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VISION ZERO FUND



Occupational safety and health improvement in the **GARMENT INDUSTRY:** Drivers and constraints

A SYNTHESIS REVIEW

Occupational safety and
health improvement in the
GARMENT INDUSTRY:
Drivers and constraints

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Introduction

Textiles and garments are produced and traded across multiple countries and among multiple firms that operate in global supply chains.⁷ In the garment industry, global supply chains provide employment opportunities for millions of workers worldwide, with women accounting for the largest share of the workforce in garment factories. Participation in global supply chains has driven economic growth and provided jobs in many countries; however, failures at all levels within these chains have contributed to decent work deficits, including in the area of occupational safety and health (OSH) (ILO 2016a).

To inform the development of strategies to improve OSH in global supply chains in the garment industry, a better understanding is needed of the OSH challenges in these supply chains and of opportunities for improvement. Accordingly, the Vision Zero Fund (see box) has been conducting assessments, in the form of case studies, of factors related to OSH in certain activities within the garment supply chains in specific countries, with a view to designing customized country-level interventions and activities in the selected country. The methodology used was developed by the ILO under the Safety + Health for All flagship programme and builds on the ILO's Market

Systems for Decent Work approach (ILO 2018).⁸

Between 2017 and 2019, the Vision Zero Fund conducted case studies on the garment industry in four countries: Ethiopia, the Lao People's Democratic Republic, Madagascar and Myanmar.⁹ With the exception of the one on Madagascar, these case studies focus mainly on garment assembly, which is the final production stage in the garment supply chain.¹⁰ They help to identify the occupational hazards in garment factories, 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 (establishing what are referred to as "OSH vulnerability profiles"). They also help to identify drivers and constraints for OSH improvement in garment factories.

The objective of this synthesis review is to establish OSH vulnerability profiles and identify the common drivers that could be leveraged and the constraints that should be addressed to improve OSH in garment factories. The findings provide information that could be used in developing effective strategies to improve OSH in global supply chains in the garment industry and to identify research gaps and potential for future research.

7 In a recent report, the term "supply chains" refers to "goods and services that cross international borders for consumption or as inputs for further production." (ILO, OECD, IOM and UNICEF 2019).

8 The terminology in this report is based on the methodology developed for the assessment of drivers and constraints for OSH improvement in global value chains and intervention design (ILO, 2018).

9 For the findings of the case study on Madagascar, see Rasolonjatovoarivelo 2020. For the findings of the case study on Myanmar, see Contri and Infante-Villarreal 2019.

10 The stages of production in a given global supply chain vary from country to country. In Madagascar, the stages of production range from cotton production to garment assembly, and all of these stages are included in the case study (Rasolonjatovoarivelo 2020).

This review draws on information available from the case studies conducted by the Vision Zero Fund, as well as on research carried out by the ILO and by the Better Work programme.¹¹ The most recent synthesis reports of the Better Work assessments in Bangladesh (ILO and IFC 2019a), Cambodia (ILO and IFC 2018a), Haiti (ILO and IFC 2020a), Indonesia (ILO and IFC 2018b), Jordan (ILO and IFC 2020b), Nicaragua (ILO and IFC 2017) and Viet Nam (ILO and IFC 2019b) are also referenced throughout the review, in particular in the section on OSH vulnerability profiles.¹²

The Vision Zero Fund case studies focus only on activities that occur in the garment industry in the selected countries, namely Ethiopia, the Lao People's Democratic Republic, Madagascar and Myanmar. Garment factories in these countries engage primarily in cut and sew activities, using imported fabrics and yarns. Accordingly, the analysis of OSH vulnerabilities is limited to such activities and does not cover upstream inputs or final distribution and marketing activities.

Overall, there is a dearth of literature available on OSH in garment global supply chains and knowledge remains limited to the study of a few workplaces and countries. Information included in this review for these countries is drawn from the country case studies, and the analysis is limited to the information available in the studies. No additional primary data have been collected. The analysis of drivers and constraints for OSH improvement in the country case studies is therefore not exhaustive, and the overview should be read and interpreted in this context.

The first section of this review discusses the general characteristics of global supply chains in the garment industry. The second section describes the main occupational hazards and OSH vulnerability profiles for garment factories. This is followed by an overview of drivers and constraints for OSH improvement. The review 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 and is endorsed by the G20. 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. To date, the Fund has been operational in eight countries and in the garments and textiles sector and in the agriculture sector. It has recently entered a new high-risk sector, construction. For more information, see: www.ilo.org/vzf.

¹¹ Better Work – a collaboration between the ILO and the International Finance Corporation, which is a member of the World Bank Group – is a comprehensive programme bringing together groups at all levels of the garment industry to improve working conditions and respect for the labour rights of workers, and to boost the competitiveness of garment enterprises. For more information, see: <https://betterwork.org/>.

¹² OSH is one of the eight compliance clusters covered in Better Work assessments. Within the OSH cluster, there are eight focus areas: chemicals and hazardous substances; emergency preparedness; health services and first aid; OSH management systems; welfare facilities; worker accommodation; worker protection; and working environment. Assessment reports generally discuss a country's performance in each area, based on the share of factories that are non-compliant.

1

Characteristics of global supply chains in the garment industry

A woman wearing a face mask and glasses is working at a sewing machine in a garment factory. She is focused on her work, and the background shows other workers and machinery. The image is partially obscured by a dark blue circular graphic on the left side of the page.



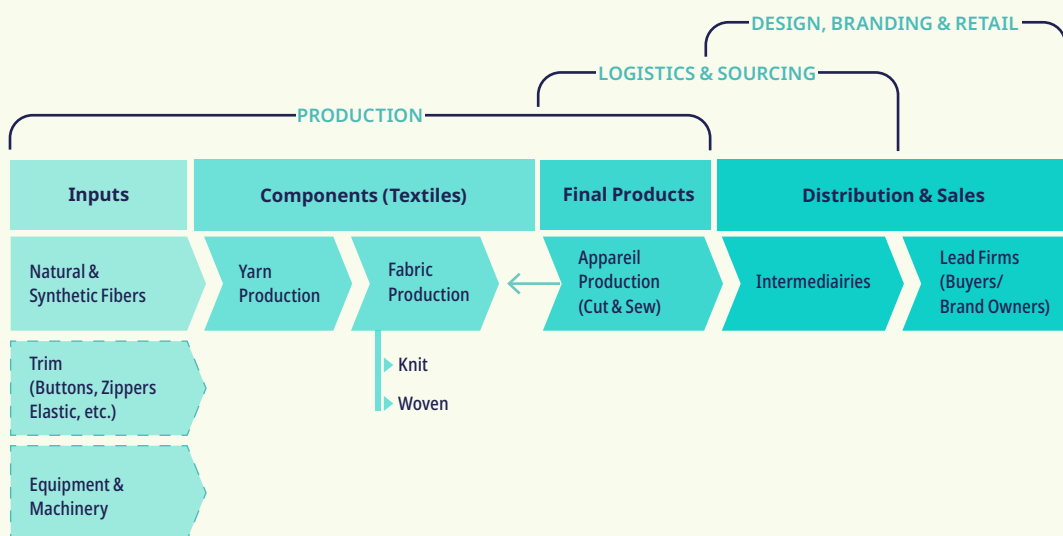
1. Characteristics of global supply chains in the garment industry

Global supply chains are complex, diverse, fragmented, dynamic and evolving organizational structures (ILO 2016b). Their operation differs by industry and by product. This section presents an overview of the characteristics of global supply chains in the garment industry and of the key indicators from the case studies conducted by the Vision Zero Fund.

