



International  
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# VISION ZERO FUND



Occupational safety and  
health improvement in

# AGRICULTURE GLOBAL SUPPLY CHAINS:

Drivers and constraints

A SYNTHESIS REVIEW



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# Introduction

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Goods and services are produced and traded across multiple countries and enterprises that operate in global supply chains. Supply chains are defined as “goods and services that cross international borders for consumption or as inputs for further production” (ILO, OECD, IOM and UNICEF 2019, 2). Participation in global supply chains has provided economic growth and jobs for workers in many countries; however, failures at all levels within global supply chains have contributed to decent work deficits, including in the area of occupational safety and health (OSH) (ILO 2016a).

Food and agricultural global supply chains represent a high percentage of global trade, both in value and in volume (ILO 2017a). According to ILO estimates, in 2019, the agricultural sector constituted 26 per cent of global employment and over half of total employment in many developing economies.<sup>1</sup> In terms of fatalities, injuries and work-related diseases, agriculture is one of the most hazardous sectors of activity (ILO 2010; ILO 2013a; ILO 2014). Globally, 27 per cent of farmers, farmworkers, fishers and agricultural labourers were recorded as having been seriously injured while working (Lloyd’s Register Foundation and GALLUP 2019).

To inform the development of strategies to improve OSH in agricultural global supply chains, a better understanding of the OSH challenges in global supply chains and on opportunities for improvement is required. The Vision Zero

Fund works to fill knowledge gaps through various research activities and initiatives, including by conducting assessments of the drivers and constraints for OSH improvements in global supply chains, to design customized country-level interventions and activities targeting a specific global supply chain in the selected country. The methodology used in the assessments was developed by the ILO (ILO 2018).<sup>2</sup>

The assessments help to identify the occupational hazards and risks to which workers are exposed in different stages of the global supply chains, the groups of workers who are exposed to these hazards, and the workers who are most likely to suffer from exposure and who have limited capacity to cope with the consequences (also referred to as “OSH vulnerability profiles”), as well as the drivers and constraints for OSH improvements in global supply chains. As of May 2020, seven case studies had been conducted in the agriculture sector, covering five products (coffee, cotton, ginger, lychees and palm oil) and six countries (Colombia, Indonesia, the Lao People’s Democratic Republic, Madagascar, Mexico and Myanmar).<sup>3</sup>

The objective of this synthesis review is to identify OSH vulnerability profiles and common drivers and constraints for OSH improvements in agricultural global supply chains based on these case studies. The findings provide information that can assist in developing effective strategies

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1 Data retrieved on 29 January 2021 from the ILOSTAT database.

2 The methodology was developed by the International Labour Organization (ILO) under the Safety + Health for All flagship programme. The methodology builds on the ILO’s Market Systems for Decent Work approach. The terminology in this report is based on that document.

3 The case studies in Colombia, Indonesia and Madagascar were conducted as part of a joint ILO–EU project to improve the knowledge base and safety and health in global supply chains to support the G20’s work on safer workplaces, under the Safety + Health for All flagship programme.

to improve OSH in agricultural global supply chains and to identify research gaps and potential for future research.

When identifying and analysing OSH vulnerabilities, most of the ILO case studies focus on the stages of the global supply chain that occur in these developing countries only. The studies do not cover the working conditions of workers in the production of upstream inputs (agricultural inputs) or final distribution and marketing. While all studies included farming, analysis of processing activities was limited for some countries. This can be explained partially by the fact that the processing activities carried out for some products are limited in some countries.

Information included in this review for Colombia, Indonesia, the Lao People's Democratic Republic,

Madagascar, Mexico and Myanmar is drawn from the country case studies, and the analysis is limited to the information available in the studies. No additional primary data has been collected. The findings in this report should be read in this context.

The report presents the findings from the synthesis review. The first section discusses general characteristics of agricultural global supply chains, using the ILO case study products as a reference. The second section describes the OSH vulnerability profiles for agricultural global supply chains in farming and processing for the products covered in the case studies. This is followed by an overview of the identified drivers and constraints for OSH improvements. The report concludes with a summary of the findings and recommendations for future research.

## VISION ZERO FUND

The Vision Zero Fund is an initiative of the G7 countries and is endorsed by the G20 countries. It works to prevent work-related accidents, injuries and diseases in global supply chains. The Fund is administered and implemented by the ILO and is a key component of the ILO Safety + Health for All flagship programme. Currently, the Fund operates in eight countries and in two sectors, garments/textiles and agriculture. For more information, see: [www.ilo.org/vzf](http://www.ilo.org/vzf).



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# Characteristics of global supply chains in agriculture

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# 1. Characteristics of global supply chains in agriculture

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Global supply chains are complex, diverse, fragmented, dynamic and evolving organizational structures (ILO 2016b). Agricultural global supply chains are no exception. They differ based on product, process and end markets, and different types of enterprises and workers are involved in different countries and stages of the chain. This section provides a brief overview of commonalities and differences across agricultural global supply chains in the ILO case studies.

Global supply chains in agriculture span from the provision of inputs through to marketing and distribution, as described in table 1 below. The most important inputs for the industry are seeds, agrochemicals (fertilizers, herbicides, fungicides and pesticides) and farm equipment and machinery. In the countries under review, these supporting inputs are often imported.

In the ILO case studies, the farming or production stage of the agricultural global supply chain begins with the preparation of land and planting of seeds,<sup>4</sup> which is followed by crop husbandry (such as fertilizing, treatment/spraying, pruning and weeding) and harvesting. After the harvest, the products are transported for processing. Farming activities are similar across products, although the terminology used in each industry differs. The farming stage employs the most workers, particularly crop husbandry and harvesting, which represented the largest share of workers in the ILO case studies.

The processing/transformation stage is divided between production for fresh consumption and

for processing. Processing activities vary by product. For example, coffee involves pulping (wet/dry), milling/hulling and sorting, whereas palm oil involves sterilization, pressing, boiling and refining. Processing also varies based on the final use; for example, ginger can be dried for export or exported in fresh form. Fresh ginger is sorted, washed, trimmed or cut, treated and packaged for export.

Often, processing or transformation occurs in an industrial facility or factory. Compared to farming, processing employs fewer workers and more permanent workers. It is not uncommon for some processing activities to take place in a different country from the farming. In some cases, primary processing activities are undertaken by smallholder farms in village-based or household facilities.

Distribution and marketing are the last steps of the chain before consumption. Activities involve developing, marketing and branding the final product and distributing it to the consumer. These activities are performed by the lead firm or brand owner and primarily take place in developed countries or the country of consumption.

Global supply chains also involve a range of actors and institutions supporting OSH, which include:

- the national authorities responsible for OSH (such as the ministry of labour or the ministry of health) and the ministries responsible for the sector (for example the

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<sup>4</sup> The frequency of land preparation and planting activities varies depending on the crop, from once annually to once in several years.

- ministry of agriculture or the ministry of industry), and the ministry of trade;
- institutions for OSH prevention, promotion and compensation (such as health and social protection schemes, occupational health services,<sup>5</sup> social security institutions, OSH advisory services and training providers);
- providers of services related to employment and skills (public or private);
- input retailers providing support to farmers;
- employers' and workers' organizations, and other industry associations such as cooperatives and farmers' organizations;
- private compliance initiatives<sup>6</sup> and certifications.

## Economic units and types of employment

Farming and processing operations are carried out by different types of interconnected economic units and workers. Farming activities are carried out by smallholder farms, cooperatives (for some products), large-scale plantations/farms and estates, and intermediaries (collectors or traders).

Farming involves a significant number of informal workers and businesses. Smallholder farms are self-employed farmers or informal businesses and employ informal workers, including the farm owner, family workers and sometimes temporary daily workers. Farming also takes place on plantations or large farms that employ a mix of permanent and formal or informal temporary workers.<sup>7</sup> Certain tasks, such as harvesting, are often temporary jobs because they require a significant number of workers for a short period of time.

The number of processing steps varies by product and final use, and the number of economic units (farmers, intermediaries and processors) involved depends on the degree of vertical integration. Generally, plantations are more likely to be affiliated with or owned by a processor. Smallholders can be independent, affiliated with a producer organization such as a cooperative, or affiliated to a specific processor or trader. Sometimes smallholders carry out initial processing prior to selling their output. Plantations usually produce for exports, whereas smallholders produce for both domestic and export markets.

5 Occupational health services provided by occupational health professionals include promotional, preventive and curative activities. Different models exist and can be combined at the national level: internal services (in large industries); external services; private healthcare centres, primary healthcare and public healthcare providing occupational health services; group services owned or organized by several companies; and hospital polyclinics.

