 2015 were North Sumatra, Riau, and Central Kalimantan.

Figure 11. Location of palm oil plantations in Indonesia



Source: UNEP, 2011.

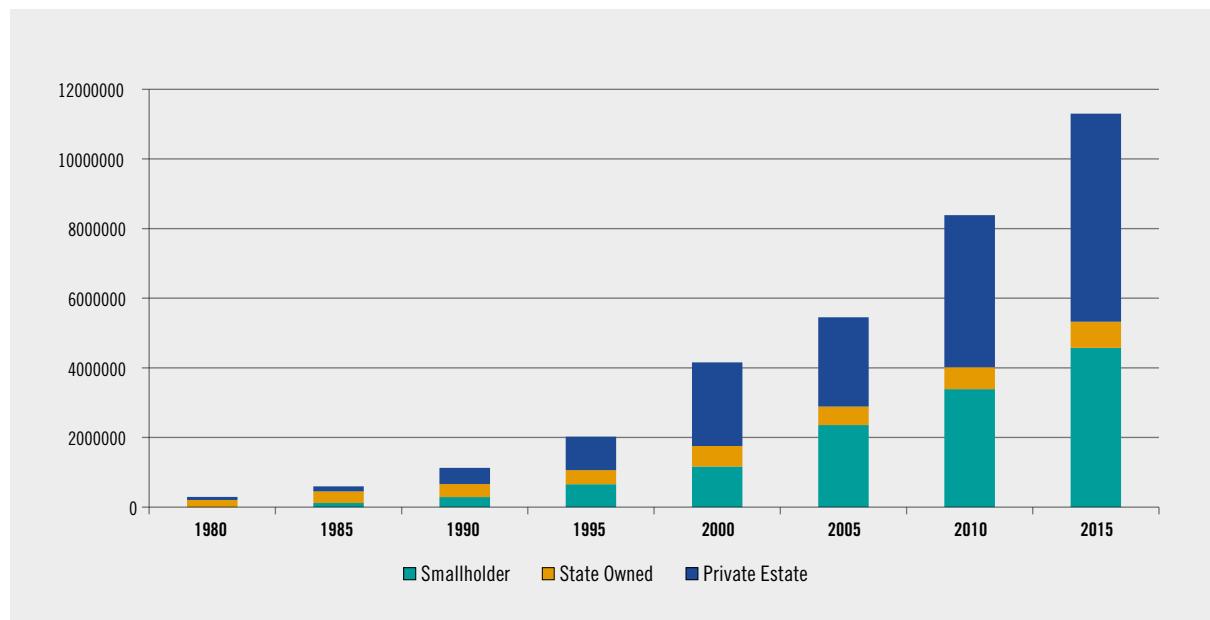
In 2015, oil palm plantations covered about 11,300,370 hectares, representing about 40 per cent of total arable land within Indonesia. Areas planted to palm oil is steadily expanding at an average, yearly rate of 420,000 hectares per year.

⁴⁶ Growers who have already banned Paraquat include Agropalma, DAABON, Hap Seng Plantations, IOI, Olam, Musim Mas, United Plantations, REA Holdings, SIAT, Sime Darby (including NBPOL) and Wilmar. Other companies, such as Bumitama, Indofood Agri have committed to a phase-out over the coming years. (RSPO Impact Update. 2015)

⁴⁷ Monsanto, one of the manufacturers of glyphosate, claims it is a highly effective weed-killer, safe to users and harmless to the environment. However, anti-pesticide campaigners reveal that there is evidence of toxic effects on humans as well as on the environment, indirect environmental damage and resistance in some target weed species.

⁴⁸ Manufacturers claim that both chemicals are harmless to people and wildlife after spraying as they are rapidly absorbed by plants and inactivated by contact with the soil. However, in parts of Indonesia where the rainfall is often very high, herbicides can be washed into streams and rivers which provide the only source of water for all household needs - including drinking - for villages around the plantations. Furthermore, the herbicides do not bind to sandy soils.

Figure 12. Areas planted (in hectares) by type of plantation and ownership in Indonesia, 1980 to 2015



Source: Authors on the basis of Directorate General of Estate Crops Ministry of Agriculture (2015) Statistik Perkebunan Indonesia 2014 – 2016: Kelapa Sawit.

Palm oil growers can be subdivided into two main categories: smallholders and plantations. Estate plantations can be further classified based on ownership, namely: private estates and state-owned enterprises. About 53 per cent of the total hectarage is owned by private estates while 40 per cent is managed by smallholders. The remaining 7 per cent is under the ownership of state-owned enterprises. Between 1980 and 2015, land cultivated by smallholders posted the highest growth rate at 21 per cent.

Based on data from the Ministry of Agriculture, there were around 3,362,640 workers employed in oil palm plantation while 2,140,774 farmers toiled on smallholder owned plantations and/or worked as labourers in nucleus estates (data disaggregated by region available in annex 4). On average, one hectare of land planted to oil palm provided employment to 0.49 workers.

In mature plantations, labour is the major cost point accounting for about a third of total production costs. Plantations, whether big or small, incur the highest labour costs in harvesting. In oil palm plantations, harvesting always takes priority over other work as any delay can result in quality deterioration. Late and

incomplete harvesting contributes to a minimum of 10 per cent reduction in yield.

a) Plantations

State Owned Plantations. State owned plantation companies or Perseroan Terbatas Perkebunan (PTP) were established during the New Order scheme which started in 1967 and supported by the World Bank and the Asian Development Bank. These companies were usually established on excellent agricultural land previously developed by Dutch planters and nationalized after Indonesia gained independence. The Indonesian government established a scheme called Nucleus Estate Scheme (Perkebunan Inti Rakyat; PIR), whereby state-owned plantation companies (the ‘nucleus’) helped farmers (namely plasma farmers) to grow oil palm by providing the latter with seedlings and technical assistance from the plantations under a buy back scheme agreement.⁴⁹ Many of the state owned plantations were located in the North Sumatera Province. In the 1980s, the government began to expand the plantations in other islands of Kalimantan and Papua. There are 10 state owned palm oil companies with an aggregate

49 Aside from the objective of promoting plantation development, the nucleus estate scheme was also linked with other policy objectives such as population redistribution through resettlement scheme or transmigration, regional/provincial socio-economic development with a focus on increased agricultural production and employment generation, and political consolidation.

of 755,787 hectares planted to oil palm as of 2016. The state owned palm companies also have their own mills and are working towards building refining capacities.

Plantation firms that are financially weak are currently being restructured.⁵⁰ Of the ten state owned palm companies, PTPN III and PTPN IV have estates with RPSO certification.⁵¹

State owned enterprises with high productivity and, consequently, healthy financial conditions have OSH management systems and accumulate various certifications (ISPO, RSPO but also ISO, SA 8000 and others). Likewise, these companies integrate promotion of good working conditions with the streamlining of work processes. In one of the state-owned enterprises that the team has visited, for example, the plantation has been designed so as to reduce

the maximum distance between collection and harvest, with improved productivity results among collectors and, at the same time, reduced intensity of manual lifting and pushing of wheelbarrows. This example illustrates the possible link between improved productivity and improved OSH, which can be achieved through reorganization of work processes.

Private Estates/Plantations. There are about 1,600 large and medium companies with CPO mills and their own plantations. A number of these companies also operate refineries. The large estates are mostly part of larger agribusiness holdings. These holdings, in turn, usually belong to business conglomerates that are active in sectors such as agriculture, telecommunications, banking, and construction. The table presents the top 20 companies in terms of hectarage of area planted to oil palm.

⁵⁰ As per interviews, losses are attributed to low productivity and inefficiencies due to outdated technology and facilities. To avert its losses, PTPN II has formed a joint venture company with Kuala Lumpur Kepong Bhd (KLK) via its wholly owned subsidiary KL-Kepong Plantation Holdings Sdn Bhd in 2009. KLK is Malaysia's third-largest palm oil producer.

⁵¹ Eighteen of the thirty four estates of PTPN III are certified. For PTPN IV, three out of the twenty-four estates have achieved certification. PTPN II and KLK joint venture is in the process of applying for certification. PTPN III is also currently working with IDH, Unilever, and RSPO in assisting independent smallholders to achieve RSPO certification. About 50 per cent of the palm oil production of PTPN III is exported and the remainder is sold in the domestic market.

Figure 13. Top 20 Palm Oil Companies in terms of Hectarage Planted to Oil Palm

Company	Net Income (US\$M)	% Indo Planted Area	RSPO	ISPO	ISCC	SPOTT	Green Tigers Rating
Golden Agri Resources (GAR)	383.7	4.50%	Y	Y	Y	63.60%	Good
Salim Ivomas Pratama Terbuka PT **	53.4	3.20%	Y	Y	X	46.00%	Poor
Astra Agro Lestari Terbuka PT	116.3	2.70%	X	Y	X	14.50%	Poor
Sime Darby Plantation	669.1	2.70%	Y	Y	Y	63.60%	Unclear
IndoAgri	48.8	2.40%	Y	Y	X	NA	Poor
First Resources Limited	141.6	1.90%	Y	Y	Y	20.00%	Poor
Genting Plantations Berhad	61.8	1.70%	X	Y	X	29.10%	NA
Wilmar Group	893	1.60%	Y	Y	Y	45.50%	Good
Bumitama Agri Limited	45.4	1.40%	Y	Y	X	30.90%	Unclear
Austindo Nusantara Jaya	32.2	1.30%	Y	Y	Y	NA	NA
Si nar Mas (SMART)**	62.8	1.30%	Y	Y	Y	63.60%	Good
PP London Sumatra Terbuka PT (Lonsum)	57.4	1.20%	Y	Y	X	43.60%	NA
Kuala Lumpur Kepong Berhad	211.1	1.00%	Y	Y	Y	41.80%	Poor
REA Holdings PLC	53.5	1.00%	Y	Y	Y	NA	NA
IOI Corporation Berhad	421.2	0.50%	Y	X	Y	54.00%	Unclear
SIPEF	46.1	0.40%	Y	Y	Y	56.00%	NA
Kulim (Malaysia) Berhad	62.3	0.40%	Y	X	X	NA	NA
FELDA	154.9	0.40%	Y	X	X	NA	Unclear
Socfin Group S.A.	67.9	0.40%	Y	X	X	33.60%	NA
United Plantations Berhad	56.1	0.20%	X	X	X	60.00%	NA

Source: Smith School of Enterprise and the Environment, 2016

** Salim Ivomas is a subsidiary of IndoAgri; SMART is a subsidiary of GAR

RSPO: Roundtable on Sustainable Palm Oil

ISPO: Indonesian Sustainable Palm Oil

ISCC: International Sustainability and Carbon Certification

SPOTT: Sustainable Palm Oil Transparency Toolkit; figures represent their rating

Green Tigers Rating: company's behaviour around protection of forest/high conservation value area, high carbon stock land, peatlands, and human rights.

LEGEND

Y: Certification

X :No certification

NA: data not available

Of the top 20 companies, 17 are RSPO certified. It can be seen though that certification does not necessarily translate to a “Good” rating from Green Tigers (see figure above). Large integrated company estates though usually have better plantation management and agro-nomic practices and a stronger incentives to increase oil yields vis-à-vis smallholders. The spread of the locations and landscapes of oil palm plantations creates a challenge for plantation estates as well as enforcement institutions, such as the labour inspection for the monitoring of compliance and good to safe practices.

Volatile price fluctuation of crude palm oil has been a major challenge faced by planters, plantation companies, investors, and even downstream industry. The volatile price fluctuations have more pronounced impact on profitability of less efficient producers and plantations that have high percentage of immature and senile trees. Plantations generally cope with price volatility by taking out costs in the production process. Since fertilizer and labour are the major cost centres, these are usually the items that are frequently “sacrificed” to maintain profitability. In most cases, plantations reduce labour expenses by expanding the ratio of cultivated hectare per worker or expanding ratio of cultivated hectare per unit labour cost.

There are three main phases in oil palm cultivation. The first phase involves farm establishment activities such as land clearing, drainage construction, seedling preparation, and planting. Activities in the second phase span from farm maintenance to harvesting. The third phase involves replanting to maintain farm productivity. All of the phases rely primarily on manual labour. Phases one and three generally generate casual jobs while phase two provides regular and ongoing jobs. Harvesting accounts for the highest number of workers in a plantation.

A plantation is divided in smaller geographical units referred to in Indonesia as divisions (divisi) or compartment (afdeling) according to the Dutch colonial heritage. To maximize the efficiency and control of labour deployment, any division which stretches over 700 to 1000 hectares is further divided in blocks of blocks of 30 to 150 hectares. Each division, depending on its size, employs from 100 to 150 workers for manual and supervision tasks on the plantation (Bissonnette, 2012).

A typical plantation structure includes a general manager, assistant manager, supervisors, clerks, and overseers. Each territorial division is under the responsibility of an assistant manager. The assistant manager is in charge of supervisors (mandor) who govern teams of 10 to 20 workers on the ground and specialized clerks (krani) who record production, costs, and wages of workers according to standardized operations. Each type of operation, harvesting, spraying pesticides or applying fertilizers is administered by overseers.

The following are the typologies of workers in oil palm plantation estates based on contractual relationships:

Permanent Workers. Workers under this category consist of office/administrative staff, plantation supervisors/foremen, and core group of plantation workers (generally harvesters). Permanent workers in Sumatra are usually descendants of the first generation of workers who migrated from Java Island in the early 19th century.⁵² In Kalimantan, plantation workers consist of domestic migrants from Java and Nusa Tenggara Timur. Establishment of plantations in Kalimantan started in 1990s which also drew in migrant workers.

Permanent workers in oil palm plantations are mostly male harvesters. The number of female workers who have achieved permanent status is higher in Kalimantan than in Sumatra. In plantations interviewed by the team in Kalimantan, a new worker with satisfactory performance is given a permanent status after three months. In Sumatra, the team came across workers who have been with the plantation for more than ten years, but are still employed as casual daily workers.

There are two categories of permanent workers: i) permanent workers paid on a monthly basis comprised mainly of managerial and administrative staff; and ii) permanent workers consisting of harvesters and core farm maintenance workers, whose pay is composed of a fixed and a variable component determined as a function of daily volumes. In the areas visited: in Kalimantan, the latter permanent workers comprise about 50 to 65 per cent of the labour force while the former, permanent workers, based on field interviews, account for about 20 to 25 per cent.

⁵² The permanent workers have stayed inside the plantation from generation to generation. Most permanent workers interviewed grew up on plantations.

Permanent workers, whether paid on a daily or monthly basis, generally have contracts and receive pay slips. They are commonly paid at least the minimum wage as set by the respective districts. Often times, mill workers receive higher wages than plantation workers because of the technical nature of their tasks (a number of them are certified). Harvesters are usually paid the minimum wage. Additionally, workers have targets that they need to meet and go beyond in order to get a bonus or premi.⁵³ Permanent workers, mainly for those able to meet and go beyond the target, reported that they perceive their position as quite attractive in comparison to industrial workers.

Plantation workers with permanent status stated receiving training on good agricultural practices and occupational safety and health, and being provided with personal protective equipment and training on how to best use them.⁵⁴ Permanent workers have access to trade unions, and unionized workers were knowledgeable about the occupational risks they faced at the workplace, existence of safety and health committees, and entitlements to protective equipment and safety training as defined by existing collective bargaining agreements.

Permanent employees were affiliated to National Employee Social Security managed by the Badan Penyelenggara Jaminan Sosial (BPJS), under which the following contingencies are covered: employment injury, death and old age for BPJS-Ketenagakerjaan and health for BPJS Kesehatan. A number of companies provide additional benefits, in particular free medical care at the plantation's medical facilities

(whether occupational or not) and pension fund entitlements. Maternity and sickness are the employer's liability in Indonesia and are not covered through the social security system. This makes effective access to this right largely contingent on formal long-term employment relationships and on employers' efforts. It may also act as a disincentive for employers to select women for permanent positions. Children of employees have access to free schooling in some of the plantations.

Permanent workers also are provided with housing. Houses for workers are located within the plantation. In the plantations that the team visited in North Sumatra, the state of housing facilities varied greatly from one plantation to the other, with a visible link between the firms' economic performance and the state of the facilities they provided to their workers.⁵⁵ Usually, only permanent workers are entitled to housing facilities. Some plantations have schools for children of workers and other facilities.⁵⁶

There were several studies (UNICEF 2016; Murray, 2014; Elmhurst et al, 2017) that indicated water was a problem in the housing facilities offered by plantation companies, especially when the plantations are located in remote areas.⁵⁷ Difficult access to water at home can further aggravate chemical exposure for sprayers.

Casual/Temporary workers (*Buruh Harian Lepas*) hired directly by the plantation. These are primarily comprised of family members of permanent workers (harvesters) and the landless living around the plantation area. Family members of smallholders cultivating palm oil and selling it to the nearby plantation mills also

53 Some companies give rice allowance to their employees.

54 There were conflicting reports between management and workers on the frequency to which PPEs were provided and the degree of training.

55 Some houses were old and needed repair. Nevertheless, if compared to houses within the vicinity of the plantations, the plantation housing facilities appear to be better or at, minimum, on par. Some workers have extended their houses or made the repairs themselves. In some cases, houses were inherited by workers from their parents who were also workers in the plantation. This creates an incentive for children of plantation workers to stay and work in the plantation as well.

56 One of the legacies of the Suharto period was the introduction of the retirement and public health agency in 1979 which operates a mandatory pension scheme and a provident fund. When workers reach the legal retirement age, they receive a lump sum equal to the total amount of money they have saved plus interest. A downside of the system according to an article by Barral (2014), is that plantation workers have to move out of the company owned housing facility as a condition for receiving the lump sum at retirement. Prior to the system, retired workers could live in the housing facility and receive a monthly subsidy until their deaths. Access to housing becomes a problem for workers who are not able to spend some of their income to buy a piece of land and build a house. With the wages they earn, most families have to work in multiple jobs and longer hours to meet daily needs and, at least, secure a home when they retire. In some instances, families are able to keep their houses by ensuring that the next generation finds employment within the plantation. Many of the workers that were interviewed by the team had parents and grandparents who used to work in the plantation.

57 According to the studies, some of the housing facilities are supplied only with unfiltered water from the rivers pumped up or delivered by trucks into barrels or drums.

provide casual labour. Casual workers were more visible in Sumatra than in Kalimantan.

Casual workers generally work for 15 to 19 days per month. Under Indonesian labour law, casual workers cannot work for more than 21 days a month; otherwise they must be fully employed as permanent workers. As per companies interviewed, casual workers are hired for tasks that are seasonal in nature. Fertilizer application, for example, is on the average done only twice a year. Spraying of pesticide is usually carried out once every four months. Some companies also said that the hiring of casual workers is in line with community expectations that the plantation provide jobs for the households. The companies, however, cannot absorb all of those applying for jobs as permanent workers.

Male casual workers consist primarily of harvesters and loaders. When FFB yield is low, permanent plantation workers can perform the harvesting tasks. Likewise, during the low-yield season, harvesters have to cover a larger area in order to reach their daily quota.

Most of female workers in oil palm plantations, especially in Sumatra, were casual workers assigned to tasks such as application of fertilizer, spraying of herbicide and pesticides, and maintenance tasks. Female labourers are often assigned tasks which are seasonal and perceived to be less physically strenuous, but require meticulous attention.

Casual workers are usually paid based on accomplishment of a given target.⁵⁸ Workers assigned to clear the undergrowth around the palm are paid on a piece rate basis. Harvesters are paid based on volume of FFB harvested or a fixed daily rate for a quota of 700 to 1,500 kilograms FFB plus incentive for excess volume harvested. Quota for harvesting is usually set based on the age of the tree. At times, harvesters work beyond eight hours per day to meet their targets and earn bonus/incentives or “premi”.⁵⁹ Targets for drivers and loaders are set with reference to the weight of the FFBs they have to load and transport.

One of the concerns of daily workers is the underpayment of premis when they are unable to meet quotas due to rain and other weather disturbances. Some

companies adopted the policy that daily workers will be paid in full if the reason a quota is not achieved is due to rain, which is in compliance to Indonesian law UU No 13 Year 2003. As per the company's work rules, workers are required to report for duty at the start of the work day to ensure full payment. According to Amnesty International (2016) and Muthmainnah (2017), some companies were reported to impose sanctions to both permanent and casual workers for mistakes committed (e.g., harvesting unripe fruits, leaving ripe fruit unharvested, palm fronds not arranged properly, etc.).⁶⁰

Some companies award permanent status to their casual workers after three months. However, in most cases, workers indicated that they have been working as casual workers for many years and are most likely to remain in such status for the years to come. The fact that in most cases a number of workers are casually employed in a first instance (sometimes for years) before a permanent position opens means that young workers are overly represented among casual workers (in particular young men as casual harvesters).

Among the large companies visited by the team and especially those who have already been certified, temporary workers were integrated in the safety and health management system of the company (i.e. access to safety training, access to equipment, etc.) and had access to company facilities (i.e. washing facilities and changing rooms, medical services, etc.). In most cases though, training was only a one-off activity and companies relied on supervisors to regularly issue reminders and to continuously monitor staff performance. It is sometimes difficult for companies to fully instil safety practices as workers move from one plantation to another which might have different practices and policies.

In some of the companies visited, all casual workers were registered to BPJS and thus were able to enjoy social security benefits including health coverage. It was reported that the registration process was easy and fast, as the administering institution has a special desk for companies and seems proactive in the registration process. This practice was not necessarily

⁵⁸ A female fertilizer worker, for example, has to apply two kilograms of fertilizer to 175 trees in one day for a fixed daily rate of IDR 40,000 to 60,000.

⁵⁹ As per feedback from harvesters, the quota is beyond what an individual worker can achieve within an 8-hour work day.

⁶⁰ Fines could range from IDR 2,000 to 2,500.

replicated from one company to the other, however, and without a clear indication as to why. It may also be possible for casual workers especially harvesters to be provided with housing. However, priority for the housing benefit is given to permanent workers.

It was noted though across the different regions covered by the research team that women workers often manifest high job satisfaction despite the fact that they enjoy less job security and often lower pay than men. The empowerment dimension of controlling one's income for women is of high importance in a rural setting. Likewise, many of the women workers especially those with young children prefer to be casual workers due to the flexible working hours which will allow them to also attend to their households and to other obligations. Flexible working hours are not possible with permanent work contracts and child care services are not always readily accessible. This highly relates to the issue of maternity protection and the need for childcare options. Since those options are not available, women support most of the burden of care work at home and cannot partake fully in the labour market to get permanent job opportunities.

Sub-contracted labour - temporary workers hired by contractors / labour brokers. As offered in the interviews conducted, plantations increasingly outsource tasks such as pruning, drainage construction, weeding, spreading of agro-chemical, among others.⁶¹ According to interviews with casual workers hired by contractors as well as with labour unions, there is little or no unionization at this stage of the value chain.

The research team received varying responses on who has the responsibility to provide personal protective equipment, safety training, and social security in this set up, indicating unclear perception of roles and responsibilities as they relate to OSH. According to some plantations, particularly the large ones, they automatically deduct the amount required for social security contributions of casual workers from payment to the contractors and pay the contributions directly to the relevant authority to ensure that all contracted workers are covered. Others said that it is the responsibility of

the contractor to ensure contracted workers are enrolled in the social security program. One labour broker interviewed also said that his pool of workers has access to social security. Some of the plantation interviewed said that they provide the PPEs for sub-contracted workers. Conversely, a few of the contracted workers interviewed by the team indicated that they received their PPEs from the contractor or were procured by the workers themselves. It would also appear that there is no clear agreement on who is responsible for training workers on safety practices. Some large plantations though indicated that training on safety practices forms part of the capacity building package provided to workers regardless of their status, and so was access to the company facilities (i.e. changing and cleaning facilities, water, medical facilities, etc.).

It is also not clear whether workers hired by contractors receive the same level of pay as casual workers directly hired by the companies. The general impression gathered from the interviews is that the net take home pay of workers hired by contractors is lower than the one of permanent and temporary workers hired directly by the plantation, since the sub-contracting agency takes a percentage.

Assistants hired by permanent or casual workers of plantations and family workers. To meet the quota and benefit from the premiums for FFB harvested in excess of the target, harvesters bring "assistants" or "kernets" to assist them (e.g., collection of loose fruits, carrying of fruits to collection points, etc.). The harvesters pay for the assistants that they bring in out of their wages or enlist family members (e.g., wife) as "free" labour. Kernets are in essence "invisible" workers as they are not on the company's books and the company management may not even be aware that they work on the premises. They have no legal protection and are not integrated in the occupational safety and health management system of the company. They do not have access to its washing and changing facilities and are ineligible for health care and work-related injury and diseases compensation under the contributory BPJS scheme.

⁶¹ For example a labour broker or agent had a contract with various plantations to provide services ranging from farm maintenance, harvesting, and transport of FFB. To carry out these tasks, the contractor deploys 300 workers daily to the plantation. Harvesters are paid daily wage of IDR 80,000 provided that he is able to harvest FFB from 150 trees. For pruning, workers are paid IDR 1,200 per tree.

b) Smallholders

There are about 2,140,774 smallholders involved in oil palm cultivation.⁶² Smallholders can be broadly classified as either “independent” or “tied/support-ed” organized in plasma- nucleus (inti) schemes around oil mills operated by plantation estates. The majority of the total area managed by smallholders in Indonesia is located in Sumatra. This is in contrast to frontier regions such as East Kalimantan and Central Kalimantan, where large scale plantations dominate.

Tied/Supported Smallholders. These are smallholders organized in plasma schemes receiving technical and financial support from nucleus plantations. They comprise about 20 per cent of the total number of smallholders.

The cost of the development of the plasma-nucleus scheme is usually transferred to a loan provided to smallholders through a participating bank with the nucleus estate as the guarantor. Tied smallholders supply their produce to the nucleus plantation company's palm oil mill which deducts the debt and cost of other services like transportation from the FFB sales. Their relationship is based on a contract. In many of the plasma schemes, the prescribed hectarage to be allotted per smallholder is two hectares.⁶³

Annex 5 presents the percentage of plasma hectares to the total area planted by large companies in Indonesia. The ratio between nucleus estates and smallholder schemes has shifted from 20:80 in its original design to 80:20 in more recent schemes and government regulations. To a significant extent, this has reduced the dependency of mills with large estates and land banks on smallholders and, consequently, may have reduced the incentive to invest in smallholders. Estate plantations argue that by reducing dependence on smallholders and/or increasing direct control of the largest area of production possible, they can boost profits by maximizing and stabilizing the daily input of high quality FFB to their mills. Vertically

integrated companies can maximize their profits by reducing volume of poorer quality FFB from smallholders. Reduced dependence on plasmas for FFB supply also makes it easier for them to control compliance with private and public standards. Likewise, nucleus plantations can optimize use of land through yield intensification which poses a significant challenge among smallholders.

Given the limited resources of tied smallholders, they are able to achieve certification primarily through the assistance of nucleus company and/or development organizations. Certification of supported smallholders is less challenging vis-à-vis independent growers. Most of the supported smallholders are already organized and have better opportunities of receiving technical support and guidance from the mills with which they are connected.

A case study (Lisnawati, 2016) showed that the engagement of smallholders in RSPO certification scheme contributed to positive changes in the daily practices of spraying and harvesting. The study, however, cautioned that knowledge diffusion processes to enhance individual comprehension and to continuously build worker awareness and self-motivation needed to be boosted. Smallholders, it was suggested, also needed to simultaneously implement more sustainable practices.⁶⁴

Independent Smallholders. Independent smallholders are not tied or contractually bound to an estate or CPO mill. They are free to sell to any buyer. In practice, they sell either directly to a mill or to local agents (middlemen). If independent smallholders do not have their own means of transport, they may rely exclusively on one particular trader or on the closest mill. The development of independent smallholders was facilitated by the emergence of independent mills that offer new market channels outside tied arrangements, which had formerly bound smallholders to estate mills. Tied smallholders may also have independent plots.

⁶² The government of Indonesia defines any producer not required to get a business license for the rights to use state lands as a smallholder farmer. To qualify as a 'smallholder farmer' in Indonesia, farmer plantations must be less than 25 hectares (Ministry of Agriculture Decree No. 98/2013, see also Glenday and Paoli, 2015). Smallholders as defined by the RSPO are plantations of less than 50 hectares.

⁶³ In earlier schemes, smallholders were also allocated plots for garden and food production which helped in promoting food security. Recent schemes, however, no longer mandate nucleus estates to provide garden plots for smallholders. The prescribed two hectares may also be too small to allow smallholders to rise above survival income.

⁶⁴ It was also recommended that the practice of giving advice and motivations need to be supported by a multilevel supervision to expect better performances of spraying and harvesting groups in the short term.

Generally, independent smallholders may be characterized as follows:

- a) From the various studies reviewed, average yield of independent smallholders was 20 to 50 per cent lower than supported smallholders. The oil recovery rate of FFB from independent smallholders is also generally lower than those coming from nucleus and plasma plantations. The low yield and oil recovery have been attributed to use of inferior quality seedlings, poor agronomic practices/lack of capacity to mitigate climate change impact, improper fertilizer management, and land degradation/flooding (especially plantations in peatland).
- b) Dependency on intermediaries for supply of fertilizer and seedlings which oftentimes are of dubious or inconsistent quality. They also generally pay much higher costs for these inputs, which increases their operating costs and reduces profits.
- c) Limited access to financial services as most banks generally require guarantors or proof of a marketing agreement. Limited access to finance also contributes to low quality of inputs used particularly seedlings and fertilizers.
- d) They work individually as their plantation locations are scattered and they are seldom organized (i.e. only a few cooperatives that would provide a channel for input provision and training). Marketing is done individually or through intermediaries. Low volume and individual transactions significantly weaken their bargaining position, particularly given that farmers did not seem to be organized in cooperatives. Producers' organizations can be a powerful force to structure supply chains (i.e. secure sourcing of inputs, share good agricultural practices, provide training, act as a market force to increase the negotiation power of producers, etc.). This lack of organization also creates an additional transaction cost /difficulty for supply chain engagement and traceability at the smallholder level beside recent traceability initiatives. Likewise, smallholders cannot directly access certification individually.⁶⁵
- e) Independent smallholders sell FFB on the open market and, thus, are highly exposed to the fluctuating price of FFB. Given that quality of FFB deteriorates 24 hours after harvest, independent smallholders are often price takers.
- f) Similar to supported smallholders, independent smallholders practice mono-cropping. There are a few smallholders who raise livestock. There are some areas though in North Sumatra where intercropping is practiced by smallholders during the three first years as the trees mature.

Tracking palm oil supplies back to the original plantations remains a formidable challenge especially if the FFBs came from independent smallholders. There is now significant traceability to mill level, but very few companies have fully tracked their supplies further back to the plantations. Traceability is an important prerequisite for mobilizing interest and resources down the supply chain. Indeed, lead firms who would like to engage are faced with scattered and geographically dispersed actors which make supply chain engagement more difficult and loosen the linkages between producer and end buyer. This potentially hinders knowledge transfer and the transfer of good OSH management practices from lead firms down their supply chain.

Smallholders are independent workers, whether plasma or independent, and mostly operate in the informal economy. About 60 to 80 per cent of the labour requirements are provided by the farmers themselves and their household members. As such, the research team did not come across smallholders who benefited from support for workplace risk assessment, professional advice on control measures, or access to occupational health surveillance. Also, the researchers did not hear of those registered to contributory social security or who benefited from compensation and rehabilitation in case of an occupational accident or disease.