Garment supply chains can be roughly divided into four stages, which are closely connected with the textile industry: raw material supply, including natural fibres (such as cotton and wool),

synthetic fibres (such as polyester, nylon and acrylic) and other inputs (trim and machinery); yarn and fabric production and finishing (textile industry); garment production (cutting and sewing fabric; adding trim); and distribution and sales at the wholesale and retail levels (see figure and table 1). In other words, fibres are spun into yarn, which is used to produce woven or knitted fabric. The fabrics are finished, dyed, or printed and cut into pieces to produce garments, home furnishings and industrial textile products (Frederick and Staritz 2012).

Main stages of global supply chains in the garment industry



Note: Dashed lines indicate indirect inputs to garment production.
Source: Frederick, 2015.

Every country engages in garment production for the domestic market. Garments are also one of the most heavily traded categories of goods: high-income countries have the highest consumption rates, however most final products are imported from lower-income countries. For example, garments are sold by brands and retailers based in the European Union (EU) and the United States of America that control the design and marketing activities and set the price for the final consumer. They purchase the final product from factories that they do not own in other countries (Gereffi and Frederick 2010). A third, more recent, production stream is emerging for growing consumer markets in Asia, Latin America and the Middle East, involving production by a mixture of in-country and regional networks. Some factories produce for multiple markets and buyers, whereas others produce for only one.

A large part of garment production – which includes cutting, sewing and finishing activities – remains labour-intensive, has low start-up and fixed costs and requires simple technology. These characteristics have encouraged the development of these activities in countries with relatively low labour costs, which are mainly developing countries. Top exporters of garments include China, Turkey, Bangladesh, Viet Nam, Indonesia, Cambodia, India, Pakistan and Sri

Lanka (Frederick and Daly, 2019). China, Turkey, India and Indonesia have been among the top ten garment exporters since the 1990s, Viet Nam and Bangladesh have been in the top ten since the 2000s, and Cambodia, Sri Lanka and most recently Pakistan have been in the top ten since the 2010s (Gereffi and Frederick 2010; Frederick and Daly 2019). In 2017, the top ten garment exporters accounted for 82 per cent of global trade. Omitted from this list is the EU-15, which is grouped as a single unit to prevent the inclusion on the list of multiple EU countries that primarily engage in intra-EU production and trade.

In contrast, textile component production is more capital- and scale-intensive and occurs in high and middle-income countries. Top textile component exporters include China, the EU, India, the United States of America, Turkey and the Republic of Korea. Some buyers and brands specify from which textile firms the garment manufacturer should purchase these inputs, while others leave the decision to the supplier. Raw material production differs for cotton and synthetic fibres: cotton production is driven by favourable climatic conditions and takes place in many developed and developing countries, whereas synthetic fibre is derived from petrochemicals and is produced in textile-exporting countries (Frederick and Staritz 2012).

► Table 1. Characteristics of global supply chains in the garment industry

Variable	Stage 1: Raw materials	Stage 2: Components (yarn and fabric)	Stage 3: Final products (garments)	Stage 4: Distribution and sales
Activities	Cotton (farming and ginning – separating fibre from seed) Synthetics (part of the chemical industry)	Yarn spinning (unloading cotton bales, cleaning, carding, drawing, spinning, winding, dyeing) Weaving/knitting fabric Quality control Dyeing	Fabric unloading, spreading and cutting Sewing machine operation Ironing Other finishing (varies depending on product, including dyeing, washing, embroidery, screen printing, zippers/buttons) Quality control Packaging	Design Marketing Branding Product development
Firms/actors	Varies depending on type of raw material and producing country	Formal; capital-intensive (reliable and inexpensive electricity are important investment criteria)	Large, formal factories Subcontractors and domestic market firms Home-based workers and microenterprises	Retailers, brands (located in import countries)
Workforce	Varies depending on type of raw material and producing country	More male-dominated	Female (50 per cent of workforce and nearly all sewing machine operators) Age: 18–35	Employed in import countries
End markets	China, Bangladesh, EU, India, Indonesia, Turkey, United States, Viet Nam	China, Bangladesh, Cambodia, EU, Indonesia, Sri Lanka, Turkey, United States, Viet Nam	EU, United States Regional Domestic	EU, United States

Source: Expanded from Frederick and Daly, 2019, and Frederick and Staritz, 2012.

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

- the national authorities responsible for OSH (such as the ministry of labour and the ministry of health), the ministries responsible for the sector (for example, the ministry of agriculture or the ministry of industry), and the ministry of trade;
- institutions involved in OSH promotion, risk prevention and compensation (such as health and social protection schemes, occupational health services,⁷ social security institutions, OSH advisory services and training providers);
- providers of services related to employment and skills (public or private);
- employers' and workers' organizations and other industry associations;
- private compliance initiatives⁸ and certifications.

The garment production stage can involve different economic units (see table 2), as described below.

Large, formal factories:

These are export-oriented and typically in export processing zones or industrial parks. They mostly employ permanent workers or workers on formal, short-term contracts and are subject to audits by parent companies (if they are branch plants of multinational enterprises), buyers and third-party certification bodies. Activities carried out in these factories may involve everything from fabric cutting to final packaging, to only sewing cut pieces and attaching trim (such as buttons, zippers and labels). These factories generally have a minimum of 250 workers and in some cases employ over 5,000 workers.

Subcontractors:

These are often domestic-owned firms (or foreign-owned, with single country investors) located near or in export processing zones. These firms have fewer workers than large, formal factories and perform a limited range of activities (such as sewing, knitting, screen printing and embroidery). They have short-term contracts with one or more firms (typically based on fulfilling an order, with a duration ranging from one day to many months). Subcontractors may be formal or informal enterprises and may have some permanent workers, but mostly have temporary workers (on short-term contracts), although it depends on the country and the firm. These firms are often subcontractors to export-oriented firms (and may be called indirect exporters) and manufacturers for the domestic market (for the consumer market or for institutions, manufacturing garments such as uniforms). These factories generally have between 10 and 250 workers and are often considered to be small and medium-sized enterprises.

Home-based workers and microenterprises:

These range from informal subcontractors to formal enterprises (often for embroidery work) and can be suppliers to the domestic market. Whether or not an entity registers as a formal business depends on the country and the size of the operation. These entities have less than ten workers, with many being one- or two-person operations. Given their small size, they typically have little incentive to register as firms.

⁷ 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. These include: internal services (in large industries); external services; private healthcare, primary healthcare and public healthcare centres providing occupational health services; group services owned or organized by several companies; and hospital polyclinics.