6 Private compliance initiatives are defined by their status as private, voluntary mechanisms for monitoring compliance with public standards (laws or regulations) or private standards (codes of conduct and so on) (ILO 2013b). There are a variety of types, including self-assessments (management systems), auditing (internal and external), certification and labelling, and public reporting. Private compliance initiatives aim to provide a level of transparency external to the enterprise that is generally consistent with national law (ILO 2013b).

7 Temporary employment, whereby workers are engaged only for a specific time period, includes fixed-term, project- or task-based contracts, as well as seasonal or casual work, including day labour.

► **Table 1: Characteristics of global supply chains in agriculture**

Value chain stages	Raw materials/inputs	Farming	Processing	Marketing and distribution
Transformation process	(a) Provision of inputs	(b) Production, (c) Collection, transport intermediaries	(d) Transformation	(e) Export and import; (f) Commercialization and distribution
Products	Seeds Agrochemicals (fertilizers, herbicides, fungicides, and pesticides) Machinery Equipment	Fresh coffee cherries Fresh lychees Ginger Cotton Fresh fruit bunches (palm oil)	Parchment, green beans (coffee) Canned/frozen, fresh (lychees) Fresh or dried (ginger) Fibre (cotton) Crude palm oil, crude palm kernel oil (palm oil)	Roasted or ground beans; instant (coffee) Fresh or canned (lychees) Fresh or spice (ginger) Textiles (yarn, fabric), then apparel, home, hygiene products (cotton) Food, cosmetics/soap, biodiesel (palm oil)
Employment status	Varies depending on input and producing country	Self-employed (farmer) Family members Temporary workers (including migrant workers) Permanent (agricultural workers) <sup>1</sup>	Permanent (core staff) Temporary (1-5 months)	Varies depending on product and countries
Type of firms/ economic units	Varies depending on input and producing country	Smallholders Plantations/estates Traders/ intermediaries (service provider) Cooperatives	Factories/mills Smallholders, community-based facilities <sup>2</sup>	Occurs in other countries (Importers, Distributors, Retailers)
Occupations	Varies depending on input and producing country	Farmer/agricultural worker Porters/loaders/traders	Sorters/cleaners Machine operators	Varies depending on product and countries
Activities/ operations	Often imported	Land preparation/cultivation Planting Crop maintenance/husbandry (treatment/ spraying, pruning, weeding) Harvesting/picking Loading  Transportation to processing	Pulping (wet/dry), milling/hulling, sorting (coffee) Treating, sorting (lychees) Sterilization, pressing, boiling, refining (palm oil) Drying, slicing (dried ginger) Sort, wash, trim, treat, package (fresh ginger) Ginning (cotton)	Transporting (all) Roasting (coffee)  Packaging Branding Retailing

**Notes**

1 Appear to represent less than 10 per cent of the workforce in farming;

2 For some products and countries such as coffee, smallholders engage in some initial processing activities in-house or using shared facilities, often using less-sophisticated methods.

**Sources:** Palm oil, lychee and Colombia coffee: ILO 2017a; Lao People's Democratic Republic coffee: Boquiren and Idrovo 2020; Mexico coffee: Mogrovejo et al. 2020; Madagascar cotton: Rasolonjatovoarivelo 2020; Myanmar ginger: Boquiren and Villaruel 2018; Ryan and Htay 2021.

The specific global supply chains share the following characteristics:

- All products covered by the case studies are seasonal except palm oil (fresh fruit bunches are harvested every 15 days). Seasonal products are harvested once per year, spanning two weeks in the case of lychees and up to five months for cotton.
- The farming stage of the chain is not concentrated in terms of the number of firms, but the mid-stream and downstream stages in coffee and palm oil are. In palm oil, six companies account for over 90 per cent of global trade. In coffee, five international trading companies account for over 40 per cent of total coffee trade, and two roasters accounted for a quarter of the global market in 2016 (UNCTAD 2018).
- Production areas within countries is concentrated in a few rural areas, except in Colombia and Mexico, where production is more widespread.

## Final products and types of buyers

Agricultural products can be distinguished by the degree of processing required for them to become a final product and by how the final product is sold on the market. These traits are highly correlated with the type of final buyer. For example, **coffee** is a consumer product that exhibits characteristics of buyer-driven governance. In buyer-driven chains, the final products are sold by lead firms (brands/retailers) that control marketing and branding activities. These firms do not own the stages of production, but purchase from or outsource to unaffiliated third parties.

The second group is products that are sold in fresh or minimally processed forms (**ginger and lychees**) and represent niche or specialty products. Processing often varies by end market. For example, ginger from Myanmar is sold via the European Union (EU), the United States of America and Japan (dried, certified ginger/fresh ginger), other Asian countries (fresh ginger) and the domestic market.

**Palm oil and cotton** are commodity inputs incorporated into generic food products and non-food consumer products. Palm oil is used as a cooking oil, and is also an input for cosmetics, soap and biodiesel, among other products. Cotton is primarily processed into textiles that are further processed into garments, home goods and hygiene products. Both are produced in large volumes globally.

Table 2 provides estimates of employment in the farming or production stages of the chain in each case study, and the breakdown of workers by economic unit and employment status in farming. It also includes employment in processing, where such information is available. Farming employs many people across the country cases and vastly more people than processing does. For example, 5.5 million people are engaged in farming for palm oil in Indonesia, whereas processing employs approximately 66,000 workers. It is the only country and product where farming is split between smallholders and plantations. Lychees and ginger are farmed exclusively by smallholders. Based on data available in the case studies, less than 10 per cent of workers engaged in farming hold permanent positions as agricultural workers.



► Table 2: Country cases: Scale and types of employment and firms

Product	Country	Farm employment	Processing employment	Farming employment by type of unit and farm worker status	
				Smallholders	Plantations <sup>1</sup>
Palm oil	Indonesia (2017)	5.5 million	~66 000 (600 mills of 70–150 employees)	Fairly even split –Smallholders (family)	Plantations (permanent, temporary/formal, outsourced, informal)
Lychees	Madagascar (2017)	45 000	Processors: 4 000 Transporters: 4 000	Smallholders (all), except 450 producers selling to a single cooperative that is organic/Fairtrade	--
Cotton	Madagascar (2018)	50 000+ 7 495 farmers	550 (ginning) (temporary/formal)	Daily worker/family worker	--
Ginger	Myanmar (2017)	15 000	Processors: 407 Intermediaries: 403 <sup>2</sup>	Smallholders (all)	--
Coffee	Colombia (2017)	730 000	Threshing: 1 341 annual jobs 173 exporters (firms)	Smallholders (85% of production < 10 hectares) Worker status: Coffee producer (46%), Family (24%), Temporary (31%). Overall: 98% non-permanent workers	15% of production
Coffee	Mexico (2019)	1.25 million	15% coffee producer organizations; 85% processing and roasting	Smallholders (91%) During harvest: 55% family workers 41% temporary workers, 4% permanent workers	9% of production
Coffee	Lao PDR (2018)	300 000	Temporary (during harvest) 3 500 workers	Smallholders: 70% Family: 60% of labour force; often unpaid 14% of smallholders sell to co-ops for export (washed Arabica; specialty) Temporary workers primarily in weeding, pruning and harvest	30% of production Permanent workers: 3 500–5 000; remainder temporary (weeding, pruning, harvest)

**Notes**

1 Coffee plantations are farms of greater than 10 hectares.

2 Direct full-time jobs spread over 1,627 part-time workers; intermediaries: full-time jobs spread over 1,612 part-time workers.

**Sources:** Palm oil, lychee and Colombia coffee: ILO 2017a; Lao People's Democratic Republic coffee: Boquiren and Idrovo 2020; Mexico coffee: Mogrovejo et al. 2020; Madagascar cotton: Rasolonjatovoarivelo 2020; Myanmar ginger: Boquiren and Villarroel 2018.







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# OSH and vulnerability profiles









## 2. OSH and vulnerability profiles

Workers in global supply chains in agriculture are exposed to various occupational hazards and risks. A **hazard** is anything with potential to cause harm or damage to safety and health. Some hazards are clearly visible, such as cutting tools, moving parts of machinery or heavy objects that need to be lifted, while other hazards, such as long working hours, repetitive movements or high levels of noise, may be less evident. Exposure to hazards is likely to cause occupational injuries and diseases, affecting workers' physical, mental and social well-being in different degrees of severity, ranging from minor injury to fatality (ILO 2019). The combination of the likelihood of an occurrence of a hazardous event and the severity of injury or damage to the health of people caused by this event is commonly understood as an **occupational risk** (ILO 2001).

In agricultural global supply chains, some workers or groups of workers are more likely to be exposed to occupational hazards and risks and to have a low capacity to cope with consequences of such exposure. Identifying the underlying factors helps to identify "vulnerability profiles".<sup>8</sup>

This section presents the main occupational hazards to which workers are exposed in agricultural global supply chains, along with the factors that increase workers' exposure to

occupational hazards and thus risk (**sensitivity factors**) and workers' **coping capacity**, that is, the strategies and resources available to them to deal with the consequences of exposure to occupational risks (for example access to health services and compensation in the event of an occupational injury, disease or death).

