Garment Industry

Fire and Life Safety Risk Profile

Jordan

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This risk profile was commissioned in 2014 by Better Work, a joint partnership programme of the International Finance Corporation (IFC) and the International Labour Organization (ILO), with funding provided by IFC. The study examines sector-wide fire and building safety risks present in garment factories participating in the ILO Better Work Jordan (BWJ) country programme, which was launched in February 2008 at the request of the Government of Jordan. BWJ aims to enhance competitiveness and improve compliance with labour standards of garment factories in the country.

This document provides an analysis of current fire and building safety risks in Jordan's garment industry and suggests possible mitigation measures as well as recommendations to key stakeholders to reduce these industry risks. Methods of analysis include initial desk research, benchmarking, document review, stakeholder discussions, and on-site factory inspections (including worker dormitories).

Compared to other Better Work countries, Jordan is unique since most of the industry's workforce are migrants coming from Bangladesh, India, Nepal and other neighboring countries within the region. This requires factories to provide accommodation to their migrant workers either within the factory compound or in some other location. Conditions within factory dormitories were considered in the profiling exercise, which were found to contribute to the overall level of risk, especially dormitories that are situated very near the main factory building. During the on-site assessment activity, the methodology and expectations applied to both the main factory and the dormitories were the same.

The most significant fire and building safety risks identified in Jordan's garment factories and their dormitories include the following:

FIRE SAFETY RISKS

- Substandard electrical installations (e.g., broken sockets and switches; unsecured electrical wires; wires directly connected to the outlet without a plug; damaged electrical panels)
- Inappropriate means of escape (e.g., blocked exit pathways; lacking, defective and unmaintained emergency lights and directional exit signs)
- Inadequate automatic fire suppression systems (e.g., obstructed, absent or lacking sprinklers, fire alarms, or smoke detectors; improperly marked fire alarm buttons)
- Unprotected fire hazard materials and equipment (e.g., hazardous installation of LPG tanks; absence of automatic shut-off devices; inadequate clearance of stacked combustible materials from the ceiling)
- Lack of emergency awareness and training (e.g., lack of familiarity with fire emergency contact numbers; outdated evacuation plans)
- Insufficient firefighting equipment (e.g., insufficient or missing fire extinguishers)

BUILDING SAFETY RISKS

- Poor building maintenance (e.g., improper structural connections – missing bolts, column to slab, beam to wall; structural cracks; overloaded structures; dampness/moisture; corrosion)
- Substandard building construction and design (e.g., roof resting improperly on the masonry wall; air-conditioning units lacking support; weak bond between bricks)

Commitment by the Government of Jordan to improve the industry as a whole is evidenced by its initiative to establish Better Work Jordan in 2008, and by its decision to make the programme mandatory for all garment factories exporting to the US and Israel in 2010. In the area of fire and building safety, formal laws, regulations and codes are in place in the country; enforcement and implementation by the government and other relevant organizations were found to be adequate as well. Given this, agencies responsible for fire and building safety should focus on sustaining and maintaining their performance and on striving to further improve their capacity. There have been no known major fire or building accidents in the garment industry in the past three years. The primary drivers currently influencing factories to implement fire and building safety measures include the legal and regulatory regime, active involvement of the government in OSH and fire safety initiatives, commercial gains from engaging satisfied buyers in business, the commitment of high-end companies/suppliers to maintain their reputation, and compliance with third party audit requirements and access to BWJ services. Conditions relating to fire and building safety in Jordan are comparatively better than those seen in the other Better Work countries visited during the risk profiling exercise, but improvements are nonetheless recommended to ensure safe conditions within factories.

The following are therefore recommended:

Garment Factories

Garment factories should tailor their actions based on their risk level, with the goal being to reach and maintain the low risk level. To ensure that risks in worker

dormitories are also being addressed and mitigated, companies should ensure that safety measures and practices in place within main factory areas are implemented in the dormitories as well.

High Risk Factories

- identify objectives and set targets on fire and building safety conditions
- develop policies and procedures related to fire and building safety (e.g., emergency response plan)
- focus on internal awareness and training
- establish the legally mandated joint worker-management OSH committee
- send health and safety personnel to relevant trainings
- perform regular assessments to determine if target and objectives are being met

Medium Risk Factories

- focus on evaluating weaknesses
- streamline existing risk controls
- reinforce inadequate risk mitigation measures
- adopt any missing risk mitigation measures

Low Risk Factories

- focus on maintaining performance of best practices and processes
- document and institutionalize existing fire and building safety risk mitigation measures, such as emergency procedures, regular assessments and allocation of resources/equipment
- consider OHSAS 18001 Safety Management System certification

Government

- focus on maintaining the level of implementation and strive to further improve capacity to effectively perform mandates in accordance with existing laws and regulations on fire and building safety
- emphasize fire and building safety issues when conducting regular labour or OSH inspections and include inspection of dormitory premises
- provide consistent training to inspectors to maintain quality factory inspections and keep up with new developments, standards and best practices in the field
- impose appropriate sanctions on factories found in violation of fire and building safety laws
- establish a reporting system whereby factories report all future OSH related incidents within their factory and dormitory premises

Jordan Engineers Association (JEA) and engineering offices

- strengthen cooperation with the government by pushing for the creation of an independent oversight directorate that will bridge the gap between the government and the association as well as oversee the work of engineering offices

Buyers

- require suppliers to perform annual basic building safety assessments and regular fire safety inspections
- provide financial assistance to factories to cover costs of structural assessments
- assess factories they source from if they have their own assessment tools, which should be reviewed periodically
- pressure/encourage factories to address non-compliance issues identified in BWJ assessments and other audits
- set up rewards (awards, recognitions) for factories based on compliance with fire and building safety measures

Jordan Garment, Accessories, & Textiles Exporter's Association (JGATE) - *Employer Association*

- promote awareness and information exchange by forming strategic partnerships within and outside the country
- gather and disseminate information on fire and building safety good practices
- act as liaison for other stakeholders and facilitate information exchange among factory management
- arrange an annual industry seminar/conference on the importance of fire and building safety
- conduct specialized trainings on fire and building safety for OSH officers in collaboration with experts and service providers (the training should enable OSH officers to conduct their own in-house emergency preparedness training or seminar for factory workers)

- initiate industry-wide competitions on fire and building safety in collaboration with BWJ
- collaborate with BWJ in organizing an annual trade fair to exhibit fire and building safety equipment and service providers
- act as the repository for fire and building accidents

Trade Unions and Workers

- pressure other stakeholders to implement positive change
- lobby for the legally mandated joint worker-management OSH committee and a fire brigade within factories
- lobby for the inclusion of fire and building safety in national OSH plans and policies
- instill in workers the value of their own safety to discourage compromise with poor working conditions
- actively participate in available trainings on fire and building safety and in emergency drills
- be aware of internal fire and building safety measures in the factory
- report dangerous conditions to supervisors/ managers and to the factory's OSH committee

PART 1

PROJECT OVERVIEW

1.1. PROJECT BACKGROUND AND OBJECTIVES

The textile, clothing and footwear (TCF) manufacturing industry remains an essential component of the global economy. It is among the most globalized sectors, employing over 60 million workers worldwide, generally women and unskilled laborers.[1] Despite the growth over the past decades, the TCF industry still faces several challenges ranging from international trade barriers to ensuring the safety and welfare of factory workers.

As a result of globalization, it is important to consider that most processes in the industry's supply chain are outsourced to developing and least developed countries, where labour is abundant and operational costs and wages are low.[2] In turn, developing countries benefit as the industry typically accounts for a large share of their total exports and is a major source of local employment.[3] The drawback is that this growth may be founded on substandard labour conditions and poor compliance with national and international labour standards.[4]

60 million workers worldwide

The Fire and Life Safety Risk Profiling Project aims to support the Better Work Programme in its efforts to improve working conditions in global supply chains. To ensure that Better Work is sufficiently addressing areas of greatest risk, the Profiling Project aims to assist Better Work in reviewing and refining its tools and approaches to assessing and remediating fire and building safety issues in each of the countries where it operates, including Jordan.

This risk profiling project was initiated in the aftermath of the collapse of the Rana Plaza Building, a commercial structure housing garment factories in Bangladesh, resulting in numerous injuries and a death toll of 1,127.[5] This tragedy highlighted the real risks that factory workers in the garment and footwear industry across the world are exposed to, and led to a clamor for improved working conditions and better compliance with factory safety standards. With the help of key industry stakeholders, the Profiling Project seeks to help prevent future incidents by conducting industry level risk assessments on fire and building safety in garment and footwear factories, in order to develop a risk profile for each Better Work country programme. Having gained a better understanding of industry risks, the project recommends proactive measures that can be taken by government authorities, international buyers, industry associations, workers and trade unions, garment and footwear factories, Better Work and others to reduce those risks and enhance worker safety.

1.2. SCOPE AND LIMITATIONS

The Fire and Life Safety Risk Profile of Jordan's garment industry is subject to the following scope and limitations:

- Risks included in this report relate only to structural integrity and fire safety in garment factories (including dormitory premises) participating in the BWJ programme.
- The number of factories assessed (4) does not constitute a representative sample for statistical purposes. However, findings from the on-site assessments in the factories visited do provide insight into the types of risks present in Jordan's garment factories, particularly when combined with the learnings from the research and desk review and the stakeholder discussions.
- The factories visited were not selected randomly; instead, a devised set of selection criteria was used to ensure, as much as possible, that factories having a range of characteristics were included in the site inspection activity.
- Factories were assessed in accordance with the Accord on Fire and Building Safety in Bangladesh – Building Standard. A fire safety checklist and a structural safety checklist, separately developed based on the Standard, were used in the assessment. In addition, the assessment of building safety included three structural tests—Rebound Hammer Test, Ultrasonic Pulse Velocity Test, and Rebar Scanning—recommended by the said Standard under Section 8.5.6.
- The on-site inspections conducted emphasized life safety aspects of the findings more than the protection of goods and materials in the facility and in worker dormitories.
- Life safety includes, at a minimum, the structural soundness of the facility and its capacity to resist fire, as well as other fire safety issues including, but not limited to, emergency exit doors, electrical machines and wiring installations, fire prevention systems, and emergency preparedness.
- Risks identified during the on-site inspections were assigned risk values in order to establish their relative prioritization. The Gretener Method was the approach used for this risk quantification process. The values given for each factor in the formula (e.g., Probability, Potential impact, etc.) were not purely statistical, but were empirically derived by the experts from their own observations and evaluations.
- On-site inspections were conducted during 2014. Changes in the level of fire or building safety risks are likely to occur in subsequent years.

1.3. PROJECT APPROACH

ACE Methodology

In order to develop the Fire and Life Safety Risk Profile of Jordan's garment industry, the Analyze-Create-Execute (ACE) Methodology, which is based on the Plan-Do-Check-Act (PDCA) cycle approach, was employed. This is a suitable methodology as it provides a systematic approach to develop an industry level risk profile that can be used as reference for several other actions.

Analyze Phase

The first phase encompasses the initial review and assessment stage which includes desk research, benchmarking, document review, site selection, stakeholder discussions and on-site factory inspections to gather necessary data.

- **Research and Desk Review**
  An initial desk research was conducted to gather existing and available secondary data relevant to the target industry in Jordan. National data on fire and building accidents as well as the degree and extent of existing legal and regulatory schemes governing fire and building safety, when existing and accessible, were also taken into account.
- **Benchmarking**
  A set of international standards was used as the basis for analyzing existing local standards and as reference to formulate assessment checklists for the on-site factory inspections. The benchmark standard also formed the basis for suggested risk mitigation measures and recommendations for key industry stakeholders.

- ## Report Review
  A sample set of BWJ factory level assessment reports was reviewed to provide information on the status of emergency preparedness in participating factories. These reports provided insights to potential concerns on fire safety where participating factories are non-compliant.

- ## Site Selection
  In preparation for the site inspection activity, a set of site selection criteria was established to identify a sample group of factories that would reflect a range of relevant characteristics of the enterprises registered with the country programme. The criteria considered for Jordan are reflected in the table below, which also illustrates the respective attributes of the factories visited during the on-site inspections.

- ## Stakeholder Discussions
  Available key stakeholders in the industry and those relevant to fire and building safety in Jordan such as government officials were interviewed to gather more information and better understand the current conditions of fire and building safety in the target industry.