⁸ Private compliance initiatives are defined by their status as private, voluntary mechanisms for monitoring compliance with standards that are either public (law or regulations) or private (such as codes of conduct). They exist in a variety of types, including self-assessments (management systems), auditing (internal and external), certification and labelling, and public reporting (ILO 2013).

► **Table 2. Economic units often found in garment production**

Type	Size; number of workers	Employment status	Location
Large, formal factories	Large; 250–5,000	Mostly permanent (however, turnover often high)	Export processing zones, industrial parks; generally close to ports or primary roads
Subcontractors	Small and medium-sized enterprises; 10–250	Permanent and temporary	Near export processing zones or rural
Home-based workers and microenterprises	Micro; 1–10	Informal	Rural

Source: Based on author's extensive fieldwork in multiple garment-exporting countries (in Central America and sub-Saharan Africa, and in China, Bangladesh, Cambodia, Jordan, Pakistan and Viet Nam) and on secondary research on other top exporters (including India, Mexico, Morocco and Turkey).

Workforce characteristics

Garment production is one of two manufacturing industries with a primarily female workforce from a global perspective.⁹ The primary occupation in garment factories is operating a sewing machine (sewing machine operators account for 70 per cent of workers). In most countries, sewing machine operators are young (under the age of 35), women workers with primary or lower-secondary education. Other garment production workers are engaged in pre- and post-assembly operations, including fabric cutting and finishing activities such as ironing, stain removal, embroidery and trim, packaging and warehouse functions. Supervisors and managers (who are mostly men) generally constitute a small share of

the workforce (less than 10 per cent) (Frederick 2017; Frederick 2019).

Garment factories in the Vision Zero Fund case study countries primarily engage in cut and sew activities using imported fabrics and yarns. In the countries in the study, total employment ranges from a low of approximately 16,000 workers in the Lao People's Democratic Republic to a high of 442,000 workers in Myanmar (see table 3). Factories in Ethiopia are the largest, with an average of 1,300 workers per factory, with most located in export processing zones. Conversely, factories in the Lao People's Democratic Republic are mostly small and medium-sized enterprises, over three quarters of which employ fewer than 300 workers.

► **Table 3. Key indicators from the Vision Zero Fund case studies on garment production**

Country	Available information on firm size/economic units	Total employment in the sector (Number of workers)
Ethiopia	Average size: 1,300 workers per factory	62,000
Lao People's Democratic Republic	98 per cent of firms employ < 1,000 workers	15,900 (2017)
Madagascar	Some export-oriented manufacturing companies subcontract part of their production to formal enterprises (based on short-term contracts with exporters, typically with a two-month duration). Non-export processing zone exporters may use informal, one-person subcontractors (often referred to as home workers) for embroidery.	120,000 (export and non-export processing zones) 2,700 (textiles) Temporary workers may account for 11 per cent of the workforce (based on percentages listed for <i>petites mains</i>). ¹
Myanmar	78 per cent of firms employ < 1,000 workers	442,000 (2019)

Note: 1. In the Madagascar case study, *petites mains* are defined as "workers hired temporarily to carry out small adjustments such as thread removal and embroidery" (Rasolonjatovoarivelo 2020).

Source: ILO, 2020a (Ethiopia); Vixathep, 2019 (Lao People's Democratic Republic); Rasolonjatovoarivelo, 2020 (Madagascar); and Contri and Infante Villarroel, 2019 (Myanmar).

⁹ The other manufacturing industry with a primarily female workforce is tobacco product manufacturing. Based on author's analysis of labour force data for 82 countries in the ILOSTAT database for 2017 (Employment by sex and economic activity - ISIC level 2), plus India and Pakistan (2018) and Indonesia (2015).

2

OSH vulnerability profiles





2. OSH vulnerability profiles

Workers in garment supply chains 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 2019a). The combination of the likelihood of an occurrence of a hazardous---s event and the severity of the injury or damage to the health of people caused by this event is commonly understood as occupational risk (ILO 2001).

In garment supply chains, some workers or groups of workers may be more likely to be exposed to occupational hazards and risks and to have low capacity to cope with the consequences of such exposure. Identifying the underlying factors helps to identify OSH vulnerability profiles.¹⁰

This section presents the main occupational hazards and risks to which workers are exposed in garment supply chains, along with the available evidence of the types of firms and tasks where these hazards and risks arise, and the characteristics of the workers who might be exposed. This is followed by evidence pertaining to sensitivity

factors and coping capacity.

This section is based on information from the Vision Zero Fund case studies. Additional evidence from Better Work reports and assessments.¹¹ Other literature is also referenced.

2.1 Main occupational hazards and risks in garment production

The main categories of occupational hazards and risks identified in the Vision Zero Fund garment case studies are the following:¹²

- risk of fire resulting from unsafe wiring, obsolete electrical systems and boilers, and exposure to flammable materials or risk of being electrocuted resulting from contact with unsafe wiring;
- chemical risks resulting from exposure to hazardous chemicals;
- ergonomic risks resulting from repetitive movements and awkward working positions;
- mechanical risks resulting from contact with moving parts of machinery or tools without any protection;
- physical risks resulting from exposure to high temperature and loud noises;
- risk of falling from heights or of slipping or tripping;

¹⁰ For the purpose of assessing the drivers and constraints for OSH improvement in global supply chains, OSH 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).

¹¹ As reflected in Appendix II, non-compliance refers to factories that are non-compliant on one or more questions within the OSH area listed. OSH is typically the area with the highest non-compliance rates across countries.

¹² The occupational hazards and risks are not listed in order of significance. 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. Risk assessment in workplaces remains essential to identify occupational hazards and risks and for the management of OSH in enterprises.

- psychosocial risks related to pressure for meeting tight production targets and deadlines and heavy workload.

An overview of these hazards by country is set out in Appendix I to this review.

Fire and electrical hazards may have consequences for all workers in a factory. Electrical concerns are primarily a problem in older factories. As for fires, improper storage of flammable materials such as chemicals or cotton fabrics may also lead to fires in the workplace.

Exposure to hazardous chemicals is limited in most garment factories that engage only in cutting and sewing activities. The primary activity that exposes workers to chemical hazards is spot cleaning to remove stains. Different chemical substances, ranging from detergent to spot remover/lifter and cleaner sprays, can pose risks to worker health and safety if not handled properly or if workers are not equipped with personal protective equipment. In Madagascar, for example, perchloroethylene¹³ is one of the products used to remove stains, a task that is generally assigned to women workers. They work in teams for four to five hours, wearing masks fitted with cartridges. However, given the toxicity of perchloroethylene and the length of exposure, these masks do not provide adequate protection (Rasolonjatovoarivelo, 2020).

According to a Better Work research brief (ILO and IFC, n.d.), trichloroethylene is another toxic chemical commonly used in spot cleaning that requires special care. It can cause harm if it is breathed in or if it touches the skin. Factories with dyeing and finishing activities use a wider range of chemicals not covered in this review.

Ergonomic risks in garment factories arise from repetitive movements and prolonged periods sitting or standing and working in other awkward positions. Sewing machine operators carry out repetitive movements and sit in the same position for long hours, and workers engaged in fabric cutting, ironing and quality control stand for long hours without anti-fatigue

mats, shock absorbing mats or chairs for sitting at regular intervals, which can lead to musculoskeletal disorders.