A common practice among smallholders is to hire casual workers to work with them during harvest.

⁶⁵ A small number of independent smallholders have achieved RSPO certification with the assistance of development organization and third parties, as funding is an issue for smallholders to get certified despite some initiatives to overcome this constraint. The first step taken by these smallholders was to organize themselves into a cooperative or association. The cooperative provided the platform for the delivery of technical assistance and for collective marketing. In some cases, certification and the formation of cooperatives also facilitated the organization of shared labour for farm maintenance and harvesting, which to a certain extent improved the adoption of safety practices since workers have undergone some training.

These workers are usually casual plantation workers who seek additional income. This work is generally not formalized, declared or subject to social security affiliation. Smallholders normally do not closely monitor the performance of their hired workers especially so if these are “trusted” workers or people with whom they have worked with for many years.⁶⁶ Appropriate PPEs are not necessarily provided. The pay though is generally better than on the plantation and workers report higher work satisfaction, which may be related to a smaller work place and in an environment where human relations play an important role.

As per interviews, smallholders and their casual workers acquired their knowledge and skills on oil palm cultivation through observations and learning from peers and experience. Supported smallholders receive training from the nucleus plantations/mills with which they are affiliated. Independent smallholders with close relationships with mills (either in the form of an agreement or informal preferred supplier – mill relationship) have also been provided with some forms of training. In many cases though, capacity building activities consist of a one-off training which is often not sufficient to create a culture of prevention and adoption of sustainable, good practices. Government agencies such as the provincial government and the Ministry of Agriculture as well as development programs also provide training, but these are on an intermittent basis given resource limitations.

According to Lisnawati (2016), casual work in smallholder plantations are paid either based on daily wage or a target-based/ performance-based system.⁶⁷ Productivity varies greatly between plantations depending on culture, management and practices, site suitability, age of trees, and quality of seedlings. Average yield per hectare in 2015 was 2.77 MT in CPO terms. Private estates had the highest average yield at 3.07 MT CPO equivalent followed by state owned enterprises. Although yield of smallholder grew at an average rate of 9 per cent annually between 1980 and 2015, this was still about 32 per cent lower than that of the private estates.

FFB Traders

FFB agents and collectors cater mainly to independent smallholders and supported smallholders with independent plots. Agents located or based within the proximity of these plantations collect the FFB at the farm gate. The agents then deliver to a dealer or collector who holds a delivery contract (or letter) with oil mills to bring in a pre-arranged volume of FFB. Local agents with delivery contracts may also deliver directly to the mills. The local agents are responsible for transporting the FFB from the farm to the warehouse of the collector at the shortest time possible to ensure that these reach the mills within 24 to 48 hours after harvest.

Margin of FFB agents is only about IDR 100 to 120 per kilogram and, as such, volume is a critical factor to business viability. In many cases, local agents pay their suppliers upfront although at a slightly lower price vis-à-vis the prevailing buying price in the mills and with the transportation cost factored into the amount. Immediate payment for FFB appears to be an important incentive as mills are reported to pay their suppliers two to four weeks after delivery. Likewise, independent smallholders would generally prefer to offload their harvest and receive immediate payment before spoilage occurs. Some local agents also provide loans and advances to independent smallholders for purchase of inputs and other plantation costs such as wages as a means of securing loyalty of the latter and, consequently, their supply of FFB.

FFB traders are not a homogeneous category of actors. It comprises a wide range of businesses, from formalized medium sized companies with salaried workers to small or individual businesses operating in the informal economy. Employment patterns follow, with a variety of categories from informal or partially formal independent workers to formalized salaried workers on permanent employment. Employment at this stage of the supply chain was reported to be mostly male.

⁶⁶ Hiring of casual workers among smallholders is generally based on friendship, kinship, and peer referral rather than competencies and skills. Smallholders usually prefer to work with relatives and people that they have known to be trustworthy. Trust it seems plays a very important role in the selection process. Another variable that influences decision making is social need. Smallholders give priority to relatives or neighbours who are in immediate need of cash.

⁶⁷ Casual workers doing herbicide/spraying service in smallholder farms are paid a daily wage ranging from IDR 60,000 to 80,000. Under a target-based system, a female sprayer is paid IDR 300,000-400,000 per two hectare lot (kapling) if is near water sources and IDR 600,000 per kapling if far from water sources. Harvesters are usually paid based on targets at IDR 100,000 to 150,000 per ton of FFB.

These intermediaries, when operating in the informal economy, do not operate under an OSH management system nor are conscious about environmental and social standards. Traceability is lost or weakened in the supply chain with the involvement of multilevel FFB agents. However, given that the existence of FFB intermediaries is vital as they address major logistical issue of transporting a steady supply of FFBs from independent smallholders to the mills, improving their understanding of traceability, environmental and social standards, and product quality would be beneficial for all parties concerned. Likewise, given their influence on smallholders, they can be active partners of oil mills in promoting compliance to good and safe practices as well as important to establishing supply chain traceability.

Palm Oil Mills

There are about 600 palm oil mills in Indonesia. Large companies (private and state owned) that operate milling facilities as part of an integrated plantation business model dominate the crude palm oil production. Large-scale plants are generally handling from 30 to 60 MT of FFB per hour. These companies have mechanical handling systems and operate in two to three shifts depending on the availability of FFB. Most processing operations are automatically controlled and routine sampling and analysis by process control laboratories ensure a smooth, efficient operation. Production volume and number of mills of major palm oil companies are presented in the below table.

Figure 14. CPO Production Indicators of Major Palm Oil Companies, 2015

Company	No. of Oil Mills/ % certified	CPO Production Volume (in MT)	Oil Extraction Ratio	RSPO Supply Chain Used
Golden Agri Resource	44 66% certified	2,380,047	22.93%	Book and Claim Mass Balance Segregated
Salim Ivomas (Indo-Food)	24 38% certified	1,002,000	22.40%	Book and Claim
London Sumatra (IndoFood)	11 55% certified	475,708	23.20%	Book and Claim
Sime Darby	Indonesia – 24 Malaysia – 35 98% certified	2,180,000		Book and Claim Mass Balance Segregated Identity Preserved
Inti Indosawit Subur (Asian Agri)	19 95% certified	1,000,000		Book and Claim Mass Balance Identity Preserved
PTPN III	12 50% certified	596,665	21%	Mass Balance
KLK Berhad	Indonesia – 12 Malaysia – 14	1,060,442	22%	Mass Balance Segregated Identity Preserved

Source: Hawkins, D.2016. RSPO reports. Hardman Agribusiness

Mills with own plantations can augment their supply of FFBs from supported and independent smallholders. FFB supply from independent smallholders comprised from 5 to 20 per cent of total FFB processed. The Ministry of Agriculture Regulation 98/2013 requires mills to source at least 20 per cent FFB from their own linked plantations. During the interviews conducted by the research team, mill management almost systematically reported underutilization of their installed capacity, which suggests that there is room for further streamlining of production (i.e. address productivity and work organization at plantation /smallholder levels in order to guarantee input provision to the mills in a more consistent manner).

In 1995, the government of Indonesia allowed the establishment of independent oil mills (not required to own a plantation) but only with a processing capacity of 5 MT FFB per hour or less. These mills are dependent on third parties particularly independent smallholders for their supply of FFB. Corporate purchasing policies of independent mills are primarily focused on the quality of FFB.

Mills generally have advanced control and management of their milling operations but reported challenges in exercising due diligence with their suppliers due to limited visibility of their supply chains. Sustainability certification has pushed the oil mills to map and identify their networks of suppliers and intermediaries. However, given the complexity of their chains, large companies have set the target for full traceability by 2020. The pressure for full traceability is higher among companies serving buyers from the European Union and United States than those selling to countries in Asia, Middle East, and Africa. As per discussions with oil mills, improved visibility of their chains is also paving the way for the development of more supportive relationships with their suppliers particularly in the area of promoting good agricultural practices, environment protection and OSH. As the gatekeepers in the upstream level of the supply chains, mills can play a crucial role in shaping safety behaviour and practices of their suppliers. From this perspective, knowing the sources of the FFBs is essential in identifying or reforming working conditions. The length and stability of commercial

relationships between mills and their clients seem to play a role in their uptake of sustainability standards.⁶⁸

An oil mill employs from 70 to 150 workers depending on their capacity. Workers in the mills generally have higher educational attainment than plantation workers. Oftentimes, mill workers receive higher wages than plantation workers because of the technical nature of their task (a number of them are certified under the Ministry of Manpower requirements). The required competencies for workers in the mills, particularly operators of machinery (boilers, engine room), are stipulated in the Ministry of Manpower Regulation No. 313 of 2013. Tasks in the mills are divided into the following work sections: Grading Area, Loading Ramp, Sterilizer Area, Press Area, Oil Room, Boiler Area, and Workshop. Except for administrative staff, workers in the interviewed mills were male.

All of the mills interviewed indicated that workers have permanent status. From time to time, the mills outsource the cleaning of the premises and equipment to a labour contractor. Mill workers generally operate in two shifts to ensure immediate processing of FFBs. Workers are assigned to specific work sections in the mill based on their competencies and expertise. Many of the workers interviewed by the team have worked in their respective palm oil mills for more than 10 years.

In the visited mills, safety training and PPEs were provided to all workers and an OSH management system was documented. OSH Management system is often focused strongly on catastrophic risks such as fires. The mills visited and interviewed that were certified under ISPO and RSPO usually also held workplace certifications such as ISO or SA 8000 and the required SMK3 certificate⁶⁹. Most workers in the mills are also provided housing facilities and are enrolled in the social security system.

Refineries

Refineries are the link between producers and users of palm oil. In refineries, palm oil is processed into various products for use in manufacturing, transport, and industry. Downstream refinery operations may

⁶⁸ Large scale mills generally have at minimum one year contract with refineries. In many cases, the refineries are also part of the holding of their mother companies. In comparison, small and medium scale mills prefer short term contracts (3 months delivery contract) with refineries that allow them to shop and select buyers based on price offers, which is closer to an on the spot transaction. Uptake of sustainability standards is oftentimes weak among companies engaged in spot transactions (Gnych et al., 2015).

⁶⁹ Sistem Manajemen Keselamatan dan Kesehatan Kerja) or "SMK3"; Government Regulation No. 50 of 2012).

include refining of crude palm oil and processing olein and stearin into specialty fats, cooking oil, oleo-chemical, and biodiesel.

Refining and fractionation plants were first established in Indonesia in the 1980s. In 2011, the Indonesian government restructured its trade tariffs to encourage Indonesian producers to focus on adding value to crude palm oil commodities. This resulted in a significant increase in installed refining capacity (Hawkins et al, 2016).⁷⁰

In Indonesia, there are about 120 refineries with most of them owned by vertically integrated companies. Large integrated firms are better able to cope with the market imbalance and price fluctuations as they have their own palm oil production and use better technology to get higher yields.⁷¹ Since many of the refineries are vertically integrated, they have clearer visibility of their supply chains.

Since mid-2015, palm oil exporters have been levied US\$50 per MT of CPO and US\$30 for processed palm oil products. In 2016, downstream products accounted for about 75.6 per cent of total palm oil exports from Indonesia with India, China, Pakistan, and the European Union as the main markets.

Some refineries are moving towards a supply shed approach as a means of promoting better governance in their supply chains. The supply shed approach requires that all plantation and mill operators supplying a major supply node in a region, such as a refinery, work collaboratively with the facility operator to ensure that all palm oil entering the facility is compliant to standards or at least moving towards that goal. A coordinated supply shed approach allows collaborating firms to lower compliance costs through economies

of scale derived from joint policy commitments, shared assessment and monitoring, and combined supply chain audits. In principle, a refinery sourcing CPO from an upstream supply shed has the buying power to refuse oil from mills known to be problematic until such plantations can prove that they are compliant, creating market-based pressures for improvement throughout the supply shed. Once in place, the supply shed would make it easier for the participating suppliers to prove compliance with other market environmental or social demands.

Importers and end buyers

As most of the exported palm oil is exported in CPO form and that a large number of companies are vertically integrated, in a number of instances the exporting and importing actors may be the same. There are then a number of businesses operating in business to business that intervene in the further transformation of the oil and its integration in various types of products.

Palm oil, palm kernel oil, and their derivatives are used widely as ingredients in the manufacture of a wide range of products ranging from cosmetics, personal care, cleaning, food products and carburant. There is a very large number of actors that are extremely diverse both in terms of the market they evolved within, geographical foothold and industry. This means that no single actor has enough market power to greatly influence the value chain. The fact that palm oil derivatives are somewhat invisible to the end consumer also creates a disincentive for consumer goods manufacturers to engage in costly full traceability and engagement processes.

70 It is estimated that installed refining capacity in 2014 reached 45 million MT vis-à-vis annual production of CPO ranging from 30 to 35 million MT.

71 Commercial scale refineries in Asia (2,000 MT - 6,000 MT per day) should have controlled supply of about 600,000 MT of crude palm oil. Breaking even for a refinery business is often given as 60 per cent capacity utilization: for a company processing 4,000 MT CPO per day (1,040,000 MT annually), controlled supply of 60 per cent of requirement would entail a plantation with mature planted area of 110,000-120,000 hectares (Hawkins et al., 2016).

Supporting functions

The value chain benefits from a number of supporting functions that have more or less access to the various value chain actors depending on their role in the production process. Effective access to those functions is a driver for OSH improvement, as will be developed in the following section.

Government-led services involved in supporting the value chain include the Ministry of Trade, the Ministry of Agriculture (through both their regulatory role, but also their extension services at local level and more recently through the Indonesia Sustainable Palm Oil mandatory certification scheme), the Ministry of Manpower (on enforcement through labour inspectorates

but also through decentralized services for training, certification and professional advisory on risk assessment and control), the Ministry of Health (occupational health division), the social security system, and the Ministry of Environment and Forestry. Local authorities are the direct contact on the ground for many actors of the value chain.

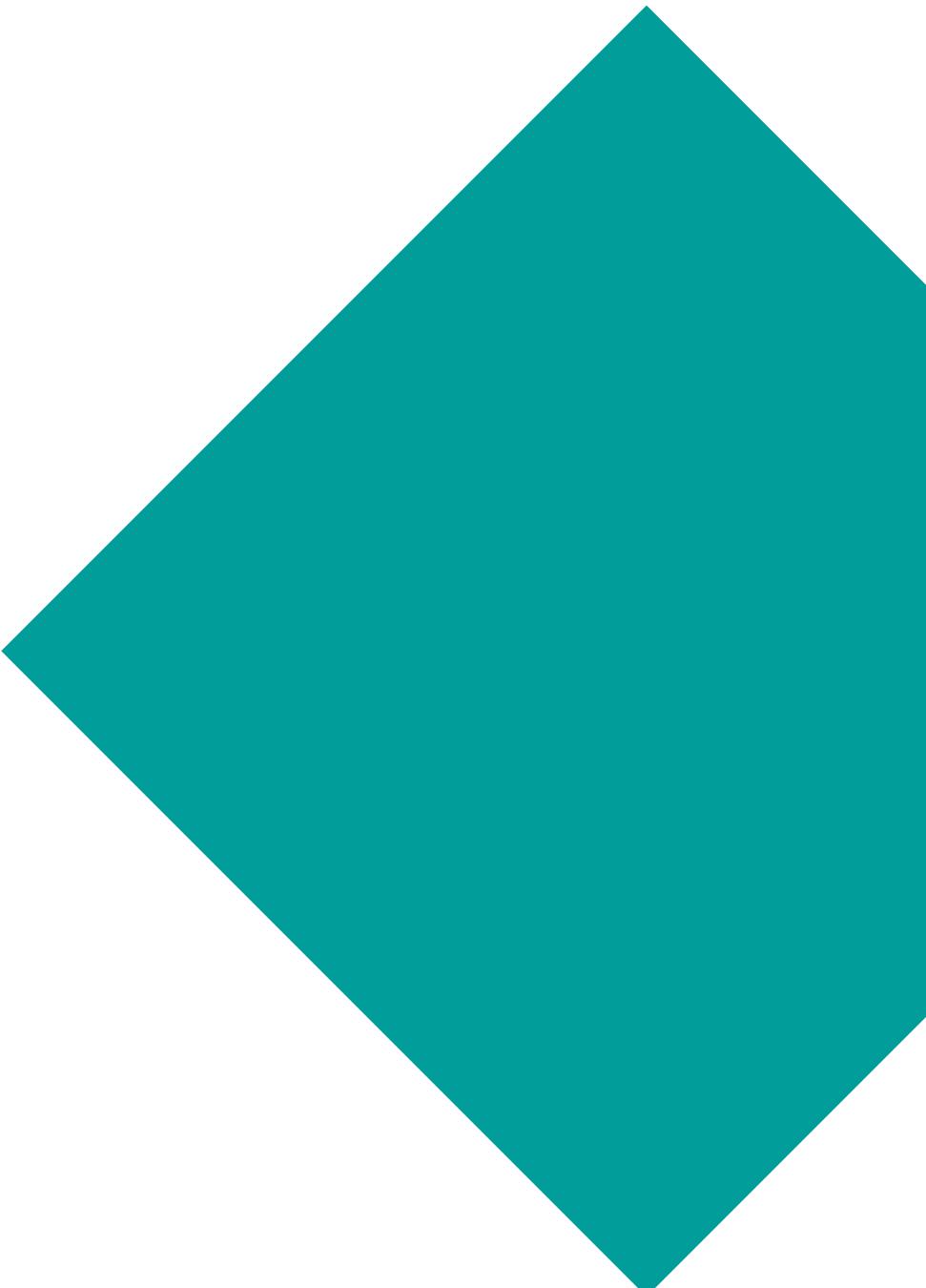
Private-sector services include input providers, auditing companies and a number of NGOs working with the Round Table on Sustainable Palm Oil (RSPO). Trade unions are also present, some of them part of larger national federation, as well as a dedicated association of palm oil producing companies (GAPKI) affiliated to the national federation of employers (APINDO).

2.140,774 families
3,362,540 workers



Occupational Safety and Health vulnerabilities in the palm oil value chain from Indonesia





2 | Drivers and constraints for OSH improvement

2.1. Supply chain risk management

Consumer and NGO pressure have led to calls for greater corporate transparency and accountability within global palm oil supply chains. To date, increasing numbers of consumer brands and palm oil companies especially aggregators (refiners and commodity traders) are taking extensive measures to mitigate regulatory, operational, and reputational risks that can threaten their market access and overall brand equity. Several public and private efforts, in both consumer and producer countries, have emerged to improve the governance of palm oil production, and reduce any negative social and environmental impacts.

The most prominent of these is the Roundtable for Sustainable Palm Oil (RSPO), a not-for-profit association formed in 2004 consisting of producers, processors, traders, consumer goods manufacturers, retailers, investors, and civil society organizations aimed at developing and implementing global standards for sustainable palm oil. In order to guarantee these standards, the RSPO introduced a certification program based on the Green Palm Trading Platform. The certification guarantees traceability of the mill or plantation, and the commitment of the producer to respect the RSPO guidance on implementing responsible palm oil production.⁷²

Palm oil and palm oil derivatives certified by RSPO can be purchased through four supply chain systems: Identity Preserved, Segregated, Mass Balance, and Book and Claim. The RSPO certification is delivered through a third party auditing system with announced audits, as in most private compliance initiatives (PCIs). Being certified provides access to a price premium for the companies who sell their CPO. The price premium though is not a set one (i.e. contrary to the practice for

⁷² Certified growers receive one Green Palm Certificate for each MT of oil produced. The certificates can then be sold to manufacturer and retailers, that can claim to support sustainable production of palm oil. Certified smallholders can also trade the certificates directly without intermediaries.

instance in fair trade certification) and depends on contract relationships. The main market for RSPO certified palm oil remains among companies in the European Union and the United States.

Certification, however, does not apply to the overall performance of an oil palm company but only specific plantation areas. Large and medium estates generally source not only from their own plantations but also from both tied and independent smallholders. Among the companies that the research team visited, only about 30 per cent to 60 per cent of the total hectarage from which they source their FFBs are currently certified. This means that it is possible that one company has some of its operations certified under sustainability principles and criteria while others do not. It also means for the companies that mostly own refineries and source at least some of their production from other mills and plantations that traceability is very difficult and certification of their entire supply chain is a challenge.

RSPO principles and criteria are presented in Annex 1. These principles are concentrated on three main pillars, namely workers, environment and profit of grower. Occupational health and environmental protection measures are mutually reinforcing. The reduction of environmental pollution and degradation may also improve the quality of the work environment. Conversely, measures that improve the work environment such as the adoption of integrated pest management, substitution of hazardous materials, and proper palm waste disposal would also improve the environmental performance of palm oil companies. As can be gleaned from Annex 1, risk prevention and control strategies especially for work hazards related to chemical use and pollution are safeguarded across several RSPO principles and criteria. The use of paraquat though is still allowed provided that spraying is done by trained personnel following “safe use” guidelines.

The Indonesian Sustainable Palm Oil (ISPO) standard, introduced in 2011 by the Government of Indonesia, is designed to ensure that all Indonesian oil palm growers, not just those exporting to foreign markets, conform to higher agricultural standards. The ISPO regulation was updated in March 2015 and is now known as the Indonesian Sustainable Palm Oil Certification System. As of April 2017, 12 per cent of the 11.9 million hectares of oil palm plantations in the country are ISPO certi-

fied. The ISPO certified plantations are owned by 266 companies. ISPO is a mandatory mechanism which is being progressively implemented in the whole country. The ISPO is a member of the RSPO. The Indonesian Palm Oil Association (GAPKI)⁷³ representing palm oil employers withdrew its membership in the RSPO in 2011 to fully support the policies of the ISPO.

The ISPO Certification System is a requirement established by the Government of Indonesia to improve the sustainability of the national palm oil industry in accordance with existing plantation industry regulations (over 200 regulations). The Assessment Standard of ISPO is based on the Revised Minister of Agriculture Regulation Number 11/Permentan/OT.140/3/2015 on the Certification System of the Indonesian Sustainable Palm Oil and its appendices.⁷⁴

The ISPO certification system is compulsory for: a) plantation companies conducting cultivation integrated with processing facilities; b) plantation companies conducting cultivation; and c) plantation companies processing estate crops. The implementation of ISPO is voluntary for: a) plasma (supported) smallholders; b) independent smallholders; and c) plantation companies producing palm oil for renewable energy that meet the requirements of the ISPO Principles and Criteria (P&C) for plantation companies conducting cultivation integrated with processing facilities.⁷⁵ ISPO will become compulsory for smallholders in 2022.

ISPO's objectives are operationalized in the following seven principles which are comprised of 40 criteria and 140 indicators:

- Principle 1. Compliance with legal business permits
- Principle 2. The implementation of Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP)
- Principle 3. Protecting primary forest and peat land
- Principle 4. Conducting and monitoring environmental management (e.g., protecting biodiversity, waste management, and fire prevention and mitigation)
- Principle 5. Showing responsibility towards employees
- Principle 6. Contributing to social and economic empowerment of society

⁷³ GAPKI has 589 members.

⁷⁴ See ISPO-RSPO, 2015.

⁷⁵ These plantations though have to fulfil the requirement and calculate their greenhouse gas emissions according to the EU RED Annex Five. See ISPO-RSPO, 2015, for more information.



■ Principle 7. Commitment to continuous improvements in sustainable palm oil production

Smallholders only need to comply with the first, second, fourth and seventh principles. The principles that address OSH are detailed in Annex 6.

ISPO has a modus operandi close to traditional certifications under private compliance initiatives in that in order to be certified, companies need to undergo assessments and regular audits through a third party auditing company. ISPO principles comprise national legislation under various ministries and the execution of each rule, including the right to enforce sanctions, lies within responsible line ministries, if and when non-compliance is encountered by the third party auditing company.

Labour provisions including occupational safety and health are covered in both the ISPO and RSPO certification standards as well as in other private compliance initiatives. Annex 7 presents a snapshot comparison

of the scope of coverage of selected internationally recognized palm oil sustainability certification systems in relation to labour provisions especially occupational safety and health.

It seems that the certification processes RSPO and ISPO contributed to impact OSH policies and practices at different stages of the value chain, and in particular in the following areas:

Safety policies and practices in mills

The certified palm oil mills visited had documented OSH risk management policies and plans in place, key risk factors had been identified and were signalled within the work place. A clear focus on fire safety was visible in all visited companies. A number of visited companies had health and safety certifications (SMK3, SA 8000, some had different ISO certifications). The below risk factors were the main focus of the management systems in place:

Figure 15. Main hazards covered in OSH Management System

Type	Factor	Description
Safety	Fire safety	Almost all the processes in the palm oil mill involve high temperatures. From the discussions with mills visited by the team, fire is considered the major hazard in a palm oil mill. Fire safety is one of the main safety aspects covered by OSH committees.
Biological	Heat stress/Heat exhaustion	Four of the work sections, namely: sterilization, press station, oil room and boiler operate at high temperatures. Workers assigned to these work stations can potentially suffer from heat exhaustion. Proper ventilation was identified to mitigate risks of heat stress among workers.
Physical	Noise	Mill workers are exposed to loud noise for 6 to 7 hours per day which can result in hearing impairment. Areas with high noise levels (most likely above 85 decibels) are the boiler station, engine room, and sterilization units. PPE use was identified as control.
Physical	Load handling	Lifting, repetitive work and posture injuries can occur as a result of lifting and carrying heavy FFBs. Repetitive tasks can lead to musculoskeletal injuries.
Mechanic	Machine handling	Among the different types of sterilizers, horizontal sterilizers pose the highest risk to workers. The use of cages, for instance, requires more physical efforts in cooking the FFB. ⁷⁶ Because of their technical weakness, ⁷⁷ alternatives are available on the market. Vertical FFB sterilizers basically resemble the FFB horizontal sterilizer in shape except that it is positioned vertically. The use of vertical sterilizer technology poses lower risks to workers. ⁷⁸ The continuous sterilizer poses the least hazards since it requires the least human contact with the machine. ⁷⁹

Type	Factor	Description
Physical/ Chemical	Smell	Sludge arising from the wastewater treatment plant can be contaminated with hazardous chemicals or have a high pH and, therefore, requires careful disposal. Solid wastes will need to be disposed of regularly to avoid odour, litter, fly and rodent problems.
Biological/ Chemical	Dust, fumes, and aerosols	Workers may inhale or ingest the dust, fumes, and aerosols exposing them to biological and chemical hazards, which present a risk of occupational lung disease. When combined with high levels of humidity, skin irritation or allergic reactions may occur. In oil extraction areas, adequate air circulation to reduce the concentration of solvents is needed.
Physical / workplace organization	Slips and falls	Slippery floors and surfaces caused by oil and fat deposits present a high risk of slips, trips and falls where spills have not been cleared up or effective cleaning has not taken place.

Improved environmental and safety and health practices in plantations

Plantations with their own mills have, to some extent, reduced their use of chemical fertilizer by using waste (e.g., empty fruit bunches) from palm oil extraction/milling to fertilize their plantations. The waste from palm oil mills contains high levels of minerals and organic carbon and does not contain any toxins. Based on experiences of palm oil estate plantations that the team interviewed, the continuous application of organic fertilizer made from palm oil extraction waste improved soil characteristics particularly those of sandy soils. The reduction in chemical fertilizers allowed plantations to make some savings while reducing environmental and occupational safety risks.

Independent smallholders though cannot readily access empty fruit bunches due to distance between

their farms and the mills. Likewise, estate owned mills utilize all their waste for their own plantations.

In certified plantations, the research team observed documented OSH management policies and plans, the presence of OSH committees and dedicated safety and health focal points. Plantations had their own medical facilities with trained health professionals who administered annual medical checks. Those are also documented in the various auditing reports that some major plantation and milling companies make public. In those, major groups, collect and print data on safety, mostly Lost time Accidents and number of incidents and accidents.

The below risk factors were identified by smallholder, workers and management interviewed and confirm existing OSH risk assessment.⁸⁰

- 76 In order to move the cages, prime movers are used to push and pull out from the horizontal sterilizer.
- 77 The conventional horizontal FFB sterilizer is also known to be inherently inefficient in air removal from the stacks of fruit bunches loaded in cages inside the sterilizer. Horizontal FFB sterilizers require high steam consumption of 360 to 400 kg per ton FFB. Handling the FFB and steamed fruit bunches (SFB) using cages, capstans, winches and overhead lifting cranes is also the source of a host of operational inefficiencies such as high oil losses, more frequent downtimes leading to higher maintenance costs and exposure of workers to higher risk of operational hazards.
- 78 It entails less direct manual handling by workers of the pressurized vessel. The system uses conveyors to transfer fruit from the loading ramp to the sterilizer thus already solving some ergonomic issues faced by workers including pulling stuck FFB from the gates. It reduces risks of workers from being hit or struck by vehicles, falling objects (crane lifting cages), and flying objects (wire rope to pulled cages). On the other hand, workers who work at vertical sterilizer are exposed to the physical hazard of working at high heights and possibility of falling. The stairs to the platform can be narrow at some points and oil spills or unrolled wire raise the risk. Aside from ensuring that workers are provided with the proper protective footwear/safety boots and stair guards, good housekeeping must be observed at all times.
- 79 The continuous sterilizer itself is not a pressure vessel. It injects low pressure steam into the rectangular cabin. However, there are still some potential risks for workers to accidentally come into contact with the steam pipe when they need to correct a stuck FFB in the sterilizer chute.
- 80 In particular see: ILO. 2004.