- ## Site Inspection
  On-site factory inspections focusing on fire and building safety were conducted on the sample set of factories using exhaustive assessment checklists and procedures which include visual inspection and if possible, non-destructive structural tests, specifically:

Table 1. Site Selection Criteria

	No. of Employees			Accommodation		Building Age			Location	
	Less than 500	501 to 1000	1001 or above	Existing	Not existing	Below 5 years	5 to 15 years	Above 15 years	Within Amman	Outside Amman
Factory 1			✓	✓			✓		✓	
Factory 2			✓	✓			✓			✓
Factory 3	✓				✓		✓	✓		✓
Factory 4		✓		✓			✓		✓	

Rebound Hammer Test

Ultrasonic Pulse Velocity Test

Rebar Scanning

1. **Rebound Hammer Test (Schmidt Hammer):** This test is used to establish the concrete uniformity and delimit areas with low quality concrete. Also, this test is useful when detecting transitions or changes in the concrete behavior. The compression resistance of the concrete can also be established using empirical relations.

2. **Ultrasonic Pulse Velocity Test:** This test is performed by measuring the travel time of an ultrasonic pulse moving through the concrete being assessed. Higher velocity means better concrete quality.

3. **Rebar Scanning:** This test is used for locating rebar in the concrete structure and determining the thickness of their covering. This test is also used as a complement to other non-destructive tests for locating areas free of rebar and/or installations.

Create Phase

The second phase involves compiling all data gathered from previous activities to develop the Fire and Life Safety Risk Profile of Vietnam's garment and footwear industry.

- **Research Data Compilation**
  All data collected from the initial stages were compiled to develop the situation analysis report on fire and building safety of the target industry.
- **Site Inspection Report Compilation**
  Data gathered from each on-site factory inspection were compiled to form the site assessment reports.
- **Industry Risk Profile Compilation**
  Using key findings and insights provided by the situation analysis report and the site assessment reports, the Fire and Life Safety Risk Profile of Jordan's garment industry was drafted and developed.

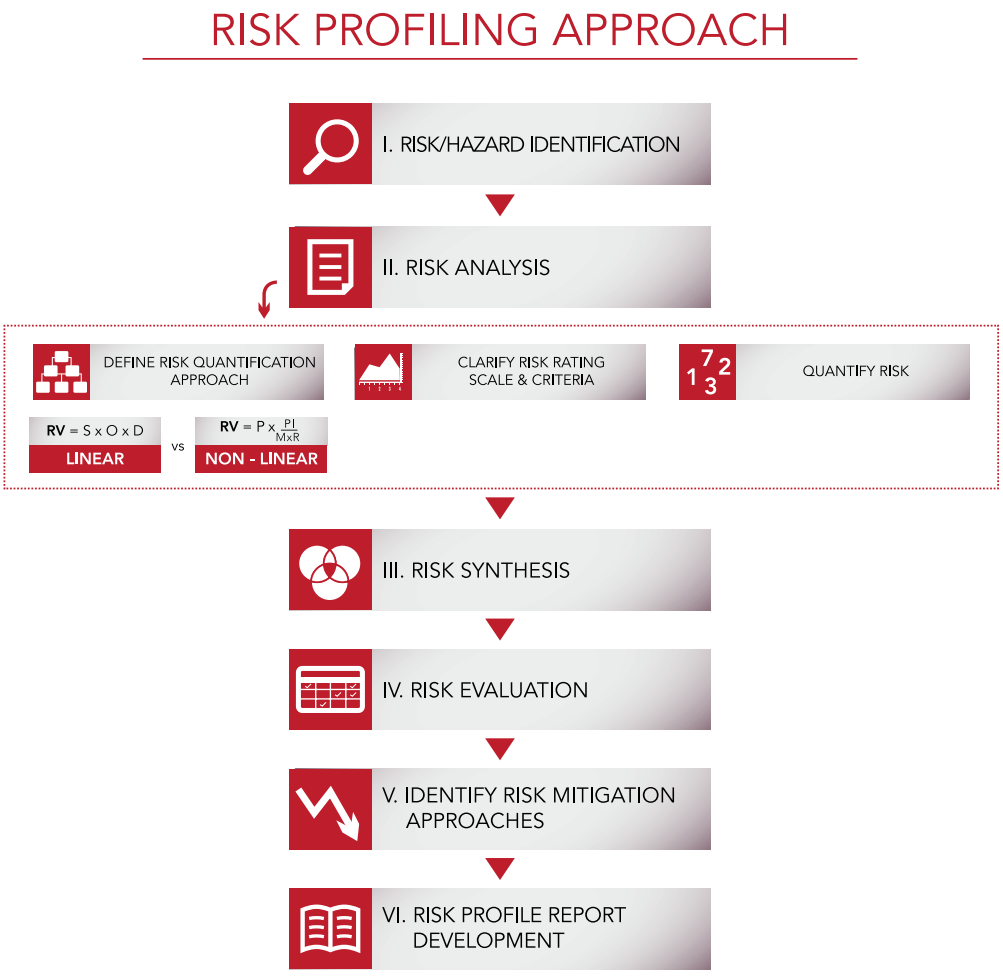
Execute Phase

The last phase includes the submission of the risk profile and conducting of a workshop for BW Enterprise Advisors.

- **Workshop for BW Enterprise Advisors**
  A short workshop session was organized for Enterprise Advisors during the Better Work EA Summit in 2015 to enhance their awareness in identifying and assessing electrical and building safety hazards. A short interactive exercise was performed to let enterprise advisors simulate assessment of different fire and building safety scenarios. Guidance on assessing building cracks and key findings from different BW countries were also shared.

Risk Profile Development

The Risk Profiling Approach details the steps taken to incorporate the fire and building safety hazards identified during the on-site factory inspections into the risk profile.



Factory Level

Risk/Hazard Identification

Hazards were identified through on-site factory and dormitory inspections on fire and building safety. Both the fire safety expert and the structural safety expert inspected the selected sample factories using separate checklists developed in accordance with the Accord on Fire and Building Safety in Bangladesh – Building Standard to determine the respective hazards in each factory. After all inspections were completed, an assessment report for each factory was compiled containing detailed information on hazards and other supporting documents.

Risk Analysis

This is the process of modeling and scoring causal and mitigating parameters to produce a rapid and simple estimate of relative fire and structural risks. The incentive of risk ranking techniques is to provide decision makers with a transparent and defensible way of arriving at decisions with the help of risk values. Risk Analysis comprises the process of defining the risk quantification approach, clarifying the rating scale and criteria, and quantifying each of the risks identified.

Industry Level

Risk Synthesis

There were risks identified during the on-site inspections that were found in multiple factories. These risks, though identical, may have different risk values depending on the condition of the factory where they were identified. In order to integrate these identical risks, the entry that yielded the highest risk value was retained and considered in the Risk Ranking table located in page 35.

Risk Evaluation

After coming up with the list of consolidated risks, the risks were ranked according to priority and were plotted on a heat map to provide a visual representation of the risk ranking and prioritization. The heat map can also be used to evaluate the residual risk after suggested mitigation measures are implemented. Furthermore, risks were classified under relevant categories/clusters to determine the areas of operation to which the suggested mitigation measures apply.

Identification of Risk Mitigation Approaches

Recommendations on possible risk mitigation measures were identified. In addition, recommendations to prevent and protect against fire and building related hazards in the sector were also developed for the different industry stakeholders in the country.

Risk Profile Report Development

All data obtained from the preceding steps were compiled and integrated as part of the final Risk Profile Report.

PART 2

OVERVIEW OF JORDAN'S GARMENT INDUSTRY

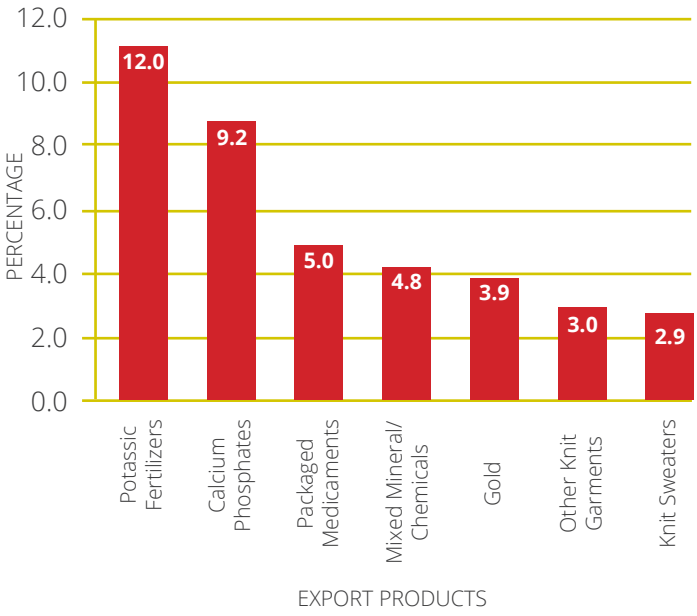
2.1. INDUSTRY CONTEXT

The Hashemite Kingdom of Jordan is a developing country and an emerging free market economy[6] in the Middle East bordered by Syria in the north, Iraq in the east, Saudi Arabia in the southeast and Israel and the occupied West Bank in the west. The three main geographic and climatic divisions of the Kingdom are the Jordan Valley, the Mountain Heights Plateau and the Badia region.[7]

Jordan has a land area of 88,778 km^2 and territorial waters of 540 km^2. 78.4% of the total land area of the country is covered by the eastern desert, Badia.[8] The Kingdom is divided into 12 governorates with Amman as the capital. As of 2013, Jordan has an estimated population of 6.46 million.[9]

The Kingdom is a constitutional monarchy with a representative government. The reigning monarch is the head of state, the chief executive and the commander-in-chief of the armed forces. The King also has an executive branch composed of the Prime Minister and the Council of Ministers.[10]

Graph 1. Top 7 Jordanian Products for Export



The World Bank reports that the country achieved a gross domestic product (GDP) of USD$33.68 billion and a GDP per capita of US$5,213.4 in 2013.[11] Its total exports and imports of goods amounted to US$7.914 billion and US$18.61 billion, respectively, in the same year.[12]

Table 2: GDP trend of Jordan (2009-2013)[13]

Country	Value (in US$ millions)				
GDP (US$ Million)	23,818	26,425	28,840	31,015	33,679
GDP Growth Rate	5.5%	2.3%	2.6%	2.7%	2.8%

As of 2013, the Jordanian labour force is composed of 1,772,636 men and women. Jordan's labour force is male dominated with only 16% employed females. The number of unemployed Jordanians in 2013 was 12.6% of the population.[14]

The top five products that Jordan exports are potassic fertilizers, calcium phosphates, packaged medicaments, mixed mineral or chemical fertilizers and gold. Other knit garments and knit sweaters ranked sixth and seventh, respectively.[15]

At least 80 garment factories had been put up in Jordan and many of them are located in 13 Qualified Industrial Zones (QIZs). In 2010, the Ministry of Labour released its decision that all garment factories and their subcontractors exporting to the United States and Israel must register with Better Work Jordan. At present, 65 exporting factories (suppliers) and their sub-contractors are registered with the Programme. While the Jordanian labour force is primarily dominated by males, majority of workers in the garment sector are females.