### 2.1 Farming

#### (a) Main occupational hazards and risks

Table 3 shows the occupational hazards in farming, the occupations and tasks where the hazards are found, the products to which the hazards pertain, and any references to the task being performed by a specific gender.<sup>9</sup> The same activities are carried out by all types of economic units (smallholders and plantations) and by workers of all employment statuses (permanent, temporary, self-employed). However, most farms are smallholders and the owners are self-employed or own-account workers who work with their family members, and in some cases employ temporary daily workers. (Production of raw materials/inputs and marketing and distribution of final products occur in other countries and were not evaluated in the case studies.)

<sup>8</sup> In the methodology developed by the ILO for the assessment of drivers and constraints for OSH improvement in global supply chains, vulnerability profiles are defined as "the characteristics of specific groups of workers putting in relation exposure to occupational hazards and risks with factors that make workers more likely to be exposed to such hazards and risks and/or with low capacity to cope with the consequences of such exposure" (ILO 2018, 19).

<sup>9</sup> Information is drawn from the ILO case studies. The occupational hazards and risks are not listed in order of importance. In most of the case studies, the information on the probability or likelihood of the occurrence of an injury or ill health and the severity of injury or damage to the health was limited. Risks assessments in workplaces remain essential to identify occupational hazards and risks and for the management of OSH in enterprises.



► Table 3: Occupational hazards and risks in the farming stage of agricultural global supply chains

Occupational Hazards and Risks	Occupations/tasks	Gender	Products
Fire: exposure to the risk of fire	Farmers and their family	Both	Cotton <sup>1</sup>
Electrical: risk of being electrocuted	Harvesters	Men	Palm oil <sup>2</sup>
Chemical: exposure to hazardous materials	Agrochemical spraying (crop husbandry), fertilization (land preparation))	Men (Mexico coffee); Women (palm oil)	All except lychee production
Physical: exposure to high temperature and sunlight	Harvesters, crop husbandry	Both	All
Physical: exposure to excessive noise	Land preparation, crop husbandry	Both	Coffee
Physical: exposure to the risk of falling from heights	Harvesters (lychees), pruning (crop husbandry, coffee)	Men	Lychee, coffee
Physical: exposure to risk of slipping or tripping and falling	Porters, transport, harvesters, crop spraying (crop husbandry)	Both	All except palm oil
Physical risk of being injured while in a vehicle <sup>3</sup>	Land preparation, transport	Men (Lao PDR)	Coffee and palm oil
Ergonomic: manually handling heavy loads	Loaders/transport, harvesters <sup>4</sup>	Men (coffee, lychee, palm oil)	All
Ergonomic: awkward postures and repetitive movements	Harvesters	Women (Lao PDR)	All except lychee
Mechanical: injured using tools/equipment	Land preparation, crop husbandry	Men (Lao PDR)	Coffee, cotton, ginger
Biological: insect/snake bites <sup>5</sup>	Harvesters, land preparation, crop husbandry	Both	All
Biological: unclean water/facilities <sup>6</sup>	--	Both	Myanmar, Lao PDR, Mexico coffee and Madagascar <sup>7</sup>
Psychosocial	--	Both	Coffee, lychee, ginger <sup>8</sup>

**Notes**

1 Cotton seed is highly flammable, and farmers use candles and oil lamps to light their homes.

2 In areas with very high trees, there is a risk of harvesters' tools accidentally touching electrical wires and electrocuting them.

3 Risks include being struck by a vehicle, falling from a vehicle and being involved in a road traffic accident.

4 Manually handling heavy loads also pertains to collectors/intermediaries, if used to transport harvested output to a processing facility.

5 Snake bites can be fatal and mosquito bites can transmit infectious diseases.

6 Unclean drinking water or unhygienic sanitary facilities.

7 The lack of access to clean drinking water was only specifically cited in Myanmar, the Lao People's Democratic Republic, Mexico and Madagascar, but is likely applicable across most countries.

8 This was only specifically identified in coffee, lychee and ginger case studies but is likely applicable to other cases.

Sources: Palm oil, lychee and Colombia coffee: ILO 2017a; Lao People's Democratic Republic coffee: Boquiren and Idrovo 2020; Mexico coffee: Mogrovejo et al. 2020; Madagascar cotton: Rasolonjatovoarivelo 2020; Myanmar ginger: Boquiren and Villarroel 2018.

The main occupational **hazards** identified in the case studies for agriculture are:

- chemical hazards related to exposure to potentially hazardous chemicals used for crop husbandry;
- physical hazards related to working in high temperatures and exposure to ultraviolet rays from sunlight; potential for falling from a height or slipping/tripping; and noise from mechanical tools such as chainsaws during land preparation for coffee;
- ergonomic hazards, primarily manually carrying heavy loads, awkward postures/standing and repetitive movements;
- mechanical/equipment-related risks, such as cuts when using tools or equipment;
- biological hazards associated with snake and mosquito bites;
- road and vehicle safety hazards; and
- psychosocial risks due to long hours and stressful work.<sup>10</sup>

In addition, the ILO code of practice on safety and health in agriculture (ILO 2010) notes that the contributory causes of accidents and ill health in agriculture often include:

- working with machines, vehicles, tools and animals;
- exposure to excessive noise and vibration;
- slips, trips and falls from a height;
- lifting heavy weights and other work giving rise to musculoskeletal disorders;
- exposure to dust and other organic substances, chemicals, and infectious agents; and
- other working conditions common to rural environments, such as exposure to extreme temperatures, inclement weather and attacks by wild animals.

**Specific tasks:** The occupational hazards and risks identified in the ILO case studies can be further narrowed down by occupation and task. Exposure to hazardous chemicals applies to sprayers of agrochemicals and, in some cases, application of fertilizer prior to planting. Physical and ergonomic risks are highest for harvesters. Occupations that are more likely to be temporary are harvesters and crop husbandry (weeding, agrochemical spraying).

**Economic units:** Exposure to physical, ergonomic and biological hazards is more common on smaller farms that use less mechanization and tools to perform activities and therefore workers spend more time performing the

activities. Exposure to chemical hazards varies: due to cost, smallholders are likely to use fewer chemicals if a natural alternative is available (thereby reducing exposure to hazardous chemicals). For example, in the Lao People's Democratic Republic and Mexico, the use of agrochemicals by coffee smallholders is low. However, if smallholders do use chemicals, the risk may be greater due to increased exposure caused by a lack of appropriate personal protective equipment (PPE) when applying, handling and storing them. Furthermore, organic farmers are not exposed to hazardous chemicals used for crop husbandry.

**Concentration of women** and men in a job or task make them more exposed to specific hazards. In some countries, certain jobs tend to be performed by one gender. Activities associated with manually carrying heavy loads (primarily related to transporting and loading and unloading sacks of the final product after harvest) is male-dominated in all coffee-producing case studies and for lychee farming. This activity creates potential for ergonomic risk due to the weight of the sacks being transported (50–60 kg). Men are also commonly engaged in picking lychees in Madagascar and pruning/crop husbandry in coffee production in Mexico and the Lao People's Democratic Republic; those activities have a risk of falling from a height or being hit by a tree branch. Plantation establishment and maintenance activities which require the use of cutting tools such as knives, machetes, grass-cutting machines and chainsaws are also mostly carried out by men, who are exposed to potential injuries while using the equipment. These activities were specifically cited as male-dominated only in the Lao People's Democratic Republic coffee, but it is likely to be applicable across coffee-producing countries.

Certain tasks, such as agrochemical spraying, may have consequences for the reproductive health of women and men. Men were more likely to be engaged in this activity in the coffee sector in Mexico, whereas women more commonly performed this activity on fresh fruit bunches for palm oil in Indonesia.

## (b) Sensitivity factors

In the ILO case studies, smallholders were found to be more likely to be exposed to occupational risks for several reasons. They lack access to OSH information, training and advisory services. They generally lack OSH management systems<sup>11</sup> and often do not engage in measures to prevent or control occupational risks. Elements of an OSH management system include establishing an OSH policy, participation of workers, assignment of responsibilities, identification and management of OSH risks, organization

<sup>10</sup> The occupational hazards are not listed in order of importance. In most of the case studies, the information on the probability or likelihood of the occurrence of an injury or ill health and the severity of the injury or damage to health was limited.

<sup>11</sup> An OSH management system is a set of activities, procedures, processes and resources used to establish an OSH policy in an organization, to achieve objectives and to continually assess and improve on them (ILO 2001).

of personnel, provision of resources, communication, information, documentation and monitoring.