Figure 16. Main hazards identified in OSH Management systems (Plantations and Smallholder Farms)

Nature of risk	Risk factor	Description
Chemical	Pesticide, herbicide and fertilizer application	<p>Exposure lies in the following activities: land preparation (before planting, but also when parcels need to be cleared when the palm trees are too old and need replanting), fertilizing, parcel maintenance (herbicides, fungicides, insecticides). Climatic factors (characterized by high levels of heat and humidity) further reinforce risk factors and difficulties for effective protection (i.e. disincentives to wear PPEs not well adapted to the tropical context).</p> <p>Generally, inorganic synthetic fertilizers are used. Although an increasing number of large estates complement these with pruned fronds and wastes from palm oil milling, this does not seem mainstreamed in smallholdings. The nutrient requirements of oil palm and frequency of fertilizer application vary widely, depending on genetic potential of the planting material used, and numerous environmental factors such as tree spacing, palm age, soil fertility, groundcover conditions, and climate. The dominant fertilizers used are urea, triple superphosphate, rock phosphates, ammonium sulfate (AS, 21% N and 24% S); potassium chloride, magnesium sulfate, and blended NPK, NP, and PK fertilizers. Those fertilizers are classified safe provided proper dosage, handling, and storage are observed.</p> <p>Pesticides and herbicides are commonly used. Paraquat, a hazardous chemical, is still being used in many places although some have shifted to glyphosate.</p>
Ergonomic	Posture during harvest	<p>Palm harvesters are exposed to multiple ergonomics risk factors of developing musculoskeletal disorder (MSD). The body areas potentially affected during harvesting are the lower back, upper back, hands and arms. Harvesting of FFB is carried out using a long pole with either a chisel like tool (dodos) or a sickle (egrek) to cut the bunches which can weigh more than 20 kilograms. Push-cutting technique with a "dodos" is employed when harvesting FFB from palms less than 3 metres high. The harvester shifts to a pull cutting technique with an egrek when palms are taller than 3 metres. Two main tasks are performed using the long pole with the egrek, namely: (i) detaching of the FFB by cutting the exposed bunch stalk; and (ii) pruning by cutting the oil palm frond at the base of the trunk. When a palm tree is in the early stage of harvesting, the height of the FFB is about the same as the average worker, thus harvesting is relatively easy. As the oil palm trees grow, the height at which the FFBs are located increases correspondingly. Likewise, harvesting associated risks increase and task increasingly requires good technique, skills, and strength. Compared to push-cutting, the pull-cutting technique requires more muscular force and technical skill to stand and drive a long steel-pole and then to 'shove in' the egrek to the targeted FFB's stalk, which is hidden in a narrow space among the base of the palm leaves. The targeted FFB could be located at the canopy of the tree as high as 20 metres above the ground, and the weight of the FFB could be more than 20 kg. Therefore, extensions of the neck and back, and flexions of the shoulder and elbow are always in extreme positions. The range of extension is linearly increased in accordance to the height of the FFB. The FFB harvester is thus required to continuously tilt his head upward as he prunes or cuts the FFB stalks while lifting and balancing the cutting tool to the appropriate height and position of the targeted FFB. Therefore, his neck, trunk and shoulders and upper limbs are repeatedly extended. With the increase in tree height, the harvesting pole is lengthened by manually attaching more poles and tying them together to reach the desired fruit stalks and tree fronds.</p>

Nature of risk	Risk factor	Description
	Heavy loads	<p>Collectors experience postural stress, particularly in the lower back and shoulders, during stooping and overreaching to collect loose fruits. An FFB collector picks up the detached FFB on the ground using either a hook or metal pole to pierce and load them onto a wheelbarrow. FFB collector then collects the loose fruits on the ground. If the wheelbarrow is left further from the fruit being collected, the FFB will have to be carried over a greater distance. In the early harvests, an FFB can weigh an average of around 5 kg. However, as the trees become older, the size and weight of FFB increase, with FFB of an oil palm tree older than 15 years old weighing over 30 kg.</p> <p>The task of lifting and loading FFB from the ground using either a hook or metal pole require the FFB collector to bend forward and with a twisting posture during lifting. This posture becomes more severe when lifting heavier FFBs and when the collector is trying to minimize the likelihood of fruit detaching, scattering or getting damaged as it's loaded into wheelbarrows. A collector pushing the wheelbarrow needs to balance its weight while at the same time lifting and pushing the load towards the desired direction. This can lead to falls, especially when the wheelbarrow is full. Balancing the heavy load while pushing also strains the muscles of the lower back, shoulder and forearms. In poorly maintained plantations and smallholdings, greater exertion may be required to push the wheelbarrow along an uneven landscape or through the overgrowth of surface vegetation.</p>
Electric	Electrocution during harvest	<p>The risk of harvester being electrocuted was frequently reported by smallholders and by both workers and companies. Some companies even developed specific training material to mitigate this risk. When harvester work in an area where trees are very high, they need to handle dodos or egrets that are particularly heavy. This means that they have a tendency not to drop the tool in between trees, but rather keep it up and move with it towards the next tree. In this process, the tool can accidentally make contact with electrical wires and, when it does, the harvester is subsequently electrocuted.</p>
Biological	Snake bite and pests	<p>Oil palms attract rats, which feed on the fruit, and the rats in turn attract snakes. An article in Mongabay (Rochmyaningsih, 2016), mentioned incidences of deaths and injuries due to snakebites, particularly the Sumatran cobra (<i>Naja sumatrana</i>), also known as the equatorial spitting cobra. This slim, medium-sized serpent can permanently blind its enemy by spitting venom in its eyes. Indonesia ranks No. 2 in snakebites globally, with more than 11,000 deaths per year, according to the International Society of Toxicology. Today, some of the plantations use barn owls as a way of controlling the rat population and, consequently, the number of snakes.</p>
Environmental	Heat	<p>Risk of sunburn is low given that most work is carried out in shade. However, sweating leads to the loss of body fluids, and heavy work in high temperatures means workers need to regularly replace fluids. Risk of dehydration is further magnified when workers do not have access to potable water while at their work sites.</p>
Safety	Road accidents	<p>Extended distances between home and work sites may pose risks. Poorly maintained roads and little use of protective equipment, aggravated by the presence of dust on motor vehicles and heavy rain, can contribute to accidents.</p>
Safety	Fire safety	<p>The use of fire and slash and burn techniques in land preparation harm both the environment and people. In addition to fatal injuries, workers and their families as well as nearby communities are vulnerable to respiratory illnesses due to air pollution brought about by forest fires and haze. Many large companies in the palm oil and timber industries in Indonesia have signed zero deforestation pledges. The key challenge is for these big companies to push their commitment across their supply chains. Additionally, the heavy use of chemicals and fire for land clearing when old trees need to be replanted seems to still be the standard practice.</p>

Permanent workers of the visited certified plantations understood the main OSH risk factors they were exposed to, as well as their rights in terms of protection, especially personal protective equipment (PPE). This last aspect was particularly enhanced when workers were also unionized. Still, workers did mention repeatedly that PPEs were not comfortable or well suited for the tasks they had to perform. Workers' certification and training and PPEs were the primary means of control within the OSH management system rather than functional upgrading. This probably relates to the perception of companies as OSH being primarily a compliance concern rather than an investment which can yield economic returns.

The generalization of the above-mentioned impacts is constrained by the following factors:

Current scope of coverage of certification systems

The RSPO certification is voluntary by nature and particularly demanded by buyers who wish to mitigate image or brand risks through compliance in their supply chain. This means that the overall market access for Indonesian exporters is not subject to RSPO certification and consequently it is likely that not all companies will become certified.

The ISPO certification is mandatory, and aimed at addressing the limitations of voluntary standards to level the playing field in the palm oil industry. Still, its implementation is gradual and has experienced a number of delays, which explains why only a small part of the industry is certified thus far.

Both schemes encounter difficulties reaching the lowest levels of the value chain. Indeed, because they are closer to buyers in the value chain, easily traceable and already evolving in the formal economy, a higher proportion of mills are certified than growers. At the bottom end lie smallholders, especially independent smallholders, who have remained largely outside of the process for both the RSPO and ISPO certification. This is largely explained by a combination of: i) low traceability and identification system of smallholders, especially independent ones that are seldom organized in cooperatives or associations, ii) low economic incentives and awareness of smallholders about certification, iii) the informal nature and low capital operating structure of smallholders for whom certification would require a sizeable investment.

There is a significant lack of capacity within the broader supply base to meet sustainability standards particularly social and workplace considerations. This raises concerns that the drive towards sustainability will marginalize and exclude smallholders. Smallholder certification demands a set of financial, managerial and agronomic capacities that smallholders often lack. Smallholders are difficult to regulate since they are typically heterogeneous, geographically scattered, and lack cohesive representation. Based on RSPO guidelines, mills and nucleus plantations are responsible for facilitating the certification of their supported smallholders. Key constraints faced by mills in facilitating the certification of scheme smallholders include the following:

- Absence of or problems with land titles
- Willingness of smallholders to participate given that premiums are oftentimes very low vis-à-vis the investments
- Weak organizations
- Lack of capacity among mills to finance the certification including the necessary facilities and resources
- Lack of capacity among mills to provide training to smallholders
- Less time and energy is allocated for 'non-core' tasks, which safety and health management is sometimes perceived to be.

Among independent smallholders, key constraints to achieving certification are the following:

- Lack of horizontal collaboration / collective organization of smallholders
- Dominance of spot transactions which means that smallholders are not affiliated to a particular supply chain which is a pre-requisite for smallholder certification
- Lack of access to financial services for upgrading investments
- Limited access to training and technical assistance.

Certification structure and compliance checks

Compliance with the principles, criteria, and indicators is checked through independent monitoring by an external auditing organization accredited by the RSPO or ISPO. After successful certification, the certificate

is valid for five years and annual audits are performed to verify ongoing criteria compliance. Most of the verifications are based on checking documented procedures rather than actual observations. Audits are also announced in advance and mostly concentrated in the mills, which is largely due to the challenges of performing comprehensive review of plantation estates that are spread out geographically.

In the case of RSPO, the objective is mostly to ensure there is a management system in place for the various aspects of the certification rather than performing a comprehensive compliance check over the entire estate. Conscious of the limitations of some auditing practices, RSPO formed the Labour Rights Task Force (LTF) early this year.⁸¹

In the case of ISPO, as highlighted earlier, non-compliance cases need to be reviewed by the relevant

authorities depending on each concerned line ministry. This means that mechanisms need to be in place to ensure that: i) Non-compliance issues effectively get raised or transmitted to the relative authorities and ii) Coordination among concerned line ministries is strong, otherwise it may hamper ISPO's speed of action. The ISPO commission lacks authority to enforce sanctions for non-compliance with ISPO standard. Sanctioning (i.e., lowering the Plantation Grade and revocation of the Plantation's Permit) belongs to the responsibility of local governments (Governor or Bupati/Walikota). Issues regarding enforcement are important constraints given the fact that ISPO is not a market-based certification and consequently there are no direct economic incentives for compliance.

⁸¹ The task force is led by Verite SEA and has a balanced representation of all stakeholders, including individuals who have strong technical knowledge and experience with labour issues, which will help to drive and guide the task force to meet its objectives. Main tasks of the LTF consist of the following:

- Assess growers', millers' and smallholders' current level of compliance to labour standards or effectiveness of implementation towards determining priority challenges and gaps, and providing input to the P&C review process
- Develop a labour standards and protocols guidance document for reference in the upcoming P&C review
- Develop a labour implementation guidance document
- Develop a comprehensive learning agenda and relevant training courses for all relevant stakeholders including auditors, certification bodies and growers
- Ensure consistency with the Complaints System in relation to development of standards and procedures for investigation and response to ensure worker protection, anonymity, privacy and non-reprisal as well as make relevant recommendations as and when requested.
- Formulate recommendations on various issues, e.g., worker representation, alternative livelihoods
- A key part of the audit reform is the greater involvement of Accreditation Services International (ASI) in monitoring auditors and surveillance of findings. ASI, which is headquartered in Germany, will also create a platform for third parties to submit any complaints against the auditors and improve training for the auditors with a focus on tackling labour issues.
- <http://www.rspo.org/nws-and-events/announcements/formation-of-the-rspo-labour-rights-task-force-ltf>

2.2. Supporting functions and rules for OSH

Actors interviewed, and in particular at the industrialization stages, mentioned the legal framework and the supporting functions for OSH as driving the adoption of safety and health practices. In accor-

dance with the topics reported as most influential on OSH outcomes, the following themes are developed below: national OSH system (legislation, data, dialogue, enforcement mechanisms, occupational health and other services), social security and sub-contracting regulation.

Occupational Safety and Health system

Indonesia ratified a total of 20 ILO Conventions (out of which 19 are in force) including a number of ILO instruments related to OSH, as summarized below:

Convention	Date	Status
C045 - Underground Work (Women) Convention, 1935 (No. 45)	12 Jun 1950	In Force
C120 - Hygiene (Commerce and Offices) Convention, 1964 (No. 120)	13 Jun 1969	In Force
C187 - Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)	31 Aug 2015	In Force
C019 - Equality of Treatment (Accident Compensation) Convention, 1925 (No. 19)	12 Jun 1950	In Force
C081 - Labour Inspection Convention, 1947 (No. 81)	29 Jan 2004	In Force

The Work Safety Act (Law No. 1, 1970) sets out the general framework for the implementation of occupational safety and health in Indonesia. Annex 2 presents a summary of the various regulations on OSH. In 2012, the implementation regulation for Article 87 (2) of the Indonesian Labour Law was issued which called for the Application of Management System for Work Safety and Health (Sistim Manajemen Keselamatan dan Kesehatan Kerja) or “SMK3”; Government Regulation No. 50 of 2012). This regulation requires companies that employ 100 or more individuals and those with activities that pose potential workplace risks and for the environment to establish an occupational safety and health management system.⁸² Based on reviews of available annual and sustainable reports of palm oil companies, most of the large companies have al-

ready received SMK3 certification. Vertical integration to some extent was correlated to the existence of OSH management systems at the pre-exporting stages (mill, refinery) with some positive spill over to the production stage (plantation) as they were integrated in one single company.

Available data on OSH is mostly limited to national aggregated indicators and there is no specific set of indicators available for the palm oil industry or its different production stages on outcomes, capacities and activities.⁸³ The following outcome data on accidents is made available by the social security system and reflects subsequently accidents for which compensation can be claimed in companies that are mandatorily affiliated to BPJS.

⁸² The Ministry of Manpower has appointed TÜV Rheinland Indonesia to do audit the Health and Safety Management System certification (SMK 3).

⁸³ As per the *Resolution concerning statistics of occupational injuries (resulting from occupational accidents)*, adopted by the Sixteenth International Conference of Labour Statisticians in 1998.

Figure 17. Workplace accidents (2005-2011)

Year	Accidents	Compensation (IDR billion)
2005	99,023	219.2
2006	90,071	196.5
2007	83,714	219.8
2008	93,823	296.4
2009	96,697	328.5
2010	98,711	401.2
2011	99,491	504.0

Source: Jamstostek annual report 2011.

In terms of outcome data, little is available on occupational diseases, and it is not disaggregated by sectors of activity. An environmental burden of diseases (WHO, 2009), is available for Indonesia at the national level, but it does not specifically indicate which are work-related.

While the responsibility for the implementation of the OSH law lies with the Ministry of Manpower and its affiliated agencies at local, regional and central levels, a number of important frameworks for operational OSH management are under other line ministries. The guidelines for chemical and machine safety, for example, are under the respective sector ministries, mainly the Ministry of Agriculture and the Ministry of Industry. Those Ministries then are in charge of enforcement through their local and province level services. The research team did not come across coordination mechanisms among those services at local level. At national level, the national commission on chemicals provides a coordination mechanism. The fact that the OSH mandate is by nature scattered among ministries and largely divided by sectors creates a de facto limitation for its effective application. This is especially problematic in a supply chain approach, which requires coordinated efforts to ensure that OSH issues are tackled at the different stages of the chain and within its distinct sectors (i.e. agriculture, industry).

The Ministry of Manpower has a Directorate General on Labour Inspection and OSH, which includes five directions including two on OSH, one in charge of OSH Development, and the other in charge of OSH Inspection. Labour inspection is under the jurisdiction of provincial and district governmental units.

The central government is responsible for the development of laws, regulations, and procedures to assist the provincial and local district government units in the implementation of labour inspection and other related functions. The effectiveness of the labour inspection in Indonesia is limited by resource constraints. As per the 2016 report from the Asian Development Bank (Allen, 2016), current labour inspection services only reach between 200,000 and 250,000 firms per year. This leaves a large gap in provision of services, with it being estimated that less than 1 per cent of enterprises are serviced by labour inspectors each year. As of 2016, there were only about 1,953 labour inspectors and 383 civil service investigators. In the palm oil sector, the inspectors are generally only able to cover large mills and refineries which are easier to inspect and monitor vis-à-vis plantations which are almost always located in remote places and with worksites covered by vast areas of land. About 200 of the 500 regencies/municipalities where oil palm plantations are located do not have labour inspectors.

The National Occupational Safety and Health Council (DK3N) is a tripartite body to provide recommendations and advice to the Government at the national level. Its members consist of main OSH organizations, including the employer's and worker's representatives. Its duties are to collect and analyse OSH data at the national and provincial level, help Ministry of Manpower to supervise the provincial OSH councils, conduct research, and provide training and education programs.

Social partners represented by APINDO and SPSI are members of the DK3N and developed services

to their members such as training that include the promotion of OSH.⁸⁴ Still, social dialogue on occupational safety and health within the palm oil value chain could be reinforced, as national-level mechanisms may not have the resources to reach out to specific sectors. The various interviews, focus groups and consultations conducted as part of this research demonstrated that the relationships between the various actors of the value chain and their market environment tend to be polarized. Antagonism exists as a result of sustained pressure from consumer countries on the industry as a whole, regardless of progress achieved. This environment creates a barrier for constructive social dialogue and for the improvement of occupational safety and health which requires collaboration between the different parties involved. This collaboration can be supported by collective bargaining agreements such as a number of industry-related players already have in place.

The Ministry of Manpower delivers trainings and workers' certification on OSH. The topics are largely industry non-specific.⁸⁵ It is expected that companies customize the OSH training according to their specific activities. In many cases though, companies particularly small enterprises do not have the capacity to develop their own modules. Outreach of government extension services is very limited due to manpower and resource constraints.

The Ministry of Manpower also has a network on the ground of OSH centres that have experts providing a range of services to companies who request it, including risk assessment services with advanced equipment, laboratory services, training of OSH focal points and OH services professionals. Those centres are equipped in appropriate machines and experts,

though their focus is mostly on industrial risks, which is also where requests tend to come from.

The Ministry of Health Occupational Health and Sport Directorate developed a strategy for outreach of occupational health services in rural areas and for workers that may be particularly vulnerable (such as women or migrant workers) and who may not be in a position to benefit from company-based OH services, which is the prevalent model. Its reach is still limited due to resource constraints. An award system is also in place for companies performing particularly well in terms of prevention.

Likewise, the number of OSH experts is very limited and their current outreach is generally confined to industrial factories in urban areas. It also seems that implementation of OSH initiatives is undertaken by various agencies and is often fragmented. The remote location of many palm oil smallholdings, estates and mills is an additional challenge for outreach of support services as well as OSH inspection services.

Social Security

The Law no. 40 of 2004 is the main framework for the Indonesian social security system. There are five contributory branches of social security that are mandatory for all workers,⁸⁶ namely:

- Occupational accidents and diseases, with an employer contribution ranging between 0.24 and 1.7 per cent
- Death benefit, with an employer contribution of 0.3 per cent
- Provident fund, with an employer contribution of 3.7 per cent and an employee contribution of 2 per cent

⁸⁴ APINDO (*Employers' Association of Indonesia*). Established in 1952, APINDO has been the member of DK3N and has incorporated safety and health and environmental protection issues in its policy statement. It also organizes seminars and training courses. SPSI (*Confederation of the All Indonesian Workers Union*). It is comprised of 18 labour union federations. SPSI has offices in 30 provinces (regional executive boards) and 316 cities and districts. It has also representative offices in 12,000 companies with total members approximately 5 million across Indonesia. In each province, SPSI has its own safety and health board which has a responsibility to work together with the companies in developing OSH.

⁸⁵ OSH training for medical doctor

- OSH training for nurses
- OSH training for OSH committee
- OSH training on chemical handling
- OSH training on food handling
- Training of First Aid at Workplace
- Training on emergency response

⁸⁶ Social Security Reform in Indonesia. Presentation by Mr. Agus Susanto, President Director of BPJS Ketenagakerjaan, September 2016.

- Old age pension scheme, with an employer contribution of 2 per cent and an employee contribution of 1 per cent
- Health insurance, with an employer contribution of 4 per cent and an employee contribution of 1 per cent

As per law 24 of 2011, the social security administering bodies are:

1. BPJS Kesehatan (BPJS Health) in charge of the health insurance scheme. The country adopted a universal health coverage policy which unified the contributory and non-contributory schemes, guaranteeing access to health care to all citizens. The affiliation of all citizens to the health scheme is still ongoing.⁸⁷
2. BPJS Ketenagakerjaan (BPJS Employment) in charge of the other schemes. The scheme had about 20 million affiliates in 2016. It also has a mandate to invest in prevention.

Compliance across the range of social security programs is still a challenge. In 2014, 5.2 per cent of employers of permanent workers nationwide were active members of these schemes, while 38.0 per cent of regular employees were active members, and only 1.0 per cent of other income earners were active members. This indicates that there are high levels of contribution evasion. By 2019 the government intends to have 62.4 million employees

and 3.5 million informal workers participating in employment related social security programs. This would require a considerable increase in compliance (Allen, 2016).

Maternity and sickness are the employer's liability in Indonesia and are not covered through the social security system. This makes the effective access to this right largely contingent on formal long-term employment relationships and on employers' efforts. In turn, it creates an incentive for vulnerable workers to come into work sick or hide their pregnancy to remain in employment, which puts them at greater risk of exposure to hazards.⁸⁸ Palm oil companies visited by the team indicated compliance to the social security program particularly for their permanent workers (for temporary workers, the practice differed from one company to another). The fact that maternity leave and relative benefits are the employer's liability may create a disincentive to offer women permanent positions.

Permanent employees of palm oil companies from refineries to plantations are entitled to the above-mentioned schemes. A number of companies provide additional benefits, in particular free medical care at the plantation's medical facilities (whether occupational or not) and pension fund entitlements. For other types of workers it seems that affiliation of the social security system be highly contingent on contractual status and smallholders mostly rely on the subsidized health scheme.⁸⁹

⁸⁷ A recent reform of the health insurance system impacted plantation workers. Under the previous regime, companies were not obliged to contribute to the health insurance system if they could provide evidence that they were covering their workers through a private insurance scheme. In this framework, a number of companies financed high-quality private health insurance for their permanent workers. The package often included a wide spectrum of services in public and private facilities as well as referral including outside the borders of Indonesia. The new health insurance system aims at unifying a regime that will ensure greater equity of care among workers and aims at progressively extending care to workers in the informal economy. Some plantation workers feel disadvantaged by this reform as the private insurance schemes they had before covered a wider spectrum of care services.

⁸⁸ Sickness impacts one's ability to concentrate and creates higher probability of accidents. If pregnancy is hidden, the appropriate prevention measures cannot be taken.

⁸⁹ In some of the companies visited, all casual workers were registered to BPJS and thus were able to enjoy social security benefits. It was reported that the registration process was easy and fast, as the administering institution has a special desk for companies and seems proactive in the registration process. This practice was not necessarily replicated from one company to the other, without a clear indication of why, though it seems the sanction system for non-compliance has little reach in rural areas.

According to Government Regulation No. 86 of 2013 (see Alizia and Limbong, 2015) on the Procedure for Imposing Administrative Fines on Employers, excluding State Officials, Certain Others, and Employers, Workers, and Recipients of Social Security, sanctions may be imposed on employers or individual for not: (i) registering themselves or their employees as participants with BPJS according to the security programs which the employees are registered in; and (ii) not providing their and their family members' personal data to BPJS correctly. The sanctions for the above violations are the following:

- a. Written warnings: given twice with an interval of ten days between each written warning.
- b. Fines: imposed thirty days at the most after the employer receives the second warning letter.
- c. Sanctions involving non-receipt of certain public services: if the employer fails to pay the administrative fine, BPJS Health or Manpower will impose a No-License Sanction and ask the relevant government department(s) not to provide public services for the following documents:
 - Business and other licenses required to participate in government procurement for employers
 - Driving Licenses and land certificates etc. for individuals.

Outsourcing

Manpower Act No. 13 of 2003 contains provisions relative to sub-contracting. According to this law:

- Short-term contracts as well as sub-contracts (outsourcing) cannot be provided for work that is permanent in nature;
- Short-term work agreements can only be made for an initial period of two years with an option to extend for an additional 12 months.

As per the regulation, outsourced work must meet the following criteria:

- Conducted separately from the user company's core business in terms of management and activities;
- Conducted under a direct or indirect order from the user company;
- Categorized as business support activities (according to the flow chart issued by the relevant business sector association);
- Does not have a direct impact on the production process if the business activity would be stopped.

In essence, manpower outsourcing is limited to support services which are separate from the main work of the user company and they may not directly affect

the production process of the user. Support services comprise: a) cleaning services; b) catering for employees; c) security personnel; d) support services in the mining and oil sectors; and e) employee transportation services.⁹⁰

It is important for manpower agencies to have a due diligence function to ensure that work being outsourced is consistent with the provisions of the law and not aimed at perpetuating casual work. An over reliance on outsourcing tends to expose the labour force to insecure and hazardous work conditions as well as weakens incentives for on-the-job training and skills formation. This is evidenced both by the interviews conducted along the value chain in the framework of this study, but also by the existing scientific literature on OSH and sub-contracting.⁹¹

The research team observed that in some municipalities the labour office was particularly involved and had relationships with surrounding palm oil companies (plantations and mills). This is also where the team encountered companies that fully integrated temporary workers in their OSH management system and granted them social security benefits. Though anecdotal, this example underlines that when Government services are present and ready to act as a support function, it creates less opportunities for misunderstanding legal requirements.

90 Regulation No. 19 also requires the type of work to be outsourced by the user to be reported and registered to the manpower agency within the municipality or regency in which the work to be outsourced will be conducted. If the registration is deemed proper by the relevant authority, a receipt for registration will be issued within 7 days.

Regulation No. 19 requires outsourcing companies to:

- be established as a limited liability company (a Perseroan Terbatas or PT);
- hold a company registration certificate (TDP);
- hold a proper business license;
- have proper receipts for mandatory employment reports;
- hold an operating license;
- have a permanent office and address; and
- have a taxpayer registration number.

91 While OSH hazards are intrinsic to all workplaces, whether part of GSCs or not, there are certain conditions that increase OSH risks for workplaces connected to GSCs (Walters and James, 2010):

- The transfer of work by relatively larger enterprises to smaller ones that have less sophisticated and inadequately resourced health and safety management systems and lower levels of OSH technical expertise;
- A shift of work to workplaces without adequate worker representation mechanisms through which unsatisfactory working conditions can be challenged;
- The introduction of more fragmented systems of health and safety management in which subcontracting results in personnel from two or more organizations working alongside each other.

Cost pressures on suppliers that reduce their capacity to make health and safety-related investments and prompt them to cut labour costs through intensified work regimes, changing terms and conditions of employment and greater reliance on 'non-standard' forms of employment, including the use of employment agencies (Walters and James, 2010).

Remuneration

The minimum wage in Indonesia is determined at provincial and district/city levels. The tripartite wage council conducts an annual survey to determine the wage that is needed for a single worker to obtain a “minimum decent standard of living” or the “kebutuhan hidup layak” (KHL). The governor or mayor then sets the provincial minimum wage annually based on the recommendations from the wage council. Ideally, the minimum wage should be equivalent to the KHL, however, over time a gap between the KHL assessment and the minimum wage emerged. Reasons for the gap according to the 2016 report from the Asian Development Bank (Allen, 2016) include the following:

- Failure of the wage council to reach a consensus on the KHL;
- Political lobbying from employers and workers to influence the decision on the setting of the minimum wage.

In 2015, a new regulation on wage settings was introduced, which specifies that the annual minimum wage adjustment is to be equivalent to the national inflation rate plus national GDP growth rate.

So far the discussions on wages has focused on wage composition. Still, for many industries wages are composed of a fixed part and an important variable part. This formula is used for workers involved at the growing stage of the palm oil value chain, but also in a large number of other industries. It is often the case in many countries that piece rate pay or a sizeable variable component of the pay is based on deliverable targets. This is considered to be a motivator for low-pay, low-skills jobs where other motivational factors are limited. The possible negative impact of this approach on the health and safety of workers has

been largely documented in a number of industries, and it is congruent with the report from the interviews conducted as part of this study. Indeed, piece rate or variable pay based on production targets can create an economic incentive that is not aligned with safe working practices (i.e. long working hours, disregard for safety procedures that would be time consuming, involvement of family members or informal workers to increase volumes, etc.). The research team came across a company that had in place a different system to calculate variable salary, which was rewarding quality rather than quantity. Although also anecdotal, this example shows that some companies developed remuneration mechanisms more likely to allow for the development of safety practices as a priority for both workers and management.

Jurisdictional Approach

There is a growing acknowledgement among private sector actors and NGOs that sustainability commitments can be achieved through a jurisdictional approach which implies concerted initiatives among public and private stakeholders. Provincial-level regulations are emerging in support of market-based mechanisms for sustainability, such as the commitment by South Sumatra's Provincial Government to turn South Sumatra into a sustainable province⁹² and the Provincial Government of Central Kalimantan's which issued a regulation acknowledging the concept of High Concentration Values (HCV) and allowing palm oil companies to retain and protect areas within their concessions (Irawan et al. 2014).

Jurisdictional programs are currently being implemented primarily to address deforestation. The scope, however, can potentially be expended to include working conditions and occupational safety and health.

92 South Sumatra's green growth plan officially launched, The Sustainable Trade Initiative (IDH), May 2017

2.3. Market incentives and requirements

Procurement policy/market access

An increasing number of consumer goods manufacturers catering to the European and North American markets have come up with sustainable or responsible palm oil sourcing policies and have committed to 100 per cent traceability within the next two to three years. OSH elements are integral parts of the sustainable/responsible sourcing policy and corporate social responsibility agenda of many of these companies. Many of the consumer goods manufacturers and retailers in Europe and the United States have committed to using only physical certified sustainable palm oil by 2020. Annex 8 lists down the top users of palm oil and progress towards the use of CSPO. To date, many of the consumer goods manufacturers fulfil their CSPO commitments through the book and claim supply chain.⁹³ Major consumer goods manufacturers and retailers have pushed for the adoption of ‘No deforestation, no peat and no exploitation’ commitments among traders and producers. Biodiesel companies and product manufacturers in Europe have established the European Sustainable Palm Oil (ESPO) initiative with its commitment towards 100 per cent sustainable palm oil in 2020.⁹⁴

According to interviews and a desk review of over fifty consumer goods manufacturers and retailers’ sustainable sourcing policies, those seem to be structured around two main instruments:

- a) Supplier’s code of conduct and subsequent audits of first tier suppliers: Most international buyers with a responsible sourcing policy now practice systematic audits every other year with their first tier suppliers, and sometimes more often in countries or industries judged “at risk”. Palm oil is almost always listed as a “risky” raw material.

- b) Purchase of certified products: Increasingly widespread for agri-food products, companies may buy products only when they have obtained a specific certification. In the case of palm oil the certification is RSPO certification.

The two practices have become mainstream in Europe and North America and are driving the market for certified products. A third level of engagement involves a direct engagement from the global buyer below its first tier of suppliers. This level of engagement is often more impactful on working conditions but it is less widespread and involves higher costs for the end buyer. It also involves additional work for the exporter. Likewise, since palm oil is not readily visible to consumers, this type of engagement is not as sizeable in the palm industry as in other high visibility commodities (i.e. coffee, cocoa, and banana). It is further complicated by the lack of traceability. New approaches to affect compliance to sustainability standards, such as the jurisdictional approach which involve local authorities, are now being piloted.

Many of the large users are working with refineries to improve traceability of the commodity. The Indonesian Sustainable Palm Oil System (ISPO) and the Malaysian Sustainable Palm Oil System (MSPO) are recognized by the Consumer Goods Forum⁹⁵ for verification of legality in their respective countries, and an additional incentives comes from the adoption of specific sourcing policies by some consumer countries.⁹⁶ Still, important limitations in terms of how influential sustainable sourcing policies may be are:

- Traceability – as mentioned earlier in this report, traceability is a challenge in the palm oil industry and requires a sizeable investment on the part of various actors of the supply chain. This investment seems too significant for buyers who may be responsible for a very small part of palm oil

⁹³ In 2015, Unilever was the largest end user of physically certified palm oil (close to 300,000 MT) in the consumer goods industry. Unilever uses about 1 million MT of crude palm oil and its derivatives and about 0.5 million MT of crude palm kernel oil and its derivatives or an equivalent of 5 million MT of palm oil which is approximately 8 per cent of global palm oil production. The company has invested €130 million in a new palm oil refinery at Sei Mangkei - Northern Sumatra. This investment allows the company to work more effectively toward 100 per cent physically certified palm oil, to improve traceability and to bring more smallholders into the supply chain.