17% of Jordan's total exports can be attributed to the contributions of the country's garment industry, which exceeded $1.3 billion in 2013, an increase of more than 8% from 2012. The main importer of Jordan's apparel export (e.g., jeans, sportswear, formal wear and undergarments) is the United States and there had been a 4.1% increase from 2011.[16]

Jordan benefits from the trade and investment cooperation with the US through the Jordan-US Free Trade Agreement signed on October 24, 2000 and enforced in December 2001. The Free Trade Agreement reduced barriers for services, covered intellectual property protection, ensured regulatory transparency and pushed for effective enforcement of labor and environmental protocols.[17,18]

Products produced in the QIZs remain valuable to the Jordan-US trade relationship. More than half of the Jordanian exports to the US come from the QIZs.[19] From the 13 QIZs, three are government-owned and the rest are private sector-owned. The QIZs primarily house the garment and textile industry sector. The QIZ agreement signed by Jordan and the US in 1997 allowed QIZ products to have quota free access to the US market subject to US laws and special conditions outlined in the agreement.[20]

Prior to signing a Free Trade Agreement with the US, Jordan already had an existing agreement on the Greater Arab Free Trade Area (GAFTA) signed in 1998 which includes 17 member states: Jordan, United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar, Morocco, Syria, Lebanon, Iraq, Egypt, Palestine, Kuwait, Tunis, Libya, Sudan and Yemen. It plays an important role in developing an Arab Common Market.[21]

Based on 2012 figures, the Jordanian garment industry is comprised of 37,055 workers. From this number, Jordanian workers account for only 20-21% and the rest are migrant workers.[22]

Despite the expansion of the Jordanian garment industry, one of the challenges is diminishing the unemployment rate in the country. In the past decade, the Jordanian Government has given more attention to job-creating investments, which contributed to a 6% increase per year in the country's economy from 2000 to 2005. However, Jordanian unemployment rate remained at 14% as migrant workers filled 63% of the jobs created.[23]

On January 2013, Jordanian workers in the garment industry received a raise in their monthly minimum wage while there were no changes in migrant workers' basic monthly minimum wage. Jordanian workers now receive JD 190 (USD 268), JD 20 more than their previous monthly minimum wage. Migrant workers continue to receive a minimum of JD 110 (USD 155).[24]

On May 27, 2013, a landmark collective bargaining agreement (CBA) was signed with the aim of strengthening partnerships, promoting social dialogue and improving the working conditions of approximately 50,000 garment sector workers. The Jordan Garments, Accessories & Textiles Exporters' Association (J-GATE), the Association of Owners of Factories, Workshops and Garments (AOFWG) and the General Trade Union of Workers in Textile, Garment & Clothing Industries signed this sector-wide CBA, which is believed to be one of the world's most comprehensive in the garment industry. The government also agreed on developing a five-year national strategy for the Jordanian garment sector.[25]

2.2. KEY STAKEHOLDERS

Engagement with industry stakeholders who have an interest in and/or influence on the development, implementation and compliance with fire and building safety standards is important in order to acquire and understand key information regarding fire and building safety in the industry and country of interest.

The following key stakeholders were engaged:

- ILO-Better Work Jordan (BWJ) – BWJ is one of the ILO/IFC Better Work country programmes that assesses working conditions and compliance with labour standards of participating garment factories in the country. It was initially established as a voluntary programme but was made mandatory by the Ministry of Labour for all garment factories and their subcontractors exporting to the US and Israel starting July 2011. BWJ assesses compliance with national laws and international core labour standards, and publishes two annual synthesis reports publicly – one summarizing the non-compliance issues of all factories assessed over a 12-month period and another report focusing on a key theme or issue in the industry. It also conducts training courses for management and workers and offers tailored advisory services to participating factories to help them increase efficiency and maintain profits while respecting the rights of workers. BWJ was established in 2008 at the request of the government of Jordan. It works with government, employers, workers and international buyers to ensure a relevant and sustainable approach. The United States Department of Labor (USDOL) is currently the programme's major donor since August 2014.
- General Directorate of Jordan Civil Defense – Jordan's Directorate of Civil Defense is a government agency responsible for disaster risk management and emergency response. It has five departments – Operations Department, Training Department, Prevention and Self-protection Department, Information and Preventive Awareness Department, and Laboratories and Hazmats Department. The Operations Department provides firefighting and rescue services, emergency medical care, drawing and carrying out of evacuation plans, and issuance of authentic copies of accident reports. Prevention and self-protection services include reviewing engineering drawings and checking public safety requirements for construction license issuance, carrying out inspections and checking safety systems such as firefighting and alarm systems for the purpose of issuing occupancy permits or vocational licenses, fire investigations, and conducting follow-up inspections.
- Jordan Engineers Association (JEA) – JEA was founded by Law No. (15) of 1972. It replaced the Jordanian Association of Engineers founded in 1953 and the Engineering Professional Union founded in 1958. The Association oversees the work of engineering offices in compliance with the "Engineering Offices By-Laws" No. (31) of 1989. An order was issued to follow and study all matters pertaining to engineering offices including registration, classification, and organization of the professional practice.[26] In addition to two main offices located in Amman and Jerusalem, it has 17 branches in different cities.

The key learnings from the stakeholder discussions are the following:

- Engineering offices prepare building plans, which have to be approved by JEA.
- JEA conducts field tours. If plans are not compliant with the national construction code, JEA does not approve them.
- Contractors are held responsible for ten years from the time of construction. According to BWJ, people are not aware of this fact.
- Renovations and additions to a building must be approved by JEA and blueprints have to be inspected.
- According to JEA, no case of garment factory collapse was reported in the last three years.
- Improved cooperation with the government is being planned to create an independent oversight directorate that will oversee the work of engineers.

This is intended to bridge the gap between the government and the association of engineers.

- JEA is only concerned with the building's construction phase, but it has no authority or mandate to force building plans to be implemented as approved.
- Imposing fines or penalties is not the mandate of JEA. Filing law suits against a contractor is up to the citizens.
- Soil testing must be performed before building construction begins.
- The Directorate of Civil Defense may visit construction sites and check construction safety practices. If requirements are not met, it sends its recommendations to correct issues.
- The Civil Defense visits garment factories at least twice a year.
- The Civil Defense has no authority to shut down factories that do not comply with requirements. When factories are found to be in violation, the Civil Defense sends a letter to the governor suggesting to suspend the license of the factory until the issues are corrected or to shut the factory down.
- Buildings have to comply with requirements depending on their use. If existing buildings change their line of industry, they have to meet the corresponding requirements.
- One challenge faced by the Civil Defense is the lack of manpower to inspect factories in all sectors. The garment industry is considered to be one of its top priorities.
- There are small factories regulated by the Ministry of Labour and the Civil Defense, but not by BWJ because they only produce for the local market.

PART 3

KEY FINDINGS

3.1. LEGAL AND REGULATORY REGIME

The constitution of Jordan assures the health and safety of workers under Article 23, Section 2, paragraph (e). This mandates the state to enact legislation and to protect workers through subjecting factories to health safeguards. In accordance with this constitutional provision, laws and regulations that comprehensively address fire and building safety exist in Jordan, some of which are briefly discussed below:

Law No. 8 of 1996. Labour Law

Jordan's Labour Law was enacted on 2 March 1996. Chapter IX entirely covers Occupational Safety and Health.

Section 78 enumerates the responsibilities of employers to their workers, which include taking necessary precautions and measures to protect workers from hazards and diseases, providing them personal protective equipment, and informing them of any occupational hazards and precautionary measures to be taken before commencing work. Workers must abide by the rules, regulations and decisions set by their employer and refrain from any act that will undermine such rules.

Section 80 specifically mentions the need to protect establishments and workers against fire and explosion hazards. Employers should provide adequate technical material and equipment for storing, transporting and handling highly flammable products. All mentioned services to be provided by employers are workers' rights and therefore, must be free of charge.

Section 85 furthers the discussion of worker safety by mandating companies to form an occupational safety and health (OSH) committee and assign supervisors if the enterprise exceeds 50 workers. The OSH committee must have relative training to cater to the safety needs of the workers and must handle all concerns regarding training, inspection, documentation, and other programs. A regulation pertaining to the formation of the OSH committee has been enacted by the Minster of Labour.

Better Work Jordan has developed a Labour Law Guide to help both factory management and workers be informed regarding their rights and duties at work.

1998 Regulation No. 7: The Regulation of Forming Committees and Supervisors of Occupational Safety and Health

Regulation No. 7 of 1998 explains the need to assign a functional staff specialized in vocational safety and health, which applies to any establishment that has more than 20 workers. The number of functional staff required increases based on the size of labour in the establishment as stated in Article 4, which is shown in the table below:

Under Article 7, it is emphasized that each establishment having more than 50 workers must establish a Vocational Safety and Health Committee. The committee members consist of the supervisor, directors of the production sections, worker representatives and the establishment's physician (if there is any). Worker representation in the committee should be equal to the number of directors representing all sections of production. Article 8 requires the committee to take charge of related decisions and procedures for issues such as accidents and injuries that occurred in the previous months and

Number of workers	Specialized Supervisor	Full time technician	Vocational Safety & Health Committee
From 20 to 50 workers	-	1	-
From 51 to 200 workers	-	1	1
From 201 to 500 workers	1	2	1
From 501 to 1000 workers	2	3	1
For each thousand that follows in addition to the previous	1	2	1

the procedures that should be taken by the supervisor. It also explains that the committee should have a bylaw to organize committee meetings, organize a symposium to study and determine the causes of work accidents and injuries, and determine preventive measures to avoid such hazards.

1998 Regulation No. 43: The Regulation of Protection and Safety from Industrial Tools and Machines and Work Sites

Article 4, section B, paragraph (9) of Regulation No. 43 emphasizes that regular check for all electric cables, wires and connections should be conducted to prevent unexpected fire-related hazards.

1998 Instructions for Protection of Workers and Establishments from Workplace Hazards

Access and provision to fire safety tools and emergency exits must be given to all workers. Even workers' break rooms must have accessible fire extinguishers.

Instruction No. 1 of 2011 for Prevention of Health Hazards Resulting from Housing Units of Labour Camps

Enterprises that offer housing facilities to workers must also provide firefighting equipment, clear evacuation plans, and emergency contact information and instructions in the accommodation. Along with these, workers must also have access to sanitary facilities and secure rooms. A supervisor, preferably an OSH committee member, must be appointed to oversee the welfare of workers in the housing facility.

Law No. 27 of 1986, Health and Safety Guidelines

It states that any establishment must be clean and must not pose health hazards to workers. Protection against fire hazards is also prioritized.

Jordanian National Building Law No. 7 of 1993

The Jordanian National Building Law is a set of 32 codes containing rules and technical requirements related to construction works. The codes are related to different degrees of prevention and general safety in establishments. The following are some codes related to fire and building safety:

- *Loads & Forces Code* – This code deals with dead, live and snow loads, as well as wind and earthquake forces that have to be taken into consideration in the structural design of buildings and other structures.
- *Site Investigation Code* – This code is mainly concerned with soil investigation on which it is intended to construct a building.
- *Foundations & Retaining Walls Code* – This code covers the minimum conditions as well as the methods of design and construction to be followed for foundations and retaining walls.
- *Plain & Reinforced Concrete Code* – This code determines the minimum conditions to be followed in the design and construction of plain and reinforced concrete structures as well as the properties, specifications and methods of testing reinforced concrete materials.
- *Pre-stressed Concrete Code* – This code determines the minimum conditions to be followed in the design of pre-stressed concrete structures and properties, as well as specifications and methods of testing of pre-stressed concrete materials.
- *Steel Structures Code* – This code deals with steel structures in terms of types, load, applied forces and materials used as well as the minimum requirements of design and construction.
- *Masonry & Walling Code* – This code covers the design requirements of load-bearing and non-load-bearing walls built from masonry blocks and stones in terms of the resistance of such walls to various loads, their stability and methods of design and construction.
- *Building Materials & Usage Code* – This code reviews most materials used in the construction industry such as their methods of application.
- *Fire Protection Code* – This code covers the design and construction requirements of new buildings as well as the modification of existing buildings according to the type of occupancy in order to ensure sufficient levels of protection against fire hazards.
- *Water Supply for Building Code* – This code includes conditions and recommendations for the design and installation of water supply networks for firefighting in buildings.
- Electrical Wiring and Installations Code – This code provides regulations defining the minimum safety protection requirements against the risk of misuse of electrical wiring, installation and equipment.
- Fire Alarm Systems Code – This code contains recommendations for the design, installation, operation and maintenance of fire detection and fire alarm systems in buildings and their surroundings.

Labour Inspections

Labour inspections are the responsibility of the Ministry of Labour through the Directorate of Labour Affairs and Inspection and its regional offices across the country. The Ministry of Health also conducts inspections related to occupational safety and health through its Directorate of Occupational Health and regional health directorates.

Issuance of Building Permit

As one of the requirements prior to obtaining a building permit for construction, approval of design drawings must be requested from the Engineering Association. Upon approval by the Engineering Association, the plans are then submitted to the municipality for verification and shall be sent to the local building committee. After the approval is issued by the building committee, the plans are sent to the inspectors for examination. A clearance on fire safety should also be approved by the Directorate of Civil Defense as part of the procedure in obtaining a building permit. Construction is authorized once the building permit is obtained and a soil examination is conducted by a licensed engineering office. During construction, inspection is required by the government to ensure that there are no violations of the building permit, but such inspections are not practiced regularly.[27] Once construction is completed, an application should be submitted to the municipality to obtain an occupancy permit. An occupancy permit is

issued once relevant inspections from the municipality are completed and the final approval from the Directorate of Civil Defense is given.