In Madagascar, for example, it was found that cutting, stitching, button attachment, ironing and packing operations all involve highly repetitive movements of the upper and lower limbs. Most of these tasks are carried out while standing, except stitching, which is done while seated. Workstations are not always adjustable or adapted for machine operators. It was also found that workers, mainly men, must carry full boxes of items weighing more than 50 kg, after the products have been wrapped (Rasolonjatovoarivelo 2020). In Myanmar, in all visited factories, working stations were adjustable, but none had been adjusted for the height of the worker – standing or sitting. Workers at various stations (cutting, quality control and so on) stand for long periods of time on hard floors (Contri and Infante Villarroel 2019b).

Mechanical or machine-related hazards are present in the fabric-cutting department and for sewing machine operators. Collective protective equipment (guards) and personal protective equipment (gloves) can be used to prevent injuries while using cutting machines, and needle guards can prevent injuries from needles. In Madagascar, the level of severity of an injury from a tool or equipment in the cutting department was identified as high, even though the frequency was identified as low (Rasolonjatovoarivelo 2020). For sewing machine operators, injuries from needles can be frequent if guards are not used. Sewing machine operators and fabric cutters are the workers most exposed to mechanical hazards.

Physical risks include exposure to high temperatures (identified in the case studies for the Lao People's Democratic Republic and Myanmar) and exposure to loud noises (identified in the case studies for the Lao People's Democratic Republic, Madagascar and Myanmar). Noise issues typically arise in factories with old equipment or in generator and boiler rooms. Old equipment is found mostly in subcontracting factories. Another risk

¹³ Perchloroethylene or tetrachloroethylene, also known as perc, is a colourless, non-flammable liquid solvent primarily used in industrial settings and also for dry-cleaning fabrics and degreasing metals. For more information see the International Chemical Safety Card for tetrachloroethylene: https://www.ilo.org/dyn/icsc/showcard.display?p_card_id=0076&p_edit=&p_version=2&p_lang=en.

identified in Madagascar and Myanmar is falling from heights when retrieving fabric rolls for warehouse workers. The risk of slipping on a wet floor or tripping and falling was also identified in the case studies for Madagascar and Myanmar.

Psychosocial risks related to pressure to meet tight production targets and deadlines and heavy workloads were reported in the case studies for the Lao People's Democratic Republic and Madagascar. Psychosocial risks related to violence and harassment are reported in some other research, but this issue is only touched upon in the Vision Zero Fund case studies. This might be explained by the challenges inherent in assessing psychosocial risks and highlights the need for more research on the topic.

In a survey conducted in 2019 of workers and managers from textile and garment firms in Ethiopia, it was found that workers experience instances of sexual harassment and verbal abuse. One in five workers indicated that sexual harassment is a concern and over half of workers indicated that verbal abuse is a concern in their factory (ILO and IFC 2019c). In Ethiopia, sexual assault and violence when commuting to and from work is also a concern for factory workers. The risk is higher for workers covering late shifts, which tend to finish between 10 and 11 p.m. (ILO 2020b).

The surveys of workers carried out from 2010 to 2015 as part of Better Work's impact assessments also provide important findings on the magnitude of the issue of sexual harassment in garment factories. For example, in Indonesia, around four out of every five workers stated that sexual harassment or sexual touching is a concern in their factory.¹⁴ In baseline worker surveys carried out in garment and footwear factories in Cambodia in 2016, "quid pro quo" sexual harassment – explained in the survey to mean when a job benefit is offered in exchange for sexual favours or a sexual relationship – was reported by 22 per cent of respondents (ILO and IFC 2019d).

2.2 Sensitivity factors

Sensitivity factors are factors that increase workers' likelihood of exposure to occupational hazards and risks.

Long working hours, and more specifically overtime, have been reported in export-oriented garment factories across all Vision Zero Fund and Better Work countries. Sewing machine operators in formal enterprises are often guaranteed minimum wages for their regular hours worked and can earn a piece or production-based bonus for exceeding a production target. This usually requires overtime hours, for which workers are paid a higher hourly rate (often 1.5 times the normal hourly rate). This creates an incentive to work overtime and long hours and is often the only way for workers to increase their income in garment manufacturing. In preparation for peak demand in end markets (November and December), the need for and opportunities to work overtime and to engage subcontractors and temporary employees increases. Working long hours can increase fatigue, which may lead to injuries while using equipment and increases exposure to musculoskeletal disorders from repetitive motions and awkward positions.

A lack of established OSH management systems was identified in garment factories in Vision Zero Fund countries.¹⁵ If factories did have such a system, it was often simplistic. Elements of such systems include establishment of an OSH policy, assignment of responsibilities, identification and management of OSH risks, organization of personnel, provision of resources, communication, information, documentation and monitoring. Where they exist, bipartite workplace OSH committees and workers' safety and health representatives often lack capacities to carry out their functions and are sometime inactive or not functioning properly.

The Better Work assessments also show that non-compliance related to OSH management systems is generally high (98 per cent for

¹⁴ Workers were asked whether sexual harassment or sexual touching is a concern in their factory, not whether they were directly victims of sexual harassment.

¹⁵ 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).

Bangladesh, 55 per cent for Haiti, 90 per cent for Indonesia, 84 per cent for Jordan, 61 per cent for Nicaragua and 82 per cent for Viet Nam) (see Appendix II).

A lack of measures to prevent and control occupational risks was also identified.

In respect of chemical safety, most Vision Zero Fund case studies showed gaps related to chemical management at the workplace level. Poor labelling, the unsafe storage of chemicals, a lack of training of workers on the use of chemicals and a lack of safety measures were identified as the most common challenges. For example, in Ethiopia, two thirds of assessed factories failed to store chemicals properly, with some storing chemicals in water bottles and not separating chemicals from fire hazards.

The Better Work assessments show that the incidence of improper chemical labelling was also high in Bangladesh, Cambodia and Indonesia, and that there was a significant lack of effective training on chemicals and hazardous substances in Bangladesh and Cambodia.

In respect of fire and emergency safety, non-exporting factories and factories outside industrial parks are less likely to engage in preventive measures, but in general all types of factories across Vision Zero Fund countries can improve in this area. Areas commonly mentioned include:

- a lack of functioning fire detection and alarm systems (Ethiopia, Lao People's Democratic Republic, Myanmar; also identified in the Better Work assessments for Cambodia and Indonesia);
- obstructed or insufficient fire escapes or exits (Ethiopia, Lao People's Democratic Republic, Myanmar; also identified in the Better Work assessment for Cambodia);
- fire extinguishers out of service or hard to access (Lao People's Democratic Republic, Myanmar) or not regularly inspected (non-exporting factories, Myanmar);

- lack of periodic emergency or fire drills (Ethiopia; also identified in the Better Work assessment for Cambodia).