Specific areas most frequently cited in the case studies are a lack of access to or use of PPE and a lack of proper chemical safety practices and training. Smallholders lack the financial capacity to take measures to prevent or mitigate occupational risks, such as PPE or machinery. They also often have insufficient access to drinking water and sanitary facilities. A lack of access to drinking water and PPE such as hats may also increase the physical risk related to exposure to high temperatures and sunlight. Smallholders also often lack awareness of risks, and often do not engage in or have access to general or risk-specific training.

Employment status and working conditions also impact workers' sensitivity to occupational hazards. Non-permanent workers – which encompasses all types of informal workers, including temporary daily workers, family workers, self-employed workers and, in some cases, subcontracted workers and migrant workers – are more likely to be exposed to occupational risks and suffer from the consequences. The ILO case studies found that they rarely have access to training on OSH and to protective equipment. In case studies in the coffee supply chain in the Lao People's Democratic Republic and in the palm oil supply chain in Indonesia, for example, it was found that permanent workers tend to have greater access to OSH training and PPE than non-permanent workers. Long working hours are also common due to the seasonal nature of the work and the need to process products within a short period of time after harvest to prevent spoiling. Workers paid on a piece-rate system are incentivized to work long hours to maximize earnings. Long hours, for example, can increase fatigue, which may lead to injuries while using equipment, and increase workers' exposure to musculoskeletal disorders from repetitive motions and awkward positions.

Non-permanent workers and smallholders also often lack access to occupational health services and have ineffective access to social protection coverage, especially schemes that can affect the incidence of work-related injuries and diseases, such as access to healthcare and protection benefits during maternity and sickness. While some permanent workers might be covered, many of them also lack access to occupational health services and have ineffective access to social protection coverage.

### (c) Coping capacity

The coping capacity of workers in farming is low because they are geographically distant from healthcare facilities, are rarely enrolled in social protection schemes, and cannot afford to pay for care on their own. Since workers in agriculture tend to earn the minimum wage or less in developing countries, they have little capacity to cover the costs incurred by any occupational injury or disease if they are not affiliated with and compensated by an employment injury insurance scheme.

Access to healthcare facilities and personnel in the event of an accident is poor due to the geographic distance of facilities. Farms tend to be in rural areas with few healthcare providers nearby. As self-employed workers or micro, small or medium-sized enterprises, farmers do not have onsite medical facilities.

Workers who are self-employed or temporary do not receive compensation in the event of work-related injuries or diseases. In some cases, they may be eligible to self-enrol in social protection schemes (such as employment injury insurance schemes) and pay the associated fees. However, self-employed farmers are rarely aware of such programmes, cannot afford to join them or consider them not worth the cost.

In Myanmar, farm owners, family members, farm workers and porters are self-employed, so they are not covered or automatically registered with the Social Security Board. In Madagascar, almost all workers in lychee farming are both informal and temporary and are not affiliated to the national employment injury insurance scheme under the social security fund. In Colombia, independent workers are not covered unless they join a social security scheme on a voluntary basis. The income, instability and seasonal nature of their work affect small producers' ability to pay into the social security scheme; as independent workers, their contributions would be 12 per cent of their gross income. In the Lao People's Democratic Republic, smallholders, family workers and seasonal daily workers are not covered unless they pay voluntary contributions of 9 per cent of their average monthly income; however, the country offers curative healthcare services to all citizens.

In coffee supply chains in Mexico, it is estimated that 95 per cent of production workers are informal workers. They lack access to the social security system and to healthcare services. In Chiapas State, where most of the coffee is

produced, coffee is harvested almost exclusively by migrant workers from Guatemala. Despite the different public initiatives to promote the access of migrant workers to healthcare services, they are found to have limited access. They also face additional barriers, such as fear and lack of knowledge (Mogrovejo et al. 2020).

## 2.2 Processing

The main occupational risks identified in the case studies during processing appear to be related to fire and electrical hazards.<sup>12</sup> The risk of exposure to fire exists during wet processing for coffee (unsafe electrical wiring, use and storage of combustibles and waste materials), due to high-temperature processing in palm oil, from electrical fires in cotton ginning (cotton fibre is highly flammable), and from the use of sulphur, which is flammable, in lychee processing. Prolonged exposure to noise was the next most common occupational risk identified for ginger, palm oil and coffee processing in the Lao People's Democratic Republic and Mexico, followed by exposure to dust particles for ginger, cotton and coffee processing. For lychee processing, prolonged exposure to sulphur-treated fruit during sorting is the primary risk. Manually handling heavy loads was also identified as a hazard in coffee, cotton and lychee processing. Awkward posture and repetitive movements because of non-ergonomically adapted working areas and tools, and poor organization of work were also reported as problems in case studies on cotton, ginger and coffee processing in the Lao People's Democratic Republic.

Women or men are concentrated in specific tasks for some products. Men more commonly perform the task of slicing ginger in Myanmar processing factories, putting them at greater risk to cuts from the slicing equipment and exposure to arm vibrations from using the slicer.<sup>13</sup> Manually handling heavy loads is also associated with the first step in processing when sacks are loaded and unloaded (in lychee, coffee, ginger and cotton processing). These tasks are often performed by men. Women are often engaged in sorting ginger, an activity that involves an awkward posture of sitting or squatting on the ground.<sup>14</sup> Women are also often sorters in the lychee industry in Madagascar. This task occurs after sulphur processing, thereby increasing chemical exposure – a hazard that may have consequences for the women's reproductive health.

Compared to farming, processing is more likely to be carried out in a factory with a higher share of permanent workers, and therefore workers have access to more coping resources.

However, in Myanmar, ginger is processed by temporary or seasonal workers employed on one- to three-month contracts as cleaners, sorters and washers, who are not covered by employment injury insurance in the event of an occupational injury or disease. In Madagascar, most lychee processing workers are affiliated to the national social security fund during their contract period. While the work is formal, it is for periods of less than one month and workers are only covered during their employment contracts. Seasonal workers in cotton ginning facilities are also registered only during their contracts. In Colombia, Indonesia and Mexico, non-permanent workers are not automatically affiliated to compensation schemes.

<sup>12</sup> Information is drawn from the ILO case studies. While all studies included farming, analysis of processing activities was limited for some countries. Risk assessments in workplaces remain essential to identify occupational hazards and risks and for the management of OSH in enterprises.

<sup>13</sup> Risk of developing hand-arm vibration syndrome due to the operation of the slicer, which vibrates if poorly maintained.

<sup>14</sup> In Myanmar, the use of sorting tables and trolleys together with provision of training to supervisors and workers in trading houses proved to be effective in reducing ergonomic risks and exposure to dust, as well as improving productivity and product quality (Ryan and Htay 2021).

► Table 4: Key points from the case studies

Product	Country	Harvest season	Chain segments assessed	OSH Vulnerability profiles
Palm oil	Indonesia	Annual	Farming and processing (focus on farming)	<b>Farming:</b> agricultural workers, nonstandard employment, especially subcontractors. Workers and producers in independent smallholdings especially non-certified and/or non-organized
Lychee	Madagascar	< 1 month per year	Farming and processing	<b>Farming:</b> small producers and casual agricultural workers and <b>Processing:</b> sulphur treatment (men) and sorting post-treatment (women)
Cotton	Madagascar	May–Sep. (5 months)	Farming and processing	<b>Farming:</b> farmers, family workers and agricultural workers <b>Processing:</b> seasonal workers
Ginger	Myanmar	1–3 months per year	Farming and processing	<b>Farming:</b> farmers, family workers, agricultural workers and porters <b>Processing:</b> cleaners/sorters, washers, machine operators
Coffee (Arabica)	Colombia	Varies by region: South: first half of the year; North: second half	Farming and processing (focus on farming)	<b>Farming:</b> small producers and family workers and temporary or subcontract workers on farms, especially pickers and agrochemicals. Workers providing <b>subcontracted</b> loading/unloading services (threshing and warehouses)
Coffee (production: 85% Arabica, 15% Robusta) <sup>1</sup>	Mexico	Sep.–March (7 months)	Farming	<b>Farming:</b> (i) shade management, preparation, and crop husbandry; (ii) planting; (iii) treatment; (iv) harvesting/picking; (v) transporting coffee cherries; (vi) wet method processing
Coffee (Exports: 60% Arabica, 29% Robusta)	Lao PDR	Arabica: Oct–Dec; Robusta: Nov.–Feb. (3–4 months)	Farming and processing	<b>Farming:</b> smallholders (farmers), their family and farm workers. Operations: Land preparation, crop husbandry and harvesting <b>Primary processing:</b> Smallholders, their family and temporary workers in village-based or household facilities. Temporary workers and machine operators in industrial mills

**Notes:** The information on production is for 2019 (USDA 2020)

**Sources:** Palm oil, lychee and Colombia coffee: ILO 2017a; Lao People's Democratic Republic coffee: Boquiren and Idrovo 2020; Mexico coffee: Mogrovejo et al. 2020; Madagascar cotton: Rasolonjatovoarivelo 2020; Myanmar ginger: Boquiren and Villarroel 2018; Ryan and Htay 2021.