Government Initatives on OSH

Aside from their enforcement activities, government agencies such as the Ministry of Labour and the Ministry of Health collaborate with BWJ in different areas to promote fire and building safety. The government also provides trainings to relevant government agencies particularly the labour inspectorates. In October 2013, a three-part training-of-trainers workshop administered by the ILO was held in Amman to train labour inspectors of the Ministry of Labour and the Aqaba Special Economic Zone Authority, together with representatives from employer and worker organizations. The course focused on labour issues including OSH to improve and develop modern labour inspections in the country in accordance with ILO standards.[28]

Better Work Jordan Initiatives on OSH

- **Emphasis on dormitory standards –** BWJ plans to focus on standards and fire safety measures in worker accommodations such as dormitories by facilitating multi-stakeholder discussions and encouraging factories to report to the Civil Defense all buildings with worker accommodation. BWJ will also insist that updated records of factory dormitories be submitted and shared to industrial zone administrators and appropriate government authorities.
- **CAT revisions –** BWJ improved its CAT by incorporating more questions on fire safety. BWJ also started checking business licenses as the renewal process required building inspections by the Directorate of Civil Defense.
- **Training materials and visual education materials –** BWJ developed training materials for workers focusing on OSH and fire safety. Visual materials such as illustrations, posters and videos dealing with fire safety in the workplace were also developed.
- **Trainings sessions –** BWJ delivered several training sessions on OSH and fire safety targeted to workers and factory middle management.
- **World Day for Safety and Health at Work –** BWJ commemorated the World Day for Safety and Health at Work by facilitating a meeting between national stakeholders to discuss ways to prevent fire risks in factories and worker accommodations.
- **2014 International Buyers Forum –** Fire risks in factories and worker accommodations were also raised during the 2014 International Buyers Forum. National stakeholders were encouraged to formulate an action plan regarding regular inspection of dormitory conditions.

3.2. PRIMARY DRIVERS OF FIRE AND BUILDING SAFETY PROGRESS

Based on observations and personal interviews conducted by fire and structural experts during the site inspection activity, the primary drivers of fire and building safety in Jordan's garment factories are economic/commercial gains, the legal regime, government support, reputation and voluntary compliance.

Economic/Commercial Gains

During the site visits, it became clear that buyers are one of the key actors influencing factories to implement fire and building safety measures. Factories are generally willing to implement measures that will satisfy the requirements of their buyers and potentially result in additional orders. Buyers that have their own safety standards subject factories to their own fire and structural safety audits.

Legal and Regulatory Regime

The country's legal framework on fire and building safety is another driver. With laws and codes available, factories are required to comply with requirements or face sanctions.

Government Support

The existence of laws and regulations on fire and building safety in the country ensures that factories can determine what requirements to comply with. Furthermore, the active involvement and collaboration of the government with BWJ contributes to the improvement of OSH among factories in the industry. BWJ's collaboration plan with the Ministry of Labour comprise of quarterly meetings between BWJ's enterprise advisors and the Ministry' labour inspectorate. It also addresses serious issues that pose an imminent threat to workers' health and safety through a zero tolerance protocol.

Reputation

Expanded and established companies in Jordan tend to enforce fire and building safety measures to preserve their reputation. Expanding companies usually serve key buyers in the industry, where only reputable companies are acceptable to supply products.

BWJ Assessments, Advisory Services and Training

Compliance by factories with BWJ's assessment requirements also contributes to fire and building safety. Factories involved in the programme undergo assessments and have access to training opportunities, advisory services and support for improvements. Since BWJ is a mandatory country programme of Better Work for factories exporting to the US and Israel, all eligible factories have access to BWJ services. In addition, it is easier to cover the sector when monitoring compliance, because the number of factories is limited.

3.3. FACTORY FIRE AND BUILDING ACCIDENTS

Jordan has comprehensive legislation on occupational health and safety which adequately covers fire and building issues. There are incidents of fire and building collapse, but there have not been major accidents specific to Jordan's garment industry. Nevertheless, following devastating events in the same industry in other countries, fire and building safety have become issues in Jordan as well.

BWJ is not aware of any significant incidents of factory fire in the industry. However, BWJ is cognizant of minor incidents in dormitories, suggesting that risk is higher in worker accommodation than in factories. One reason is that the government does not regularly inspect OSH issues in worker accommodations provided by factories for migrant workers.

Incidents of building collapse are also not historically prevalent in the industry given the small number of garment factories. During the stakeholder discussions, JEA reported no records of garment factory collapse in the last three years, while JGATE mentioned that were incidents of small fires caused by chemicals, but no issues related to construction flaws.

3.4 IMPLEMENTATION OF PRACTICES

One of the services provided by Better Work Jordan to participating factories is the assessment of compliance with international core labour standards and national labour laws in order to help factories identify areas in need of improvement. In assessing factory compliance, BWJ conducts interviews, document reviews and factory observations using a checklist covering basic working conditions and fundamental rights at work called the Compliance Assessment Tool (CAT). After every factory assessment, BWJ produces a report that details the factory's compliance, including basic factory information, areas of non-compliance, good practices, and areas of potential concern. The assessment report is then shared with authorized buyers. Every year, results of individual factory assessments conducted within the 12-month period are consolidated and summarized into a Compliance Synthesis Report to provide an overview of working conditions in the industry. In this annual report, BWJ calculates the average non-compliance rate of factories for the issues assessed. It also presents tables highlighting the number of factories found non-compliant for each specific requirement. Aside from Synthesis Reports, BWJ is also producing an annual report that focuses on a certain theme or issue relevant to the industry. So far, it has produced one Thematic Synthesis Report focusing on fire safety.

6th Compliance Synthesis Report

The 6th Compliance Synthesis Report of BWJ, released in January 2015, covers 59 factories assessed from October 2013 to October 2014. At the time of the report's release, BWJ had 65 registered exporting factories, covering over 95% of the labour force in the industry and over 95% of all apparel exports.

The Occupational Safety and Health cluster has the highest number of non-compliance issues, despite detailed OSH laws and regulations in Jordan. The average non-compliance rate of factories on Emergency Preparedness is 80% while it is 90% on OSH Management Systems.

QUESTION	# OF FACTORIES OUT OF COMPLIANCE
Are emergency exits and escape routes clearly marked and posted in the workplace?	29
Are flammable materials safely stored?	8
Are possible sources of ignition appropriately safeguarded?	1
Are the aisled and emergency exits accessible, unobstructed and unlocked during working hours, including overtime?	29
Are there enough emergency exits	6
Does the employer conduct periodic emergency drills?	11
Does the workplace have a fire detection and alarm system?	13
Does the workplace have adequate and accessible fire-fighting equipment?	14
Has the employer trained an appropriate number of workers to use the fire-fighting equipment?	4

Table 3. BWJ 6th Compliance Synthesis Report, In Focus Table #6: Emergency Preparedness

Approximately half of the factories failed to have accessible, unobstructed and unlocked emergency exits during working hours as well as emergency exits and escape routes that are clearly marked and posted in the workplace. Both requirements have 29 non-compliant factories out of 59 (49% non-compliance). Other pressing fire safety issues include inadequate and inaccessible firefighting equipment (24% non-compliance), absence of fire detection and alarm systems (22%), failure to conduct periodic emergency drills (19% non-compliance), and flammable materials that are not safely stored (14% non-compliance). All but six have enough emergency exits; four had not trained at least 10% of its workers on the use of firefighting equipment; and only one had unprotected source of ignition. In theory, while some issues such as obstructed exits may be easier to correct than others, factories fail in implementing systems to ensure that these issues do not recur over time.

According to the report, non-compliance on OSH Management Systems was primarily due to stringent legal requirements. Compliance effort on this compliance point declined by 45% due to 46 additional factories that did not have the required OSH specialists.

Thematic Synthesis Report: Fire Safety

BWJ's 1st Thematic Synthesis Report produced in June 2014 focused on the theme of fire safety. In order to see the progress of participating factories on this issue, the report covered 24 factories that had already been assessed by BWJ at least four times. 10 factories already had their fifth assessment, but the latest data were not considered in the analysis.

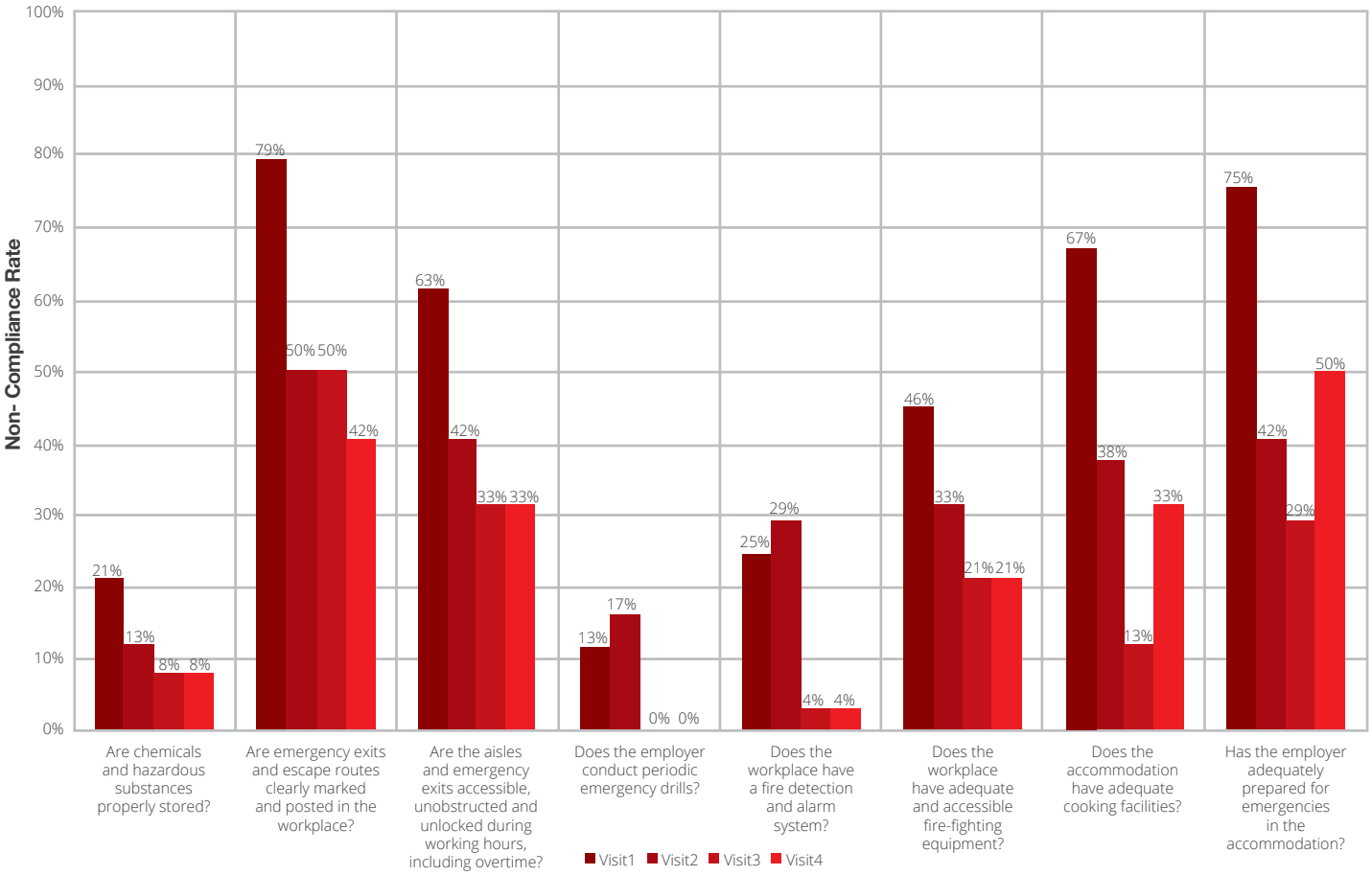


Chart 2. BWJ Thematic Synthesis Report: Fire Safety, Non-compliance rate by visit

Non-compliance on fire safety requirements generally declined. Over the four visits, average non-compliance across fire safety-related questions decreased from 38% to 22%. Out of the questions reviewed, improvements of more than 5% were seen on six, while two issues showed encouraging improvements by the third visit but regressed by the last assessment.