⁹⁴ The agreement is supported by an alliance of refineries, food and feed manufacturers and retailers in the Netherlands, Denmark, France, Belgium, Germany, the UK, Italy, and Sweden. It is facilitated by three European sustainability organizations. Its mission and objectives are to support the uptake of more sustainable palm oil in Europe by working in close collaboration with national initiatives, RSPO and EU associations.

⁹⁵ The Consumer Goods Forum is a global, parity-based industry network that is driven by its members to encourage the global adoption of practices and standards that serves the consumer goods industry worldwide. It has 400 members consisting of retailers, manufacturers, service providers, and other stakeholders across 70 countries.

⁹⁶ Some governments in developed consumer countries are taking action with regard to palm oil procurement. The most significant and latest is the EU parliament call made last 4 April 2017 for a single certification scheme for palm oil entering the EU market. The non-binding resolution suggested that only palm oil supplied through sustainable methods could enter the bloc after 2020.

production and for whom the palm oil component of their product has little consumer visibility and may even be substituted.

- Premium price – the premium price which comes from certified sustainable palm oil for all actors of the supply chain remains limited according to the actors interviewed in comparison to the costs it incurs. Global buyers may be reluctant to reward certification economically for various reasons, including the fact that it is a cost that cannot be passed on to the consumer (little or no visibility of palm oil ingredients, uncertainty of the value of the certification, reluctance to advertise palm oil use, etc.). The limited (for RSPO) or absent (for mandatory schemes such as MSPO and ISPO) economic reward for certification explains to a large extent the slow progress of certification. A key limitation is that the purchasing decisions of many buyers outside of Europe and United States are still predicated on price rather than sustainability standards. While certified companies will cater to markets like the European Union where consumers and governments demand compliance with social and environmental standards, the non-certified companies can continue with “business as usual” by serving other markets.⁹⁷

Environment, social, and governance (ESG) requirements of banks

The establishment of oil palm plantations and processing facilities requires substantial investment that may be financed by issuing stock, borrowing, and

letters of credit. An increasing number of banks are now requiring palm oil companies seeking loans to demonstrate alignment with no deforestation, no peat and no exploitation policies, or other equivalent standards. A disclosure review by the World Wide Fund for Nature (Stampe and McCarron, 2015) of 18 domestic banks and four global banks in Indonesia revealed the following:

- All four global banks offer products based on sustainability or ESG (environmental, social and governance) considerations. They also provide sector-specific policies including for forest and palm oil (sometimes covered under agribusiness/ agriculture policy). In addition, they are each members of three or more relevant international multi-stakeholder initiatives.
- Only three domestic banks explicitly reference ESG in client approval.⁹⁸ Several banks apply ESG standards in credit assessments.
- Generally, domestic banks are just starting to consider ESG issues in their processes and products.

Many of the financial services providers have yet to include ESG principles in their financial products. Financial services providers lack the capacity to develop the policies and internal systems necessary to evaluate ESG risks as well as the indicators and metrics needed to measure ESG risk across the different functions in the palm oil supply chain. Widespread uptake of ESG standards among domestic banks can potentially drive positive change throughout the industry.

97 Example of drivers for certified sustainable palm oil consumption: a 2016 Meo Carbon Solutions study on Germany's palm oil consumption in 2015 shows that all sectors and many companies in Germany increased the use of certified palm oil between 2013 and 2015. As per the study, less consumer-focused sectors make lesser use of certified palm oil than sectors where consumers buy off the shelf. The following are the key findings from the study:

- 47% of palm oil used in Germany came from certified sustainable cultivation in 2015. That is a 12 per cent increase since 2013.
- Including the energy sector, certified palm oil accounted for 72 per cent.
- The sector that uses the most sustainable palm oil is the food industry, where certified sustainable palm oil makes up 79 per cent according to the study.
- The study puts the figure for the animal feed industry at just 15 per cent. However, this marks a 12 percentage point increase since 2013.
- 60 per cent of palm oil in household washing and cleaning products is certified, as against only 10 per cent of palm oil used in industrial cleaning products (Federal Ministry of Food and Agriculture).

98 For instance, Bank Negara Indonesia bases certain decisions on a poor performance on the Indonesian government's environmental standard, PROPER. BNI no longer provides loans for corporations that have a red or black PROPER rating. It also provides disclosure of total corporate loans by PROPER rating. Bank Rakyat Indonesia states that it has a policy to offer investment or working capital loans only to industries that apply environmentally friendly practices.

3 Opportunities for OSH improvement and scale-up of good practices

3.1. OSH vulnerability profiles

The field research revealed two key findings:

- Exposure to occupational risks is highly correlated with vulnerability of employment.
- Exposure to occupational risks and its consequences are increased by a number of related working conditions (contract, remuneration, working hours, access to social protection, etc.).

It is necessary to assess occupational safety and health risks in context to fully apprehend the degree of vulnerability different categories of workers are experiencing, and further understand what drives them. This case study proposes to explore the following dimensions to assess safety and health vulnerabilities:

- Exposure: identifies occupational risks by activity and provides an assessment of their severity and probability of occurrence.
- Sensitivity: identifies the specific characteristics of the employment situation of workers which are linked to their risk exposure and influence its nature and frequency.
- Coping capacity: identifies the strategies and resources that workers have at their disposal to face the consequences of risk occurrence.

This section provides an analysis of OSH vulnerabilities according to those three dimensions. As per both the large number of qualitative interviews and workplace observations undertaken by the research team and the

literature review, two main vulnerability profiles could be addressed by further actions to improve their safety and health in the value chain:

- Workers on non-standard forms of employment at growing level, especially sub-contracted workers.
- Smallholders, especially independent smallholders in remote areas.

Those two profiles are where vulnerability to OSH risks is high in comparison to the rest of the value chain actors reviewed. As mentioned above, this does not mean that there are less risk factors at other levels / type of actors of the value chain, but rather that at those other levels the risks are identified and prevention measures are taken so that effective exposure, sensitivity and coping capacity are better.

Agricultural workers in non-standard forms of employment, especially sub-contracted workers

Division of work in plantations corresponds to some extent to various employment patterns. Harvesting and associated tasks are considered as core functions of plantation companies, while maintenance tasks that are more seasonal are often performed by temporary or outsourced workers. Practices seem to vary broadly

between companies. Various factors explain the use of temporary and outsourced workers, which include the seasonal nature of the tasks performed, cost saving strategies as well as the communities' expectation for job creation. On the latter, the fact that some plantations are particularly remote creates an expectation from the families who live on the plantation that the company will provide work opportunities for more than one family member. Likewise, historically surrounding communities seem to expect that the establishment of a nearby plantation will generate job opportunities.

Beyond temporary and outsourced workers hired by companies to perform maintenance tasks, sometimes workers themselves can hire or mobilize family members as helpers. In this setup those workers do not have any contractual relationship with the company in which they perform work. They are remunerated by or share the remuneration of the contract holder.

Exposure

Risk exposure is directly linked to the type of tasks performed by workers. Hence in the case of agricultural workers in palm oil plantations, risk exposure correlates with the type of contractual relationship and largely corresponds to different types of tasks, and so does sensitivity and coping capacity.

Figure 18. Type of tasks and type of contractual relationships

Task	Dominant Contractual Relationship	Main hazards	Dominant gender
Fertilizer application	Temporary workers Outsourced workers	Chemical exposure Excessive load Bending work	Female
Pesticide spraying	Temporary workers Outsourced workers	Chemical exposure Slips and falls Heat stress Snakes	Female
Harvesting	Permanent workers Occasionally temporary workers	Excessive effort Electrocution Uncomfortable posture Falling fronds and debris Sharp sickles Sharp thorns Snakes	Male
FFB Collection, Loading, and Weighing	Permanent workers Assistants / family members hired by workers	Excessive load Excessive effort Snake bites and pests	Male

Tasks also tend to be divided by gender. Oil palm is generally framed by many companies and by village officials as a "man's business". A conceptual distinction along gender is made between maintenance tasks which are largely assigned to women and production tasks reserved for men. While men are often assigned the physically strenuous jobs of harvesting and loading of the FFBs, women are typically given the tasks of applying agro-chemicals.

Among the maintenance tasks performed mostly by women, pesticide/herbicide spraying is considered the most hazardous, especially if paraquat is used. Herbicide spraying is usually done three times a year (once every four months). A sprayer is required to cover 1 to 1.5 hectares (depending on weed growth) which translates to handling about 120 to 144 litres of herbicides per day. Most sprayers work 15 to 18 days per month with a minimum exposure of 5 hours per day.

A majority of the female workers interviewed by the team indicated that they did not know the names of the chemicals they were handling. The preparation of the chemicals is usually done by a supervisor based on assessment of the type and growth of weeds in the scheduled work site. In some plantations, different pesticides are mixed in one container. The more conscientious plantations have separate teams for different types of weeds and, as such, they do not mix two or three pesticides in one knapsack sprayer. Ideally, pesticides should not be mixed together as each chemical has its own specific properties and instructions on proper handling. Weed and pesticide specific spraying though takes longer, which is why workers are not so keen to use this practice, especially if there is no adjustment on their quota and pay. Likewise, it would seem that workers are not cognizant of the implications of handling a concoction of pesticides at one single time. Although most of the workers indicated that they have had some training and subsequent briefing on safety practices, it seems that information shared has been generic in nature rather than pesticide specific.

The task of spreading fertilizer is considered by female workers to be more physically demanding than spraying. It entails carrying heavy loads of fertilizer from the road side to a spot near their assigned block. From there, the stock of fertilizer is transferred into a small bucket. The work can be particularly strenuous and slow when the terrain is hilly since workers have to climb up and down several times to refill

their buckets. Measures that could reduce the use of agro-chemicals such as soil analysis to dose fertilizers and use of organic fertilizer from processed FFB are not yet systematically used.

Harvesting is done every seven to fifteen days depending on the productivity of the tree. Related to harvesting are the tasks of FFB collection, loading, weighing, and delivery to the mills which are usually performed by male workers, usually on permanent or temporary employment hired directly by the company. Collection of loose fruits is also done by women as "assistants" to male workers officially employed by the company. Aside from the skill of workers, ergonomic hazards are influenced by age of tree, height of tree, and the general conditions in the plantation (e.g. pruning maintenance, weed growth, etc.). Physical effort required in harvesting and collection increases as the oil palm trees mature due to the increased height of tree and weight of FFB.

Sensitivity

Sensitivity to occupational risk factors is often a function of:

- Existence of a participatory OSH management system at the company level;
- Workers' skills to perform the job and organizational structure favourable to safety;
- Provision of appropriate equipment and PPEs;
- Workers' awareness of risk factors and means to protect themselves and practice effective use of those means;
- Adapted company premises (water, washing facilities, storage facilities, medical facilities, etc.) and work organization favouring their effective use.

The contractual status of workers largely impact on their access to the above. While for permanent workers the above is identified as necessary and to a large extent provided by both workers and companies, the situation is less consensual and greatly varies from one company to another regarding temporary, outsourced and invisible workers.

- Temporary workers: as they are hired directly by the plantation, they tend to be integrated and benefit from the OSH management system in place. There is, however, much less incentive for the company to invest in their training and equipment considering that these workers are not permanent.

- Outsourced workers: as they are not plantation employees (outsourced activities are a procurement matter, not an HR matter) and have a distinct employer, there seems to be a high range of practices in terms of their integration, level of benefit from the plantation's OSH management system and access to key facilities (i.e. washing facilities, first aid kit, OH and other medical services). In particular, some companies seem to integrate outsourced workers fully, granting access to washing facilities on the premises (which is key to reduce possible adverse effects of agro-chemical exposure), providing them with training and PPEs, etc. while others do not. As the workers concerned seem to be mostly female, this also impacts their access to any facility for breastfeeding or child care. Outsourcing companies also seem to cover a very diverse category of actors, some of which are more professional than others, with various cost structures that impact their ability to provide training, PPEs and social benefits to their workers.
- Invisible workers: workers and family members brought to the premises by the main contract holder to help him do not have any contracting relationship with the plantation within which they operate. There were conflicting reports during interviews on whether or not (and at which level and to what extent) the plantation companies are aware of this phenomena. Still, those invisible workers, who are often female, are not integrated in the OSH management system of the company by the very nature of their employment status. Controlling this type of informal arrangements between workers is particularly challenging considering the superficialities of estates and the economic incentives at play (i.e. volume-based bonuses).

The degree of importance accorded by plantations on the various tasks also has implications on occupational safety and health. While farm maintenance is viewed as important in promoting productivity, the effects of improper management are generally felt between one to five years. Delays and improper harvesting, on the other hand, result in immediate losses which are readily felt by plantations. Given these circumstances, plantations tend to give higher priority to harvesting tasks than other activities in the plantation. Many of the research and develop-

ment investments, for example, have been focused on coming up with varieties that are productive and, at the same time, shorter in height to ease harvesting tasks. Plantations are generally more inclined to invest in good planting materials of the "dwarf" varieties than in research and search for safe fertilizer and pesticides, except during the recent years when criticisms on chemical inputs have become more prominent, and when they do not seem to receive any support from input providers. In effect, with companies investing in dwarf varieties, a significant part of the risks associated with harvesting is reduced. Likewise, plantations are continuously in search of technologies to reduce time between harvesting and delivery to the mills. As such, companies invest in better work organization and semi-mechanization in the collection of FFBs. Investment in improving farm maintenance technologies is perceived as less strategic. The importance given by companies to harvesting related tasks can also be discerned by the fact that harvesters are comprised mainly of permanent workers, who are more likely to be unionized and included in OSH committees where they can voice their concerns. In contrast, women's access to skills and resources needed to ensure occupational safety are limited by their casual status and the perceived, non-strategic nature of maintenance work.

Resources for OSH tend to be concentrated in more visible catastrophic events such as fires and electrocutions than in activities with chronic health consequences, which are less apparent and visible in the short-term and poorly monitored. For instance there is no data available on the incidence rate of acute and chronic health effects of agro-chemical exposure at the palm oil growing stage, which has to do with the fact that these tasks are performed by workers who, due to their contractual status, do not necessarily benefit from occupational health surveillance services.

The fact that women are predominantly employed on a temporary basis means they are subsequently less organized and their specific needs in terms of safety and health are often not properly voiced and addressed, in particular when pregnant or lactating. As per 2016 report from UNICEF, many of the mothers working in plantations stopped breastfeeding after three months. Casual workers are not entitled to paid, maternity leave. There were reports of hidden pregnancies or coming into work sick so as to preserve

one's income.⁹⁹ Women are also inclined to work in jobs that offer flexible working arrangements (casual work) so that they can combine work with care responsibilities, in a context where access to child care services is limited.

Coping Capacity

Workers' ability to cope when occupational risks effectively occur is determined by:

- Access to quality medical care (geographical, financial) for first aid, emergencies as well as regular check-ups, diagnosis and care of occupational injuries and diseases;
- Access to rehabilitation services when needed;
- Access to compensation for their loss of income when they are incapable of working, temporarily or permanently, or when they die and leave their family behind.

Access to those three functions by workers is largely dependent on their contractual status.

Big plantation companies have health facilities, including both OH services and general care services. Access to these facilities, however, is almost always reserved for workers directly hired by the company and their families. Coverage of casual workers and outsourced workers generally depends on ethics and corporate social responsibility of the company as well as its procurement policy and responsibility bestowed upon their labour contractors. Outsourcing companies are usually small and medium-sized enterprises which do not have their own health services. While BPJS Health is now an entitlement for all citizens, regardless of their employment status, the presence of quality health care facilities in remote and rural areas remains a challenge. An additional challenge is for small health posts with limited personnel to have the skills necessary to effectively diagnose occupational diseases. While the occupa-

tional health and sport directorate of the Ministry of Health already identified this challenge and developed a strategy to mainstream basic OH in community health centres, there is a lack of resources to bring this strategy up to scale and evaluate its impact.

Contractual relationships also affect workers' access to rehabilitation and compensation mechanisms in case of work injury or disease. Indeed, while permanent workers are automatically registered at BPJS Employment, the situation is different for temporary, outsourced and invisible workers. Temporary workers are registered by some companies, and their direct contracting relationship with the company is a key factor for their assimilation with standard HR procedures. In the case of outsourced workers, their employer is supposed to register and contribute to BPJS, though as mentioned above this category of actor is diverse and the research team encountered that many do not affiliate their workers to social security, especially among the smallest ones. Invisible workers evolve largely in the informal economy and are not covered, despite recent attempts to expand BPJS Employment to the informal economy.

Workers and producers in independent smallholdings especially those that are not certified and/or organized

Oil palm farming on smallholders' farms is based on an individual's own labour, household, and hired labour. The work is by nature informal and falls largely outside of the reach of enforcement and support functions for OSH.

Exposure

As opposed to mills and refineries where risks tend to be of a little-occurrence catastrophic and visible nature (in particular as relate to fire safety), palm growing work, in plantations or smallholdings, involves

99 The fact that sickness and maternity leave are the employer's liability to a certain extent reinforces the disincentive to transition women workers to permanent employment.

Two-day menstruation leave: Female workers who feel pain during their menstruation period and notify the company about this are not obliged to come to work on the first and second day of menstruation. Since sick leave is an employer's liability in Indonesia, the full cost is to be borne by the company. Anecdotal stories indicate that this particular obligation creates tension and strengthens general tendency to hire women as daily casual workers as companies are more likely to "lose" 2 person days of labour per female worker per month which translate to higher labour cost.

■ Maternity leave: Indonesia is also one of the few countries in which maternity benefits are funded by employers rather than social security insurance (employer's liability model), and paid time-off is not offered during nursing breaks. This may discourage employers from hiring women of childbearing age on permanent employment.

risks that are more diffuse and with rather chronic exposure or exposure built over long periods rather than acute health effects. Risk factors are detailed in section 2.1.

Sensitivity

Smallholdings are usually family businesses in the informal economy. Job satisfaction seems high in smallholdings according to the different actors interviewed. Safety and health practices in the smallholding, especially if independent, tend to be less structured and lack resources in comparison with the standards in place in plantations and mills. Indeed, there is often no documented risk assessment and control measures taken (especially in independent, non-certified smallholdings), hazards can be further enhanced by the poor access of smallholdings to proper seedling and inputs (including agro-chemical inputs). Because of their informal nature, independent smallholdings receive little support in the form of training or capacity building on good agricultural practices and handling of agro-chemicals (storage, application, dosage and frequency, PPEs, etc.).

Though smallholders and their workers reported job satisfaction, including satisfaction in terms of income generation, OSH conditions are primarily linked with the resource constraints in terms of skills, finance, training, technology, network, etc. Many of the smallholders are also not organized which weakens their access to quality inputs (i.e. easier to access as a cooperative for instance) and bargaining position. Independent smallholders are eligible for government support, however, eligibility exists only through their participation in farmer organizations.¹⁰⁰ In most cases they lack institutional support and advocacy, as they have poor channels of communication with relevant OSH related government institutions and OSH management systems.

It has also been observed by the team that while smallholders and their workers are generally receptive to tangible productivity related measures, they are less likely to fully adopt risk prevention measures that may not have visible business impacts especially if the risks are intangible.

Coping Capacity

Farmers and workers in independent smallholdings have limited access to occupational health services and health surveillance in general, health services in case of emergency and compensation in case of occupational accident or disease. As mentioned previously, OH services are mostly company-based and though the Ministry of Health has a strategy for extension through community facilities, the access on the ground remains limited at the moment. BPJS Health now has the mandate to cover all citizens which improves financial accessibility, although geographical accessibility remains a challenge in rural areas, especially in remote areas.

In terms of compensation, smallholders and their workers are usually not affiliated to BPJS Employment and consequently are not covered by an employment injury insurance scheme.

3.2. Opportunities for intervention

A number of programmes, regulations and supporting schemes are already in place in Indonesia's palm oil value chain. Still, few of them look specifically to working conditions and their linkages with competitiveness and long-term sustainability. Hence there is room to build on the good practices developed in some parts of the industry and improve occupational safety and health outcomes for the most vulnerable workers in the value chain.

Capitalize on the OSH knowledge and good practices of a number of actors in the value chain towards most vulnerable groups of workers and farmers. A Number of actors, especially big businesses that operate in an integrated manner, cater for the EU market and hold multiple certifications, have developed over the years sophisticated OSH management systems and tools (i.e. training adapted to control specific risks such as electrocution in the plantation, work organization maximizing productivity but also reducing efforts to transport and load FFB, advanced

¹⁰⁰ According to regulations from the Ministry of Trade (07/2/2009) and Ministry of Agriculture (82/Ot140/8/2013), farmers should be members of farmer groups (*kelompok tani*) or cooperatives in order to receive government support.

OH services quality standards, adoption of PPEs adapted to the specific working and weather conditions of plantations, etc.). Though it seems this wealth of knowledge and initiatives is little shared and has little reach outside of the companies that develop them. Considering market incentives are not necessarily aligned with improved working conditions, mainstreaming the existing good practices could be fostered through both private-sector led actions around knowledge sharing and the constitution of a community of practice of safety and health professionals of the industry. This could be encouraged through the mobilization of institutions that have an effective reach to smallholders. Indeed, reaching the lowest tier of supplier in the chain and the most vulnerable workers assumes that smallholders are engaged. In other countries, institutional support to the organization and strengthening of smallholders' capacities was successful in mainstreaming production and safety and health standards in smallholdings. In Indonesia, the BPDP-KS (Indonesian Palm Oil Estate Fund) started working in this direction as it allocates part of its revenue from the tax levy on CPO to support smallholders. While support has been primarily focused on replanting, it could be a suitable mechanism for redistribution of resources and skills promoting better working and living conditions in smallholdings.

Provide an enabling environment for OSH improvement in smallholdings through access to adapted awareness raising and skills building, as well as through the effective access to supporting services (risk assessments, OH services, compensation) with special attention to gender-specific vulnerabilities. A number of programmes emerging from innovative public private partnerships (PPPs) are supporting smallholder farmers in the palm oil value chain. Those programmes could be reinforced by a component on safety and health and related working conditions. Without supporting functions, it is unlikely that smallholdings on their own can build up the skills and awareness necessary to effectively control occupational risk factors on their farm, especially if they are not organized. Beyond capacity building (on risk identification and controls) and awareness raising (especially on adverse health effects and positive productivity gains) that could be channelled through rural extension services, existing smallholder support programmes (such as REDD+ or the new jurisdictional approaches), input providers and direct buyers, smallholders could benefit from accessing OH services and strengthen their coping capacity. In particular, the current strategy of the Ministry of Health as it regards the mainstreaming of OH

in local health facilities could be evaluated and scaled-up to ensure effective access of rural workers to OH services, proper diagnosis and the effective collection of robust data on occupational health (incidence rates of acute and chronic health effects). In this framework, health professionals in charge of maternal and child health could receive particular information on dissemination of good practices regarding the handling of agro-chemicals during pregnancy and breastfeeding. There is also an opportunity to reinforce the social protection compensation system to ensure that in case of an accident or a disease related to their occupation, smallholders and their workers get appropriately compensated. Being covered by a compensation scheme also creates an incentive for the institution in charge of the scheme to invest in prevention activities for its covered population.

Build the business case for OSH based on its linkages with productivity and improved environmental practices. At the palm growing stage, there is room to confirm how the adoption of safer work practices can foster productivity gains and support environmental compliance in a measurable manner. As mentioned in this report, observations and interviews evidenced that actors at the growing stage, especially smallholders and small plantations with limited resources, may be reluctant to adopt safer working practices and equipment if their economic viability is not demonstrated. A number of interventions could be piloted and evaluated in the following areas:

- Good agricultural practices and integrated pest control, with a view to reducing and improving the use of agro-chemicals.
- Work organization and physical set up and maintenance of the plantation / smallholding so as to reduce risk exposure to heavy loads, slips and falls.
- Provision of adapted PPEs, which includes working on an industry-wide adapted PPE model.

Based upon this first layer of work, the industry may want to further pursue the development of OSH-specific guidelines for palm oil production, as it already exists for a number of other industries within Indonesia. This work could be done in partnership with the Indonesian Palm Oil Association (GAPKI) and with workers' unions active in the sector.

Work on contractual relationships in order to align occupational safety and health conditions of different categories of workers at growing stage.

As noted in this report, contractual relationships largely determine the extent of effective exposure, sensitivity

and coping capacity of workers as it relates to occupational risk factors. Temporary workers or those with an outsourced status are often less integrated into the company's OSH management systems than are permanent workers. A number of interventions by several actors would be needed to address this root cause for underperformance of OSH.

- Public and private standards: ISPO and RSPO standards are tools that can be strengthened in terms of working conditions requirements and that have existing channels within the industry. Support could be provided to facilitate the adoption of standards that address issues of temporary work and sub-contracting in a gender-sensitive manner. Support could also be provided to strengthen current auditing mechanisms and the reporting of non-compliance as well as complaint mechanisms.
- Enforcement: the labour inspectorate has the mandate to control compliance with labour legislation and, as such, is uniquely positioned to develop a strategic vision for compliance and involve actors who may be best positioned to support, identify and prevent non-compliance issues. For example, in Colombia the labour inspectorate is engaged with employers, workers and the other actors to actively reduce illegal and disguised forms of employment on palm oil plantations with success.¹⁰¹
- Enabling environment: as highlighted above, the vulnerable situation of temporary and sub-contracted workers is enhanced by their lack of access to key supporting functions. In the case of women, the fact that sickness and maternity are an employer's liability in Indonesia creates a disincentive to provide them with permanent employment, and their lack of access to child care services pushes them further to seek primarily casual work. The feasibility of creating social protection mechanisms that even the playing field for women should be assessed and could be piloted by industry champions. BPJS Employment has a mandate for financing prevention through its EII scheme. This same mandate could be directed at supporting employers who invest in prevention for their most vulnerable workers. Those activities could be complemented by strengthening the capacities of workers' organization on OSH and their ability to include and represent temporary and sub-contracted workers, especially women.

Foster good practice sharing between palm oil producing countries on key compliance issues that relate to OSH. Palm oil producing countries are faced with similar market demands from North America and Europe, where there seems to be sometimes little understanding of the complexity and challenges posed by those requirements to supply chain actors in producing countries. Malaysia and Indonesia created the Council of Palm Oil Producing Countries (CPOPC), which could gather more countries and be the basis to share practices on legislation and topics such as chemical use, sub-contracting and outsourcing relationships, compliance initiatives such as MSPO and ISPO, strategic compliance planning and tools for labour inspectorates, etc.

Support the existing dialogue with global buyers through the RSPO platform. RSPO has formed a Labour Rights Task Force with the aim of achieving the following objectives:

- Strengthen RSPO's labour protection standards and processes
- Improve the level of standards implementation and compliance among members
- Develop a comprehensive program that addresses the current gaps in the existing systems and the implementation challenges faced by different stakeholders.

This provides an opportunity to forge a closer integration between OSH and sustainability issues. This work could build on:

- The business case for OSH and behaviour change interventions mentioned above;
- Development of indicators and guidance that would help advance OSH implementation beyond documented OSH management system and PPEs;
- Improved OSH data collection, availability, and accessibility to findings that can elevate the importance of safety and health within sustainability discussions;
- Strengthened audits on OSH verification and assessment procedures.

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| Annex

Annex 1

RSPO Principles and Criteria relevant to OSH outcomes (taken directly from source)

RSPO Principles and Criteria	
Principle	Criteria or Guidance Specific or Relevant to OSH
Principle 1: Commitment to Transparency	<p>Publicly available documents shall include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> a. Land titles/user rights b. Occupational health and safety plans c. Plans and impact assessments relating to environmental and social impacts d. HCV documentation e. Pollution prevention and reduction plans f. Details of complaints and grievances g. Negotiation procedures h. Continual improvement plans i. Public summary of certification assessment report j. Human Rights Policy
Principle 2: Compliance with applicable laws and regulations	<p>Implementing all legal requirements is an essential baseline requirement for all growers and millers whatever their location or size. Relevant legislation includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Land use period and right b. Labour c. Agricultural practices (e.g. chemical use) d. Environment (e.g. wildlife, pollution, environmental management and forestry) e. Storage f. Transportation and processing practices. <p>It also includes laws made pursuant to a country's obligations under international laws or conventions (e.g. the Convention on Biological Diversity (CBD), ILO core Conventions, UN Guiding Principles on Business and Human Rights). Furthermore, where countries have provisions to respect customary law, these will be taken into account.</p>
Principle 3: Commitment to long-term economic and financial viability	<p>A documented management plan, a minimum of three years shall be available, including, where appropriate, plan for scheme smallholders.</p> <ul style="list-style-type: none"> • Growers should have a system to improve practices in line with new information and techniques. For smallholder schemes, the scheme management should be expected to provide their members with information on significant improvements.