Regarding engineering controls¹⁶ and personal protective equipment (PPE),¹⁷ in garment factories, fabric cutters should ensure that the machine is adequately guarded and use metal mesh gloves when using cutting equipment to protect themselves from finger injuries; good ventilation and vacuum systems and dust masks may also be needed when cutting chemically-treated fabrics. Sewing machines should have needle guards installed. To prevent exposure to hazardous chemical substances in spot removal, where the use of hazardous chemicals cannot be avoided, local exhaust ventilation (extraction systems) should be installed and workers should wear proper face masks to prevent inhalation and gloves and other suitable clothing to prevent skin exposure. Workers exposed to high levels of noise must wear proper hearing protection. Workers need to be provided with adequate equipment when it is needed; should be trained on how to use it and why (including with regard to maintenance); and should be required to use personal protective equipment.

In the Vision Zero Fund case studies, most issues surrounding personal protective equipment appear to arise from a lack of proper training on how to use it and from a lack of requirements for workers to use it. Similarly, in a review of non-compliance rates across six Better Work programme countries (Haiti, Indonesia, Jordan, Lesotho, Nicaragua and Viet Nam), it was found, within the OSH cluster, that worker protection was the compliance area with the highest level of non-compliance, considering non-compliance to relate to workers' use of provided PPE and effective training on how to safely use machines (Kotikula et al. 2015). This issue was also highlighted in Better Work's most recent synthesis report on Bangladesh, according to which nearly all factories were non-compliant on some aspect of training workers to use PPE.

16 Where the elimination or substitution of hazardous substances is not practicable, technical measures should be applied to prevent the hazard from reaching the worker by enclosing it completely. Engineering controls include: increasing ventilation rates in the work environment; installing local exhaust ventilation; and installing physical barriers, such as guards.

17 PPE covers a worker's body and protects it from hazards. It includes gloves, overalls, personal hearing protection devices, safety glasses and face masks. Engineering controls are considered more effective than PPE, which should be used only: as a short-term measure before other controls are implemented; where other controls do not reduce risk to acceptable levels; during activities such as maintenance, clean up and repair where other controls are not feasible or effective; or during emergency situations.

However, management claims that workers are given training, but prefer not to use it.

Workers may prefer not to practice safety measures (such as using PPE) if doing so impedes productivity, particularly for risks that appear unlikely or less severe. This is often mentioned regarding the use of sewing machine needle guards. In other cases, it may be uncomfortable to use or wear PPE for extended periods of time (as is the case with respiratory masks for spot cleaning). When PPE is provided, but not used, the issue may be a lack of enforcement and workers' awareness of risk.

A lack of awareness of occupational risks, particularly those associated with long-term exposure, was identified as an issue in all four Vision Zero Fund case studies. Garment manufacturing is often the first formal job of workers, and therefore many workers are inexperienced in how to use the equipment and are unlikely to have gained OSH knowledge prior to entering the job market. Written materials also present challenges, because workers often have low levels of formal education (primary or lower secondary) and limited vocabulary and reading comprehension levels. Language barriers also present challenges, especially for migrant workers.

Insufficient training is also a common issue, in areas ranging from fire-safety and machine-safety training in Myanmar to chemical and OSH officer training in Ethiopia. In Madagascar, a lack of training is particularly an issue in subcontracting factories and for temporary workers, who have been found to receive less training and lower-quality PPE because they are not always present in the factories throughout the year.

Occupational health services do not exist or have very limited capacities across Vision Zero Fund countries. Activities relating to occupational health services would include identifying and assessing occupational risks in the workplace, surveilling the working environment in factories and workers' health in relation to work, and providing OSH advisory services, education and training.¹⁸ The case studies on Myanmar and Ethiopia both mention

gaps in the surveillance of workers' health in relation to work. In Madagascar, there are gaps in advisory services and most factories do not register temporary workers with the social security institution or occupational health services.

It was found that the financial constraints faced by subcontracting factories in Madagascar discourage these factories from engaging permanent workers and registering workers with the national social security fund and occupational health services. The succession of fixed-term contracts complicates the registration of temporary workers. Employers also expressed dissatisfaction with the quality of service provided by the national social security fund and occupational health services.

Financial capacity to invest in OSH improvement is limited. This factor was identified in all Vision Zero Fund case studies. Profit margins in garment manufacturing are low for all firms, which makes the cost of investing in OSH improvement particularly challenging for smaller firms, subcontractors and non-exporters, who often have the lowest profit margins. In Myanmar, recent evidence suggests that the adoption of OSH measures to address the COVID-19 pandemic has created a heavy financial burden, particularly for small factories.

In the Vision Zero case studies, all firm types and workers in garment factories are found to be likely to be exposed to occupational hazards and risks for the reasons already mentioned. However, workers in subcontracting factories are found to be more likely to be exposed and to suffer from occupational risks. These workers are more likely to work longer hours. Subcontractors earn less than prime contractors, and therefore face increased financial constraints. Often no measures are taken to prevent occupational accidents and diseases in subcontracting factories and these firms lack the human resources to undertake risk identification and assessments.

18 See the ILO's Occupational Health Services Convention, 1985 (No. 161), for further details in this regard.

2.3 Coping capacity

Coping capacity refers to strategies and resources that workers have at their disposal to deal with the consequences of exposure to occupational risks, such as access to occupational health services and compensation in the event of an occupational injury or disease.

Export-oriented factories tend to be in or near export processing zones or industrial parks, and therefore are generally close to healthcare facilities in the event of an accident at work. Some large factories provide onsite healthcare facilities. Factories in more rural and isolated areas tend to have fewer resources at their disposal nearby or onsite.

Compensation in the event of injury and coverage of medical expenses depends on enrolment in social security programmes. In the Lao People's Democratic Republic, for example, registration is mandatory, but many workers are not enrolled. In Madagascar, exporters often do not enrol temporary workers and often make late payments of contributions. Temporary workers and workers in informal subcontracting factories and in non-exporting factories are the least likely to be enrolled.

2.4 Gender-specific vulnerabilities

Women account for the largest share of workers in garment factories, particularly in sewing machine operations. As such, women are more likely to experience consequences associated with repetitive movement and potential for injury from sewing machine needles. If women engage in stain removal with toxic chemicals while pregnant or nursing, their child might be at risk of exposure. In Madagascar, most workers assigned to the task of stain removal are women, yet there is evidence that high exposure to perchloroethylene (which is one of the products used to remove stains) can lead to miscarriage and that it passes into breast milk and can intoxicate a breastfed infant (INRS, 2012).

Since women in garment factories are often of childbearing age, maternity leave policies are particularly relevant. The provision of benefits, such as allotted time for breastfeeding and maternity leave, follows national legislation requirements. Results from the country case studies and Better Work assessments suggest that factories generally comply with the ILO's Maternity Protection Convention, 2000 (No. 183), which provides for a period of maternity leave of not less than 14 weeks for permanent workers. Informal workers and temporary or daily workers often do not receive paid maternity leave and do not have access to health insurance.

Findings from Better Work assessments also show that workers in garment factories are vulnerable to various forms of verbal or physical abuse that may create an unsafe or undesirable working environment. Results from baseline worker surveys across Better Work country programmes indicate that concerns about sexual harassment are common in garment factories and women – who comprise the majority of the garment sector's workforce – are most often, but not exclusively, the target of sexual harassment (ILO and IFC, n.d.).