As shown in the chart above, factories that were part of the study managed to demonstrate 100% compliance with conducting periodic emergency drills and training an appropriate number of workers on how to use firefighting equipment. Factories also showed good compliance effort in the area of emergency exits, though non-compliance ratings are still high. From 19 non-compliant factories out of the 24 that had no clearly marked and posted emergency exits and escape routes during the first visit, it went down to 10 factories by the fourth visit. Seven of the fifteen factories that had inaccessible, obstructed or locked aisles and emergency exits were already compliant by the last visit. However, compliance effort on having enough emergency exits remained the same across the four visits. With regard to having adequate and accessible firefighting equipment, non-compliant factories declined from eleven to five, while one remaining factory still had not installed fire detection and alarm systems in its facilities.

Regression in compliance effort was observed in requirements related to accommodations. From three non-complaint factories that had no adequate cooking facilities during the third assessment, it increased to eight by the fourth visit; factories that had not adequately prepared for emergencies in the accommodation increased as well from 7 to 12 in the same period.

Compliance effort remained static on four issues from the third and the fourth visits.

Factory Assessment Reports: A Trend Analysis

As part of the research activity, assessment reports of 30 garment factories, provided by BWJ, were reviewed to understand the following:

- The assessment method being implemented by BWJ
- The types of items the assessment checklist covers and whether fire and building safety are being addressed
- The compliance level of factories related to fire safety and emergency preparedness.

This review exclusively focused on findings relating to emergency preparedness in the 30 assessment reports completed between July 2012 and June 2014.

After totaling the number of findings on emergency preparedness of each factory, the result shows that there are 9 top compliant factories, 18 middle compliant factories, and 3 bottom compliant factories.

Compliance Ranking	Number of Findings on Emergency Preparedness	Number of Sample Factories
Top	0 – 1	9
Middle	2 – 4	18
Bottom	5 or more	3

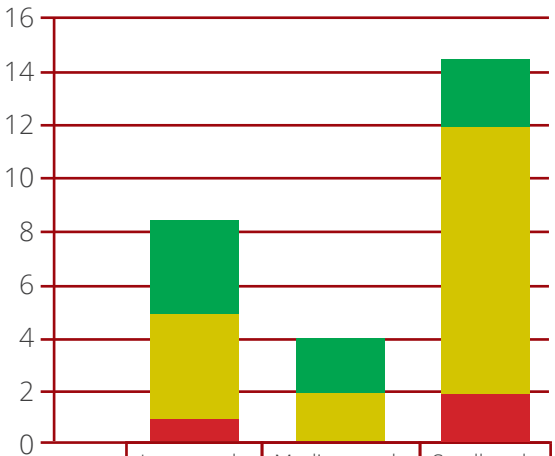
Note: based on 30 sample assessment reports

Based on data in their respective assessment reports, 9 factories are large-scale; 6 factories are medium-scale; and 15 factories are small-scale enterprises.

Category	Number of Workers	Number of Sample Factories
Large-scale	1001 or above	9
Medium-scale	501 - 1000	6
Small-scale	1 - 500	15

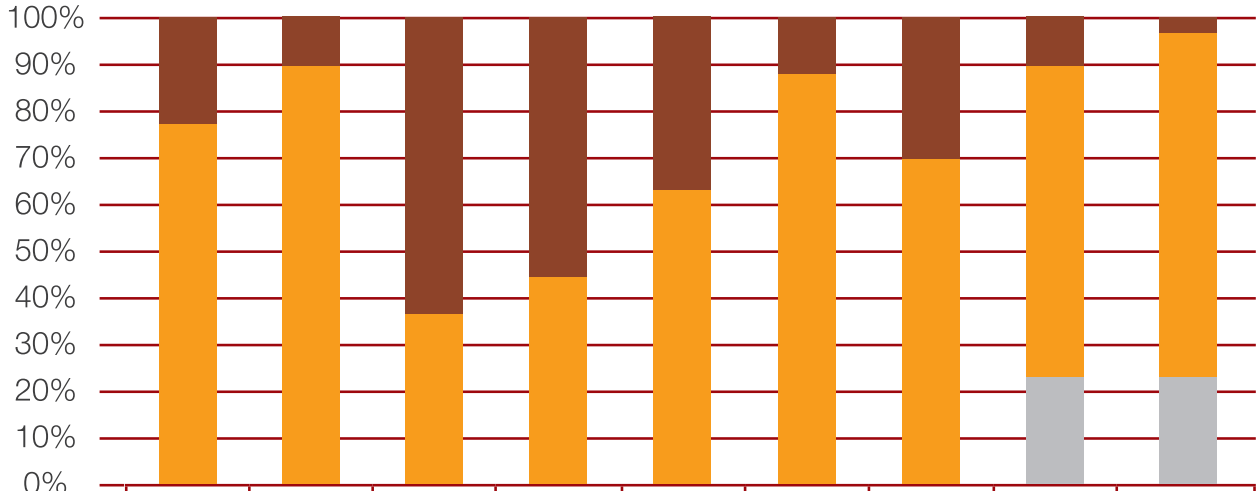
Note: based on 30 sample assessment reports

The review shows that 4 large-scale, 2 medium-scale and 3 small-scale factories are top compliant; 4 large-scale, 4 medium-scale and 10 small-scale factory are middle compliant; and 1 large-scale and 2 small-scale factories fall under the bottom compliance ranking.



	Large-scale	Medium-scale	Small-scale
Top Compliant	4	2	3
Mid Compliant	4	4	10
Bottom Compliant	1	0	2

Overall Compliance of Factories on Emergency Preparedness



	Does the employer conduct periodic emergency drills?	Are there enough emergency exits	Are any of the emergency exits accessible, unobstructed and unlocked during working hours, including overtime?	Are emergency exits and escape routes clearly marked and posted in the workplace?	Does the workplace have adequate fire-fighting equipment?	Has the employer trained an appropriate number of workers to use the fire-fighting equipment?	Does the workplace have a fire detection and alarm system?	Are flammable materials safely stored?	Are possible sources of ignition appropriately safeguarded?
Non-Compliant	10	3	19	16	11	4	9	3	1
Compliant	20	27	11	14	19	26	21	20	22
No Data								7	7

Two of the nine requirements were violated by at least half of the 30 factories. This includes inaccessible, locked or obstructed emergency exits (19 non-compliant factories) and emergency exits and escape routes that are not clearly marked (16 non-compliant factories). 11 had inadequate firefighting equipment; a third failed to conduct at least two emergency drills annually; and nine did not have fire detection and alarm systems.

Most factories complied with having sufficient emergency exits, which only three factories violated. They also showed good compliance with having enough trained workers who can use firefighting equipment.

Two requirements were checked in only a fraction of the 30 sample factories because these questions were introduced to the CAT recently. Safely stored flammable materials and safeguarded sources of ignition were inspected in only 23 of the 30 sample factories. Three were non-compliant with the former while only one violated the latter.

Large-scale garment factories in Indonesia tend to be more compliant with BWJ requirements. For three requirements, at least 50% of medium-scale factories were non-compliant. The same goes for small-scale factories. Two of the three factories that belong to the bottom compliance ranking are small-scale enterprises while the other one is a large-scale enterprise. However, before making any broad conclusions, one must take into account the disparity/unequal representation of the number of factories under the three categories (9 representing large-scale factories; 6 representing medium-scale factories; and 15 representing small-scale factories), and the fact that these 30 factories constituted only around 53% of garment factories registered with BWJ at the time of the review.

The BWJ Compliance Assessment Tool covers a broad range of fire safety issues. It is one of the most inclusive among the Better Work countries. Most requirements are under the Emergency Preparedness compliance point of the OSH cluster, while building safety is briefly addressed under the OSH Management Systems compliance point. The CAT requires assessors to check for legally required construction/building permits.

PART 4

INDUSTRY RISK PROFILE

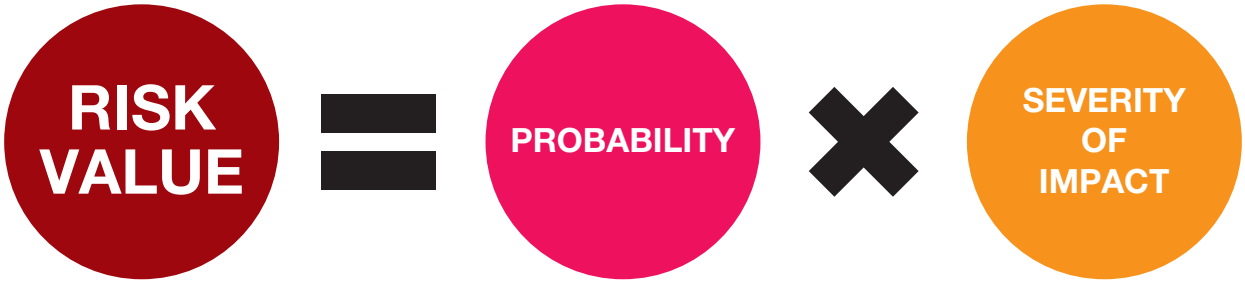
4.1. RISK ANALYSIS AND SYNTHESIS

Risk Quantification Approach

The Gretener Method for Risk Assessment is one of the widely used and most well-documented fire risk ranking methods available. This method is suitable to quantify the risks identified because of its simple mathematical formulation as well as its consideration for the facility's insurance rating and code enforcement.

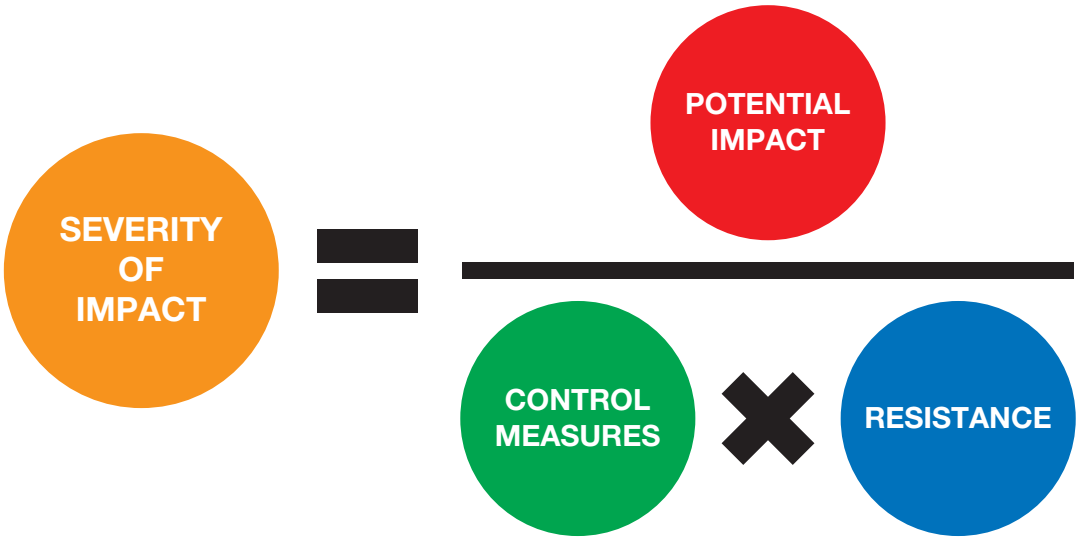
The Gretener Method is derived from the universal risk assessment formula: *Risk = (Severity) x (Probability of Occurrence) x (Detection or Control)*. However, the Severity parameter takes into consideration compliance with standards and the factory's capacity to resist fire, which are both empirically derived from the on-site factory inspections.

The product of the fire/structural incident probability due to the risk and the risk's *severity of impact* yields the Risk Value.



DEFINITIONS
Risk Value - The assigned prioritization value for each fire or structural risk finding, derived from the probability and severity of impact.
Probability - Probability that a fire or structural incident will occur due to the risk.
Severity of Impact - Degree of danger caused by the risk.

The *Severity of Impact* is calculated as the ratio between the risk's potential impact and the existing protective measures in place. Therefore:



DEFINITIONS
Potential Impact – Probable degree of severity or danger to life.
Control Measures – Existing fire safety measures (e.g., alarm, sprinklers, fire extinguishers) or structural safety measures (e.g., compliance to plans/design, building permits).
Resistance – Building ability to resist/minimize passage of flame in general.