RSPO Principles and Criteria

Principle	Criteria or Guidance Specific or Relevant to OSH
Principle 4: Use of appropriate best practices by growers and millers	<p>Operating procedures are appropriately documented, consistently implemented and monitored.</p> <ul style="list-style-type: none"> Standard Operating Procedures (SOPs) for estates (land clearing to harvesting) and SOP for mills (reception of FFB to dispatch of CPO and PKO) shall be available. <p>Practices maintain the quality and availability of surface and ground water.</p> <ul style="list-style-type: none"> The water management plan will: <ol style="list-style-type: none"> Take account of the efficiency of use and renewability of sources; Ensure that the use and management of water by the operation does not result in adverse impacts on other users within the catchment area, including local communities and customary water users; Aim to ensure local communities, workers and their families have access to adequate, clean water for drinking, bathing, cleaning and latrine purposes; Avoid contamination of surface and ground water through run-off of soil, nutrients or chemicals, or as a result of inadequate disposal of waste including Palm Oil Mill Effluent (POME). <p>Pests, diseases, weeds and invasive introduced species are effectively managed using appropriate Integrated Pest Management techniques.</p> <ul style="list-style-type: none"> Growers should apply recognized IPM techniques, incorporating cultural, biological, mechanical and physical methods to minimize the use of chemicals. Native species should be used in biological control where possible. <p>Pesticides are used in ways that do not endanger health or the environment.</p> <ul style="list-style-type: none"> Evidence of pesticide application by trained person and in accordance with application guidelines in product label and storage guidelines shall be available. Appropriate safety equipment shall be provided and utilized. All precautions attached to the products shall be properly observed, applied, and understood by workers. Storage of pesticides shall be according to recognised best practices. All pesticides containers shall be properly managed according to the existing regulations and or instructions enclosed on the containers. Pesticides may only be applied aerially where there is a documented justification. Surrounding communities shall be informed of impending aerial pesticide applications with all relevant information within reasonable time prior to application. Annual medical records of pesticide operators, and follow-up treatment of medical results, shall be available. Records shall be available to show that spraying is not conducted by pregnant or breast-feeding women. <p>An occupational health and safety plan is documented, effectively communicated and implemented.</p> <ul style="list-style-type: none"> A health and safety policy shall be in place. A health and safety plan shall be documented and implemented, and its effectiveness monitored. A documented risk assessment shall be available and its implementation shall be recorded. Records of Occupational Health and Safety (OHS) program and Personal Protective Equipment (PPE) training in accordance with the result of hazard identification and risk analysis shall be available to all workers. The responsible person(s) for occupational health and safety shall be identified and there shall be records of periodical meetings on health and safety issues. A procedure for emergency and work accident shall be available in Indonesian Language; and the workers, who have attended First Aids training, are available in the working areas. All workers shall be provided with medical care, and covered by accident insurance. Occupational injuries shall be recorded using Lost Time Accident (LTA) metrics. <p>Staffs, workers, smallholders and contract workers are appropriately trained.</p> <ul style="list-style-type: none"> Workers should be adequately trained on: the health and environmental risks of pesticide exposure; recognition of acute and long-term exposure symptoms including the most vulnerable groups (e.g. young workers, pregnant women); ways to minimize exposure to workers and their families; and international and national instruments or regulations that protect workers' health. The training program should include productivity and best management practice, and be appropriate to the scale of the organization. Training should be given to all staff and workers by growers and millers to enable them to fulfil their jobs and responsibilities in accordance with documented procedures, and in compliance with the requirements of these Principles, Criteria, Indicators and Guidance. Contract workers should be selected for their ability to fulfil their jobs and responsibilities in accordance with documented procedures, and in compliance with the requirements of the RSPO Principles, Criteria, Indicators and Guidance. Growers and millers should demonstrate training activities for schemes smallholders who provide Fresh Fruit Bunches (FFB) on a contracted basis. Workers on smallholder plots also need adequate training and skills, and this can be achieved through extension activities of growers or millers that purchase fruit from them. This training may be conducted through smallholders' organizations, or through collaboration with other institutions and organizations. The contract workers in Indonesia refer to the Fixed Term Contract (PKWT) and Non-fixed Term Contract (PKWTT) based on the Decree of the Minister of Manpower No. 100 year 2004; and the Regulation of the Minister of Manpower & Transmigration No. 19 year 2012 regarding Requirements for Transfer of Parts of Work to Other Company(ies).
Principle 5: Environmental responsibility and conservation of natural resources and biodiversity	<p>Waste is reduced, recycled, re-used and disposed of in an environmentally and socially responsible manner.</p> <ul style="list-style-type: none"> The waste management and disposal plan should include measures for: <ol style="list-style-type: none"> Identifying and monitoring sources of waste and pollution; Improving the efficiency of resource utilization and recycling potential wastes as nutrients or converting them into value-added products (e.g. through animal feeding programs); Appropriate management and disposal of hazardous chemicals and their containers. Surplus chemical containers should be reused, recycled or disposed of in an environmentally and socially responsible way based on best available practices (e.g. returned to the vendor or cleaned using a triple rinse method) and existing regulations. This is to prevent pollutions to the water sources and risk to human health. <p>The disposal instructions on the manufacturer's labels should be adhered to.</p>

RSPO Principles and Criteria

Principle	Criteria or Guidance Specific or Relevant to OSH
Principle 6: Responsible consideration of employees and of individuals and communities affected by growers and millers	<p>Aspects of plantation and mill management that have social impacts, including replanting, are identified in a participatory way, and plans to mitigate the negative impacts and promote the positive ones are made, implemented and monitored, to demonstrate continual improvement.</p> <ul style="list-style-type: none"> • Potential social impacts may result from activities such as: building new roads, processing mills or other infrastructure; replanting with different crops or expansion of planting area; disposal of mill effluents; clearing of remaining natural vegetation; changes in employee numbers or employment terms; smallholder schemes. Plantation and mill management may have social impacts (positive or negative) on factors such as: <ul style="list-style-type: none"> a. Access and use rights b. Economic livelihoods (e.g. paid employment) and working conditions c. Subsistence activities d. Cultural and religious values e. Health and education facilities f. Other community values, resulting from changes such as improved transport /communication or arrival of substantial migrant labor force g. Traditional or customary rights owned by the local community, if identifiable h. Welfare of workers/labour and women, children and vulnerable group i. Contribution to the local development, including improvement of human resources, local and customary communities. <p>Pay and conditions for employees and for contract workers always meet at least legal or industry minimum standards and are sufficient to provide decent living wages.</p> <p>The employer respects the rights of all personnel to form and join trade unions of their choice and to bargain collectively. Where the right to freedom of association and collective bargaining are restricted under law, the employer facilitates parallel means of independent and free association and bargaining for all such personnel.</p> <p>Any form of discrimination based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, or age, is prohibited.</p> <p>There is no harassment or abuse in the work place, and reproductive rights are protected.</p> <ul style="list-style-type: none"> • There should be programs provided for particular issues faced by women and men, such as violence and sexual harassment in the workplace. • A gender committee specifically to address areas of concern to women will be used to comply with this Criterion. This committee, which should include representatives from all areas of work, will consider matters such as: training on women's rights; counselling for women affected by violence; child care facilities to be provided by the growers and millers; women to be allowed to breastfeed up to 9 months before resuming chemical spraying or usage tasks; and women to be given specific break times to enable effective breastfeeding. <p>No forms of forced or trafficked labor are used.</p> <p>Growers and millers respect human rights.</p>
Principle 8: Commitment to continual improve- ment in key areas of activity	<p>The action plan for monitoring shall be available, based on a consideration of the social and environmental impacts and routine evaluation of the plantation and mill operations. As a minimum, these shall include, but are not necessarily be limited to:</p> <ul style="list-style-type: none"> • Reduction in use of certain chemicals • Environmental impacts • Waste reduction • Pollution and greenhouse gas emissions • Social impacts • Optimising the yield of FFB production

Source: Indonesian National Interpretation of RSPO Principles and Criteria for Sustainable Palm Oil Production 2013

Annex 2

Overview of OSH legislation in Indonesia

Regulation	Summary/Highlights
Law No. 1 Tahun 1970 concerning Occupational safety and health	<ul style="list-style-type: none"> • All workers are entitled to the protection of their safety. • The law stipulates safety in all workplaces, including those in terrestrial, underground, water surface, underwater and in the air. • Apply to all workplaces including (summarized those relevant to palm oil): <ul style="list-style-type: none"> a. Machines, apparatus, tools, equipment or installations which are dangerous or may cause an accident, fire or explosion; b. Activities performed in the fields of agriculture, plantations, forest clearance and exploitation, a. the processing of timber or other forest products, cattle raising. Fisheries and health; c. The loading and unloading of cargoes in or on board ship, proas, quays, docks, stations or warehouses; d. Areas subjected to temperature variations, humidity, dust, dirt, fire, smoke, steam gas draughts, variable weather conditions, rays or radiation sound or vibration. • Safety conditions shall be prescribed by legislative regulation to: <ul style="list-style-type: none"> a. Prevent and reduce the possibility of accidents b. Prevent and reduce the possibility of and extinguish fires c. Prevent and reduce the possibility of danger from explosion d. Provide means of escape from fire or other danger e. Provide first-aid in case of injury f. Ensure that workers are provided with protective equipment g. Prevent or control the incidence or spread of temperature variations, humidity, dust, dirt, smoke, steam, gas, draughts, variable weather conditions, rays or radiance, sound and vibration h. Prevent or control the incidence of occupational disease, whether, physical or psychological, poisoning, infection or contagion i. Provide adequate and suitable illumination: j. Provide satisfactory temperature and humidity levels k. Provide satisfactory air circulation l. Maintain cleanliness, health and good order m. Workplace arrangements, work environment, work methods and processes n. Safeguard and facilitate the transportation of people animals, plants or goods o. Safeguard and maintain all kinds of construction p. Safeguard and facilitate the loading, unloading, handling and storage of goods q. Prevent shock by electrical currents r. Adjust and develop safety measures in accordance with the requirements of increasing accident rates.
Law No. 13 Year 2003 Concerning Manpower Act	<p>This law stipulates overall labour issues, including the following:</p> <p>On OSH (article 86 and 87):</p> <ul style="list-style-type: none"> • Every worker has the right to receive (a) occupational safety and health protection; (b) protection against immorality and indecency; (c) treatment that shows respect to human dignity and religious values. • In order to protect the safety of workers and realize optimum productivity, OHS shall be administered. • Every enterprise has an obligation to apply an OSH management system that is integrated into the enterprise's management system.

Regulation	Summary/Highlights
<p>OSH Management System</p> <ul style="list-style-type: none"> • Ministry of Manpower Regulation No. 05 of 1996 	<p>Enterprises that employ 100 or more people and/or enterprises having potential for danger of or risks for accidents in the production processes, such as explosions, fires, pollution and work related diseases, are required to apply an OSH Management System.</p> <p>The purpose and objective of an OSH Management System is to create a work safety and health system in the workplace (involving management, and members of the workforce) to prevent and reduce workplace accidents and occupational diseases and to create a safe, efficient and productive work environment.</p> <p>The Company is required to satisfy the following:</p> <ol style="list-style-type: none"> a. Establish occupational safety and health policies and ensure commitment to the implementation of OHS Management Systems; b. Create policies, goals and objectives of the implementation of occupational safety and health; c. Implement effective occupational safety and health policies by developing the necessary capabilities and support mechanisms to achieve health, safety, and occupational policies, objectives and targets; d. Measure, monitor and evaluate safety and health performance and take corrective and preventive action; e. Regularly review and improve the implementation of OSH Management System.
<p>OSH Committee</p> <ul style="list-style-type: none"> • Ministry of Manpower Regulation No. 04 1987 concerning committee on OSH 	<p>OSH Committee shall be established in enterprises which employ 100 people or more; or enterprises that employ less than 100 people but use materials, engage in processing and have installations that have a high risk of explosion, fire, poisoning and radioactive radiation,</p> <p>The OSH Committee consists of both workers and management representatives, who are responsible for monitoring and implementing OSH policy.</p> <p>The head of the OSH Committee is required to be a high level management representative. The OSH Committee Secretary must be a certified General OSH expert. In order to be appointed, he or she must undertake a two week General OSH training course organized by the Ministry of Manpower and Transmigration and receive an appointment letter from the Ministry.</p> <p>The OSH Committee must submit a report on the activities of the OSH committee to Local Manpower Office addressed to the Minister of Manpower and Transmigration every 3 months.</p>
<p>Department of Manpower and Transmigration Circular SE-01/MEN/1978</p>	<p>Department of Manpower and Transmigration Circular SE-01/MEN/1978 sets forth (i) the occupational exposure limit of 85dBA for an 8-hours day, 40-hour work week;</p> <p>(ii) the requirements of ambient temperatures between 21-30 degrees centigrade, humidity levels for 65-95 %, and requires employers to take specific action to lower temperatures above 30 degrees.</p>
<p>Child Labour Law No. 1 of 2000 Ratification of ILO Convention No. 182 Concerning Prohibition and Intermediate Action for the Elimination of the Worst Form of Child Labour</p>	<p>Children under 18 years are not allowed to work in hazardous work as defined by the Child Labour Law, including work which is by its nature likely to harm health, safety, or morals of children.</p>

Regulation	Summary/Highlights
Ministry of Manpower Regulation No. PER-02/ MEN/1992 Concerning Procedures for appointment, obligation and authority of OSH Expert	<p>Occupational Safety and Health Expert is a specialized, skilled personnel appointed by the Ministry of Manpower to oversee the compliance of the Workplace Safety Act on certain criteria.</p> <p>The requirements include a minimum of an undergraduate degree with at least 2 years' experience, be in good physical health, be a full-time employee as well as pass the selection by the assessment team.</p> <p>Occupational safety and health experts are obliged to: Assist in supervising the implementation of safety and health legislation. Provide a report to the Minister of Manpower or Appointed Official</p> <p>Occupational safety and health experts are authorized to: Enter the workplace. Request information on the implementation of occupational safety and health. Monitor, examine, test, analyse, evaluate and provide the requirements and guidance of occupational safety and health covering on working conditions and facilities; tools and machinery; handling of materials; production process; nature of work; procedures and workplace environment.</p>
Ministry of Manpower Regulation No: PER.15/MEN/ VIII/2008 Concerning First Aid for Working Accident	<p>Employers are required to provide First Aid officers and First Aid facilities at the workplace, including:</p> <ul style="list-style-type: none"> a. First Aid Room; b. First aid kit and materials; c. Evacuation equipment and transportation means; and d. Additional facilities in the form of personal protective equipment and / or special equipment in the workplace designed to protect against specific hazards.
Minister of Manpower Regulation No. Per. 02/MEN/1980 on Examination of the Worker's Health in Administering Occupational Safety.	<p>Various health checks include:</p> <ul style="list-style-type: none"> a. Pre-work health check is a medical examination performed by a physician before a worker starts their job. b. Periodic medical examination performed by a physician; • Periodic Medical Examinations are intended for maintaining the health status of the workforce after being in the job, and assessing the possible effects of work performed. Periodic exams allow for early detection of health concerns and encourage preventative care. • Companies shall conduct periodical health checks for workers at least once a year unless otherwise determined by the Director General of Labour Relations and Labour Protection. • Periodic Medical Examination includes a complete physical examination, to include physical fitness, lung x-ray (if possible) and routine laboratory and other tests deemed necessary. • Employers or administrators and physicians are obliged to formulate guidelines for periodic medical examination according to the health needs related to job expectations and the type of work performed. • Guidelines for periodic medical examinations are developed following the company's capabilities and medical progress in occupational safety. <p>The Special Medical Examination is intended to assess the effect of a particular occupation on a particular workforce or group of workers. The Special Medical Examination shall also be conducted on:</p> <ul style="list-style-type: none"> • Workers who have experienced accidents or illnesses requiring more than two weeks of treatment. • Workers over the age of 40years old, women, and workers with disabilities, as well as younger workers performing certain jobs. • Workers with certain health claims or concerns may require an additional examination. <p>Special medical examinations shall also be held if there are grievances among workers.</p>

Regulation	Summary/Highlights
Ministry of Health Regulation No. 48 of 2016 Concerning OSH Standard of Office Work	<p>Occupational Safety and Health Management System for Offices are part of the overall office building management system in the framework of risk control related to work activities, as part of safe, efficient and productive workplaces.</p> <p>Regulation of OSH Standards is a reference for implementing OSH to create a healthy, safe, and comfortable office to support work performance and productivity.</p> <p>OSH for Office include: a) work safety; b) occupational health; c) working environment health office; and d) ergonomics of working in the office.</p> <p>Safety Standards include: a) office safety requirements; and b) disaster awareness.</p>
Ministry of Manpower Regulation No. 03 of 1986 Concerning Terms on Health and Safety in Workplace Using Pesticide	<p>Workers dealing with pesticide need to be above 18 years, have had a medical test, is knowledgeable of harmful effects of pesticides, and is capable of performing first aid for a poison related accident. Workers are not allowed to be exposed to pesticides for more than 5 hours per day and 30 hours per week.</p> <p>Workers have to wear PPE including protective shoes, eyeglasses, and a mask.</p> <p>Spraying is not allowed for workers who are under the influence of alcohol and/or drugs, have a physical disability, have history of skin disease, and are pregnant or breastfeeding.</p>
Ministry of Manpower Regulation No. 33 of 2016	<p>Labour Inspection is the activity of supervising and enforcing the implementation of regulations. The labour Inspector is a civil servant appointed and assigned as the Supervisor of Labour to supervise and enforce the implementation of regulations of labour in the workplace. Inspector Specialist shall be the Labour Inspector having specialized expertise appointed by the Minister to conduct the labour practices in accordance with the laws and regulations.</p> <p>Labour Inspection aims to ensure the implementation of employment norms in the Company or the Workplace. Labour Inspection functions include:</p> <ul style="list-style-type: none"> a. Ensuring labour law enforcement; b. Providing technical information and extension to the employers and workers/ labourers on matters related to effective implementation of labour laws and regulations; c. Collection of information on employment relations and conditions for improvement of labour regulations.
Presidential Regulation No. 10 of 2012 Concerning Labour Inspection Committee	<p>Labour Inspection is an activity to supervise and enforce the implementation of the laws and regulations concerning manpower.</p> <p>The Labour Inspection Committee is a non-structural institution composed of government, employers' organizations, trade/labour unions, and other stakeholders that strengthen the implementation of labour inspection without affecting the independence of labour inspectors as they enforce compliance.</p> <p>The Labour Inspection Committee shall monitor, provide input, advice and consideration to the Minister for the implementation of labour inspection.</p> <p>The Labour Inspection Committee has the following duties:</p> <ul style="list-style-type: none"> a. To give input to the Minister and establish the policy of labour inspection b. To collect and analyse data for suggestions related to human resource development and improving the performance of labour inspection.
Decree of Minister of Industry No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals	<p>The Global Harmonization System on Classification and Labelling of Chemicals (GHS) is a generalized and rational approach to define and classify chemical hazards as well as communicate information on the label and Material Safety Data Sheet (MSDS).</p> <p>Every actor producing chemicals must determine the classification of chemical hazards and/or products produced in accordance with the provisions on chemical labelling and packaging; reviewing the label at least every two years as needed.</p>

Annex 3

Breakdown of Farmers & Workers Employed in Oil Palm Plantations by Province, 2015

Province	Farmers	Workers	Total	Farmer and Workers per Hectare
Sumatra	1,696,415	1,806,243	3,502,658	0.49
Aceh	122,115	109,211	231,326	0.52
North Sumatra	174,057	513,263	687,320	0.48
West Sumatra	188,657	98,197	286,854	0.72
Riau	536,723	496,297	1,033,020	0.43
Riau Islands	180	9,476	9,656	0.48
Jambi	219,877	136,683	356,560	0.48
South Sumatra	220,335	273,482	493,817	0.49
Bangka Belitung	34,720	77,235	111,955	0.52
Bengkulu	102,626	55,126	157,752	0.52
Lampung	97,125	37,273	134,398	0.69
Java	10,522	13,051	23,573	0.70
West Java	199	6,937	7,136	0.50
Banten	10,323	6,114	16,437	0.85
Kalimantan	331,944	1,401,064	1,733,008	0.48
West Kalimantan	115,661	317,322	432,983	0.44
Central Kalimantan	60,985	520,406	581,391	0.49
South Kalimantan	44,641	230,898	275,539	0.50
East Kalimantan	101,571	263,867	365,438	0.48
North Kalimantan	9,086	68,571	77,657	0.48
Sulawesi	77,329	97,809	175,138	0.47
Gorontalo	2,209		2,209	0.51
Central Sulawesi	25,316	41,731	67,047	0.44
South Sulawesi	15,317	10,908	26,225	0.50
West Sulawesi	30,203	24,270	54,473	0.48
Southeast Sulawesi	4,284	20,900	25,184	0.53
Maluku and Papua	24,564	44,473	69,037	0.59
Maluku	1,886	4,905	6,791	0.62
Papua	12,422	19,237	31,659	0.59
West Papua	10,256	20,331	30,587	0.58
TOTAL	2,140,774	3,362,640	5,503,414	0.49

Source: Directorate General of Estate Crops, Ministry of Agriculture

Annex 4

ISPO principles relevant to OSH and working conditions

Principle 2: Implementation of GAP and GMP

- The SOP on land clearing should include non-slash and burn land clearing/preparation
- The SOP is in place on pest and weed control, as well as the use of registered pesticide
- The pesticide used should be registered by the Ministry of Agriculture and the use is based on pesticide regulations
- The work team should be trained and approved by the pesticide committee for use of limited pesticide
- The company has adequate storage for weed and pesticide related materials

The company makes sure that the waste management is in line with the existing regulations

- SOP on waste control is prepared
- Document on measures of air quality

Principle 3: Environmental Monitoring and Management

Management of Hazardous Waste

- Availability of storage of hazardous waste
- Availability of SOP on hazardous waste management

Prevention and Fire Control

- Availability of SOP on prevention and control of fire

- Availability of capable human resources on fire prevention and control
- Availability of facilities and equipment
- Availability of emergency system

Principle 4: Responsibility for workers

OSH

- Availability of OSH document
- OSH organization is established and supported with adequate facilities and equipment
- Availability of OSH documents and reporting

Workers Welfare and Capacity Improvement of Workers

- Implementation of minimum wages
- Availability of standardized salary and wages
- Available of equipment and facilities on workers' welfare
- Company include workers in BPJS
- Availability of training program for staff capacity enhancement

Child Workers and Discrimination

- Policy on minimum age
- Equality for workers
- Availability of complaint mechanism

Workers Union

- Implementation of relevant policy on workers union

Annex 5

Comparison of labour provisions of selected private compliance initiatives and workplace certifications

	RSPO	ISCC Plus	SA 8000
WORK AND LABOUR RIGHTS: general principle	Y	Y	Y
CONDITIONS OF WORK: general principle	Y	Y	X
Women's rights at work	Y	Y	X
Sexual exploitation / harassment	Y	Y	X
Safety at work (ILO 184)	Y	Y	X
Safety at work - legal compliance	Y	Y	Y
Electrical equipment safety	X	Y	Y
Fire preparedness (drills, equipment, signs)	X	Y	Y
Emergency exits and evacuation procedures	Y	Y	Y
Training on safety issues	Y	Y	X
Workplace safety	Y	Y	Y
Safety equipment and personal protective equipment (PPE)	Y	Y	Y
Machinery / equipment safety	Y	Y	Y
Emergency first aid kits	Y	Y	Y
Safety procedures for handling chemicals	Y	Y	Y
Monitoring of accidents records	Y	X	Y
Training of workers on procedures to deal with accidents	X	Y	Y
Healthy work conditions / medical checks	Y	Y	Y
Workers' access to safe drinking water	Y	Y	Y
Workers' access to sanitary facilities at work	Y	Y	Y
Workplace conditions (air quality, lighting, noise)	X	X	Y
Dormitories and canteens	Y	Y	Y
Workers' entitlement to breaks (e.g. meal breaks)	X	Y	Y
Infirmary at production site	Y	Y	Y
Criteria for keeping records of disciplinary measures	X	Y	Y
Security issues / role and behaviour of security guards	Y	Y	Y
Privacy protection	Y	X	Y
Worst forms of child labour (ILO 182)	Y	Y	Y

Source: ITC

Legend:

Y – Labour provision

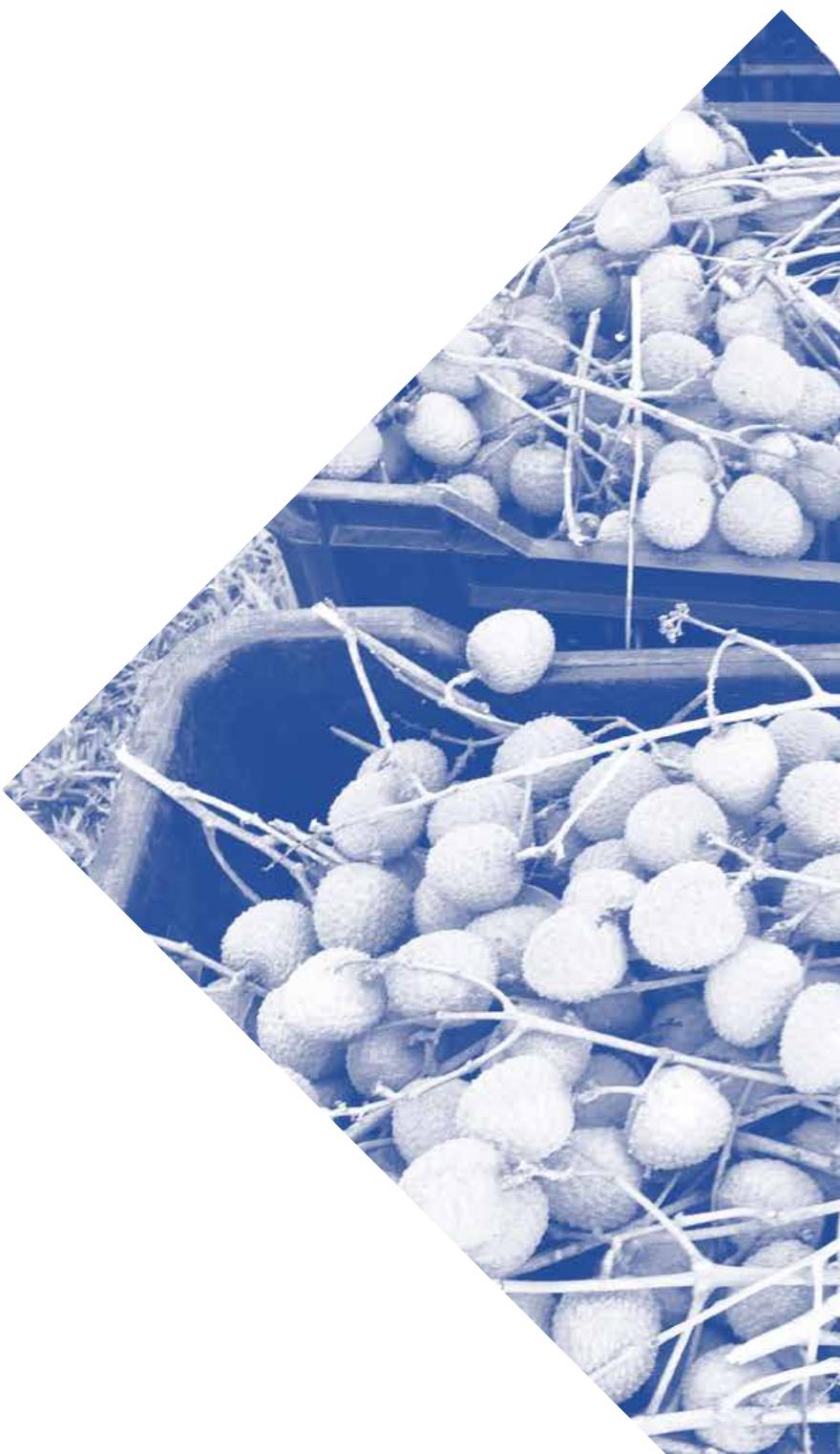
X – Labour provision not covered

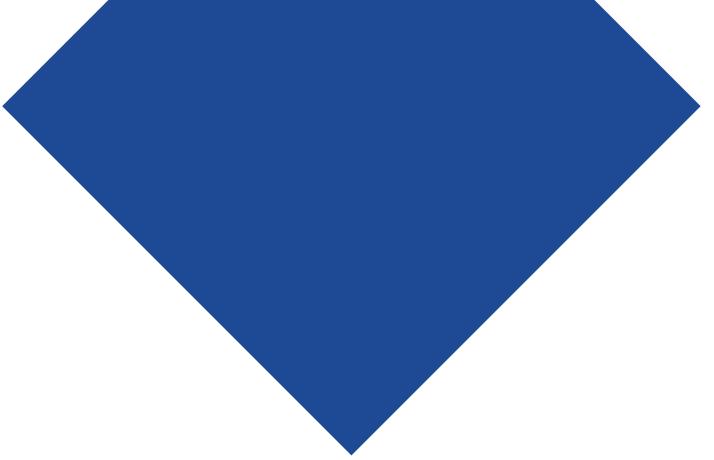
Annex 6

Top Users of Palm Oil, 2015

Company	Headquarters	Commitment to 100% CSPO (Year)	2015 Palm Oil Consumption (in MT)	% CSPO
Colgate Palmolive	United States	2016	174,328	100%
ConAgra Foods	United States	2014	102,728	100%
Ferrero 99.5% of palm oil supply comes from 63 mills and 301 plantations located in: Peninsula Malaysia (75.87% of total volumes), Papua New Guinea (18.17%), Insular Malaysia (3.67%), Brazil (1.2%), Indonesia (0.91%), Guatemala (0.1%) and the Solomon Islands (0.08%). About 6.34% of the palm oil volumes bought by company came from approximately 20,941 smallholders.	Italy	2015	181,000	100%
Friesland Campina Target year to use only physical CSPO: 2020	Netherlands	2011	107,500	100%
Mondelēz Mondelēz serves on the RSPO Board of Governors and is co-chair the Consumer Goods Forum's Palm Oil Working Group. It has supported the United Nations Development Programme (UNDP), the Government of Indonesia, and other partners to develop the Indonesia Palm Oil Platform (InPOP).	United States	2013	289,255	96%
PepsiCo Target year to use only physical CSPO: 2020	United States	2015	452,743	100%
Reckitt Benckiser Target year to use only physical CSPO: 2020 Member of TFT	United Kingdom	2015	125,843	100%
Unilever Target year to use only physical CSPO: 2019	Netherlands	2012	1,513,265	100%
Procter and Gamble Target year to use only physical CSPO: 2020	United States	2015	493,677	47%
Nestlé Target year to use only physical CSPO: 2020	Switzerland	2013	417,834	24%
Kao	Japan	2020	100,000	24%
Unigra	Italy	2020	315,000	21%
Godrej	India	2020	150,000	0%

Source: WWF Scorecard 2016





A case study of drivers and constraints for OSH in the lychee global value chain from Madagascar

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Acronyms

BRC	British Retail Consortium
CIRAD	<i>Centre de coopération internationale en recherche agronomique pour le développement</i>
CNAPS	National Social Welfare Fund
CTHT	<i>Centre Technique Horticole de Tamatave</i>
COLEAP	Europe-Africa-Caribbean-Pacific Liaison committee
EU	European Union
EU-ACP	European Union - African, Caribbean and Pacific (ACP) region
GAP	Good Agricultural Practices
GEL	Lychee exporters group
GEPAT	Regional Employers Organization of Toamasina
GRASP	GLOBALG.A.P. Risk Assessment on Social Practice
GSCs	Global supply chains
IFS	International Featured Standard
ILO	International Labour Office
MRL	Maximum Residue Limit
OMSI	Inter-professional Medical and Social Organization
OSH	Occupational safety and health
PIP	Programme Initiative Pesticides (Pesticide Initiative Programme)
PPE	Personal Protective Equipment
SAME	Independent Medical Services
SMIE	Inter-company Medical Services
SO2	Sulphur dioxide
TnT	Tranoben'ny Tantsaha
WHO	World Health Organization

1 | The supply chain of lychee from Madagascar

1.1. Market and product

Market

Global demand for exotic fruits has grown over the past decades, linked with an overall increase in world population and changing consumption patterns, particularly in Europe and North America (European Parliament, 2015). Indeed, exotic products, and in particular exotic fruits, have become a regular part of the European and North American diet. This change coincided with the concentration of retailers who first provided an extended range of products, including various fresh and exotic products to western consumers. These products seem to assume a new strategic importance in the differentiation of the customer experience sought by retailers (McKinsey and Company, 2013).

In this context, beginning in the early 1990s, a market for lychee emerged in Europe and North America. Initially widely consumed in Asia, lychee started gaining popularity in Europe due to: i) a growing trend towards consuming more exotic products; and ii) a combination of regulation and access to technology that allowed for importing fresh fruit during the European holiday season. Duty-free and quota-free EU market access under the European Union - African, Caribbean and Pacific region (EU-ACP) agreements as well as the marketing of lychee as a Christmas fruit greatly fostered this trend. The market for lychee juice and canned lychees has also increased in the European Union and Switzerland, with a focus on fair trade and organic products. The US market, given a national regulation, does not allow lychees imported from Madagascar because they are sulphur-treated.

Product

Lychee, from the *Sapindaceae* family, is native to China. It is a rough, red pericarp fruit and contains a perfumed and sweet translucent pulp and brown seed. The most common varieties have a diameter of between 28 and 34 millimetres. The total weight of the fruit is about 20 grams and the pulp, the only consumable part, represents approximately 60 per cent of its total weight. The fruit is consumed fresh or processed as canned fruit or fruit juice.