3

Drivers and constraints for OSH improvement





3. Drivers and constraints for OSH improvement

To understand the root causes of the OSH vulnerabilities or of the underperformance on OSH, and to identify the constraints that must be addressed and the drivers that can be leveraged for OSH improvement in global supply chains, the assessment methodology developed by the ILO and used in the case studies takes into consideration elements of the market and institutional environment. It includes the analysis of:

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

The drivers and constraints for OSH improvement in garment supply chains identified in this review¹⁹ can be divided into two categories: those relating to the national OSH system; and those relating to the dynamics and relationships among firms along the chain.

The limited development of national OSH systems is a constraint on OSH improvement found in all four Vision Zero Fund case studies. The requirements of buyers and brands is a key driver of OSH improvement found in all four case studies. Appendices III and IV present these and

the other drivers and constraints referenced in the case studies.

Although return on investment was not cited as a driver of OSH improvement in the case studies, the Myanmar case study has a section that uses secondary research from other countries and industries to illustrate the potential benefits of investing in OSH, which include economic return due to direct savings (such as energy efficiency), reduced turnover and absenteeism, and increased levels of productivity.

Further research in Myanmar showed that greater sustainability and impact at the workplace level are achieved through the engagement of multiple stakeholder groups, including the government, the private sector, workers' organizations, employers and workers (Ryan and Aung Myang Htay 2021).

3.1 National OSH system

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

- laws and regulations;
- authorities responsible for OSH;
- mechanisms for ensuring compliance (inspection);
- a national tripartite advisory body;
- information and advisory services on OSH;
- occupational health services;

¹⁹ The analysis of drivers and constraints for OSH improvement in most Vision Zero Fund case studies is not exhaustive. This review should be read and interpreted taking into consideration the limitations.

- 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.

Weak national OSH systems are a constraint on OSH improvement across Vision Zero Fund countries, and the lack of institutional capacity is often the most significant hurdle. The drivers and constraints linked to the national OSH system can be divided into three subcategories: OSH requirements under national legislation and regulatory frameworks; awareness and enforcement of legislation, including repercussions for non-compliance; and institutional capacities in respect of OSH.

OSH requirements under national legislation and regulatory frameworks: A sound and clear legal framework, developed in consultation with the social partners, is an important first step towards OSH improvement. The national legislation on OSH is viewed as a driver of OSH improvement in Ethiopia, Madagascar and Myanmar. In the Lao People's Democratic Republic, the government enacted OSH legislation in 2019. In Myanmar, a new OSH law was enacted by parliament in March 2019.

There may be loopholes or gaps in legislation that may constrain OSH improvement. In Ethiopia, there is no requirement for electrical tests and there is a limited number of qualified technicians to conduct tests. This is a legislative and technical capacity constraint. On the other hand, boiler inspections are legally required, but they rarely occur (ILO 2020a).

In the Better Work synthesis report for Indonesia, it was found that some districts do not have local building safety regulations, so firms in those areas are less likely to focus on or be aware of structural hazards (ILO and IFC, 2018b). In Indonesia, labour laws are also

frequently misinterpreted due to communication gaps or regulatory ambiguity.

Awareness and enforcement of legislation, including promotion of compliance and repercussions for non-compliance: It is important that firms and workers are aware of their legal rights and obligations and that compliance with legislation is promoted and enforced. A lack of legal awareness and enforcement was identified in the case studies for Ethiopia, the Lao People's Democratic Republic and Myanmar. In Myanmar, for example, the labour inspectorate is not yet able to inspect garment factories to a standard acceptable to many international brands (Contri and Infante Villarroel 2019a).

Workers' organizations can play an important role in raising workers' awareness of their rights and responsibilities under OSH legislation and in providing information on social security benefits, for example. In Myanmar, the role of workers' organizations was highlighted as key to driving and sustaining OSH changes in the workplace (Contri and Infante Villarroel 2019a; Ryan and Aung Myang Htay 2021).

In Ethiopia, it was also found that employers' and workers' organizations are important drivers in the enforcement of OSH legislation. However, it is reported that these organizations have few members and limited capacity (ILO 2020a).

Institutional capacities in respect of OSH: Lastly, and most importantly, institutions (in particular the regulatory authorities) must have the capacity to carry out their functions. Insufficient institutional capacity is a constraint across Vision Zero Fund countries, owing to limited resources, a limited number of labour inspectors and occupational health providers and professionals, and limited technical skills. The capacities of employment injury institutions are also often limited.²⁰ Regarding technical skills, in Myanmar, two designated departments in the Directorate of Industrial Supervision and Inspection are responsible for conducting inspections on business premises to check

²⁰ In Myanmar, Vision Zero Fund activities to strengthen the capacity of the employment injury institution resulted in improvements in the delivery of benefits to workers and had an impact in industries beyond the garment sector. The Fund's support for the establishment of a new tripartite national OSH training centre also contributed to the establishment of an important technical resource to help employers and workers to comply with the provisions of the OSH law and to further strengthen tripartism and social dialogue in Myanmar (Ryan and Aung Myang Htay 2021).

that boilers and electrical appliances are in accordance with the law and to issue licences as a result of these inspections. Training services provided to boiler and electrical operators in the garment industry are often insufficient and training curricula are ad hoc, reflecting shortcomings in the training process for inspectors (Contri and Infante Villarroel, 2019a).²¹

In Madagascar, inspections tend not to focus on OSH, due to the lack of technical skills and time, and the limited number of inspectors (Rasolonjatovoarivelo 2020).²² In Ethiopia, labour inspectors outside industrial parks lack the technical skills to conduct building safety and electrical inspections (ILO 2020a).

Limitations also arise in respect of occupational health professionals and services. In Ethiopia, the number of occupational health professionals is insufficient (ILO 2020a). In Madagascar, preventive services are not viewed as a priority and providers lack OSH technical skills (Rasolonjatovoarivelo 2020).

In Ethiopia, the Lao People's Democratic Republic and Myanmar, the limited availability of data on occupational accidents, injuries and diseases was also identified as a constraint on OSH improvement. This constraint can be linked to the limited capacities to collect and analyse OSH data. In Ethiopia, it was found that there is a lack of awareness of the requirement for factories to notify the competent authority about occupational accidents, injuries and diseases.

3.2 Industry dynamics and relationships

Requirements of buyers and brands were listed in all four case studies as a driver of OSH improvement. Many multinational companies have standards relating to health, safety, environmental considerations and worker treatment to which their suppliers must adhere. Buyers monitor suppliers by means of compliance initiatives and programmes administered by third parties, as well as by means of their own audits to ensure that buyer-specific requirements are met.

While requirements of global buyers are identified as a driver of OSH improvement, some limitations have also been identified. The global market is highly competitive and suppliers must be competitive in terms of cost. In the Madagascar case study, it was found that profit margins for garment manufacturing are generally low, which places constraints on the ability of factories to invest in OSH improvement, especially for subcontractors. Ensuring the traceability of subcontractors in the garment supply chain is also a challenge (Rasolonjatovoarivelo 2020). In other available research, it was found that global buyers and brands consider labour and working conditions as part of their sourcing criteria, while price, quality, lead time and firm capabilities are key priorities (Frederick 2016; Tessier et al. 2018).