# 3

## Drivers and constraints for OSH improvement









## 3. Drivers and constraints for OSH improvement

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To understand the root causes of the OSH vulnerabilities or underperformance on OSH and to identify the constraints that must be addressed and the drivers that can be leveraged for OSH improvement, the assessment of drivers and constraints looks at the elements of the market and institutional environment. The methodology includes the analysis of:

- commercial practices and business models of the different categories of actors in the supply chain and their interplay;
- legal framework and the public and private entities responsible for OSH, including the overall enforcement system;
- actors that may assume a supporting role affecting OSH awareness, capacities, practices and outcomes.

Drivers and constraints for OSH improvements in the agricultural global supply chains identified in the synthesis review can be divided into three areas: (1) dynamics and relationships among firms along the chain, (2) the national OSH system and (3) channels of support.

### 3.1 Dynamics between tiers of the supply chain

The opportunity for economic benefits, whether in the form of more customers or better-paying customers and higher profit margins, is a driver for suppliers to make changes and improvements to their OSH awareness and practices. The main drivers of OSH improvements cited in the case studies are: buyers or brands mandating compliance with OSH requirements (mentioned as a driver of OSH in all case studies), production of specialty

or premium products that requires certification to a standard, and exporting to a country that requires products to meet food safety standards (primarily for chemical use).

The distribution of profit along the chain is a constraint to farmers. Farmers have limited ability to set the price of the products they sell, and therefore limited potential to increase profit that could be used to invest in OSH improvements. Certification schemes can indirectly contribute by increasing prices paid to farmers for their products, which in turn provides increased financial capacity to invest in OSH improvements. In Colombia, where producers of coffee for certification schemes earn higher returns than conventional coffee producers and pay workers higher wages, there have been improvements in conditions of work and accommodation (ILO 2017a). Similarly, price premiums for specialty coffee were identified as opportunities to drive improvements in both Mexico (Mogrovejo et al. 2020) and the Lao People's Democratic Republic (Boquiren and Idrovo 2020).

Price premiums are not always present or sufficient to justify the costs involved in meeting the demands of certification schemes. This is particularly the case for products that are not consumer-facing and where it is difficult to pass price increases onto the consumer. For example, as there is little to no visibility of palm oil ingredients to global consumers, global brands believe there is little room to increase retail prices and are therefore unwilling to pay more for certified inputs.

While OSH is not the primary focus for any of the existing private compliance initiatives,

many include a section on OSH or their primary focus areas relate indirectly to workers' safety and health. Most require adherence to the ILO core standards and have provisions on various hazard-specific areas, including hazardous chemical identification and safety, PPE use, access to clean water and sanitary facilities, training, OSH plans and provisions specific to women (not being exposed to hazardous chemicals while pregnant or nursing, sanctioned time for breastfeeding, maternity leave). They generally do not cover physical, mechanical, biological, ergonomic or psychosocial risks.

Evidence on the impact of sustainable sourcing policies of multinational enterprises on OSH, at the level of suppliers, remains limited, especially beyond first-tier suppliers (Walters and James 2009 and 2011; ILO 2017b). Not all stages of the supply chain are required to comply with global buyers' requirements (often only first-tier suppliers), and not all types of workers are necessarily covered. Enforcement and audit mechanisms may also lack effectiveness. For example, in Indonesia, many smallholders sell to processors via traders, making traceability back to the smallholder difficult.

When importing markets increase the health and safety requirements of the products entering the country, it can also drive OSH improvements in supplying countries. **Food safety product and process standards**, which vary by country (or end market), are legal requirements a company must comply with to export products to foreign locations. These requirements often regulate the use of **chemicals**, which can indirectly create a driver for OSH improvements

related to exposure to hazardous chemicals. For example, changes in EU legislation motivated EU lychee buyers to develop the capacities of suppliers to meet the EU food safety regulations. Two European importers financed most of the investment needed to comply with standards for Global Good Agricultural Practices (GLOBALG.A.P) (ILO, 2017a). Similarly, **organic standards** address exposure to chemical risks and use of PPE.

Interest in social and environmental standards varies by end market. In the EU and to some extent North America, governments mandate compliance with food safety standards, buyers often require compliance with social and environmental standards and a growing share of consumers are interested in how products are produced and are willing to pay higher prices. This is less apparent in Asian markets and developing countries in general, where the emphasis is still primarily on price competitiveness, with limited demand for or emphasis on sustainability. As such, buyer demands and private compliance initiatives are currently only a driver for OSH improvements in companies exporting to the EU and North America. In the ILO case studies, production for the domestic market ranged from 10 per cent of coffee output in Colombia to 70 per cent of lychee output in Madagascar. Across countries in the case studies, over half of exports were destined for "non-demanding" end markets and were therefore in a similar situation as domestic sales. At most, around one quarter of output is produced according to a private compliance initiative.



### Box 1: Findings from ILO research on OSH and sustainable sourcing policies of multinational enterprises

In 2018, ILO research<sup>1</sup> found that in sourcing policies of multinational enterprises, OSH requirements are usually broadly formulated, and while the importance of OSH varies in firms' sourcing decisions, sourcing criteria are largely driven by price.

Challenges identified by multinational enterprises in implementing the OSH requirements of their sustainable sourcing policies included difficulty in reaching suppliers beyond tier one, as it is difficult to trace all actors at the supply base. It was also reported that incentive structures were sometimes insufficient for the smallest actors to make the necessary investments to comply with OSH requirements of sustainable sourcing policies. Administrative requirements may also be difficult for suppliers with lower levels of education.

The effectiveness of external audits using checklist verification mechanisms as a means of identifying non-compliance was found to be limited, as they do not provide direct support to suppliers to improve their practices and do not address small producers' difficulties in finding cost-effective alternatives to reduce

the use of hazardous chemicals. The audits also have a limited ability to identify non-visible risks such as psychosocial risks, or they incentivize employers to provide PPE, but not necessarily information and training to workers on how or why to use it.

Common challenges for verification mechanisms in private compliance initiatives<sup>2</sup> were the lack of independence, impartiality and proper training of auditors and the limited connection of certification bodies with the national OSH system. OSH provisions in private compliance initiatives had low alignment with the ILO's 2001 guidelines on OSH management systems; none of the private compliance initiatives required a formal OSH management system with a continuous improvement approach. Requirements in private compliance initiatives did not always refer to specific national legislation or policies on OSH. Requirements concentrated on visible OSH practices and on controlling and reducing pre-identified hazards and risks and thus may not contribute to building a culture of prevention in the workplace.

#### Notes

- 1 The research (Tessier et al. 2018) reviewed the sustainable sourcing policies of 45 multinational enterprises in agriculture and textile global supply chains and interviewed 35 multinational enterprises involved in palm oil, coffee, lychee, textile and/or ginger global supply chains, 16 private compliance initiatives and ten auditing firms located in the field.
- 2 The research included a benchmark of 15 standards of private compliance initiatives against the 2001 ILO guidelines on OSH management systems.

## 3.2 National OSH system

The national OSH system is the infrastructure which provides the main legal and institutional framework for implementing the national policy and programmes on OSH (ILO 2012). It includes the following elements:

- laws and regulations
- authorities responsible for OSH
- mechanisms for ensuring compliance (inspection)
- national tripartite advisory body
- information and advisory services on OSH
- occupational health services
- bipartite cooperation mechanisms at the level of the enterprise
- education and training
- collection and analysis of information
- employment injury institutions
- strategic mechanisms for supporting enterprises.

The drivers and constraints for OSH improvements that are linked to the national OSH system can be divided into three areas: (1) whether a country has all the aforementioned elements of a national OSH system, (2) whether the policies are enforced, including repercussions for non-compliance, and whether stakeholders are aware of the policies and programmes and (3) whether the system has adequate capacity and resources.

### Elements of a national OSH system

The legal framework and supporting functions for OSH in Indonesia and Colombia have been drivers for the adoption of safety and health practices, particularly in the processing stages. However, in the farming stage in Indonesia, for example, smallholders are not required to register as businesses, so they fall outside the realm of the national OSH system (ILO 2017a).<sup>15</sup>

In the Lao People's Democratic Republic, national OSH legislation was formalized in 2019. By law, companies must undergo safety inspections by the labour inspectors at least once a year, but there is little evidence that these inspections are conducted in coffee plantations and mills (Boquiren and Idrovo 2020). Myanmar's new OSH law, which was enacted by Parliament in March 2019, extended OSH coverage to sectors previously excluded, including agriculture. However, until then, legislation was a constraint because it applied only to factories and manufacturers with five or more employees if using power, or ten workers without the use of power (Boquiren and Infante Villarroel 2018).