The lychee tree is acclimatized to humid, tropical zones. Its size can reach 15 to 20 metres, but when cultivated in orchards and regularly pruned, its size stabilizes to between 3 to 5 metres. Depending on growing conditions, the tree usually yields fruit 5 years after planting and reaches full production after 10 years. As an evergreen tree, its growth is continuous with "Y" branches. Flowering coincides with the annual drop in temperature. The average yield of an adult tree varies from 50 to 100 kilograms of fruit each year. Consequently, the production period differs between the production zones located in the northern hemisphere (winter in January and February) and those in the southern hemisphere (winter in July and August).

Only lychees produced in the southern hemisphere can supply the end-of-year holiday markets in Europe. Over 80 per cent of lychee imported by the European Union is from Madagascar. The main competitors of the southern hemisphere on the EU market are South Africa and to a lesser extent Mauritius, Reunion and recently Mozambique. These countries benefit from the same production season as Madagascar, but currently have less production capacity.

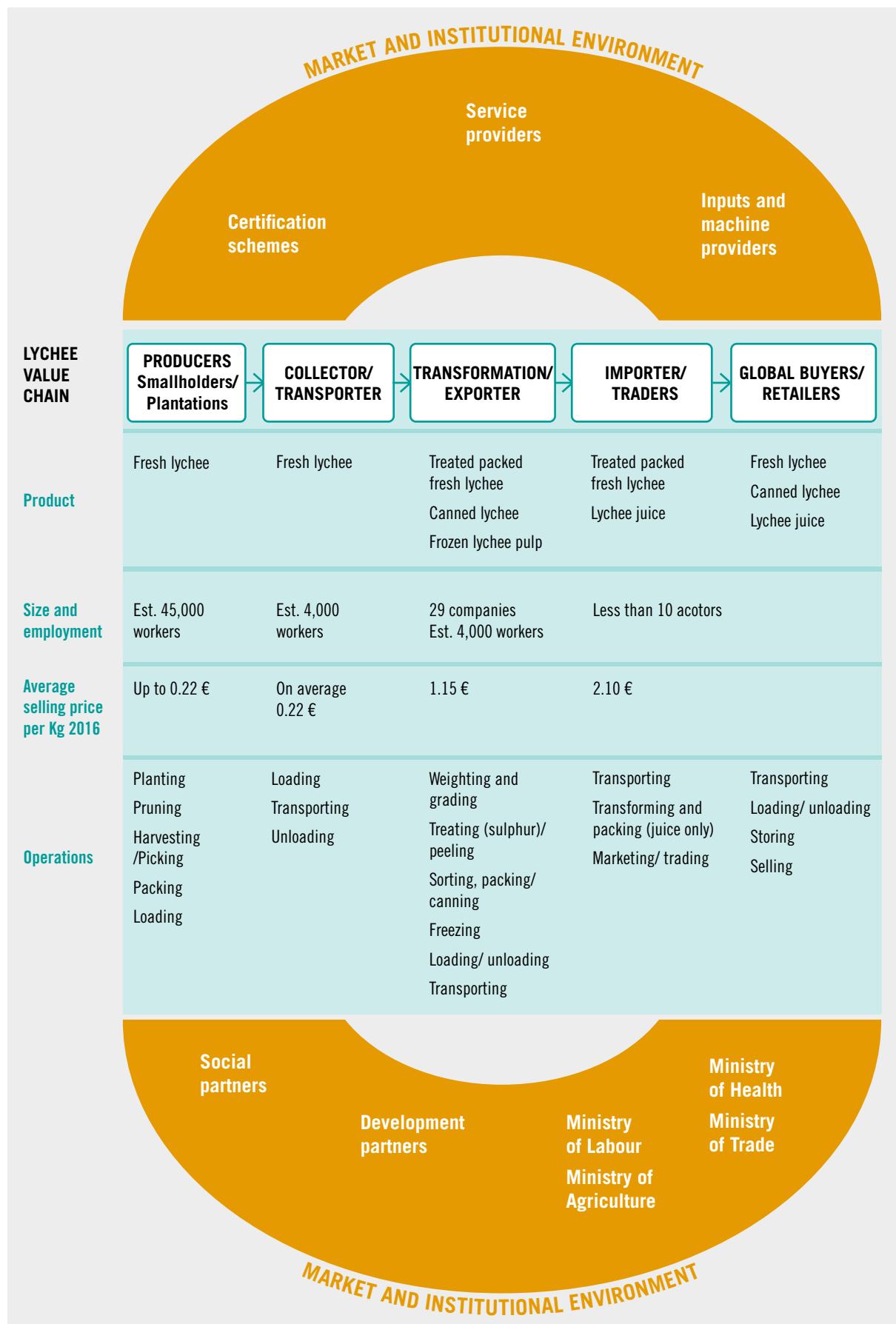
1.2. Value chain structure

The vast majority of lychees are marketed fresh and are destined for the European Union, however, lychee is marketed for export in three forms:

- Fresh lychee (about 20,000 tonnes transported by ship and to a lesser extent, by air, for early sales (29 exporting companies);
- Canned lychee (about 250,000 cans exported to Switzerland and the European Union per year, one transforming / exporting company);
- Lychee pulp (about 2000 tonnes exported frozen to the European Union and South Africa, four transforming / exporting companies).

The supply chain varies according to the processing method, but the production and collection for the three types of export remains substantively the same. Small holders grow the fruit, which is gathered by collectors or transporters before going through treatment or transformation stations. The majority of fruit is shipped to Europe by boat.

Figure 19. The lychee value chain and its market and institutional system



Source: authors based on collected information.

Producers

Producers with access to the export market are those located within a 100-kilometer radius of Toamasina. Beyond this perimeter, transport conditions do not allow access to the market. All of the lychee processing and treatment stations for export are concentrated in Toamasina, which benefits from a deep, water port.

Figure 20. Map of Madagascar and localization of Atsinanana and Analanjirofo regions.



Source: authors (empty map from Wikipedia).

It is important to mention that the potential for Madagascar lychee production is much wider with a large share of its production occurring in the South (Mananjary, Manakara, and Fort Dauphin). Access to the international market, however, is not yet possible due to a lack of appropriate infrastructure. It is estimated that about 25 per cent of Madagascar's annual lychee production is exported (mainly to Eu-

rope), 5 per cent is processed and the remaining 70 per cent is marketed and consumed locally.

Quantifying the exact number of producers involved in the export of lychees is challenging (Jahiel et al., 2014). Exporters have historically relied on a network of collectors who bought fruit from producers in the region, transported the fruit to the processing station, and sold it to the exporter with a profit margin. These collectors benefited from an advance from exporters that allowed the latter to guarantee a given volume of fruit during the limited time allocated for export. This configuration makes traceability to the producer difficult. However, the situation is currently changing as the Global GAP certification process progresses. In this new configuration, exporters, in order to be certified, must be able to trace the product back to the producer. This means the exporter and the producer establish a more direct relationship. An evolution of the role of collectors to that of transporters receiving a fixed remuneration should also assist transparency.

Little statistical data is available on lychee producers involved in export chains. However, general characteristics emerge. There are a few plantations, which tend to be small and vertically integrated with exporters. The majority of lychee production comes from small producers of very different sizes (between two and up to 100 lychee trees). Small producers are not historically organized and there are few co-operatives or producer associations. The seasonality of the product and the lack of inputs, in particular agro-chemicals, explains to some extent the few incentives for organization at the level of producers in cooperatives or associations. For the organic and fair production of lychee, a single cooperative is the only supplier to date. The cooperative is made up of just under 500 small producers, 90 per cent of whom are lychee producers (on average cooperative members own 2.5 lychee trees and always less than 10 hectares of land). With the growth of the Global GAP certification, producers have to organize themselves into groups of cooperatives or associations.

Historically, the primary function of producers was to bring together the lychee harvest and ensure its sale to the collectors. There are few practices of maintenance and replanting of trees in Madagascar and the production of lychee is not professionalized. Producers do not fertilize trees and their limited resources hinder access to inputs (fertilizers, pesticides) and tools or any form of mechanisation. Replanting is seldom done, and in order to replant, growers trans-

plant trees. The purchase of lychee trees at nurseries does not appear to be the norm.

The quality and size of fruit and the efficiency of the harvest are affected by all the above-mentioned practices. In fact, Madagascar's producers struggle to grow sufficiently sized fruit for export (28 to 30 millimetres in diameter). Inadequate renewal also affects the quantity and quality of harvested fruits as does a lack of regular tree maintenance. Subsequent tree height makes collection less easy and affects labour productivity and occupational risks during collection. Although the actors note these considerations, problems with quality encountered at the production stage do not seem heavily sanctioned by the market. Indeed, Madagascar lychees are the most abundant in the southern hemisphere, and consequently competition for the Christmas market is relatively low, although new entrants, such as South Africa and Mozambique, are beginning to emerge.

There appears to be little practice of contract farming, therefore the producers themselves make investments. Access to financial services and saving capacities of producers are limited and their income is both uncertain (they have little control over prices) and irregular (seasonal) without access to financial products to smooth out their income over the year. For producers, the sale of lychee for export can represent 30 to 40 per cent of the household annual income. Other activities are mainly concentrated in food crops (banana, rice) and other export crops, such as clove, pepper, mango and vanilla.

Though it is not possible to know the exact number of producers involved in the export value chain, it is estimated that about 45,000 workers are involved at the producing stage.¹⁰² While some permanent jobs exist for plantation workers, these jobs are by definition seasonal and include a few working days per year for the maintenance of plots (compulsory for certified plots). A large part of the workforce involved in the collection of lychees consists of small producers and their direct family members (paid or unpaid). The structure of employment depends largely on the size of the farm, but it seems that as soon as the plot has more than 3 to 4 trees, producers tend to rely on agricultural workers for the harvest. The

few plantations that exist also use seasonal agricultural workers to support the harvest period.

This part of the value chain is largely in the informal economy and works both for the export market and for the local market. The greatest difficulties in certification of producers relate to the difficulty of producing employment contracts for agricultural workers and family members employed by farmers, especially for small producers. The lack of formalization and the weakness of rural infrastructure mean that workers have very little protection and access to basic services (i.e. health, trainings and sanitation, etc.).

Collectors and transporters

Collectors are composed of a combination of: i) transporters, many of whom come from Antananarivo for the season with their vehicle; and ii) lychee producers with the means to rent a vehicle for the season. Collectors receive cash advances from exporters to buy fruit from producers and then resell it to the exporter. In the absence of easy access to credit for rural households, this solution makes it possible for collectors to secure the minimum investment required for collection. It also allows exporters to guarantee a certain level of fruit provision to be processed and packaged while refrigerated vessels are docked in the port of Toamasina.

At the collection point, collectors must be able to appreciate the weight and quality of fruit presented by producers to ensure that exporters do not buy at a price that causes them any financial loss. Indeed, no weighing instrument is used at the collection point and the traditional mode of packaging (the *garaba*, which weighs between 20 and 30 kilograms) is different from that used by treatment and transformation stations for weight evaluation (crate of about 18 kilograms). Hence, there is an incentive on the collector's side to negotiate down the price of the *garaba* of fruits purchased from the producer to ensure his or her own profit margin.

It is difficult to estimate the number of collectors, especially since some collectors are also producers. However, it is possible to estimate the number of carriers required for transport between collection points and stations and then stations to port, according to

¹⁰² To the extent that the tonnage exported is known and data was collected on the productivity of harvesting work, it is possible to estimate the volume of employment required for harvesting. Based on an average of 100 kilograms harvested per day per worker, a volume of about 45,000 workers is required to ensure the harvest of the exported fresh lychees over five days of collection.

tonnage. This calculation yields an estimate of more than 4,000 workers.¹⁰³ Additionally, as mentioned earlier, this function is evolving into that of a fixed-rate transporter with the progress of the Global GAP certification process. This supply chain model was applied in the framework of fair trade production.

Transporters are to be remunerated, in line with the legislation, if they work within the framework of certified supply chains (Global GAP, organic, Fair Trade). They are regarded as formal workers and in theory are covered by social security for the duration of their contract. In general, the transport functions are outsourced to specialized companies for the duration of the season.

The status is different for non-certified supply chains where employment status and remuneration vary greatly. In particular, remuneration depends directly on the collector's ability to generate a margin between the buying price from producers and the selling price at the station. The selling price at the station per kilo is generally twice the price paid to the producer, and collectors have their own costs (transport, *garaba*, fruit eliminated at sorting stage in the station). The purchase prices offered at the station to collectors fluctuate during the season. Prices vary from day to day depending on the level of supply and the loading speed of export vessels.

Transformers / exporters

The market for fresh lychees exports to the European Union and Switzerland constitutes the majority of the market for Malagasy exporters. The market is shared among a limited number of exporters (29) who are also the actors in charge of the sulphur treatment and packaging of fruit as well as processing (for canned lychee and lychee pulp). This activity is seasonal (roughly one month a year), however each exporter has its own economic model, with some having activities the rest of the year based on their installed capacity, for example, use of existing equipment and buildings. Others do not. Lychee exporters are grouped together as the Lychee Exporters Group (GEL).

The main functions of exporters of fresh lychees are sorting, treating, and packing and their transport to the port or, for the early season fruit sales, the airport. The primary function of canned lychees or lychee

pulp exporters is processing (fruit preparation, canning or sterilization, labelling or freezing) and transport.

As previously mentioned, given that access to financial services is limited, exporters also perform a function of financing collectors. For the majority of certified organic and fair-trade production, pre-financing concerns only the one producer cooperative currently certified. In this framework, there are no collectors, but simply transporters. Finally, exporters have a function of searching for new product markets, although this is not currently well developed.

Investing in a treatment plant constitutes the main entry barrier to the canned and pulp export business. This barrier explains why the vast majority of exporters come from families historically present in the sector and anchored in the production region.

Treatment and transformation stations of fresh and canned lychees operate between 5 and 10 days per year, depending on the export volume and productive capacity of each. The main production factors are capital in the form of station equipment (sulphur chamber, sorting chains, loading and unloading areas, transformation chain for canned lychees), work (organized in teams of 300 to 400 workers), sulphur and cardboard packaging for fresh lychees (cans for canned lychees). Access to these factors pose different challenges for exporters. Investment in a station, as named above, is often based on existing family and historical capital. Access to work does not appear to be problematic although the stabilization of teams from one year to the next is not always possible. Sulphur powder is imported, but it is easy to access and inexpensive. Of the cardboard used, 50 per cent is made in Madagascar and the rest is imported from South Africa.

The transformation function requires a large investment in equipment. The equipment is imported (canning, sterilization, freezing). The high level of investment required and the lack of access to financing facilities constitute major barriers to entry and partly explains the limited number of players. The economic model works, however, because of a diversification of activity. Using the equipment to transform other products over the year makes amortization of investments possible on an annual basis and not only for seasonal activity.

¹⁰³ With the following assumptions: average tonnage per vehicle of 1.5 tonnes, on average 1.5 worker per vehicle.

The size of treatment and processing plants vary, as does the internal organization, but are close enough to estimate the volume of employment at this stage of the supply chain. It is estimated that about 25,000 people work in treatment and processing stations during the lychee season, which spans 5 to 10 days for fresh and 10 to 15 days for processed lychees. Employment is seasonal and, with the exception of companies that have several other activities and mobilize their permanent workers, work is temporary.

During the export period, most treatment stations operate both day and night with teams of 200 to 300 workers (representing an average of 500 workers per treatment station, with a total of 25 treatment stations in the region of Toamasina, one canning station and two pulp processing stations). All but one of the treatment stations are Global GAP certified, and the canning station as well as one of the pulp processing stations are Fair Trade and Organic chain of custody certified, which means they are regularly audited. The certification module includes compliance with legal obligations in the area of national labour law. As a result, in theory,¹⁰⁴ station workers are formalized, have employment contracts, receive payment for overtime and are affiliated to social security (CNAPS and OMSI) for the duration of their contract. Wages vary little from one company to another, but the total remuneration is on average twice the minimum wage. This does not necessarily mean that the hourly rate is higher than the minimum wage. In many cases, minimum wage is related to the number of hours worked (12-hour shifts) and night work.

Importers

For historical reasons, two importers from Madagascar dominate the market for fresh lychee in the European Union.¹⁰⁵ Greenyard (formerly Univeg / Katope) and Compagnie Fruitière are currently the two importers of sulphur-treated lychees to the EU and Switzerland. These two players won a public tender in 2011 launched by the GEL following a period of open competition between importers. This influenced an instability of the sale price in Europe and did not promote a healthy structuring of the sector. The two sell

lychees to wholesalers and supermarkets. The market is mainly France (between 35 and 40 per cent), Germany, Austria and Switzerland (between 40 and 45 per cent) and to a lesser extent (about 5 per cent), England.

The role of those two importers in the configuration of the supply chain is extensive and they are the main actors on which the financing, logistics and efforts to professionalize the supply chain (crop monitoring services, laboratory, logistics and certification) are based. To this end, the two importers pool their resources and compete only once the lychees have arrived on European soil where each has its own marketing strategy towards its customers (wholesalers, retailers) and negotiates prices.

The sale of fresh lychees for the holiday season is the cornerstone of the importers' marketing strategy. The festive period allows the sale of exotic fruits, whose price to the consumer is comparatively higher than that of European seasonal fruit. This explains why importers have had a real interest and the financial capacity to mobilize investments in their supply chain.

Other importers are:

- Importers of fresh lychees based in the United Arab Emirates, Russia, Mayotte and European-based early season fruit importers, representing just over 2,000 tonnes of fresh lychees. The market for fresh lychee diversified in recent years, with new destinations such as the United Arab Emirates and Russia. For these destinations, the exporters concerned were able to forge direct relationships with importers in those countries.
- Importers of lychee pulp based in South Africa (between 600 and 1,000 tonnes each year of uncertified pulp) and in the European Union (200 tonnes certified organic and fair trade, a single importer of "ethical" products).
- Importers of certified organic and fair-trade lychees (only one importer of "ethical" products) or only fair trade certified (one importer - Swiss retailer), with a total volume of nearly 250,000 cans in 2016 (representing less than 200 tonnes of fresh lychees).

104 And according to actors interviewed during the study.

105 The first exports by conventional boats from the port of Toamasina began in 1996 and mobilized a dozen competing European importers sharing the spaces available in the mobilized boats (between 4 and 6). Competition between the different importers during the commercial phase did not guarantee good economic results and in 2011, the two biggest players decided to unite to control the transport and marketing of lychees transported by boat to Europe.

Retailers

Buyers are mainly major retailers and to a lesser extent, wholesalers and smaller businesses specialized in fresh products in the French, German, Austrian, Belgian, Swiss, and English and, in smaller quantities, Russian and Emirate markets.

Large-scale retailers make up the biggest part of the market. Major European groups play an important role in the value chain in Madagascar (in particular demand in large quantities, increase in certified demand, etc.). Buyers in the European Union are pushing the market for certified lychees and the importers of lychees have invested in the sector to meet this demand, which is driven by large German, Austrian and Swiss retailers. The objective of the two

main importers is to move to a 100 per cent certified Global GAP production by 2019. In addition, both importers are also marketing fresh fair trade lychees, the volume of which tripled between 2015 and 2016.

Specific data on lychee purchase and sales by distributor is not available in the public domain, however, the main function of supermarkets, is, of course, product distribution to the consumer. To the extent that supermarkets are particularly concentrated in Europe, as shown in the table below, they also benefit from significant bargaining power. Buying prices for fresh lychees once in Europe typically follow a variation with high prices at the beginning (before Christmas) of the season and then lower prices as time passes, due to the perishable nature of the fruit.

Figure 21. Main European retailers

Group	Origin	International Rank 2015	Countries where the retailer is present	Revenue 2015 (M US\$)
Schwarz Untemehmens Treuhand KG	Germany	4	26	94,448
Carrefour	France	7	35	84,856
Aldi	Germany	8	17	82,164
Tesco	United Kingdom	9	10	81,019
Metro Ag	Germany	13	31	68,066
Auchan	France	16	14	59,050
Edeka Group	Germany	18	1	52,477
Casino Guichard-Perrachon SA	France	19	31	51,257
Rewe Combine	Germany	22	11	43,607
Ahold Delhaize	Holland	23	6	42,435
E. Leclerc	France	26	7	39,277
Sainsbury	United Kingdom	28	1	35,100
Intermarché	France	32	4	30,857
Morrison Supermarket PLC	United Kingdom	40	1	24,551
Migros-Genossenschafts Bund	Switzerland	41	3	24,391
Coop Group	Switzerland	45	6	22,449
Mercadona	Spain	48	1	21,171
Système U	France	49	4	20,694

Source: Deloitte. 2016.

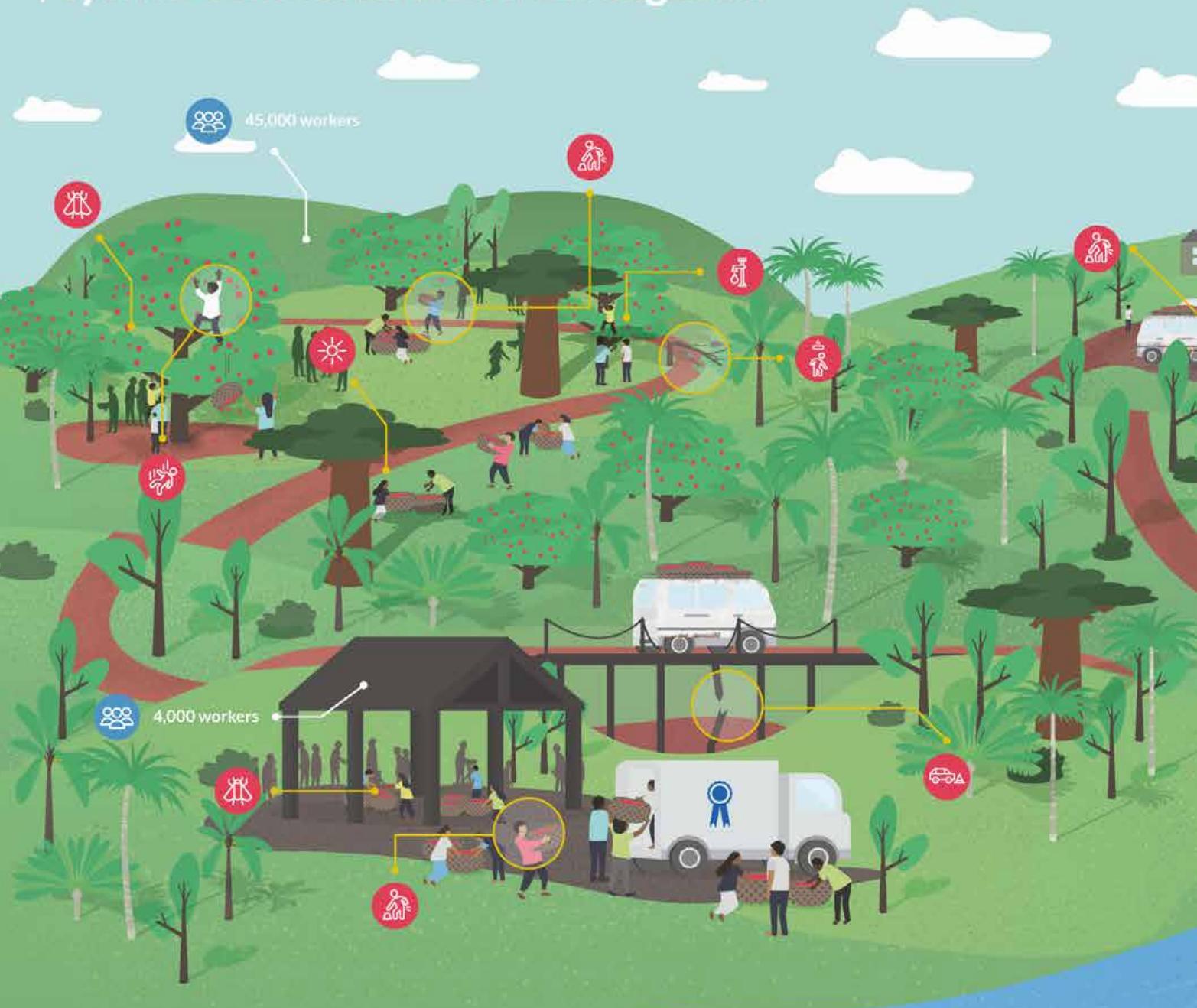
As far as the distribution of canned lychees from Madagascar in Europe is concerned, a Swiss retailer has been involved in the supply chain since 2012. The retailer sells canned lychees as its own brand. They are shipped in containers. Originally, the distributor sought to develop his line of exotic, canned fruits and made contact with the only certified production cooperative in the Toamasina region. Then, the retailer looked for a transforming company on the spot. This research corresponded, according to the importer, both to the personality of the buyer then in charge of this portfolio and to the cooperative values of the group, rather than to a specific market demand on lychee. To the extent that the processing company already existed and exported green pepper and canned snails, an agreement was reached to begin exporting canned lychee to Switzerland. In this case, the importer is also the distributor and the product is fully processed in Madagascar. Imports have grown steadily since 2012. In 2012, one container was imported, compared to five containers shipped in 2016. The distributor now imports about 75 per cent of the canned lychee produced in Toamasina.

Institutional environment of the value chain in Madagascar

The institutional environment of the value chain in Madagascar is composed of different authorities, in particular:

- Local authorities are in charge of the issue of road patents and vehicle inspections.
- The Ministry of Commerce is in charge of issuing annual, export authorizations. The authorization is extended to each exporter following approval of their fruit processing and packaging unit.
- The Ministry of Agriculture is responsible for issuing phytosanitary certificates and derogations for the export of "early" products (lychees exported before the official date fixed for fruit collection).
- The Ministries of Trade and Agriculture participate in regional meetings organized to determine the start date of the lychee collection in the Atsinanana and Analanjirofo regions.
- The Ministry of Labour and its decentralized services have a mandate for workplace compliance checks.
- The social security bodies and the Ministry of Health provide in cash and in kind benefits to populations.

Occupational Safety and Health vulnerabilities in the lychee value chain from Madagascar



Vulnerability profile

Smallholders and temporary agricultural workers

Associated main OSH risks

- | | | | | | |
|--|-------------------|--|---------------|--|----------------|
| | Fall from heights | | Heavy lifting | | Pest exposure |
| | Heat exposure | | Road safety | | Fall of object |
| | Unsanitary water | | | | |

Temporary treatment and transformation station workers

- | | | | | | |
|--|------------------|--|---------------|--|----------------|
| | Sulphur exposure | | Heavy lifting | | Fall of object |
| | Fire | | | | |

Surrounding communities

- | | |
|--|------------------|
| | Waste management |
|--|------------------|



29 Companies
25,000 workers



SELLING PRICE
 $\approx 0.22\text{€}/\text{kg}$

Certification



€
SELLING PRICE
 $\approx 1.15\text{€}/\text{kg}$

€
SELLING PRICE
 $\approx 2.10\text{€}/\text{kg}$



Supermarket





2 | Drivers and constraints for OSH improvement

It is necessary to emphasize the uniqueness of the lychee supply chain in Madagascar and its success. Indeed, the country's products are generally poorly integrated into global supply chains, notably because of the Madagascar's difficulties in overcoming non-tariff barriers for its products. The lychee sector is an exception as it succeeded in penetrating the market for fresh products and its sanitary regulations in Europe. As mentioned above, this was accompanied by some improvements in the management of occupational safety and health as well as in employment conditions. Hence, there is the potential to use global supply chains as leverage to improve safety and health in the country.

In theory, it would therefore be appropriate to explore both the possibilities for OSH improvement in the lychee supply chain, and the possibility to replicate the experience elsewhere. This could be accomplished with the rest of the lychee production from Madagascar, which exports only a fourth of its production. Other agricultural supply chains, especially spices and fruits and vegetables, could be included, as could the national OSH system as a whole.

Policy and development support to agro-food functional upgrading

Policies and financing for cooperation in rural development and the modernization of agri-food production processes are at the origin of some important factors that facilitated both the competitiveness of the sector on the international market and the elimination of certain occupational risks. Indeed, two programs of financial support played an important role:

- Until 2008, support activities in the lychee sector were carried out within the framework of the 10th European Development Fund of the EU and IFAD, focusing on upstream processes (mainly replanting, structuring of producers, Global GAP and Fair Trade certifications).
- From 2010 to 2014, financial support was provided to exporters under the EU PIP program,¹⁰⁶ concentrating actions on sulphur control (GSAC) and support towards compliance to Global GAP certification and its GRASP¹⁰⁷ module. This latter program was largely responsible for functional improvements at the treatment stations.

This support to functional upgrading had a positive impact on labour productivity¹⁰⁸ as well as reduction and elimination of certain occupational hazards at treatment plant level, in particular:

- i) Reduction of sulphur exposure for treatment plant workers. The EU's PIP program enabled the financing of gas neutralization systems (for the gas released after sulphur combustion in treatment stations). All stakeholders identified this as a key factor in improving safety and health conditions in treatment stations over the last decade. Previously, sulphur chambers were degassed by simply opening the doors onto the reception and sorting lines.
- ii) Streamlining production processes and development of good OSH practices in certain workplaces. Support given to the sector and modernization of equipment in treatment plants allowed for the reorganization of workplaces towards more streamlined production processes. In this context, certain workplaces adopted processes that

are better suited to prevent occupational risks, in particular, ergonomic ones. For example, some treatment stations have set up ramps to unload lychee delivery trucks. Ramps allow for the flow of products on the sorting lines and limit the transportation of heavy loads. In some stations, lychees are sorted upon arrival, which also limits the volume transported, treated with sulphur, and subsequently sorted, thereby further reducing the sorters' exposure to sulphur.

The multiplication of the impact on OSH that this funding could have had was limited by the following factors:

- i) The weakness of systems for assessing productivity gains related to the improvement of working conditions, and in particular on OSH. The business case for good OSH practices and relative productivity gains remain somewhat vague to exporters.
- ii) Access to finance remains a bottleneck for investment in technological and functional upgrades that have positive effects on working conditions throughout the supply chain in Madagascar. In terms of investment, access to bank loans is not easy, which limits new entrants among exporters (i.e. significant investment required in terms of land purchase, construction of processing or transformation plant, purchase of processing or treatment equipment). Recently, private investors, notably pension funds from Mauritius, supported the development of export structures. In this context, part of the capital of the company becomes the property of the pension fund (in proportion to the investment granted). The exporter becomes associated and in charge of the management of the company. At present, three companies used this form of investment to develop their production capacity and upgrading. Where there has been funding through the above programs, they had no effect on upgrading of production processes at the producer level. Access to credit and savings services for producers is also limited. According to the Direction Générale du Trésor, there were fewer than 1,000 points of service in 2015.

¹⁰⁶ PIP: *Programme Initiative Pesticides* (Pesticide Initiative Programme) implemented by the Europe-Africa-Caribbean-Pacific Liaison committee (COLEACP).

¹⁰⁷ GLOBALG.A.P. Risk Assessment on Social Practice.

¹⁰⁸ Although there is no rigorous measure of productivity, the players in the chain agree that the rationalization of production processes and their modernization reduced the time of the season for the same production volume.

The microfinance sector is growing in Madagascar, but access is still inadequate, particularly in rural areas. To the worries of geographical access are added difficulties in fulfilling the conditions of access to credit.