The values for these individual factors are not based solely on statistics, but are also based on learnings from the on-site factory inspections and the experts' own observations.

Rating Scale and Criteria

PROBABILITY RATING	
Probability of Fire/Structural Failure	Rating
High: • Imminent danger/incident will happen at any time. • Factory activity/practice may imminently result in fire. • Factory condition has a high potential to cause fire or immediate spread of fire. • Structural or building condition may cause imminent threat/failure at any time.	4
Moderate: • Factory condition may result in building collapse or fire in the near future. • Factory condition will not directly cause fire or building collapse but may cause fatalities. *(Note: may be rated as High if there are occurrences in multiple sample factories or based on the assessor's judgment.)*	3
Low: Relatively low chance that incident/failure will happen.	2
Remote: Incident/failure is unlikely.	1

Note:
1. Risks that will not directly cause/trigger fire or structural incidents (e.g., no available fire alarm system, inadequate emergency plans, substandard fire extinguishers) are rated as Moderate but may be influenced by the frequency of occurrence.
2. Findings that may cause fire or building safety risks (e.g., open electrical wires, weak structures) are rated according to the Probability Table.

POTENTIAL IMPACT RATING	
Potential Impact	Rating
High: May cause death or severe injury to multiple employees.	4
Moderate: May cause injury to some employees that requires hospitalization.	3
Low: May cause minor injury to few employees that will not disrupt operations. Basic first aid required.	2
None: No impact.	1

CONTROL MEASURES RATING	
Preventive and Control Measures	Rating
High: Full compliance to fire and structural requirements, with evidence of complete safety management documentation and best practices.	4
Moderate: Generally acceptable. Compliant with the requirements in key areas but needs to improve some areas.	3
Low: Partial compliance to requirements/standards. Needs improvement in key areas.	2
Poor: Non-implementation of building and fire safety measures.	1

Note: Minimum requirements are based on the Bangladesh Accord.

RESISTANCE RATING	
Facility Fire Resistance	Rating
High: Critical areas are properly protected with partitions using fire resistive materials. (e.g., gypsum board, concrete, brick).	4
Moderate: Critical areas are enclosed using non-fire resistive materials (e.g. wood, metal sheet, screen).	3
Low: Critical areas are not enclosed (e.g. boiler, electrical panels, generators, workshops, flammable material storage). There are flammable items in some areas.	2
Poor: Generally flammable environment. No partitions/enclosures in any areas with flammable items. Fire can easily spread across areas in the factory.	1

Note:

1. Though footwear and garment factories fall under G2 category (Moderate Hazard Industrial Occupancy) and H2 (Moderate Risk Storage), the overall resistance rating of the factory may vary due to age, type, and management of materials and facility.

2. Since this factor is not applicable for building safety risks, the same rating provided for the "Control Measures" factor will also be applied to this factor in order to compute the Risk Value using the aforementioned formula.

Risk Ranking

The following tabulated data presented illustrates the consolidated risks ranked from highest to lowest based on their corresponding Risk Value. The frequency of occurrence of each hazard among the sites assessed is identified in the table to support and justify the probability of certain risks that do not directly cause fire or structural accidents. This section reflects the process of risk synthesis and does not include suggested risk mitigation measures.

For risks that were found in multiple factories, the entry that yielded the highest risk value was retained and considered in the Risk Ranking.

Example:
The fire safety hazard/risk *"Illuminated directional exit signs are either inconspicuous ornot available."* appeared in all 4 factories. Using the formula and the rating scale and criteria above, each entry of the risk was assigned its own risk value depending on the condition of the factory where it was identified as illustrated in the following table:

Risk: Illuminated directional exit signs are either inconspicuous ornot available.						
Factory	Potential Impact	Control Measures	Resistance	Severity of Impact	Probability	Risk Value
1	2	1	1	2	3	6
2	2	2	2	1	2	2
3	2	1	1	2	2	4
4	1	1	1	1	2	2

Given that fire and building safety risks are threats to life, the highest Risk Value derived for this particular risk, which is 6 (factory 1), was the one used in the Risk Ranking table below.

	FIRE SAFETY HAZARDS / RISKS (Observed in the factories and worker dormitories)	Area		Frequency	Potential Impact	Control Measures	Resistance	Severity of Impact	Probability	RISK VALUE
		Factory	Dormitory							
1	An emergency exit pathway is obstructed.	✓		1	4	1	1	4	3	12
2	Automatic sprinkler system is not available in key areas of the facility.	✓	✓	1	4	1	1	4	3	12
3	Workers and factory personnel are not familiar with fire emergency contact numbers.	✓		2	3	1	1	3	4	12
4	Standby fire extinguishers are insufficient or missing from their assigned location	✓		1	4	1	1	4	3	12
5	An electrical socket is broken.	✓	✓	1	4	1	1	4	3	12
6	Housekeeping in the electrical panel room is poor.	✓		1	3	1	1	3	3	9
7	Electrical wiring installations are not properly secured.	✓	✓	1	3	1	1	3	3	9
8	Emergency lights are insufficient.	✓	✓	4	3	1	2	2	4	8
9	The installation of LPG tank is hazardous.		✓	1	4	1	1	4	2	8
10	Illuminated directional exit signs are either inconspicuous or not available.	✓		4	2	1	1	2	3	6
11	Fire alarm buttons are insufficient.	✓	✓	1	3	1	1	3	2	6
12	Smoke detectors are insufficient.	✓	✓	1	3	2	1	2	3	6
13	An electrical outlet switch is not properly installed.	✓		1	3	2	1	2	3	6
14	A diesel tank is not properly enclosed.	✓		2	2	1	1	2	3	6
15	An LPG tank has no automatic shut-off device and sensor.	✓		2	2	1	1	2	3	6
16	Electrical wires are directly connected to the outlet without a plug.	✓	✓	2	4	1	2	2	3	6
17	Emergency lights are not functional.	✓	✓	1	3	2	1	2	2	4
18	An electrical switch is not properly installed.	✓		1	2	1	2	2	2	4
19	The hose in the cooking area is exposed.	✓		1	2	1	2	2	2	4
20	Evacuation plans posted are not updated.	✓	✓	1	2	1	2	1	3	3
21	An electrical panel is damaged/dirty.	✓		1	2	1	2	1	3	3
22	Illumination of exit signs is not functional.	✓	✓	2	2	2	2	1	2	2
23	A fire alarm button is obstructed.	✓		2	2	2	1	1	2	2
24	Fire alarm buttons are not properly maintained and visibly marked.	✓	✓	1	2	1	2	1	2	2
25	Stacked combustible materials have no clearance from the ceiling.	✓		1	3	2	2	1	2	2
26	Emergency lights are not properly maintained.	✓		1	1	2	2	1	1	1

**Photos of some fire safety risks can be found in Appendix F.*

	STRUCTURAL SAFETY HAZARDS / RISKS (Observed in the factories and worker dormitories)	Area		Frequency	Potential Impact	Control Measures	Resistance	Severity of Impact	Probability	RISK VALUE
		Factory	Dormitory							
1	Structural elements are not properly connected (e.g., missing or insufficient bolts; steel column to base slab; steel beam to masonry wall; purlins and rafters; side bracings; expansion joints).	✓		4	4	1	1	4	4	16
2	Cracks can be found in the structure.	✓	✓	4	3	1	1	3	4	12
3	The roof structure has been overloaded in many places.		✓	3	3	1	1	3	4	12
4	The roof is not properly rested on the masonry wall.	✓		1	4	1	1	4	3	12
5	The stage carrying air-conditioning units lacks support and is not properly rested on the ground.	✓		1	3	1	1	3	4	12
6	Steel structural members are not properly rested and finished.	✓		1	3	1	1	3	3	9
7	The slabs below some machines have been damaged due to the operating load and vibrations.	✓		1	3	1	1	3	2	6
8	Structures (e.g., walls, ceilings, slab soffits) are subjected to dampness and moisture.	✓	✓	3	2	1	1	2	2	4
9	Lintels were constructed only with bricks and not with reinforced concrete.	✓		1	2	1	1	2	2	4
10	Corrosion can be found in some places in the factory (eg., steel members, bolts, and welding connections).	✓		3	1	1	1	1	3	3
11	The concrete walls and structural members adjoining the chemical storage area have spalled.	✓		1	2	1	1	2	1	2
12	Floors are overloaded with moisture-retaining materials with no proper water-tight wrapping.		✓	1	2	2	2	1	2	2
13	Purlins have significantly sagged.	✓		1	2	2	2	1	2	2
14	The ground surrounding the factory is deformed.	✓		1	1	1	1	1	2	2
15	The masonry walls are not properly constructed (bond between bricks is weak).	✓		1	2	1	1	2	1	2
16	An RC column was not properly constructed.	✓		1	2	2	2	1	2	2

**Photos of some building safety risks can be found in Appendix F.*

4.2. RISK PROFILE MODEL

All hazards identified on the factory-level were classified under eight clusters that constitute the industry risks on fire and building safety. The hazards identified are listed in the table that follows the graphic.

A. Electrical Installations

Electrical equipment is improperly maintained or incorrectly installed.
Ignition sources such as electrical installations and equipment must be properly installed and maintained.

Hazards:		Risk Value:
A1	An electrical socket is broken.	12
A2	Electrical wiring installations are not properly secured.	9
A3	An electrical outlet switch is not properly installed.	6
A4	Electrical wires are directly connected to the outlet without a plug.	6
A5	An electrical switch is not properly installed.	4
A6	An electrical panel is damaged/dirty.	3

B. Means of Escape

Means of egress in the event of an emergency are inconspicuous, obstructed or inaccessible.
All workplaces must have clearly identified and accessible means of escape at all times to ensure that everyone can evacuate in the event of fire or other emergency.

Hazards:		Risk Value:
B1	An emergency exit pathway is obstructed.	12
B2	Emergency lights are insufficient.	8
B3	Illuminated directional exit signs are either inconspicuous or not available.	6
B4	Emergency lights are not functional.	4
B5	Illumination of exit signs is not functional.	2
B6	Emergency lights are not properly maintained.	1

C. Automatic Fire Suppression Systems

Automatic fire suppression systems in the facility are absent or inadequate.
Inadequate or absent automatic fire suppression systems may result in the immediate spread and non-containment of fire. Automatic suppression systems help delay and control the fire while waiting for the firefighting team.

Hazards:		Risk Value:
C1	Automatic sprinkler system is not available in key areas of the facility.	12
C2	Fire alarm buttons are insufficient.	6
C3	Smoke detectors are insufficient.	6
C4	A fire alarm button is obstructed.	2
C5	Fire alarm buttons are not properly maintained and visibly marked.	2

D. Fire Hazard Materials and Equipment

Flammable / fire hazard materials are not properly protected or segregated.
Unprotected fire hazard materials present possible sources of ignition. Combustible materials in the factory must be controlled and properly managed.

Hazards:		Risk Value:
D1	The installation of LPG tank is hazardous.	8
D2	A diesel tank is not properly enclosed.	6
D3	An LPG tank has no automatic shut-off device and sensor.	6
D4	The hose in the cooking area is exposed.	4
D5	Stacked combustible materials have no clearance from the ceiling.	2

E. Emergency Awareness and Training

Workers and factory personnel lack awareness and training regarding emergency procedures
Sufficient information, awareness, training and supervision should be provided to employees to ensure their safety in the event of danger.

Hazards:		Risk Value:
E1	Workers and factory personnel are not familiar with fire emergency contact numbers.	12
E2	Housekeeping in the electrical panel room is poor.	9
E3	Evacuation plans posted are not updated.	3

F. Firefighting Equipment

Firefighting equipment is deemed ineffective because of obstruction or improper installation.
Basic firefighting equipment such as fire extinguishers and fire hoses are the first line of defense against fire accidents. Therefore, this equipment must always be in good working condition and easily accessible.

Hazards:		Risk Value:
F1	Standby fire extinguishers are insufficient or missing from their assigned location.	12

G. Building Maintenance

Building maintenance is poor.
Overlooked dilapidation and inadequate maintenance of the building may lead to loose mosaic tiles and plasters of external walls, spalling concrete (breaking into fragments), and rusty steel trusses which may put the safety of workers at risk.