Even when OSH national systems exist, a common bottleneck is a lack of coordination among institutions responsible for OSH. In Indonesia, for example, several important frameworks for operational OSH management are under multiple line ministries, but there are no coordination mechanisms among those services at the local level (ILO 2017a).<sup>16</sup>

### Enforcement and awareness

Lack of enforcement and awareness of policies and programmes is a constraint for OSH improvement. For example, in the Lao People's Democratic Republic, legal regulations require imported chemicals to have labelling and safety instructions in the Lao language and for chemicals to be properly stored and disposed of. However, the regulations are not yet applied systematically. Chemicals are sold without labelling and safety instructions in the local language, are improperly stored in reused containers, and there is low awareness among smallholders on how to use them. Similarly, even though enrolment in social security schemes is compulsory for salaried workers, most permanent and temporary farm workers were not enrolled (Boquiren and Idrovo 2020).

<sup>15</sup> 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). The Roundtable on Sustainable Palm Oil defines smallholders as those of less than 50 hectares (ILO 2017a, 99).

<sup>16</sup> 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 are in charge of enforcement through their local and provincial services. The research team did not come across coordination mechanisms among those services at the local level. At the national level, the national commission on chemicals provides a coordination mechanism (ILO 2017a, 118).

In Mexico, available data and statistics on work-related accidents, injuries and diseases fails to provide a true picture of the nature and scale of the impact of OSH in the coffee sector. This is due, in part, to under-reporting in smallholder farms of occupational injuries and diseases. For the production of statistics, OSH data is aggregated at the sectoral level (agriculture, livestock, forestry, fishing and hunting), making it difficult to extract industry-level data on work-related accidents, injuries and diseases, such as for coffee production (Mogrovejo et al. 2020). In the Lao People's Democratic Republic, there is also a lack of OSH data in the coffee industry and the agriculture sector in general (Boquiren and Idrovo 2020). Access to data that is more reliable is essential to raise awareness of the importance of OSH, foster commitment, establish priorities, inform OSH policies and develop strategies to prevent work-related accidents, injuries and diseases.

In Colombia, the National Federation of Coffee Growers of Colombia collects data on working conditions and has carried out OSH surveys with over 7,000 coffee farmers with resources from the Ministry of Labour's Occupational Risks Fund (ILO 2017a, 48). That Fund is financed partly by social security contributions and other public funds, for instance, fines paid by companies not in compliance with OSH policies (ILO 2017a). Better enforcement accompanied by sanctions for non-compliance can also provide a source of income for OSH improvements.

In Indonesia, a national compliance initiative, the Indonesian Sustainable Palm Oil Certification System, was established to promote higher agricultural standards such as those required by the Roundtable on Sustainable Palm Oil for all Indonesian oil palm growers, not just those exporting. However, the scheme does not yet have the capacity to inspect all farmers and factories, nor does it have the legal right to impose sanctions for non-compliance (ILO 2017a).

### Capacity and resources

A lack of national institutional capacity to inspect facilities and provide widespread information, advisory services and training on OSH is a root cause of vulnerability mentioned in every case study. Firms and workers in developing countries

are often unaware of OSH hazards and risks and the benefits of investing in OSH management, and thus need information and support.

The number of labour inspections and share of enterprises inspected is problematic across countries. In Indonesia, inspectors are generally only able to cover large mills and refineries, which are easier to inspect and monitor than plantations, which are almost always in remote locations and have worksites over vast areas of land. Of the 500 regencies and municipalities where oil palm plantations are located, 200 do not have labour inspectors (less than 1 per cent of enterprises are serviced by labour inspectors each year) (ILO 2017a). In Mexico, none of the firms interviewed in the Vision Zero Fund fieldwork reported having undergone an inspection (Mogrovejo et al. 2020).

In Madagascar, an OSH policy framework and some institutions exist, but the government services that are supposed to play a supporting role in improving working conditions, particularly safety and health, have limited reach. In the case studies conducted in 2017 and 2018, it was assessed that the capacities of labour inspectors were too limited to ensure compliance with OSH legislation. There were insufficient human and material resources to conduct OSH inspections, and inspectors' activities were confined to mediating, issuing overtime work permits and checking employment contracts. These restrictions particularly affected inspectors' ability to operate in rural regions and those far from the capital, and in informal enterprises. Workers on cotton farms and in ginning factories reported that they had never been visited by an inspector.

The most common area of insufficiency is the lack of resources and personnel dedicated and qualified to provide advisory services, health and safety inspections and occupational health services at the national level, particularly in rural areas where farming activities often take place. Rural areas tend to have very few, if any, providers of training and advisory services, labour inspectors or occupational safety and health service providers. Furthermore, the institutions responsible for providing these services often lack the technical expertise and industry-specific knowledge and skills needed to carry out their functions. Similarly, where

occupational health service providers do exist, the quality and range of services provided, particularly in rural areas, is low. The scarce OSH resources that are available are primarily dedicated to larger employers in urban areas.

### 3.3 Channels of support

Non-governmental or quasi-governmental organizations and public-private partnerships are providing support to stakeholders in global supply chains.

The National Federation of Coffee Growers of Colombia was established in 1940 to design and implement policies and programmes to support the country's coffee farmers. One of its main functions is guaranteeing the purchase of producers' coffee at a transparent price. The Federation also publishes a daily coffee price that serves as a benchmark for non-member producers to avoid selling their coffee for less than the international market recognizes. Through this policy, the Federation seeks to ensure the price and payment terms offered by other intermediaries and buyers match the official benchmark price. The Federation has also supported several other initiatives related to OSH training for rural extension workers, data collection, and publicizing and educating farmers on pension schemes (ILO 2017a).

Government programmes that are not OSH-specific can also be drivers for OSH improvements, such as having an industry strategy or a strategy for rural development and sustainable development (mentioned in Colombia, the Lao People's Democratic Republic and Madagascar for cotton). In Colombia, organizations created under the National Federation of Coffee Growers of Colombia were developed to facilitate marketing and branding activities in the country and create a national image for the country's coffee. In the Lao People's Democratic Republic, the Department of Agricultural Extension and Cooperatives delivers extension services, including technical training to farmers' groups, disseminates

information and promotes the use of machinery and modern production technologies.

Large firms in a country can be drivers of improvement. In addition to marketing and branding, the National Federation of Coffee Growers of Colombia facilitated the development of large, capital-intensive roasting and grinding processors, logistics intermediaries, cooperatives, and distribution channels for selling to domestic and foreign markets.

In the Lao People's Democratic Republic, the private sector is increasingly involved in the delivery of agricultural extension and social services. It is common for lead companies engaged in a contract farming model<sup>17</sup> with smallholders to provide support to improve their skills and farm practices. The medium- to long-term goal for them is to obtain certification. One company supports 1,700 coffee farmers through training on good agricultural, social and environmental practices, and coffee processing. It also engages in corporate social responsibility activities, including the provision of free basic medical care and access to drinking water for contract farmers. The presence of lead firms in Champasak Province that are already certified and helping their suppliers to achieve certification can provide leverage and infrastructure for promotion and implementation of OSH (Boquiren and Idrovo 2020).

Third parties are also helping to establish support programmes. For cotton in Madagascar, producers under the Better Cotton Initiative received support from the World Bank's Integrated Growth Poles and Corridor Project, the Interprofessional Cotton Council and a ginning company. An annual training programme devised to strengthen capacity was provided at no cost to producers. In 2017, nearly one third of producers in the country participated. Also in Madagascar, financial support was provided to lychee exporters under the EU Pesticide Initiative Programme between 2010 and 2014 for actions on sulphur control and support towards compliance with GLOBALG.A.P. and the GLOBALG.A.P. Risk Assessment on

<sup>17</sup> In the Lao People's Democratic Republic, "many smallholders are involved in contract farming with investors (companies or cooperatives). Under the most common model, the smallholder provides labour and land, and the investor provides capital, technology, and marketing. Under this model, farmers and/or households are able to maintain their access to land while securing more reliable income, improved technology, and agricultural productivity" (Boquiren and Idrovo 2020).



Social Practice. The latter programme was largely responsible for improvements at sulphur treatment stations.

ILO programmes, such as the Vision Zero Fund, are also supporting OSH improvements by strengthening legal and policy frameworks, building the capacities of social partners and institutions with an OSH mandate and supporting the implementation of direct substantive solutions to strengthen OSH for workers in the supply chains of focus. The Vision Zero Fund brings together governments, employers' and workers' organizations, companies and other stakeholders in global supply chains to jointly address the root causes of OSH deficits in agricultural global supply chains. Research in Myanmar showed that greater sustainability and impact at the workplace level are achieved through the engagement of multiple stakeholder groups, including government, the private sector, workers' organizations, employers and workers (Ryan and Htay 2021).