- iii) Minimal sharing of good practices on production, productivity and OSH practices. Thus, production processes that reduced risks in certain workplaces are not necessarily shared or generalized to other worksites.
- iv) Access to professional consulting services that provide technological solutions to improve OSH and productivity is very limited. This type of service does not seem to exist in the supply chain in Madagascar. In addition, exporters underline difficulties in recruiting and retaining qualified supervisory staff from one year to the next. The remoteness from the capital city and the short duration of the season seem to limit the attractiveness of the sector.

Supply chain risk management

Given various health crises in Europe, significant consumer pressure emerged and led decision-makers to introduce stricter regulations on food products entering the EU market. Furthermore, in order to provide consumers with additional security assurance, numerous commercial certifications were introduced and progressively applied to products from developing countries (Global GAP - initially EurepGap and standards like IFS, BRC, ISO 9001, etc.).

Lychee from Madagascar followed this trend, as virtually all the products marketed are sulphur-treated before export and sulphur residue in the pulp is subject to a Maximum Residue Limit (MRL) to enter European markets (10 mg per kg of SO₂ in the pulp). Over the past five years, compliance with this MRL has been the main regulatory constraint importers encounter and that buyers (mainly large retailers) control before purchase.

In order to manage the financial risk associated with compliance with this MRL, large retailers that buy fresh lychees gradually imposed the implementation of a pri-

vate compliance initiative, known as the Global GAP certification. Failure to comply with the MRL has significant financial implications for importers, who see their goods rejected entry to the EU, and distributors, who are unable to source lychees. In 2010, excessive sulphur residues led to the closure of the German, Austrian and Swiss markets. Thus, retailers sought to minimize this health and financial risk by imposing a certification to their lychee supply chain in Madagascar.

In 2006, COLEACP's Pesticides Initiative Program (PIP no. 1) launched a program to support the sector and enable operators to meet the quality control requirements of their buyers. It was a voluntary program and led to the first exporter to undergo certification audit in December 2006. In parallel, local experts (from the *Centre Technique Horticole de Tamatave*) were also trained to implement quality assurance processes. The training was consistent with the requirements of the reference system (EurepGAP at that time) to support exporters wanting to comply with these new requirements.

After good agricultural practices, hygiene and food safety became flagship themes. In 2014, the first exporter of fresh lychee was certified according to IFS requirements (IFS Food version 6), as well as an exporter of processed fruit (it was IFS certified since 2011 but on different canned products). New emerging topics concern environmental protection, social practices and the safety of worksites. By 2015, some operators in the lychee supply chain began to meet the requirements of GRASP, a complementary module of Global GAP on compliance with working conditions. Under the pressure of consumers and buyers, in 2016, exporters were strongly encouraged to introduce the application of this module within their quality systems.

GRASP certification is not related to a particular product positioning and is not associated with a premium price for lychee sale. This is a condition of market access for a number of retailers. In particular, supermarkets in the German-speaking countries of Europe increasingly view it as a necessary element in their purchasing decision criteria.

The volume of products meeting these certifications increases every year and require exporters to adapt to the requirements of the standards.

Figure 22. Selected data on sulphur-treated lychee exports with Global GAP certification

	2013-2014	2014-2015	2015-2016	2016-2017
No. Of exporters certified with Global GAP (over a total of 30 in 2016-2017)	26	26	26	29
No. Of producers certified with Global GAP	325	322	362	817
Certified surface (hectares)	366,1	592,3	935,2	3961,1
Average surface per producer (hectares)	1,1	1,8	2,6	4,8
GRASP : induction initiated (over 30 exporters)	-	-	-	21
No. of exporters with at least 75% of their sales certified with Global GAP	-	-	-	9

Source: authors based on collected information.

Under pressure from buyers, in the 2016-2017 season, all but one exporter became certified as Global GAP. The GRASP module is also increasingly taken into account (21 out of 29 Global GAP certified exporters), although, in the same 2016-2017 season, only four fully met GRASP requirements. Global GAP certification measures the degree of compliance of the management system and agricultural practices, with a strong emphasis on food safety standards. Obtaining the certificate requires the establishment of a quality management system and traceability of the production chain from the outset. Compliance points are more extensive and distinct for processors, treatment stations, and packers than for small producers. Maintaining the certificate is subject to an annual, external audit for exporters, while producers are grouped and a sample corresponding to the square root of their number is audited randomly each year. In recent years, auditors noted an increase in compliance due to pressure from buyers, but also noted a better understanding of compliance points by processing and treatment stations. Nevertheless, conformity is more difficult to obtain with producers, particularly in regards to documentation of activities and the formalization of work.

Nine exporters now have more than 75 per cent of their production certified Global GAP, of which three have 100 per cent, representing a total of 546 hectares for the last export season. These nine exporters therefore accounted for 55.8 per cent of all producers engaged in certification, but only 13.8 per cent of certified areas. These exporters probably favoured and included in their networks producers who owned the parcels with the highest concentration of lychee

trees. The goal of importers is to move towards a 100 per cent certified Global GAP production by 2018-2019, which implies a reorganization of the supply chain for the remaining exporters during upcoming seasons. In practice, it is difficult for exporters to be partially certified. Indeed, this requires that products from certified parcels be identified and kept separate from others during all stages of production, transport, weighing, sulphur treatment, sorting and packaging. In processing and treatment stations with limited space and with significant time constraints linked to the short duration of the season, this separation is not easy, which pushes exporters to move forward in the Global GAP certification process.

The cost of the Global GAP certification (cost of audits and implementation support services) is financed by importers, which has been a key incentive to almost all exporters and an increasing part of their supply base (producers, transporters). The main impacts of this process on occupational safety and health in the supply chain are:

- i) Adoption of formal OSH management systems at processing and treatment stations. Stations have documented and implemented OSH risk management systems. This process of documentation, signage in the workplace and wearing personal protective equipment for the identified risks is directly related to the certification process.
- ii) Generalization of the formalization of work in treatment and processing stations, together with social security coverage during the contract period. As part of the certification process, documentation of the company's overall management

system requires proof of compliance with labour laws in force in the country. Most of this evidence is documentary and consists of the employment contract and the payment of social contributions. The systematization of verification (audit) in certified stations contributes to an effective formalization of the work and the protection that goes with it (health coverage, including occupational health and occupational health services and employment injury insurance).

- iii) New traceability from the exporter to the producer with two main consequences: (i) the professionalization of transporters (instead of collectors) with a certain degree of formalization and a fixed payment that does not encourage risk taking at work. This is contrary to volume-based payment under the prevailing system of collectors; (ii) the establishment of visible producer groups that have direct interaction with exporters. Direct contact enables awareness of good agricultural practices. Interactions occur through physical meetings before and during the season when basic questions are addressed, such as access to water, basic tree maintenance, and food handling. The Lychee Exporters' Group (GEL), in the framework of Corporate Social Responsibility, has been able to finance basic infrastructure to access water in certain places. Meeting the requirements of the Global GAP often requires investments at the level of production that the producers themselves are not always able to make.

These impacts, as illustrated above, are not always direct and may be limited by the following factors:

- i) At the level of processing and treatment stations, certification is widespread, and therefore affects OSH. However, those who are not certified do not seem to benefit from these impacts (one non-certified station, as well as non-certified producers, collectors and the ones operating for the local market).
- ii) The weakness of OSH risk management support services. Access to professionalized support (expertise, training, etc.) in the identification and assessment of risks at treatment and processing stations (and in Madagascar in general) is limited. In addition, the emphasis is most often on very high and visible risks (such as fire safety) and on the provision and wearing of personal protective equipment (PPE) rather than risk elimination or reduction. This is especially true with

risks that have the least visible, immediate effects (ergonomic risk factors, low prolonged chemical exposure, etc.). To the extent that the certification process focuses on the existence of a risk management system, its documentation and its visible application, does not necessarily make the content or how it was formulated, easy to evaluate (i.e. participation of workers, respect of the hierarchy of controls to eliminate and control risks, etc.). Taking this step further would require appropriate support services greater than just compliance checks.

- iii) The allocation of value in the supply chain does not always make investments in technological upgrading possible, which are necessary for the elimination or reduction of risk factors in the supply chain, in particular at the level of small producers. Indeed, the certification process can lead to gradual awareness on occupational risks and the need to address them (but also the need to formalize labour relations). However, this is not accompanied by a financial incentive to invest in the basic equipment and infrastructure necessary for the elimination or reduction of certain risks (in particular the risk of falling and the risks associated with basic health infrastructures at the producer level).
- iv) The lack of clarity in the legal framework for the protection of family and unpaid workers also limits the impact of certification on improving employment conditions in general and OSH in particular. In the case of the lychee supply chain, most workers fall under the definition of seasonal work under the Labour Code (Article 52) with the exception of producers and their unpaid family workers. For the supply chain, the risk of employing children under 15 years of age (minimum age for employment) and minors over 15 years of age can be easily controlled at certified treatment and processing stations (annual audit, and given the short duration of the season, control is systematic). Conversely, there is a risk at the level of small producers in view of the current social norm in a farming environment where all family members who are physically able to do so are expected to contribute to farm activities. The Malagasy legal framework does not openly address the issue of child labour in the context of unpaid family activities. However, we can give elements of understanding on the dynamics observed in the supply chain at the level of production. The very short

duration of the season does not suggest any major incompatibility with schooling and, if so, adjustments could be made relatively easily. Rather, the issue is with the definition of the activities carried out, the nature of certain activities at the harvesting stage (or rather the way it is practiced without equipment and tools) and the transport of heavy loads hazardous for health and safety, especially for children and young workers. The fact that the legal and institutional framework offers little clarity on the work of minors for unpaid family activities as well as the prevailing social norm in rural areas could play a role in the future evolution of the sector, in particular with the increase of the certification process. In many developing countries, pressure from international buyers to control risks in their supply chain related to their own image resulted in a certification becoming a market access requirement. In some cases where the regulatory framework for hazardous work was not sufficiently clear, understood and adapted to all sectors, the above-mentioned process may have resulted in the inability of some small producers to comply, thereby excluding them from the export market. One of the future challenges for the competitiveness of the lychee industry may be linked to this issue.

- v) Finally, the seasonality of the activity hinders rapid implementation of corrective actions when auditors identify non-conformity. The supply chain tends to evolve from one year to the next. The quick duration of the season does not often allow for the identification and implementation of corrective actions in the same season.

New markets

New, high growth, markets for ethical and organic products have emerged in Europe and North America. In 2012, sales of ethical products worldwide were almost six billion euros, six times more than in 2013.¹⁰⁹ The sector remains dynamic despite the economic crisis and food products constitute over 90 per cent of sales. The European Union is the world's largest market for these products, accounting for two-thirds of sales in 2012 (European Commission, 2011 and 2012 a, b, and c).¹¹⁰ Similarly, the market for organically grown products has grown steadily over the last ten years. The total value of the EU organic retail market has doubled from 11.1 billion euros in 2005 to 24 billion in 2014.¹¹¹

The distribution of these products evolved from specialized shops to a widespread distribution in supermarkets. This development was accompanied by the emergence of organic and fair-trade products in retailers' own brands (i.e. marketed under the own brand of supermarkets). This phenomenon affects the market for fresh products, especially exotic fresh fruits (bananas, mangos, lychees, etc.), which stimulates fruit importers' demand for organic and fair trade certified products.

Since 2006, several commercial constraints arose for lychee from Madagascar in relation to new consumer expectations as well as subsequent importers' demands (especially regarding ethics at work, workers' health and safety, product traceability, producer remuneration, etc.). This situation imposed the implementation of various certifications. Some correspond to a concern for risk management in the supply chain

¹⁰⁹ La Plate-Forme pour Commerce Equitable

¹¹⁰ European Parliament.2015.

¹¹¹ IFOAM-EU Group. 2016.

from retailers, as is the case for the Global GAP certification and its GRASP module mentioned above, while others respond to product positioning such as fair trade and organic farming certifications.

During the 2016-2017 campaign, five operators exported fresh, sulphur-treated fruit certified fair trade. The whole of canned exported lychees is also certified fair trade with part coming from organic farms. The market for this certification in Europe is growing every year, especially among retailers from German and English speaking countries. At the procedural level, these certificates are granted and maintained in the same way as the Global GAP.

Although farmers do not use agro-chemical inputs, organic certification is limited and auditors encounter significant compliance challenges faced by producers. These are mainly related to: (i) the difficulty of assimilating and maintaining the documentation required for the certification granting and compliance monitoring processes; (ii) the presence of chemical agents in the household (especially impregnated bed nets) where agricultural products are also stored; and (iii) the presence of carbon residues from slash-and-burn practices in the direct environment of farms. Furthermore, the organic market concerns only processed products (pulp, canned). Early harvest, sulphur-treated lychee is ineligible.

The main impacts on occupational safety and health are as follows:

- i) Adoption of formal OSH management systems at processing and treatment stations, following the same process as the Global GAP certification.
- ii) Generalization of the formalization of work in treatment and processing stations, together with social security coverage for the length of the contract, in the same way as for Global GAP certification.
- iii) Adoption of good agricultural practices at the level of certified producers (access to water, tree maintenance, basic training in food handling). Certified organic and fair trade producers are grouped in a cooperative with more than 500 producers, 90 per cent of whom produce lychee. Access to information and awareness-raising services is facilitated by: (i) the fact that organic and equitable certifications require the adoption of good basic

agricultural practices as key compliance points; (ii) that the cooperative is professionalized and has resources to invest collectively for the benefit of producers. Part of this investment concerns the working conditions of producers and their awareness of good agricultural practices. Via the functioning of fair trade, a premium price is paid for certified products shared between the producer and the cooperative. For this organic and fair-trade sector, there is a unique cooperative whose success is largely linked to its ability to market several export products (mainly fruits and spices).

- iv) Awareness of chemical and biological hazards within certified producers. Organic certification involves the strict adoption of production practices that by themselves eliminate chemical risk. This certification details the production processes and inputs used. It therefore requires producers be made aware of the identification of compliance points that are linked to environmental risks (underlying organic farming). In fact, these good environmental practices are concomitant with the elimination of certain occupational risks for producers and agricultural workers, in particular chemical and biological risks. Again, the collective organization of producers in a cooperative facilitate the awareness-raising process.

These impacts, as illustrated above, are not always direct and may be limited by the following factors:

- i) As for the Global GAP certification, the players in the supply chain who are not certified do not benefit from the impacts in working conditions and OSH. The cooperative organization marketing several types of products certified for export makes it possible to mitigate this limitation by ensuring that all member producers are monitored throughout the year.
- ii) Although the growth of this market is high, it remains small compared to the non-certified market, which in effect limits the number of eligible producers. Prospects for growth in demand in Europe are good, however, in this niche Madagascar is competing with Asian countries (especially for processed products such as juices and canned fruit) which have lower production costs (processing and packaging materials available lo-

cally at a low cost and economies of scale with large volumes and a dynamic regional and local market).

- iii) Although the cooperative is active throughout the year, some of the limitations created by the seasonality of the activity outlined above apply here as well, and so does the lack of clarity in the legal framework for the protection of unpaid family workers.

Existence of prevention, protection and compensation policy frameworks

Global market access and integration into a global supply chain led to modernization of production processes and, with it, two trends with opposite effects on OSH:

The emergence of new risks. Specifically, these risks relate to two main factors: (i) chemical exposure to sulphur in the processing of fresh fruit; and (ii) the new time constraints imposed by the export of fresh produce, which result in the need to work quickly.

Other issues, such as night work, sometimes in difficult climatic conditions for transporters, in particular, may exacerbate risks (i.e. road safety, etc.).

At the same time, the creation of formal jobs at the level of exporters (processing and treating plants) increased to meet the protection requirements of the Labour Code and the Social Security legislation.

This dual phenomenon resulted in both greater demand for prevention, protection and compensation services set up by the State, but also an increase in their effective use by previously uncovered populations. This was possible because policies and services in these areas existed, demonstrating that global market integration can be accompanied by improved working conditions, even in the least affluent of countries, when enabling policies and institutions exist.

Madagascar ratified 42 ILO Conventions and one protocol (of which 36 are in force), the following ILO instruments that relate to Occupational Safety and Health.

Convention	Date	Status
C081 - Labour Inspection Convention, 1947 (No. 81)	21 Dec 1971	In Force
C129 - Labour Inspection (Agriculture) Convention, 1969 (No. 129)	21 Dec 1971	In Force
C182 - Worst Forms of Child Labour Convention, 1999 (No. 182)	04 Oct 2001	In Force
C013 - White Lead (Painting) Convention, 1921 (No. 13)	01 Nov 1960	In Force
C004 - Night Work (Women) Convention, 1919 (No. 4)	01 Nov 1960	In Force
C012 - Workmen's Compensation (Agriculture) Convention, 1921 (No. 12)	10 Aug 1962	In Force
C006 - Night Work of Young Persons (Industry) Convention, 1919 (No. 6)	01 Nov 1960	In Force
C014 - Weekly Rest (Industry) Convention, 1921 (No. 14)	01 Nov 1960	In Force
C019 - Equality of Treatment (Accident Compensation) Convention, 1925 (No. 19)	10 Aug 1962	In Force
C089 - Night Work (Women) Convention (Revised), 1948 (No. 89)	10 Nov 2008	In Force
P089 - Protocol of 1990 to the Night Work (Women) Convention (Revised), 1948 ratified on 10 Nov 2008 (In Force) Has ratified the Protocol of 1990		
C118 - Equality of Treatment (Social Security) Convention, 1962 (No. 118) Has accepted Branches (b) to (d) and (g)	22 Jun 1964	In Force
C119 - Guarding of Machinery Convention, 1963 (No. 119)	01 Jun 1964	In Force
C120 - Hygiene (Commerce and Offices) Convention, 1964 (No. 120)	21 Nov 1966	In Force
C124 - Medical Examination of Young Persons (Underground Work) Convention, 1965 (No. 124)	23 Oct 1967	In Force
C127 - Maximum Weight Convention, 1967 (No. 127)	04 Jan 1971	In Force
C171 - Night Work Convention, 1990 (No. 171)	10 Nov 2008	In Force

Two main institutions provide prevention, protection and compensation services:

i) Occupational health services

As part of the Interdepartmental Health Services governed by the Labour Code, employers are obliged to provide medical services to employees in the formal sector, mainly:

- Medical check-up at hiring stage
- Systematic site visits
- Curative and preventive care
- Consultations, care and medicine

The promotion and prevention of occupational risks is the primary mandate of occupational health services. Occupational health services are organized by DECRET N ° 2003-1162. Services are decentralized (there is no equalization at national level or pooling of risk) and funded jointly by employers and workers¹¹² through the Inter-professional Medical and Social Organization (OMSI). Insofar as there is no health insurance scheme in Madagascar, the OMSI also covers the dependents of affiliated workers. In practice, occupational medical services are provided by the Inter-company Medical Services (SMIE) or, exceptionally, by the SMAE (Independent Medical Services run by the company itself). The OMSI therefore manages health centres where both formal contributors and their families access care (preventive, curative and pharmaceutical care). The creation of these centres is based on the volume of affiliates, so none currently exists in rural areas.

In practice, occupational health services provide annual medical examination to the various formal companies in the lychee supply chain (mainly exporters), with logistical problems sometimes linked to the very short duration of the season and OMSI's lack of internal capacities. For many seasonal workers this preventive contact with a health professional is often their only contact during the year. Access to care, in the OMSI's facilities, beyond the employment contract period is not possible. Private care exists, but is often outside the reach (financial, geographical etc.) of many workers.

ii) The National Social Welfare Fund (CNAPS)

CNAPS is a centralized institution with a tripartite governance structure that manages the three social security schemes set up by the Social Security Code,¹¹³ namely the family allowance scheme, the retirement pension scheme and the employment injury and diseases scheme. The latter includes provisions for prevention in three main areas: (i) the collection and analysis, in collaboration with the labour inspectorate, of data on occupational accidents and diseases during inspections; (ii) financing of preventive actions carried out by the member companies through a specific fund; (iii) the obligation to visually indicate (signage) risks and preventive measures at each affiliate's workplace.¹¹⁴

Benefits provided by CNAPS include:

- Benefits granted in the context of occupational accidents or diseases (medical expenses and annuities)
- Reimbursement of medical expenses for childbirth
- Half-pay compensation for women during maternity leave
- The implementation of health and social actions
- Old age pensions

CNAPS is responsible for the administration of the compensation scheme in case of occupational accident or disease. The effective coverage is mainly focused on formal sector enterprises in urban areas. The benefits covered by the scheme include: (i) temporary disability through income replacement, financing of related healthcare costs, and rehabilitation; (ii) permanent disability, through a periodic pension; (iii) death, with a periodic pension for survivors.

The impacts described above are limited by the following factors:

- i) The gap or discontinuity of protection linked to the seasonality of the activity. Workers at lychee treatment plants are affiliated to CNAPS and in some workplaces OMSI for the duration of their contract. Given the short duration of the contract,

112 Contribution rates: employer: 5%, worker: 1%.

113 Décret n° 69-145 du 8 avril 1969 fixant le Code de Prévoyance sociale.

114 www.cnaps.mg

however, this does not allow on-going access to social protection throughout the year. Moreover, this creates a heavy administrative process of affiliation and disaffiliation each year at the time of the exporting season, which lasts two weeks.

- ii) Limited availability and effectiveness of prevention, protection and compensation services. The services in question, especially occupational health services, are not always equipped to cope with a seasonal influx like that of the lychee season. In addition, staff are not necessarily trained to detect and respond to health problems related to exposure to specific (and relatively new) occupational risks in the supply chain.
- iii) Lack of integration and coordination as well as existing funding mechanisms for prevention, protection and compensation services. With regard to access to occupational health services and health care in general, the system is divided between OMSI, financed by compulsory contributions from workers and employers in the formal sector, and the Ministry of Health, which is supposed to take care of any person needing care. This situation creates a discontinuity of health contact points for workers at treatment and processing stations that are active only a small part of the year. In addition, OMSI funding is decentralized and there is no equalization at the national level, resulting in unequal distribution of health structures between regions and their absence from rural areas. Finally, there is no coordination or integration with the compensation mechanisms managed by CNAPS, although it is indicated in the Code of Social Security that CNAPS must participate in the prevention effort.
- iv) Coordination among actors responsible for compliance, prevention, promotion, protection and compensation functions is provided for in national regulatory provisions (policy formulation). In the field, the actors are few and have limited resources, causing limited effective service delivery. This is accompanied by limited coordination and cooperation.
- v) Coordination and collaboration with local authorities or decentralized services not directly responsible for the promotion of health and safety at work does not appear to exist. Insofar as services and presence on the ground are limited, the actors do not necessarily feel the need to engage

in coordinated strategies and concerted action at the sector level.

- vi) The limited scope of existing policies. The services mentioned above apply to certain categories of workers defined by the Labour Code and, in fact, exclude informal work. While formalized workers in lychee treatment and processing plants can benefit from preventive care and social protection during their contract period, the same is not true for producers and their agricultural and family workers.

The opportunity for a strategy to improve working conditions and competitiveness at the level of government services

At the government level, there is no current, concerted strategy linking compliance and competitiveness, or that, which is capable of articulating prevention, promotion and enforcement in an effective and balanced way throughout the whole supply chain. That is to say, a vision involving coordination of the various government departments responsible for support and compliance functions (in particular, the Ministry of Commerce, the Ministry of Agriculture, the Ministry of Labour and the Ministry of Health) articulating decent working conditions as a competitive advantage on the global market. This strategic vision is necessary to support a clear approach with the actors of the sector and to be able to replicate those experiences that have the most impact and success. The coherence and coordination of policies around working conditions in global supply chains in the country are limited.

Competitiveness issues related to respect for and promotion of decent work are slowly emerging, mainly due to pressure from European and American trading partners. It does not seem that this issue is at the heart of the relationship between the Ministry of Commerce and the exporters yet. The Ministry of Commerce appears to be progressively gaining awareness of the commercial impact of developing decent working conditions. However, there also appears to be a lack of internal capacity and coordination with other ministries on this topic, in particular with the Ministry of Labour. The latter has a labour inspectorate in charge of compliance. Nevertheless, the physical and monetary resources of these services, as well as their concentration in urban areas

and in particular the capital city, do not enable them to fulfil their functions of compliance control and advisory services on occupational risks in a proactive, effective and transparent manner.

The issues of working conditions in relation to competitiveness are not necessarily apparent or addressed by the players in the lychee supply chain, who, at this time, remain largely unorganized. The GEL is the main professional organization of the sector, representing exporters. On the workers' side, the existing trade unions in Madagascar are not present in the supply chain. As far as producers are concerned, they are also poorly organized, with the exception of a few cooperatives. Finally, as of 2014, GEL is no longer an active member of the GEPAT (Regional Employers Organization of Toamasina, representing employers in social protection institutions, in particular the OMSI).

Although lychee exporters are organized and have an ongoing relationship with the Ministry of Commerce, there does not seem to be a real strategy for expanding the industry based on its increasing compliance with international private standards. The Ministry organizes meetings with exporters once or twice a year and informs them of developments in the commercial framework as well as promotional events in which Madagascar is invited. Malagasy exporters and the GEL, in particular, do not seem to fully benefit from these opportunities to promote their products internationally. The Ministry appears to have difficulties in mobilizing exporters to participate in this type of forum. This poses two important limitations:

- Non-tariff trade barriers to entry in high value-added markets (US, Canada) limit the expansion of the sector and concerted lobbying would be needed to overcome these barriers.
- It does not yet seem that the potential for expansion and replication of the sector is apparent to the various stakeholders (government, economic actors). If perceived as niches, the global supply chains' potential to be leveraged for improving working conditions decreases.

The weak institutionalization of support functions to improve working conditions in the sector

As explained before, although the policy framework and some institutions exist, the reach of government services that are supposed to play a supporting role in improving working conditions, and in particular of safety and health, are limited:

- i) The services of the Ministry of Labour (OMSI, CNAPs) cover only the formal sector.
- ii) The national health system serves the population as a whole in theory. Agricultural producers and workers in rural areas do not benefit from occupational health services. Access to care and occupational health services in general is difficult. According to the WHO, in 2007, there were 0.161 doctors per 1000 inhabitants.¹¹⁵ This is one of the lowest densities in the world and hides a significant disparity between rural and urban areas. The producers and agricultural workers met during the field research did not report using any preventive services. Instead, delaying the consultation of a professional, which is seen as expensive and difficult to access geographically, was more likely. The health sector is mainly financed by the State, external aid and households through user financial participation introduced in November 1998. From 1997 to 2004, the public health budget in relation to the State budget remained stable or between 8 and 10 per cent. This allocation of resources does not guarantee universal access to basic health care, including prevention, (per capita health expenditure was estimated at US\$6 per year in 2004, while cost estimates for a package of essential health care are between 30 and 40 US\$ worldwide).
- iii) Rural extension services under the Ministry of Agriculture, and in general, are very limited in Madagascar. The Ministry of Agriculture focuses on regulation functions given its limited resources. The Department of value chains identifies promising sectors for each region and ensures their follow-up

¹¹⁵ http://www.who.int/gho/health_workforce/physicians_density/en/

with a view to maximizing value added, but this unit does not benefit from decentralized services. The lychee supply chain has potential in three regions. The structures identified at the local level are; chambers of agriculture; Agricultural Services Centres; the Tranoben'ny Tantsaha (TnT). According to the conclusions of the National Consultation for the Promotion of Social Protection for Rural Workers (ILO, 2015), reinforcing the effective presence of these structures and their field of action on the ground is necessary.

The fact that these support functions are weak has forced importers, in order to ensure that their supply chain meets the criteria required by their buyers and the EU's regulatory constraints, to finance and structure ad hoc support functions, in particular:

- i) Financing of the audit and monitoring system (training for self-supervision by the CTHT in particular) of Global GAP certificates.
- ii) Laboratory. Importers annually fund the CTHT for the establishment of a temporary laboratory for the analysis of fruit quality before export. These analyses concern the following parameters: maturity (Brix measurement), size (fruit diameter measurement), regulatory risk (measurement of sulphur content in fruit pulp), and storage risk (measurement of sulphur content in the fruit pericarp). The laboratory is at the port and operates 24 hours a day during the season. This temporary set-up alleviates the absence of a specialized permanent laboratory for the export of fresh products.
- iii) Harvest forecasting. Importers annually fund the CTHT for the follow-up of the lychee yield in the Toamasina region in order to provide information on available volumes and the strength and duration of the harvest period. With this information, importers, in consultation with exporters, set the dates for the presence of refrigerated vessels at the port of Toamasina.

iv) Autonomous port. Importers annually fund a logistics capacity building team at the port, which is responsible for strengthening the loading arrangements for the two refrigerated vessels. It is important to note that transport and loading teams at the port must be made aware of the risks associated with exposure to sulphur, in addition to the safety rules applicable to normal loading activities. The storage of freshly sulphured fruit in confined spaces (storage shed before loading, chilled storage) requires ventilation before any worker enters the site (aeration of storage sheds, aeration at the time of opening of holds before staff entry).

Given that none of these structures is backed by institutional support or institutionalized as such, limits the potential for extending compliance efforts and improving working conditions to the rest of Madagascar's lychee production and its other supply chains. Three fourth of the country's lychee production, for example, is not currently for export. The CTHT is the only semi-institutionalized, somewhat sustainable actor with public and private funds in the region and with the technical capacity to extend to different supply chains. In other countries and supply chains, some institutionalization of the support functions made it possible, in particular, to:

- Share good practices in production and OSH processes;
- Harness commercial expansion and added value in the producing country to invest in better working conditions;
- Encourage common awareness raising needed to implement a cultural change to the perception of occupational risk in rural areas, particularly at the producer level.

3 Opportunities to improve competitiveness and OSH

3.1. Safety and health vulnerability profiles

Field research revealed two key findings:

- Exposure to occupational risks and low demand for prevention are highly correlated with vulnerability of employment.
- A number of related precarious working conditions (contract, remuneration, working hours, access to social protection, etc.) increases exposure to occupational risks and its consequences.

It is necessary to assess occupational safety and health risks in context to apprehend the degree of vulnerability different categories of workers are experiencing, and further understand what drives these vulnerabilities. This case study proposes to explore the following dimensions to assess safety and health vulnerabilities:¹¹⁶

- Exposure: identifies occupational risks by activity and provides an assessment of the severity and probability of occurrence.
- Sensitivity: identifies the employment situation of workers. The specific characteristics of which are linked to risk exposure and influence its nature and frequency. The following factors are identified and analysed: access to a workplace risk management system; access to personal, collective and social protections that help prevent occupational risks; status in employment if linked to differential

¹¹⁶ This framework takes stock of various risk assessment methodologies, from both an OSH perspective (Alli. 2008; ILO. 2013) and a business and human rights perspective (Chan. 2012; Tromp.2016 and European Investment Bank. 2013).

access to prevention, promotion and protection against occupational risks; company or holding status, if linked to a differential access to compliance checks by relevant institutions (labour inspection, social security inspection, etc.).

- Coping capacity: identifies the strategies and resources that workers have to address consequences of risk occurrence. In particular, it is a matter of assessing access to care and compensation services in the event of an occupational accident or illness. Such incidences incur possible sanctions for the employer.

These three dimensions aim to capture a holistic way to view occupational risk vulnerability by looking at underlying factors. In particular, enforcement and access to prevention, promotion, protection (individual, collective, social) and compensation services are considered. This gives a greater understanding of the concept of vulnerability related to OSH risks. The present chapter describes the different profiles of safety and health vulnerabilities encountered within the lychee supply chain in Madagascar using the three dimensions mentioned above.