Hazards:		Risk Value:
G1	Structural elements are not properly connected (e.g., missing or insufficient bolts; steel column to base slab; steel beam to masonry wall; purlins and rafters; side bracings; expansion joints).	16
G2	Cracks can be found in the structure.	12
G3	The roof structure has been overloaded in many places.	12
G4	The slabs below some machines have been damaged due to the operating load and vibrations.	6
G5	Structures (e.g., walls, ceilings, slab soffits) are subjected to dampness and] moisture.	4
G6	Corrosion can be found in some places in the factory (eg., steel members, bolts, and welding connections).	3
G7	The concrete walls and structural members adjoining the chemical storage area have spalled.	2
G8	Floors are overloaded with moisture-retaining materials with no proper water-tight wrapping.	2
G9	Purlins have significantly sagged.	2
G10	The ground surrounding the factory is deformed.	2

H. Building Construction and Design

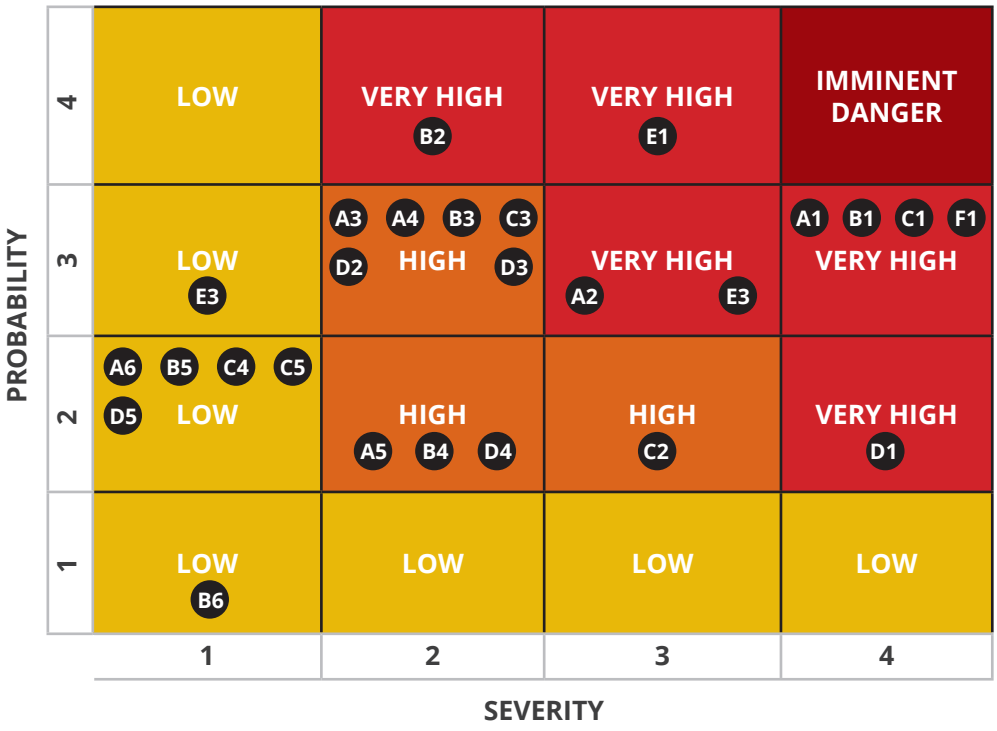
Building construction and design are substandard.
Building structural design plays a big role in safety. Proper design ensures that all materials used and structures built are according to standards.

Hazards:		Risk Value:
H1	The roof is not properly rested on the masonry wall.	12
H2	The stage carrying air-conditioning units lacks support and is not properly rested on the ground.	12
H3	Steel structural members are not properly rested and finished.	9
H4	Lintels were constructed only with bricks and not with reinforced concrete.	4
H5	The masonry walls are not properly constructed (bond between bricks is weak).	2
H6	An RC column was improperly constructed.	2

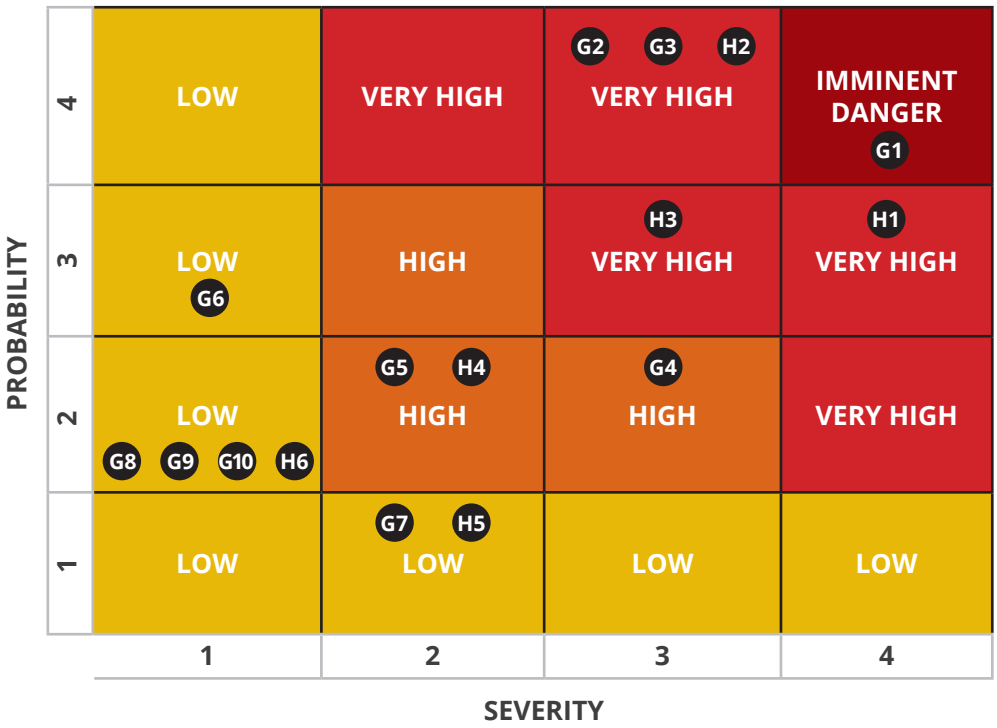
4.3. RISK HEAT MAP

The Risk Heat Map provides a visual representation of the likelihood and severity of the hazards listed in the preceding tables. Each circle relates back to a hazard identified during the on-site inspections (using the same coding system used in the preceding tables).

Fire Safety



Building Safety



4.4. RISK PROFILE MATRIX

The Risk Profile Matrix details the eight industry risk clusters in order of priority together with their corresponding impact on life safety and proposed mitigation approach. Recommended document templates that factories or assessors may use are included as Appendices to the risk profile.

Definition of terms:
Industry Risk Description – General industry risk derived from categories of observed factory risks/hazards
Risk Impact on Life Safety – The potential impact on life safety of the defined industry risk cluster
Score – The sum of all risk values falling under the risk cluster from the factory-level risks. Risk scores are presented for comparison against other industry risk clusters to facilitate prioritization
Proposed Mitigation Approach – Recommended actions to mitigate and manage the industry risk

FIRE SAFETY

Industry Risk Description	Risk Impact on Life Safety	Score	Proposed Mitigation Approach
ELECTRICAL INSTALLATIONS **Electrical equipment is improperly maintained or incorrectly installed.** This includes broken electrical sockets and switches; unsecured electrical wiring installations; wires directly connected to the outlet without a plug; and damaged electrical panels.	Substandard installation or poor maintenance of electrical cables and equipment are possible sources of ignition, short circuit or electrocution. Electrical fires (Class C) are harder to put out.	40	Inspection of electrical installations both in factory and dormitory premises should be regularly conducted by a competent electrician to ensure that cables/ connections and panel boards are properly installed and that electrical equipment/ machines are properly maintained. Factories should also educate their employees regarding electrical safety practices especially within their dormitories. Recommended Document: Appendix A – Fire Safety Inspection Checklist
MEANS OF ESCAPE **Means of egress in the event of an emergency are inconspicuous, obstructed, defective or inaccessible.** This includes blocked emergency exit pathways; lacking, defective, and unmaintained emergency lights or directional exit signs.	Inconspicuous, obstructed or inaccessible means of escape will impede people from quickly evacuating the factory and proceeding to a safe area. There is also the likelihood of people getting trapped inside the factory if means of escape are locked during working hours.	33	Factory management should assign responsibility to a Safety Officer (or equivalent) who will ensure that all exits are always unlocked, accessible and unobstructed during working hours. Directional exit signs should always be visible and emergency lights must be sufficient and in good working condition. Recommended Document: Appendix A – Fire Safety Inspection Checklist
AUTOMATIC FIRE SUPPRESSION SYSTEMS **Automatic fire suppression systems in the facility are absent or inadequate.** This includes the obstruction, absence or lack of automatic sprinkler systems, fire alarms, or smoke detectors in areas of the facility where people are usually present. Fire alarm buttons are also not properly marked.	Absent, defective or inadequate automatic fire suppression systems may cause high casualties due to spreading fire and the non-containment and inability to suppress the fire source. Automatic fire suppression systems also serve as an advanced signal in case of fire.	28	The complementary approach to controlling the burning rate is the use of a fire suppression system. Factories should install automatic fire suppression systems or improve them if inadequate. A variety of suppression technologies currently exist, including wet- and dry-pipe sprinklers (residential and commercial), water mist systems, carbon dioxide and other gaseous suppression systems, and foam systems (including AFFF). Estimated Cost: The cost for installing automatic fire sprinkler systems in buildings ranges from under a dollar to about $2.00 per m^2.

FIRE HAZARD MATERIALS AND EQUIPMENT **Flammable/fire hazard materials and equipment are not properly protected or segregated.** This includes hazardous installation of LPG and diesel tanks, absence of automatic shut-off device and sensors, and inadequate clearance of stacked combustible materials from the ceiling.	Fire hazard materials and equipment that are not properly protected, stored or disposed of may become possible sources of ignition or explosion.	26	Hazardous equipment and materials should be compartmentalized, isolated, protected and labeled accordingly. Automatic suppression systems and shut-off devices should also be provided. Good housekeeping practices should be implemented and factory personnel should be trained to identify potential fire hazards. Recommended Document: Appendix A – Fire Safety Inspection Checklist *1. Factory management may use this checklist to perform regular fire safety inspection internally in main factory areas and in worker dormitories.* *2. Values specified in the checklist were derived from the Bangladesh Accord on Fire and Building Safety Standard. When there is applicable local laws, requirements of the local laws supersede that Standard.*
EMERGENCY AWARENESS AND TRAINING **Workers and factory personnel lack awareness and training regarding emergency procedures.** This includes workers and factory personnel who are not familiar with fire emergency contact numbers, outdated evacuation plans, and poor housekeeping.	Lack of awareness of factory personnel and workers on factory emergency procedures and important emergency numbers will result to chaos and slow evacuation during fire incidents. Failure to notify the fire department in a timely manner will delay the response resulting to more damage and casualties. For people inside the factory, not knowing where to proceed in the event of an emergency will also prevent rapid evacuation.	24	Conduct regular internal awareness training on the proper use of firefighting equipment, the different types of fire and how to correctly extinguish each one, as well as fire drills (evacuation procedures) consistently at least twice a year or during employee inductions. Employees and security/OSH officers should also be oriented on emergency hotline numbers and protocols in case of fire. These trainings should be applicable to both factory and dormitory settings. The number of emergency evacuation plans posted within the factory and dormitory premises should be increased. An adequate firefighting team should be designated with clearly established responsibilities. The number of members required in a firefighting team should be determined based on the following factors: 1. Size of the factory 2. Number of buildings and floors 3. Distribution of team members across the factory Recommended Document: Appendix B – Fire Safety Awareness Guide
FIREFIGHTING EQUIPMENT **Firefighting equipment is deemed ineffective because it is obstructed or improperly installed.** This includes missing or insufficient fire extinguishers.	Firefighting equipment is useless if it is obstructed or improperly installed. The failure to function or the inaccessibility of firefighting equipment will result in non-containment of the fire source.	12	Implement periodic maintenance and inspect firefighting equipment including its condition and accessibility on a monthly basis both in the factory and in dormitories. Recommended Document: Appendix A – Fire Safety Inspection Checklist

STRUCTURAL SAFETY

Industry Risk Description	Risk Impact on Life Safety	Score	Proposed Mitigation Approach
BUILDING MAINTENANCE **Building maintenance is poor.** This includes improper structural connections (e.g., missing or insufficient bolts, column to slab, beam to wall, purlins, bracings, rafters, expansion joints); structural cracks; overloaded structures; dampness and moisture; corrosion; sagged purlins; and deformed ground.	Dilapidated parts of the factory due to neglect or improper maintenance may collapse and cause injuries or casualties.	61	Conduct a thorough periodic building maintenance activity inside factory and dormitory premises to check and repair deteriorated or damaged structures, concrete spalling, cracks, seepage/leakage, and corroded steel beams/ columns. Recommended Document: Appendix C – Building Maintenance Checklist
BUILDING CONSTRUCTION AND DESIGN **Building construction and design are substandard.** This generally includes poor construction of parts of the main facility. A part of the roof is not properly rested on the masonry wall; the stage carrying air-conditioning units lacks support; the bond between bricks of the masonry wall is weak; an RC column was improperly constructed; and lintels were constructed using only bricks and not with reinforced concrete.	Weak or overloaded building structures, especially those frequented by people may collapse and cause casualties when put under too much strain or in the event of natural calamities.	41	Prohibit any installation of additional structures inside factory and dormitory premises unless designed by a competent engineer. Conduct preliminary assessments on factories and dormitories, especially those that do not have a structural plan or as-built drawings. Estimated Cost of Structural Assessment & Non-Destructive Tests: $1,500-$3,000 per day depending on the location and size of the building. Non-destructive tests include Rebar Hammer Test, Ultrasonic Pulse Velocity Test, and Rebar Scanning Test.