Input retailers also play an important role in providing information to farmers, especially on the safe use of agrochemicals. They are often the only source of information to farmers on the safe use on chemicals. In Myanmar, input retailers often provide OSH information to farmers looking to purchase agrochemicals, including on the appropriate products to be used (linking productivity and OSH), chemical risks and measures to prevent exposure to hazardous chemicals (Ryan and Htay 2021).

Industry associations and cooperatives can help with organizational issues stemming from the large number of smallholders. In the Lao People's Democratic Republic, farmers who are members of cooperatives that have direct contact with international coffee buyers are

more likely to receive some training on OSH than non-organized farmers. Cooperatives may also be necessary for smallholders to receive some certifications, such as GLOBALG.A.P.

A lack of cooperatives was identified as a constraint for ginger producers in the Myanmar case study (Boquiren and Infante Villarroel 2018). In Myanmar, ginger farmers are not eligible to hold certifications if they do not have legal personality. With support from the Vision Zero Fund, cooperative groups were established in Myanmar. The organization of farmers facilitated access to more lucrative export markets, and quality requirements set by global buyers led to the adoption of multiple OSH preventive measures. Improvements in productivity, product quality and OSH have been demonstrated. The cooperative groups play an important role in providing information on OSH and promoting safety and health in farms. Adoption of OSH measures was observed to be stronger and more embedded within villages and among farmers that are engaged in a cooperative group with a strong executive committee (Ryan and Htay 2021). By training traders, processors, warehouses, input retailers and cooperative groups, OSH measures are more effectively integrated within the entire supply chain and not just at the farmer level.

A lack of formal organizations of farm workers was also cited in Colombia as an important constraint on access to OSH information and training (ILO 2017a). This constraint was not specifically cited in other case studies, but it is likely applicable across most countries. In Myanmar, the case study on ginger indicated that trade unions have been advocating proper pesticide use and providing training to farmers' groups; however, the reach remains limited (Boquiren and Infante Villarroel 2018).

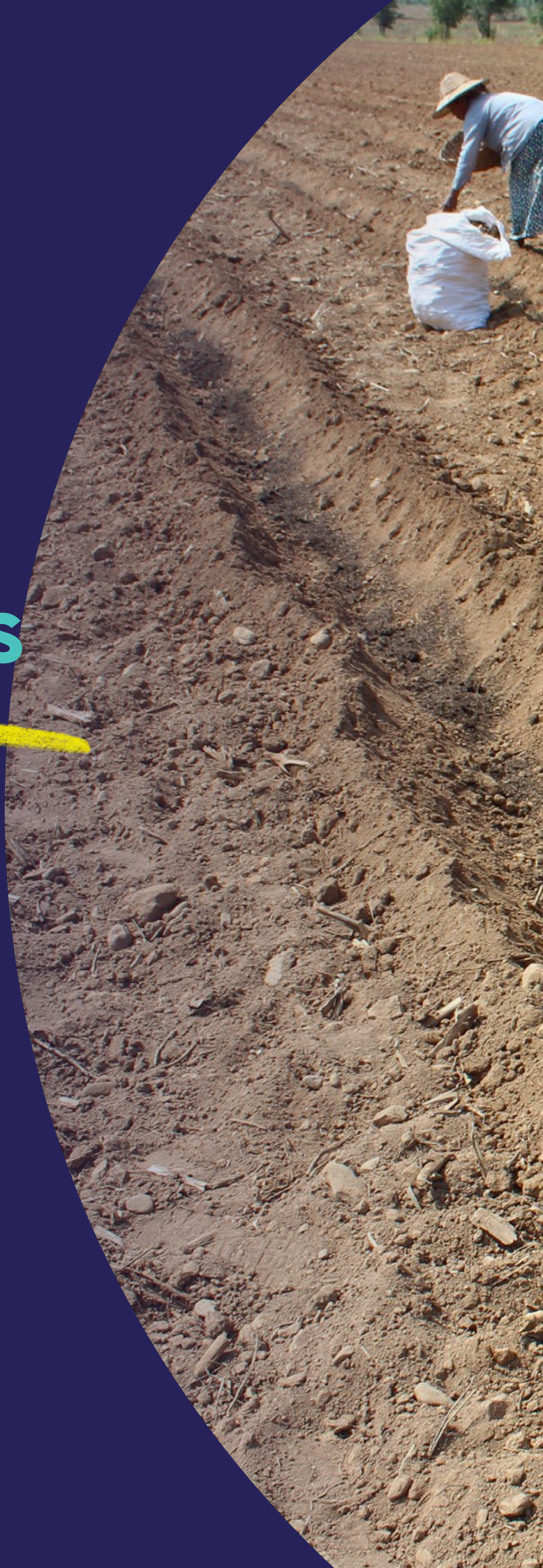




# 4

## Conclusions

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## 4. Conclusions

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Analysis of the case studies suggests that most workers in the farming stage of the chain are smallholders, which is synonymous with informal labour that generally does not benefit from any existing national OSH programmes. They lack awareness or the financial capacity to invest in OSH improvements. The seasonal and short-term need for harvesting occupations in agriculture supports temporary or informal labour arrangements. Workers in the farming stage are likely to be exposed to the identified occupational hazards and risks, and often lack mechanisms to cope with any consequences that arise.

The national OSH system is insufficient across all countries in the case studies. There is limited capacity to conduct inspections beyond large facilities in more urban areas and to provide OSH information, training and advisory services. Smallholders rarely have access to occupational health services and social protection coverage. This is also the case for temporary workers, who are only covered while they are employed, if at all. Workers' coping capacity is also low because of insufficient access to health services (particularly in rural areas where farming tends to take place). In the event of an occupational injury or disease, workers who seek medical care must often pay for it out of pocket.

The most cited reason for suppliers to invest in making OSH improvements was demands to meet buyers' standards in areas that are embodied in private compliance initiatives. Workers employed on farms or in processing facilities that produce for the domestic market or Asian markets are not required to comply with private compliance initiatives. Across

the countries in the case studies, over half of production was destined for "non-demanding" end markets such as these.

Private compliance initiatives also have limitations, and the evidence on the impact of sustainable sourcing policies on OSH at the level of suppliers remains limited. Three occupational risks that tend not to be specifically covered by private compliance initiatives are ergonomic risks (carrying of heavy loads, repetitive motions and awkward positions), biological risks from insect or other pest bites, and psychosocial risks. However, the notion of compliance initiatives is an effective medium for promoting improvements in the practices of suppliers, and can serve as a vehicle for embedding OSH requirements.

The results presented in this synthesis report (and the underlying case studies analysed) provide an initial overview of OSH issues in global supply chains in agriculture. However, there is limited research available on a number of topics. Evidence across multiple areas outlined below would provide a more robust depiction of the OSH hazards and risks workers face, vulnerability profiles and the drivers and constraints for improving outcomes:

- **Expansion of products:** Research is required on a number of additional product categories, such as fruits and vegetables, nuts and non-crop products.
- **Analysis of occupational risks:** More and better data is needed on occupational risks (the probability or likelihood of the occurrence of an injury or ill health and the severity of injury or damage to the health).

- **Occupational profiles:** Gender-specific vulnerabilities could draw on industry research to create general workforce profiles on the division of male and female occupations to identify segments with gender-specific tendencies.
- **Full chain studies:** To fully evaluate drivers and constraints, mapping and analysis should cover all the stages of the supply chain (inputs, components, final products, and final marketing and distribution). Primary and secondary information on general characteristics of the industry, data on occupational risks, and drivers and constraints could be gathered for every stage in the chain. The available knowledge is heavily concentrated on the farming stage, with limited assessment of intermediate and final products and no assessment of or perspective from final buyers in the post-manufacturing marketing and distribution stages.
- **Multiple countries:** These studies could be conducted in multiple countries to present a full picture of the issues at the global level. Country studies tend to focus on the portions of the chain carried out in that country and exclude operations in other countries. These studies could also be carried out in countries at different stages of economic development.
- **Global product-specific analysis and global agriculture analysis:** Research could be conducted at the product level, along the entire chain, in multiple countries. This information could then be combined and analysed to create a product-specific global profile. Once this process is completed for multiple products, the information across products could be combined to create a global analysis for the agriculture sector.
- **Impact of sustainable sourcing policies on OSH at the level of suppliers:** As suggested by Tessier et al. (2018, 32), “[f]urther research is needed to document, in a systematic and comparable manner, the impact of sustainable sourcing policies on OSH, at the level of suppliers, especially beyond the first tier”. Research could focus on innovative

practices that go beyond the challenges for implementing sustainable sourcing policies and document conditions for effective OSH management in supplier organizations.

- **National OSH system:** At the country level, specific research could be conducted on the different elements of the national OSH system and on the coordination among the different institutions responsible for OSH. This would enable a better understanding of the gaps and opportunities for strengthening the framework and institutional capacities to support OSH improvements at the workplace level in agricultural global supply chains.
- **Workplace OSH management systems:** Research could also focus on challenges and opportunities for developing and implementing OSH management systems in the agricultural sector, especially in small and medium-sized enterprises.