In research conducted by the ILO in 2018,²³ multinational enterprises identified the challenges they face in implementing the OSH requirements associated with their sustainable sourcing policies, including the difficulty of reaching suppliers beyond the first tier, as it is difficult to trace all actors along the supply chain. It was also reported that incentive structures

21 Since 2019, in Myanmar, with support from the Vision Zero Fund, 24 electrical inspectors and 21 boiler inspectors in the Directorate of Industrial Supervision and Inspection have been trained by boiler engineers from the Ministry of Manpower of Singapore and electrical engineers from the firm Arup with regard to safety procedures and inspection practices.

22 Since 2018, in Madagascar, with support from the Vision Zero Fund, a task force of labour inspectors has been established and has delivered OSH training in Malagasy labour inspectorates. The OSH training curriculum was then included in the initial training that the National School of Administration provides for its future labour inspectors. In addition, the labour inspectors and the national social security fund have set up joint social protection task forces to carry out joint visits to factories. This coordinated action resulted in the registration of 558 employers and 12,172 workers with the national social security fund.

23 This research included a review of the sustainable sourcing policies of 45 multinational enterprises in agriculture and textile global supply chains and interviews with 35 multinationals involved in palm oil, coffee, lychee, textile or ginger global supply chains, 16 private compliance initiatives and ten auditing firms located in the field.

were sometimes insufficient for the smallest actors to make the necessary investments to comply with the OSH requirements of sustainable sourcing policies (Tessier et al. 2018).

Some buyers source garments from hundreds of suppliers, and naturally focus more on firms and countries that account for a higher percentage of their sourcing. There is an ongoing consolidation of the first-tier supply base as buyers increasingly concentrate orders on larger and more capable suppliers who offer consistent quality, reliable delivery, short lead times, large-scale production, flexibility and competitive prices, as well as broader non-manufacturing capabilities (Frederick 2016). These suppliers are also becoming more concentrated in fewer countries. Global trade data support the trend towards consolidation: in 2000, the top 15 garment-exporting countries accounted for 76 per cent of exports and, by 2012, this had increased to 87 per cent (Frederick 2015).

Smaller firms that are focused on assembly activities are less likely to form direct relationships with global buyers. Buyers prefer to have fewer suppliers, because identifying and maintaining relationships with many vendors incurs time and transaction costs for the buyer. However, this does not mean there are fewer garment manufacturers overall. Smaller firms still play a role as subcontractors to first-tier suppliers and as producers for domestic markets. Furthermore, demand for garments is growing in Asian, Latin American and Middle Eastern markets. Countries in these markets often source from different sets of domestic and regional suppliers.

In the Vision Zero Fund case studies, it was found that drivers for OSH improvement also vary by destination. For example, European buyers show the most concern for and are the strictest with supplier regulations; and Asian buyers tend to be the least demanding.²⁴ The same is true for factories that supply garments to domestic retail outlets.

There are also limitations on and room for improvement in how assessments are conducted. For example, buyers often rely on annual assessments by third-party auditors, largely using available documentation rather than primary observation. Auditors may not be specialized in OSH or the garment industry, and may not speak the local language. For example, in Madagascar, instances were reported in which auditors made inappropriate recommendations with regard to occupational risks and did not speak Malagasy, limiting their ability to communicate with workers.

In research conducted by the ILO (Tessier et al. 2018), it was found that external audits using checklist verification mechanisms often focus on visual requirements, limiting the ability to identify non-visible risks (such as psychosocial risks) and giving employers an incentive to provide PPE, but not necessarily information and training to workers on how or why to use it.

Overall, evidence of the impact of the sustainable sourcing policies of multinational enterprises on OSH, at the level of suppliers, remains limited, especially beyond first-tier suppliers (Walters and James 2009; Walters and James 2011; Tessier et al. 2018).

In enterprises participating in the Better Work programme, the public disclosure of audit results had a positive impact on compliance results for OSH in Viet Nam. OSH was the area in which the most change was exhibited during programme participation in Viet Nam (Hollweg 2019).

²⁴ See Contri and Infante Villarroel (2019) for a more-detailed evaluation of OSH and end markets.

4

Conclusions





4. Conclusions

4.1 Summary of findings

Workers in garment factories in the four case study countries are exposed to various occupational hazards and risks. Long working hours, weak – or an absence of – OSH management systems, insufficient training, a lack of risk awareness, a lack of OSH advisory services and occupational health services, and limited financial capacity to invest in OSH improvement are all factors identified in garment factories that increase workers' likelihood of exposure to occupational hazards and risks.

The limited development of national OSH systems in the four countries was found to be a main constraint on OSH improvement in garment supply chains in all four country case studies. This includes limited institutional capacities in respect of OSH and a lack of awareness and enforcement of legislation.

The most vulnerable workers are those working in subcontracting factories and in factories producing for the domestic market in developing countries and, to a lesser extent, exporters to any market other than the EU and the United States of America. These enterprises are not required to comply with private compliance initiatives and are generally smaller and located in areas where national OSH resources are non-existent or limited. Non-exporting factories and factories outside industrial parks are less likely to engage in preventive measures. These factories tend to generate less income than prime contractors, and therefore face increased financial constraints. In addition, workers in subcontracting factories are more likely to work longer hours.

By firm type and tier, the closer the firm is to the buyer, the more likely the firm will be required

to meet the buyer's standards. Larger, export-oriented factories tend to have greater awareness of these requirements and better access to support in comparison to subcontractors and factories outside industrial parks.

In all four country case studies, it was found that buyer requirements are the main driver of OSH improvement. However, buyers often rely on external audits conducted by auditors who may not be specialized in OSH, often using available documentation and checklist verification mechanisms and focusing on visual requirements, sometimes leading to inappropriate recommendations and limiting the ability to identify non-visible occupational risks.

4.2 Knowledge gaps and prospects for future research

To date, research efforts focusing on OSH within global supply chains in the garment industry are scarce and remain fragmented. The analysis presented in this review is based on a limited number of country cases for one stage of the chain in countries that play a limited role in global supply chains in the garment industry. As most of the available research focuses on the activities carried out in the countries, the analysis is often limited to cut and sew activities in garment manufacturing and does not cover dyeing and finishing or textile production. Additional country case studies from top global garment exporting countries could provide a holistic picture of drivers and constraints.

As previously noted, industry dynamics differ considerably, based on the end markets, firm type and needs. A discussion of OSH drivers and constraints may benefit from comparing

dynamics across industries and countries to identify synergies and characteristics that are unique to garment production.

Information on occupational risks and OSH vulnerability profiles and analyses of drivers and constraints for OSH improvement are limited in most Vision Zero Fund country case studies. More and better data on occupational risks and on groups of workers most likely to be exposed and suffer from occupational hazards and risks at the different levels and in different units of the global supply chain could be collected. Knowledge of less evident occupational hazards and risks – such as biological, ergonomic, mechanical and psychosocial risks, including violence and harassment at work – is limited.