Casual agricultural workers and small producer

Production process

As soon as the lychee plot has more than three to four trees, producers tend to rely on agricultural workers for collection. To the extent that producers are small (two to three lychee trees), the harvest is usually completed by family members, whether paid or unpaid, on the family farm.

Harvesting is typically organized as follows:

- Each lychee tree has three workers in charge of the harvest, usually a man who climbs into the tree and two women who sort and pack fruits in *garaba*. *Garaba* are large bamboo baskets in which freshly cut *Ravenala* leafs are placed to keep lychees fresh.
- A supervisor or collector is in charge of assigning the roles and organizing the transport of *garaba* to either a collection point or directly to the truck, if on site, in the case of large farms.

- Once a number of *garaba* are ready, they are transported to the collection or transport point. The producer or producer group then sells to the collector (not certified) or loads them into the carrier's truck and accompanies the fruit to the treatment or transformation station. In this case, this is the point when the certified collector is paid.

Figure 23. *Garaba*



In general, to harvest lychee, almost no tools are used. The harvester climbs directly on the tree, which is often not maintained and therefore can be over 5 metres high, equipped with an empty *garaba* that he fills and sends down to the ground with a rope.

In the few existing plantations, men are assigned to the collection and women gather in a hangar for tailing and packing the fruit in crates. In plantations, tools are provided, such as ladders, and the trees are regularly pruned and therefore, shorter.

Exposure

The main occupational hazards identified at the harvest level include:

- Fall from heights: this risk is identified as the most serious, although its probability appears to be limited according to agricultural workers (no statistical data on accidents collected at the production phase). If a fall occurs, it can be very dangerous, as unmaintained trees are tall. Lychee is a brittle tree because of its Y-branching and when still young only a light person can climb without risk of breaking it. In this case, young workers are used.¹¹⁷

117 Producers and workers interviewed reported using children in these cases, with no specific age group defined.

- Fall and slips: linked to slippery and steep terrain (the lychee season is at the beginning of the rainy season).
 - Biological risks:
 - Insect bites, especially fly worms (with bee stings - *Anthophila* - type *Poliste* wasps - and mosquitoes - *Culicidae*) are reported frequently.
 - Dirty or non-drinkable water: as mentioned above, certified producers are meant to offer access to a water source, which is an exception compared to other agricultural production sites in the region. Although no information has been found on water quality, access to quality drinking water in rural areas remains a frequent problem in Madagascar and there have been no indication from lychee producers of use of water filters. Sanitation facilities are limited with little access to modern latrines, however the water, during the lychee season, does not appear to be soiled.
 - Physical risks - sunlight and heat: Exposure to the sun is limited insofar as harvesting is done in the tree's shade. Most sun exposure takes place during the transportation of *garaba* to the collection point. Lychees are not harvested during the hottest season nor are lychees harvested in the rain because sulphur does not bind well to the wet fruit. However, temperatures remain high, as for any agricul-
- tural work in the region, it is important to ensure access to drinking water. Certified producers are among the few who do so.
- Economic risks – transport and handling of heavy loads: the *garaba*, when filled, weigh 20 to 30 kilograms and are carried on the back or shoulders, without tools to facilitate transport. The *garaba* have a bamboo structure that tends to hurt the wearer when it is filled and heavy. Small cuts are frequently reported.
 - Psychosocial risks: operators have reported that there are isolated cases of cardiovascular accidents each year, in particular when a farmer or a collector arrives late and is refused delivery at the entrance of the treatment station. This risk is aggravated, as explained, by those with little, if any, access to health care services and who do not receive regular medical or preventive check-ups.

The exposure time for all of these risks is obviously very limited insofar as the season is short, which also limits the possible consequences. This is particularly true in regards to chronic diseases related to workstation ergonomics. The table below summarizes the main risks identified with the players. There is also a general risk mentioned by farmers regarding the security of their belongings, especially when they receive cash payment for lychees sold.

Figure 24. Main occupational hazards at production stage

Risk factors		Workers concerned	Severity	Probability	Ranking
Security	Falls from heights	Harvester (in the tree)	4 to 5	2	9
Security	Falls and slips	During <i>garaba</i> transport	1 to 2	3	3 to 6
Biological risk	Pest exposure	Harvester (in the tree, below the tree)	1	4	4
Biological risk	Unsanitary water exposure	All harvesters and possibly collectors during breaks.	2 to 3	3	6
Physical risk	Sun exposure	Harvesters during the transport of <i>garaba</i>	1	4	4
Physical risk	Heat exposure	Harvesters (in the tree, below the tree) and during <i>garaba</i> transport	1	3	3
Ergonomic risk	Heavy loads	Harvesters during <i>garaba</i> transport Collectors	2	4	8
Psychosocial risk	Cardiovascular accidents	Farmers and collectors	4 to 5	1	4 to 5

Source: authors based on collected information.

Severity: 1 / No work time lost, may require the use of the first-aid kit; 2 / Less than three days of inability to work; 3 / More than three days of inability to work; 4 / Major injury or severe disability; 5 / Invalidity or death.

Probability: 1 / Very unlikely, 2 / Unlikely, 3 / Probable, 4 / Very likely, 5 / Unavoidable.

Sensitivity

The sensitivity of casual agricultural workers and small producers to occupational risks is important. There are few control measures for the risks described above.

Measures to eliminate the risk of falls and loads imply modernization of production processes and using tools, which have not been possible to date. The lack of and irregularity of resources and limited knowledge at the producer level are key challenges to risk reduction. Although lychee revenues can represent 30 to 40 per cent of the producer's annual income, he or she does not have access to financial products to smooth out income over the year or financial education programs allowing for investments. Producers' saving capacity is also limited. This stage of production only captures about 10 per cent of the market value of lychees in Europe, thus constraining investment in modernization at this level of the value chain.

Young people are at risk of falling as they are called upon to harvest in young trees. Even established lychee trees can break easily so only a light person can climb up into the young ones. Harvesting young trees requires the worker to climb directly into the tree, thereby significantly increasing the risk of falling. No tools or protective gear is used due to lack of knowledge, resources and suppliers, which also increases risk. These young people are used on the spot and are often unpaid family members. The Malagasy Labour Code does not yet address unpaid, family work.

Control measures are also virtually non-existent. Awareness on control methods as well as risk perception are limited. Workers and producers are able to identify the risks they face, but living and working conditions in rural Madagascar are such that the need for, or the awareness of, the right to safe working conditions is not necessarily expressed. The absence of control measures increases the occurrence of risks, which for the most part would be relatively easy to eliminate or control.

The sensitivity to occupational risks is accentuated by the general health status of workers and producers. Access to health care and occupational health services in rural areas are limited in Madagascar. The fact that almost all workers at the production stage are both informal and temporary means they are ineligible for Madagascar's health and employ-

ment injury insurance schemes. These workers can use community health services, but those have limited human and financial resources that reduce both the geographical coverage and the overall quality of services.

Coping capacity

It is particularly difficult for casual agricultural workers, and small producers and their families, to cope with the physical and financial consequences of a work-related accident or illness. Insofar as their jobs are informal, they do not benefit from social protection coverage. Their geographical and financial access to health services is limited, as is their access to extension services (good agricultural practices, basic hygiene, etc.).

In the event of an accident, access to care is extremely restricted. At the certified sites, an emergency kit is provided, but medical facilities are often far from the production sites (apart from the few peri-urban sites around Toamasina). Since agricultural workers and small producers do not have access to sickness insurance or occupational risk insurance, they largely finance the costs incurred by any occupational accident or disease.

Gendered vulnerability patterns

Production process

Women involved in the lychee value chain are mainly concentrated at the production, treatment and processing stages. There is a clear division of labour according to gender. In terms of production, treatment and processing, women occupy a majority of positions involving the handling of fruit. At the production level, women are in charge of tailing and *garaba* packaging. Each lychee tree has three workers in charge of the harvest, usually a man who climbs into the tree and two women who sort, deck and put the fruit in *garaba*. In the few plantations, the work may be streamlined with the men assigned to the harvest and the women gathered in a hangar for the tailing and packing of fruit crates.

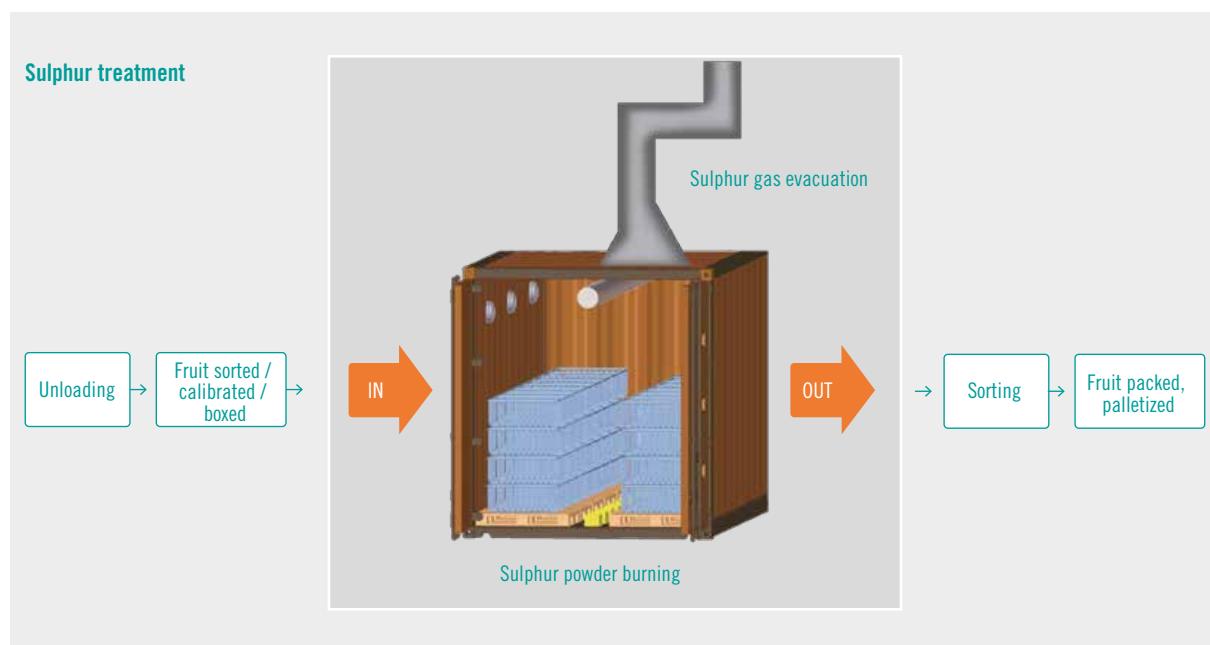
At the treatment stage, women hold jobs sorting fruit, which is usually done as fruit leaves the sulphur chamber. At the processing level, women occupy positions

preparing fruit and packing. Teams are divided into different workstations on a fixed basis (no rotation of posts) and there is a gendered division of labour (corresponding to workers' preferences at hiring stage).

Each workstation performs a series of operations. Once arrived at the treatment station, fruit destined to the fresh export market are:

- Unloaded;
- Sorted, calibrated, weighed (in some companies only);
- Sorted, calibrated, weighed (in some companies only);
- Put into boxes of 18 kilos, traced;
- Put into the sulphur chamber,¹¹⁸ exit the sulphur chamber;
- Sorted;
- Packed;
- Palletized;
- Loaded in trucks.

Figure 25. Sulphur chamber



Source: adapted from *Le Séchage Solaire à Petite Échelle des Fruits et Légumes* (GRET, 1996)

For processed lychees (canned, juice), after being unloaded, sized and weighed, the fruits are scalded, hand-pitted, packaged and sterilized. As this con-

cerns only a small part of the production, the risk analysis below focuses on fresh fruit.

¹¹⁸ Standard recommended usage is 600 grams per tonne of sulphur for transportation by sea, 400 grams per tonne for transportation by air. If the sulphur chamber is watertight and equipped with a powerful chimney, the gas released when the chamber is opened after treatment is limited to a minimum. The fruits release some gas when sorted and palletized.

Figure 26. Jobs at treatment level

Fonction	Dominant gender	Average proportion of total staff
Reception (unload, put into 18 kilo boxes)	Male	20%
Sulphur treatment	Male	5%
Cardboard preparation	Female	10%
Sorting	Female	20%
Packing	Male	10%
Cleaning	Mixed	5%
Traceability	Mixed	15%
Management	Mixed	10%
Other	not communicated	5%

Source: authors based on collected information.

Exposure

To the extent that women and men perform different jobs, exposure to occupational risks is also different. For women, specific risks are associated with food handling. Risks for women are mainly biological risks at the production stage and chemical risks at the treatment stage (sulphur dioxide in gas form). For men, as described above, the risks of falling and the risks associated with the transport of heavy loads are the most concerning.

At the production stage, men and women are vulnerable to the same risk factors regarding access to water and exposure to heat and sun, while some other risks are directly dependent on the gendered division of labour. In particular, women are in prolonged contact with fruits, which can lead to increased exposure to biological agents (bacteria, fungi, viruses, etc.). In comparison, men are at risk for falls (from the tree) and to ergonomic risks linked to the transport of heavy loads.

At the treatment and processing stage, men and women face the same risk factors related to the workstation (i.e. risks of fires, falling objects, etc.). The exposure differs, however, in the transport of heavy loads (function occupied by men) and sorting of product just after sulphur treatment (function occupied by women). As offered earlier, all of the stations are Global GAP certified with one exception and therefore comply with preventive and protective

measures to reduce vulnerabilities to some of the above risks, in particular:

- Access to a first aid kit;
- Access to a safety briefing at the beginning of the season;
- Marked workplace with security markings for each identified risk;
- Existence of a fire evacuation procedure and simulation exercises;
- Personal protective equipment (depending on the position);
- Affiliation to health insurance and occupational risk insurance for the duration of the contract;
- Medical visit at the beginning of the season (still a work in process for many stations).

Handling powdered sulphur, such as storage and use, is a priority, insofar as it is flammable and therefore a risk of fire exists.

The table below gives an overview of the main risks observed and reported in the treatment plant, given that additional risks exist depending on how each workstation is organized. Night work, the absence of job rotation and the length of the working day, often up to 12 hours, accentuate the probability of risk occurrence.

Figure 27. Main occupational hazards identified at treatment stage

Risk factors		Activity	Severity	Probability	Rank
Ergonomic risk	Heavy loads	Reception (unloading) and sulphur treatment (unloading of treated fruits in sorting mat) – positions dominated by males.	2	4	8
Chemical risk	Sulphur exposure ¹¹⁹	Sulphur chamber personnel Sorting after sulphur treatment – position dominated by females. ¹²⁰	5 1 to 2 ¹²¹	4 4	20 6
Security	Fall of objects	Preparation and storage of palletized cardboards. ¹²²	2	2	4
Security	Fire	All activities.	4 to 5	1	4

Source: authors based on collected information.

Caption:¹²³

Severity: 1 / No work time lost, may require the use of the first-aid kit; 2 / Less than three days of inability to work; 3 / More than three days of inability to work; 4 / Major injury or severe disability; 5 / Invalidity or death.

Probability: 1 / Very unlikely, 2 / Unlikely, 3 / Probable, 4 / Very likely, 5 / Unavoidable.

Sensitivity

Two factors reinforce the vulnerability of women to the specific risks they face: (i) limited access to occupational health services, including maternal and child health services, affecting their health at work; and (ii) limited access to specific infrastructure in the workplace and lack of job rotation.

The limited access to occupational health services mentioned above, especially for rural workers, affects women and their access to maternal and

child health services. This situation, coupled with the fact that most workplaces do not benefit from specific and adapted facilities (especially for pregnant and lactating women or for parents with young children), reinforces their vulnerability to the occupational risks to which they are exposed and may add to their stress level.

The influence of gender on labour roles is reflected in the absence of job rotation (at the production stage and at the treatment and processing stage). With prolonged working hours, the lack of rotation increases risk exposure. At the processing stage, working hours vary from one company to another, but the majority work 24 hours a day with a day and a night crew. Each crew generally works 12-hour shifts including a food break and breaks when carriers or collectors arrive.

¹¹⁹ NRS, Toxicological Data Sheets Database: "Acute exposure is responsible for severe respiratory disorders with pulmonary edema and bronchoconstriction. Non-specific bronchial hyperactivity may persist long after acute exposure. Chronic exposures are characterized by chronic bronchitis and pharyngitis. Exposure to this gas may also exacerbate pre-existing respiratory conditions. Current data do not allow sulfur dioxide to be considered a direct human carcinogen. (...) Sulfur dioxide produces severe irritation of the mucosa of the respiratory tract with cellular lesions and laryngotracheal and pulmonary edema. It causes severe irreversible damage to the skin and eyes. Repeated inhalation causes chronic bronchial involvement; In the case of ingestion, an alteration in the general condition of the animals is noted with diffuse organic damage. Hydrated derivatives (sulfurous acid or sulphites) can produce mutagenic and genotoxic effects in vitro. In vivo tests are negative. Sulfur dioxide is not classified as a carcinogen by the European Union. For IARC-IARC, it cannot be classified as to its carcinogenicity to humans (group 3). The data on fertility are not sufficient to conclude. A fetotoxic effect is noted in mice."

¹²⁰ The staff working with sulphur chambers is also exposed but to a lesser extent because: (i) the possible contact lasts a short time; (ii) the risk is well identified and the personnel concerned is equipped with complete personal protections - suit, anti-sulphur filter mask renewed every year, safety shoes, gloves, goggles.

¹²¹ Low concentration.

¹²² Depending on the ergonomics of the workplace, sometimes this activity is performed in an upper floor.

¹²³ ILO. (2013a)

Coping capacity

Adaptability when accidents or illnesses occur is often lower among women due to unequal pay at the production stage. In some cases, remuneration may be different for the functions of harvester, which is a predominantly male role and ginner or sorter often held by females. The latter is paid less. Remuneration received in exchange for work depends largely on geographical location. The closer the workplace is to Toamasina, the more agricultural workers have alternative options and therefore the bargaining power over their pay rate is often higher. The payment terms also vary with pay-for-performance practices more commonly found in remote areas. In the case of performance payments, no minimum income is guaranteed. For fixed daily payments, often practiced in peri-urban areas, the income is close to the minimum agricultural wage imposed by the law. Insofar as these peri-urban workers have more alternatives and thus greater bargaining power, higher wages can sometimes be secured. Access to social security benefits for sickness, maternity or occupational accidents for workers in treatment and processing stations including access to medical care (occupational health services and general medicine) is inconsistent. Workers are covered only for the duration of their contract. It seems that for female workers this one of the few formal job options that exist.

Given the weak organization of workers at all levels of the supply chain, it is difficult for workers, and in particular, the most vulnerable workers among which women are highly represented, to request specific consideration of the occupational risks they face.

Vulnerability is linked to seasonality of employment. Occupational risks are exacerbated by the short lychee season. Occupational risks identified above are reinforced at all levels of the supply chain. Three main consequences are:

- i) Weak capacity / professionalization of economic actors (farmers, harvesters, management, workers);
- ii) Lack or inconsistent access to social protection linked to the seasonality of contracts;
- iii) Weakness of collective organization and a productive social dialogue on hazards.

Capacities and professionalization

As mentioned in the previous sections, identified risks in the supply chain are related to a low level of professionalization, which involves a lack of equipment (especially at the stage of production) and limited knowledge and awareness of occupational risks. This combination acts as a constraint against adopting appropriate control measures. Despite some initiatives to strengthen capacity, regarding work safety, basic hygiene measures, and good production processes, results remain mixed. High staff turnover (only about half of seasonal station workers return the following year), and the lack of investments in human resources, given the short duration of the lychee season, compounds the problem. Few incentives exists for employers and produces to support greater value distribution within the supply chain. While some lack the financial means or backing to do so, others simply cite the short duration as a reason not to invest.

Discontinuity of protection

As mentioned, jobs at the production stage are informal and therefore enjoy little protection, medical surveillance or training on occupational risks.

At the transport, treatment and processing stage, the majority of jobs are "non-standard". These are seasonal jobs and therefore the protection granted by the Labour Code is less than that granted to permanent workers.

Treatment station workers benefit from more employment-related protection than farm workers and producers. All but one of the stations are Global GAP certified, which means they are regularly audited. The certification module includes compliance with legal obligations in the area of labour law. As a result, station workers are formalized, have employment contracts, receive payment for overtime and are affiliated to social security (CNAPS and for some workplaces OMSI) for the duration of their contract. Wages vary from one company to another, but the total remuneration is on average twice the minimum wage. This does not necessarily mean that the hourly rate is higher than the minimum wage, as in many cases it is related to the number of hours worked (12-hour shifts) and night work. Protection for station workers is limited by the very short dura-

tion of their employment contract. Again, while station workers are affiliated to the social security system for the duration of their short-term contract, continuity of access to medical care (occupational health services and general medicine) as well as benefits in the event of sickness, maternity or accident at work are not guaranteed throughout the year.

Lack of collective organization

Finally, women and men who work in the lychee supply chain are poorly organized. There are no unions or structures organizing or engaging in social dialogue. In this context, workers, and particularly the most vulnerable among which are women, have difficulty making their voices heard and demanding specific considerations based on the occupational risks they face.

Vulnerability of surrounding communities due to waste management practices

The potential impact of surrounding communities of sulphur exposure, if identified as a workplace risk, exists, in particular the release of SO₂ gases via station chimneys and via waste management. Both empty bags of sulphur powder and lychees freshly treated with sulphur, but sorted out, are thrown away outside treatment stations. Concerning this last point, during the season it is possible to see locals collecting the discarded fruit (treated with sulphur) by hand, and without protection, in order to resell these fruits on the local market.

This is in line with a more general phenomenon of inadequate waste management at the collection, processing and processing stages, due to limited incentives to adopt good environmental practices.

3.2. Opportunities for intervention

Considering incentives and constraints for OSH as well as vulnerability in the lychee value chain, several objectives could be set to improve the competitiveness of the value chain and its OSH outcomes. Interviews carried out downstream the chain, with distributors and certification bodies reveal that OSH is an important and increasing part of the standards imposed by purchasers to their supply chain, both for reasons of consumers' expectations and food safety regulations. The trend is towards increasing demand for compliance throughout the supply chain. Thus, the implementation of advanced occupational risk management systems in line with ILO instruments contributes to this market requirement and anticipates new market trends (GRASP certification and others).

Control of hazards at the level of farmers and agricultural workers

Reducing occupational risks during harvesting season for farmers and agricultural workers requires the adoption of production standards and support for their implementation to include training, and co-financing mechanisms. These standards should address, in particular, the following aspects: height of trees, minimized through regular maintenance and pruning, use of tools, the size and weight of *garaba*, access to clean drinking water near production sites, and access to necessary first aid equipment. These elements are in line with sections AF 4.1 and 4.4 of Global GAP (OSH risk assessment, clothing and protective equipment). The interventions detailed below could help achieve this result:

- **Training** of farmers and agricultural workers, preferably through existing mechanisms (cooperatives, smallholder groups, regular contacts between farmers and exporters). A training plan could span

over several seasons and include key elements facilitating both OSH improvement and compliance with Global GAP and GRASP. Basic training in OSH and good agricultural practices could incorporate the use of new rope and hand pruning shears when pruning trees, and the use of smaller *garaba*, in agreement with exporters. Training in the assessment of the producer's occupational hazards and basic farm-level changes would also be important.

- Program for the **adaptation of production sites**:
 - Replanting and pruning plan with the producers of the sector. In order to link the good practice and economic performance, the industry could adopt differentiated remuneration practices (separate pricing) based on quality and for calibration at the entry station.
 - Widespread adoption of smaller *garaba* and maintenance of access roads.
 - Sustainable funding and procurement mechanisms for equipment (first aid kit, basic tools for pruning and harvesting, water supply mechanisms, smaller *garaba*), in connection with the Global GAP provisions on hygiene (water points and supply of drinking water) and safety (emergency kits).
- Pre-harvest **prevention campaign** and recording of incidents and accidents at the production stage. There is the possibility of doing so via mobile applications insofar as some treatment stations already use this method to pay farmers.
- **Organization** of farmers, with a promotion and potentially an incentive (engagement with exporters) to group in cooperatives and associations, which could serve as channels for dissemination of good production practices and certification.
- **Capitalize** on productivity gains and improved (safer) working methods on other crops (pepper, clove ...) in order to reinforce the sustainable adoption of new practices.

The potential for **technical and potentially financial support from international purchasers** from importers to end buyer on items 3.2.1 and 3.2.2. This could be discussed and evaluated to the extent that these practices already exist in the value chain.

Control of hazards at treatment and processing plants

Eliminating and reducing occupational hazards in processing and processing plants requires strengthening the capacity to implement an OSH management system in line with ILO instruments and in particular ILO-OSH 2001 guidelines. The sustainability of risk management practices also depends on the ability to relate productivity gains and the strengthening of links with institutional support structures. The interventions detailed below could help achieve this result:

- Implement **prevention and information activities** at the station before each season, in collaboration with the organizations in charge (CNAPS, OMSI), adapted to the risks and needs of treatment and processing stations. This would facilitate the application of GRASP points 4 and 8, where there is provision for awareness-raising on the national regulations in force for the personnel responsible at the lychee treatment stations, but also at the producer level (with proof of attendance).
- Review the **ergonomics and arrangements of workplaces and processes**. (Collective Protective Equipment such as unloading ramps, but also practical changes such as sorting before sulphur treatment to reduce chemical exposure, rotating stations, the use of shorter shifts and the avoidance of night work, especially at peak hours) and measure productivity gains. Adjusting work shifts is aligned with GRASP compliance point 11 (see in bibliography Global GAP and GRASP referential) regarding a maximum of 60 working hours per week. Measuring and documenting the links between productivity and the reduction of risk factors is key to establishing additional, sustainable good practices and facilitating their adoption.
- **Share good practices** amongst the different players in the sector and other sectors via existing structures, such as the GEL, and the adoption of OSH, good practice charters. Establish a dialogue between the different supply chains in the production area (pepper, clove, etc.) to share good practices and reduce compliance costs.
- Ensure the implementation of **annual health checks** in collaboration with OH services (OMSI). This point corresponds to compliance with the Global GAP, point CB 7.8.1.

- Strengthen the capacity of actors and their **subcontractors** (transport) to reduce and manage risk together (in particular with regard to road safety and regulation of the quantities transported). This reflects the Global GAP compliance point QM 10.
- Strengthen the **occupational risk identification and management systems** in line with ILO-OSH 2001 (ILO, 2001), in particular to strengthen the capacity of stakeholders to create participatory risk management (management - workers) mechanisms. This links sections AF 4.1 and 4.4 of the Global GAP framework.
- Develop a strategy with supply chain players to create / include **OSH focal points and advisory services** within work teams and business service providers. Evaluate the feasibility of providing these services to other related supply chains. Create a pool of public-private expertise on key prevention issues that can also involve and benefit other agri-food value chains.
- The potential for **technical and potentially financial support from international purchasers** from importers to end buyer on items 3.2.1 and 3.2.2 could be discussed and evaluated to the extent that these practices already exist in the value chain.

Coordination and effective implementation of support functions for the promotion, prevention, protection and compensation of occupational risks

Reducing factors that increase vulnerability to occupational hazards within the value chain and, in particular, at the first levels of production require access to support functions in the promotion, prevention, protection and compensation of occupational risks. Organizations such as CNAPS and OMSI, as well as the Ministry of Health mandate these support functions. The interventions detailed below could help achieve this result:

- Implement **prevention and information actions** on OSH and labour legislation jointly by CNAPS and OMSI at the treatment and processing stations and

then at the level of the farmers' groupings. Coordinate access to prevention, promotion and protection services (OMSI, CNAPS, external service providers).

- Strengthen the **capacity of occupational health services** to: (i) ensure the affiliation of temporary workers, and (ii) respond to the seasonal flow of workers from treatment and processing plants, specifically concerning annual check-ups, which relates to compliance with GlobalGAP CB 7.8.1.¹²⁴
- Find appropriate solutions (feasibility study, monitoring, monitoring and evaluation) to promote **prevention services for the rural economy**: itinerant preventive health services, training of rural extension services to occupational risks, etc. Explore options for public-private partnerships in strengthening capacities for geographical access to prevention services (e.g. extension services, roving services, etc.) for the lychee and other chains with the same production base (pepper, clove, mango ...).
- Study the **feasibility** of an appropriate legal and administrative framework to ensure the continuity of social protection coverage and medical follow-up of seasonal formal workers for the rest of the year. This could be done in support of the government's current work on the social protection of rural workers and a pilot proposal could be made for the Toamasina production area. This should also include a simplification of the administrative procedures for affiliation and registration for rural populations.¹²⁵

Formulation and implementation of an agri-food export competitiveness policy integrating OSH compliance as a key factor

The following activities could be carried out in connection with the various agro-food supply chains of the country that can benefit from the experience of the lychee industry (vanilla, pepper, clove, etc.):

- Develop a **strategic vision** with the relevant ministries (labour, health, agriculture, trade) on the

¹²⁴ "Does the producer offer all employees in contact with plant protection products to undergo annual health examinations or at a frequency appropriate to a risk assessment that takes account of their exposure and the toxicity of the products used?"; therefore an annual health check for at least agents working directly in contact (manipulations) with sulphur.

¹²⁵ In connection with the constraints specific to the rural world in Madagascar the registration of births and the renewal of identity papers for example are not always the rule. Moreover, what emerges on this point from the application of GRASP is that at the level of the production plots those administrative difficulties further complicate the formalization of seasonal workers.

competitiveness of agricultural sectors including improving safety and health at work to overcome barriers to increasing market entry requirements. This could be done in conjunction with the recent adoption of the National Plan of Action for the Promotion of Decent Work in the Rural Economy.

- Strengthen the Ministry of Labour's capacity to **formulate and implement a compliance strategy** that takes into consideration the priorities, opportunities and possible partners to strengthen workplace compliance with existing regulations. In this context, identify those parts of the **legal framework** that could be reviewed (in particular strategies for the protection of minor unpaid family workers)¹²⁶ and fortify exchanges with private compliance initiatives within the strategic planning of the Ministry of Labour and its Inspection.
- Strengthen coordination mechanisms and institutional capacity of the ministries concerned to **integrate prevention, promotion and compensation services** (especially in the context of improving the social protection of rural workers). See how current funding and service provision mechanisms can be improved and how to mobilize public-private partnerships.
- Initiate work with **Global GAP** on the points of reference, which could be clarified or better adapted to professional conditions and sector risks. Specifically, considerations in relation to national legislation are assessment of occupational risks, requirements on work hardship (rotation), registration of accidents and incidents, risks related to road safety, subcontracting, work of minors, documentation of employment contracts and the minimum wage.

¹²⁶ In practice, there may sometimes be the employment of teenage workers to help during the harvest, mostly in the family (in connection with GRASP item 8). In theory, the authorization of the Labour Inspector would be required for each case, which is very complicated for the time being in rural areas. For those companies that have implemented GRASP, no employed minors under 15 years of age has been declared or observed. However, this represents the "GlobalGAP" plots, so a small percentage of plots for now.

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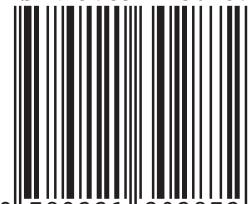
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