In recent years, it has become evident that global supply chains are undergoing profound changes driven by multiple global transformative forces which are disrupting global production systems, reshaping the distribution of value along global supply chains and redefining how businesses and nations advance sustainable development (UNDP and WEF 2019). These forces include climate change, environmental disruption and, more recently, the COVID-19 pandemic (ILO 2020), which are having an impact on demand and supply in agricultural global supply chains and have implications for OSH. Challenges and opportunities for OSH improvements may arise or be amplified as a result of these changes.

Research on global disruptive forces and their impact on OSH outcomes and practices in agriculture supply chains, on the strategies, responses and motivations of stakeholders in global supply chains and on the constraints they face in mitigating negative impacts on OSH and global supply chains at all levels of the supply chains is also important to better inform stakeholders in the development of effective strategies to ensure safer and healthier supply chains.



## References

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- Boquiren, Marian, and Ivan Idrovo. 2020. Improving Occupational Safety and Health in the Global Value Chain of Coffee in Lao People's Democratic Republic: Drivers and Constraints. A Case Study. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-bangkok/documents/publication/wcms\\_761319.pdf](https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-bangkok/documents/publication/wcms_761319.pdf).
- Boquiren, Marian, and Mariana Infante Villarroel. 2018. A Case Study of Drivers and Constraints for Occupational Safety and Health Improvement in the Ginger Global Value Chain from Myanmar. Geneva: ILO. Available at: [https://www.ilo.org/yanmar/publications/WCMS\\_647316/lang-en/index.htm](https://www.ilo.org/yanmar/publications/WCMS_647316/lang-en/index.htm).
- ILO. 2001. Guidelines on Occupational Safety and Health Management Systems, ILO OSH 2001. ILO: Geneva. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---safework/documents/normativeinstrument/wcms\\_107727.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/normativeinstrument/wcms_107727.pdf).
- . 2010. Code of Practice on Safety and Health in Agriculture. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_159457.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_159457.pdf).
- . 2012. ILO Training Package on Development of a National Programme of Occupational Safety and Health, Module 1: The ILO's Strategic Approach to Occupational Safety and Health. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---safework/documents/instructionalmaterial/wcms\\_215356.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/instructionalmaterial/wcms_215356.pdf).
- . 2013a. "Promoting Rural Development through Occupational Safety and Health". ILO Policy Briefs. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---safework/documents/publication/wcms\\_222333.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_222333.pdf).
- . 2013b. "Labour Inspection and Private Compliance Initiatives: Trends and Issues". Background paper for the Meeting of Experts on Labour Inspection and the Role of Private Compliance Initiatives. Geneva, 10–12 December 2013. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---lab\\_admin/documents/meetingdocument/wcms\\_230798.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/meetingdocument/wcms_230798.pdf).
- . 2014. Global Action Guide for WIND, Work Improvement in Neighbourhood Development: Practical Approaches for Improving Safety, Health and Working Conditions in Agriculture. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---safework/documents/instructionalmaterial/wcms\\_241019.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/instructionalmaterial/wcms_241019.pdf).
- . 2016a. Resolution concerning decent work in global supply chains, International Labour Conference, 105th Session, Geneva, 2016. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_norm/---relconf/documents/meetingdocument/wcms\\_497555.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_497555.pdf).
- . 2016b. Decent Work in Global Supply Chains, Report IV, International Labour Conference, 105th Session, Geneva, 2016. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_norm/---relconf/documents/meetingdocument/wcms\\_468097.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_468097.pdf).
- . 2017a. Food and Agriculture Global Value Chains: Drivers and Constraints for Occupational Safety and Health Improvement. Volume 2 – Three Case Studies. Geneva: ILO. Available at: [www.ilo.org/safework/projects/WCMS\\_593288/lang-en/index.htm](http://www.ilo.org/safework/projects/WCMS_593288/lang-en/index.htm).

- . 2017b. Food and Agriculture Global Value Chains: Drivers and Constraints for Occupational Safety and Health Improvement. Volume One – Perspectives from Relevant Research Areas. ILO: Geneva. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---lab\\_admin/documents/publication/wcms\\_593280.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/publication/wcms_593280.pdf).
- . 2018. Occupational Safety and Health in Global Value Chains Starterkit: Assessment of Drivers and Constraints for OSH Improvement in Global Value Chains and Intervention Design: Guide for Implementers. Geneva: ILO. Available at: [www.ilo.org/safework/projects/WCMS\\_635715/lang-en/index.htm](http://www.ilo.org/safework/projects/WCMS_635715/lang-en/index.htm).
- . 2019. Supporting Companies' Occupational Safety and Health Performance: A Guide for Employers and Business Membership Organizations on OSH Advocacy and Services. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---act\\_emp/documents/publication/wcms\\_741660.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_741660.pdf).
- . 2020. COVID-19 and the Impact on Agriculture and Food Security. ILO Sectoral Brief, 17 April 2020. Sectoral Policies Department, ILO, Geneva. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/briefingnote/wcms\\_742023.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/briefingnote/wcms_742023.pdf).
- ILO, OECD, IOM and UNICEF. 2019. Ending Child Labour, Forced Labour and Human Trafficking in Global Supply Chains. Geneva: ILO, OECD, IOM, UNICEF. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_norm/---ipecc/documents/publication/wcms\\_716930.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---ipecc/documents/publication/wcms_716930.pdf).
- Lloyd's Register Foundation and GALLUP. 2019. The Lloyd's Register Foundation World Risk Poll: Full Report and Analysis of the 2019 Poll. Lloyd's Register Foundation: London. Available at: [https://wrp.lrfoundation.org.uk/LRF\\_WorldRiskReport\\_Book.pdf](https://wrp.lrfoundation.org.uk/LRF_WorldRiskReport_Book.pdf).
- Mogrovejo, Rodrigo, Pilar Cariño, Rodolfo Arias and Francisco Abardía. 2020. Improving Occupational Safety and Health in the Global Value Chain of Coffee in Mexico: Drivers and Constraints – A Case Study. ILO: Geneva. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---lab\\_admin/documents/publication/wcms\\_749646.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/publication/wcms_749646.pdf).
- Rasolonjatovoarivelo, Fetra Henri. 2020. Drivers and Constraints for Occupational Safety and Health Improvement in the Global Textile Supply Chain from Madagascar: A Case Study. Geneva: ILO. Available at: [www.ilo.org/global/topics/safety-and-health-at-work/resources-library/publications/WCMS\\_741175/lang-en/index.htm](http://www.ilo.org/global/topics/safety-and-health-at-work/resources-library/publications/WCMS_741175/lang-en/index.htm).
- Ryan, Kallene, and Aung Myang Htay. 2021. Vision Zero Fund Myanmar: Outcomes and Practices Assessment 2017-2020. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-yangon/documents/publication/wcms\\_773057.pdf](https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-yangon/documents/publication/wcms_773057.pdf).
- Tessier, Lou, Alice Faudot-Miguët and Anna Buxaderas Rierola. 2018. Occupational Safety and Health within Sustainable Sourcing Policies of Multinational Enterprises. Summary of Research Findings Focusing on Agriculture and Textile. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---lab\\_admin/documents/publication/wcms\\_635148.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/publication/wcms_635148.pdf).
- UNCTAD (United Nations Conference on Trade and Development). 2018. Commodities at a Glance No. 10: Special Issue on Coffee in East Africa. Available at: [https://unctad.org/en/PublicationsLibrary/ditccom2018d1\\_en.pdf](https://unctad.org/en/PublicationsLibrary/ditccom2018d1_en.pdf).
- UNDP (United Nations Development Programme) and WEF (World Economic Forum). 2019. Reshaping Global Value: Technology, Climate, Trade – Global Value Chains Under Pressure. Available at: [http://www3.weforum.org/docs/WEF\\_Reshaping\\_Global\\_Value\\_Report.pdf](http://www3.weforum.org/docs/WEF_Reshaping_Global_Value_Report.pdf).
- USDA (United States Department of Agriculture). 2020. "Coffee Annual, Mexico", 14 May 2020. Available at: [https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Coffee%20Annual\\_Mexico%20City\\_Mexico\\_05-15-2020](https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Coffee%20Annual_Mexico%20City_Mexico_05-15-2020).
- Walters, David, and Philip James. 2009. Understanding the Role of Supply Chains in Influencing Health and Safety at Work. IOSH: Wigston, United Kingdom. Available at: <https://iosh.com/media/1468/iosh-understanding-the-role-of-supply-chains-full-report-2009.pdf>.
- . 2011. "What motivates employers to establish preventive management arrangements within supply chains?" Safety Science, 49 (7): 988–994.

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