Information can be drawn from countries that collect data on occupational injuries and diseases and workers' compensation claims, combined with short and long-term studies in the garment and textile industry by occupation.²⁵ This information could also be collected and analysed through independent channels of support that have frequent interaction with factories, such as the Better Work programme or industry associations.

A strong national OSH system is essential for OSH improvement. 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 improvement at the workplace level in global supply chains in the garment industry.

Knowledge of the impact of sustainable sourcing policies on OSH beyond tier one is limited. As suggested in research conducted by the ILO (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.

More research on the economic benefits of investing in OSH improvement and management systems (for example, direct savings or increased levels of productivity) in developing countries could contribute to increasing the likelihood of stakeholders investing their time and resources in this area. Research could also focus on challenges and opportunities in respect of developing and implementing OSH management systems at the workplace level, 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 that 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 emerging technologies²⁶ and, more recently, the COVID-19 pandemic, which are having impact on demand and supply in global supply chains in the garment industry, as well as implications for OSH. Challenges and opportunities in respect of OSH improvement may arise or be amplified as a result of these changes.

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

²⁵ For example, one study evaluated persistent upper limb pain from repetitive hand motions by comparing workers in and out of the garment industry using a questionnaire and a physical exam while controlling for effects related to age and length of employment (Punnett et al., 1985).

²⁶ New technologies present challenges related to increased risks and exposure to new risks, while at the same time they can contribute to reducing other risks and removing people from hazardous environments (ILO 2019b).

Appendices



Appendix I

Occupational hazards referenced in the Vision Zero Fund case studies on OSH improvement in global supply chains in the garment industry

Hazard	Madagascar	Myanmar	Ethiopia	Lao People's Democratic Republic
Fire and electrical				
Exposure to flammable materials			X (chemicals)	
Unsafe wiring (electrocution)		X (mostly identified in locally owned factories)	X (factories outside industrial parks)	X
Old equipment	X (non-exporting and subcontracting factories)	X (boiler safety issues)	X (boiler safety issues)	
Chemical				
Exposure to hazardous chemicals	X (stain removal) and (dye/finishing)	X (stain removal activity)	X ¹	X (footwear production, glue)
Physical				
Temperature		X		X
Noise	X (non-exporting and subcontracting factories)	X* (subcontracting factories)		X (footwear production)
Heights/falling	X	X (in warehouse)		
Slip/trip/fall	X	X*		
Hit by moving vehicle	X ²			
Ergonomic				
Repetitive movements	X (sewing, stitching, ironing and packing activities)			X (sewing activity)
Awkward posture/standing	X (sewing, stitching, ironing, packing activities)	X (sewing and cutting activities)	X	X
Manual handling heavy loads	X			
Mechanical				
Cut using equipment/machine	X (cutting ³ and sewing activity using needles) ⁴	X (cutting and sewing activities)	X	X (cutting activities)
Psychosocial⁵				
Heavy workload and pressure for meeting tight production targets and deadlines	X (temporary, subcontractor)			X (sewing activities)

Notes: X indicates occupational hazard listed as a risk factor. X* indicates that the hazard was not explicitly listed in the case study report but confirmed as an occupational hazard in further assessments conducted by the Vision Zero Fund in garment factories at the country level.

- The case study report does not discuss exposure but mentions a lack of chemical safety (ILO 2020a);
- The coming and going of delivery lorries presents a hazard. Workers in export-oriented companies also generally finish work at 4 or 5 p.m. Large numbers of people are moving about at this time, but the supply of public transport is limited. Passengers jostle to mount moving vehicles and accidents are frequent (Rasolonjatovoarivelo 2020);
- At the cutting station, workers use various machines fitted with sharp blades. Most workers (64 per cent) were not in the habit of using collective protection and PPE (chainmail gauntlets). Men are usually assigned to the cutting stations (89 per cent). Cuts are not frequent, but they can cause very serious injury (amputated fingers) (Rasolonjatovoarivelo 2020); 4 Needle injuries from sewing machines are frequent, according to 93 per cent of workers in the companies visited. The risk is at its highest at the end of the day, according to 70 per cent of workers, because of fatigue and lowered concentration (Rasolonjatovoarivelo 2020);
- In 1984, the ILO and the World Health Organization defined psychosocial hazards as "the interactions between and among work environment, job content, organizational conditions and workers' capacities, needs, culture, personal extra-job considerations that may, through perceptions and experience, influence health, work performance and job satisfaction" (ILO 1986, 3; see also ILO 2017).

Appendix II

Better Work non-compliance findings: OSH and working time cluster

Area	Bangladesh 2015–18	Haiti 2020	Indonesia 2018	Jordan 2020	Nicaragua 2018	Viet Nam 2019
Chemicals and hazardous substances	90%	100%	80%	11%	78%	68%
Emergency preparedness	96%	100%	85%	43%	35%	74%
Health services and first aid	100%	93%	90%	91%	30%	51%
OSH management systems	98%	55%	90%	84%	61%	82%
Welfare facilities	94%	79%	59%	58%	39%	43%
Worker accommodation	1%	0%	1%	70%	--	2%
Worker protection	100%	90%	85%	66%	87%	93%
Working environment	44%	97%	58%	22%	91%	15%
Leave	42%	28%	35%	9%	13%	28%
Overtime	99%	3%	66%	3%	26%	81%
Regular hours	59%	38%	45%	5%	17%	58%
Number of factories assessed	200	29	172	81	23	331
Sources	ILO and IFC 2019a	ILO and IFC 2020a	ILO and IFC 2018b	ILO and IFC 2020b	ILO and IFC 2017	ILO and IFC 2019b

Note: Non-compliance refers to factories that are found to be non-compliant in respect of one or more questions within the compliance area listed. For details on the methodology used to assess non-compliance, see: ILO and IFC 2020b.

Appendix III

Drivers of OSH improvement referenced in the Vision Zero Fund case studies on OSH improvement in global supply chains in the garment industry

Driver	Myanmar	Ethiopia	Lao People's Democratic Republic	Madagascar
Legally required (national)	X (case study discusses relevance of requirement and enforcement)	X		X
Buyer/brand requirements	X	X	X	XX
Proven return on investment	XXX			
Economic development programmes by non-governmental organizations		X		

Notes: X: listed as a factor; XX: not listed as a factor, but implied; XXX: listed as potential factor, but not identified as a driver in the country.

Appendix IV

Constraints on OSH improvement referenced in the Vision Zero Fund case studies on OSH improvement in global supply chains in the garment industry

Constraint	Myanmar	Ethiopia	Lao People's Democratic Republic	Madagascar
Buyers/private compliance initiatives more checklist focused than systematic	XX			XX
Not legally enforced (national) (incl. lack of awareness of legal requirement)	X	X	X	
Lack of institutional capacity (national)	X	X		X
Insufficient labour inspection (lack of labour inspectors, lack of technical skills, insufficient institutional set-up/structure)	X (lack of training)	X (lack of technical skills and equipment)		X (insufficient human and material resources)
Insufficient occupational health services (lack of technical skills and lack of occupational health professionals)	XX	X (lack of occupational health professionals)		X (poor quality of services)

Notes: X: listed as a factor; XX: not listed as a factor, but implied.

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