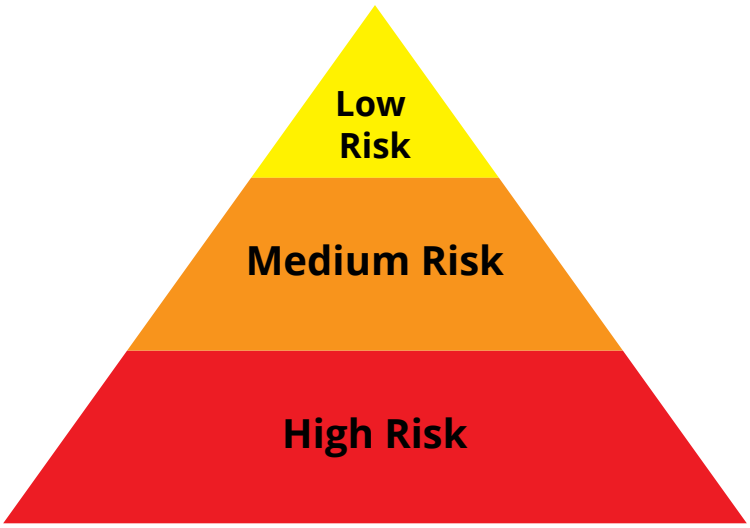
PART 5

RECOMMENDATIONS

Although conditions relating to fire and building safety in Jordan are comparatively better than those seen in the other Better Work countries visited during the risk profiling exercise, improvements are nonetheless needed to ensure safe conditions within factories and worker accommodations.

One key learning from this study is that factories in the industry exhibit different levels of fire and building safety depending on a multitude of both internal and external factors. Consequently, factories can be categorized as low risk, medium risk, or high risk. Those that have high compliance with requirements and take proactive measures to ensure fire and building safety are likely to have low risks, while factories that do otherwise may have higher risks. Depending on the level of risk, factories require different levels of effort in order to establish or maintain fire and building safety as a norm.

For the industry to maintain growth while ensuring decent working conditions, risks including fire and building safety risks to life or property must be controlled. Factories and all other industry stakeholders must act both individually and collectively to reduce risks. The risk profile presents recommendations in two layers, at the factory and the industry level, to guide all industry stakeholders in commencing or augmenting fire and building safety initiatives. Factory level recommendations can be taken by enterprises internally, while industry level recommendations require proactive involvement of a range of stakeholders.



5.1. FACTORY LEVEL

Factories have a fundamental role to play in addressing fire and building safety issues, since they directly control conditions on their premises. Changes may entail additional expenses and movement of resources. However, factories that are willing to initiate positive changes and that understand the costs and benefits of such improvements will gain advantage in the long run compared to those that do not. Factories certainly have to take responsibility in ensuring the safety and welfare of all workers they employ and should also collaborate with other industry stakeholders to produce the most positive outcome for the industry as a whole.

High risk, medium risk and low risk factories should tailor their actions based on their risk level by utilizing or implementing OHSAS 18001:2007 and using the Plan-Do-Check-Act (PDCA) cycle approach. The recommended measures are cumulative, such that medium risk factories must have undertaken the PDCA measures recommended for high risk factories, and low risk factories must have completed and sustained the recommendations for both high and medium risk factories. The goal is to reach and maintain the low risk level. In the case of Jordan where dormitories provided by factories for migrant workers can contribute to the risk, safety practices that are applied in the factory area such as having adequate firefighting equipment, posting evacuation procedures, and conducting periodic evacuation drills should also be implemented in the dormitories.

OHSAS 18001:2007 is an internationally recognized standard developed to guide all kinds of organizations establish reliable occupational health and safety management systems.

PDCA is described in the OHSAS 18001 standard as follows:

- Plan: establish the objectives and processes necessary to deliver results in accordance with the organization's OSH policy
- Do: implement the processes
- Check: monitor and measure processes against OSH policy, objectives, legal and other requirements, and report the results
- Act: take actions to continually improve OSH performance

	Plan	Do	Check	Act
High Risk	*Identify objectives and set targets on fire and building safety conditions *Assess risks and define corresponding mitigation measures to be implemented as well as the required resources *Plan resources such as people, equipment, budget, and timeline *Establish the legally mandated joint worker-management OSH committee and clearly define roles and responsibilities *Develop an Emergency Response Plan and an OSH policy (see appended reference guideline for the development of an ERP)	*Implement defined risk mitigation measures *Implement the Emergency Response Plan/ Procedures (awareness training to all employees) *Begin regular fire safety inspections *Start performing preliminary building structural assessments *Send health and safety personnel to relevant trainings	*Monitor and investigate near-misses, incidents, and nonconformities *Conduct internal audits of the OSH management system *Management reporting and performance review (Review the performance of the OSH system to check the effectiveness, suitability and opportunities for improvement)	*Implement corrective actions (to prevent recurrence of hazardous events) and preventive actions (to prevent occurrence of hazardous events) *Implement changes and opportunities for improvement on the OSH system

Medium Risk	*Identify and evaluate weaknesses (Based on the result of this activity, the organization shall plan and document accordingly the prioritization of actions and controls to be performed.)	*Streamline existing risk mitigation measures *Reinforce or adopt inadequate risk mitigation measures *Implement planned mitigation and controls for identified weaknesses such as building preventive maintenance activities	*Monitor and investigate near-misses, incidents, and nonconformities *Conduct regular fire safety inspections *Perform periodic building structural assessments *Conduct internal audits of the OSH management system *Management reporting and performance review (Review the performance of the OSH system to check the effectiveness, suitability and opportunities for improvement)	*Implement corrective actions (to prevent recurrence of hazardous events) and preventive actions (to prevent occurrence of hazardous events) *Implement changes and opportunities for improvement on the OSH system
Low Risk	*Consider OHSAS 18001 Safety Management System certification *Establish, implement and maintain procedures for identifying and accessing other legal and buyer OSH requirements applicable (The organization shall then determine the resources required to comply including the timeline of activities.)	*Document and institutionalize existing fire and building safety risk mitigation measures, such as emergency procedures, regular assessments and allocation of resources/ equipment *Maintain performance of good practices and processes	*Sustain regular fire and building safety assessments *Evaluate compliance with other legal and buyer requirements *Management reporting and performance review (Review the performance of the OSH system to check the effectiveness, suitability and opportunities for improvement)	*Implement corrective actions when target objectives are not met or when near-misses, incidents, and nonconformities occur. (Corrective action may include change in policies, additional controls, resource or any activity that will mitigate the issues.)

High risk factories have the most improvement measures to implement. Planning in high risk factories includes identifying objectives and setting targets, as well as developing policies and procedures related to fire and building safety. For imminent risks, immediate mitigating actions must be taken as soon as possible. High risk factories also have to develop an emergency response plan and focus on providing internal awareness and training to their workers. Factory management must take time to increase their awareness as well. In addition to conducting regular in-house training and emergency evacuation drills, factory management should ensure that workers are not merely attending but are actually learning from the activities. The legally mandated joint worker-management OSH committee should be immediately established to deal with fire and building safety as well as other OSH issues in factory and dormitory premises to ensure continuous improvement. Furthermore, factory personnel responsible for OSH should be sent to relevant trainings to become more competent in supervising company compliance with relevant laws and regulations. Factory management should also include fire and building safety as part of the orientation for newly inducted employees.

Factories are considered medium risk when existing risk mitigating measures do not guarantee good outcomes. Despite having been put in place, these measures are deemed not to be effective. As a whole, factories in this level are not consistent in maintaining good practices on fire and building safety. They should focus on evaluating their weaknesses, streamlining existing risk controls, reinforcing inadequate risk mitigation measures and putting missing ones in place.

Finally, low risk factories are to focus on maintaining the processes and policies already in place that contribute to the low risk level. To ensure sustainability, factories can document and institutionalize their existing fire and building safety risk mitigation measures in the factory area and in dormitories, such as emergency procedures, regular assessments and allocation of resources/equipment. These factories can also consider certification on OHSAS 18001 Safety Management System.

Regardless of their risk level, all factories should conduct periodic internal fire safety inspections (e.g., evaluation of the adequacy of fire safety processes, capability of firefighting equipment/systems, and controls on fire hazard activities and materials) in factory and dormitory premises every month to minimize the risk of fire. In addition, factories should perform regular preliminary building structural assessments (e.g., evaluation of the adequacy of building safety processes and quality of building structural components) by contracting civil engineers in order to identify potential hazards and minimize the risk of total or partial structure collapse. These assessments also help in determining if the set targets and objectives are being met. Existing laws, codes and standards in Jordan should be used as references in performing these assessments.

5.2. INDUSTRY LEVEL

While factories can implement changes internally, consistent reinforcement from key industry stakeholders is essential for improvements to become sustainable. In the end, all these activities and collaborations will ensure that fire and building safety is made a priority and eventually a norm in the industry.

Government

A legal and regulatory framework on fire and building safety is in place, and government enforcement is adequate. Relevant government agencies should focus on maintaining their level of implementation and striving to further improve their capacity to effectively perform their respective mandates in accordance with existing laws and regulations.

Regular labour or OSH inspections conducted by the Ministry of Labour, the Ministry of Health, and the Civil Defense should emphasize fire and building safety issues. To maintain quality factory inspections, these agencies should provide consistent training for their inspectors to sustain capabilities in recognizing fire and building safety risks in factories and worker dormitories as well as keeping up with new developments, standards and best practices in the field. The government must be firm in imposing penalties and sanctions on factories found in violation of fire and building safety laws.

Aside from proactive and preventive measures, the Ministry of Labour or the Civil Defense should establish

a reporting mechanism where factories can report all future OSH related incidents within factory and dormitory premises. This can be done with the help of JGATE. Incident reports must include at least the extent of the damage (major and minor), whether the problem originated in the factory or in the dormitory, the number of casualties and the cause of the incident. The government should consolidate these statistics for record-keeping purposes and make them available to other stakeholders for transparency.

Jordan Engineers Association (JEA) and engineering offices

Cooperation of JEA and engineering offices with the government should also be strengthened. Plans to create the independent oversight directorate that will bridge the gap between the government and the association as well as oversee the work of engineering offices should be pushed by JEA.

Buyers

Labour-intensive industries are considered buyer-driven value chains where influence resides with retailers. Considering this, international buyers in Jordan's garment industry have the leverage to push for fire and building safety improvements in factories they source from. They should require suppliers to perform annual basic structural assessments and conduct regular fire safety inspections. In addition, buyers can pressure/encourage factories to address non-compliance issues identified in BWJ assessments and other audits. Since this entails additional costs for factories, buyers can provide some form of financial assistance to cover costs of structural assessments. International buyers may assess the factories they source from if they have their own assessment tools, which should be reviewed periodically to ensure that building and fire safety issues are adequately addressed.

International buyers can also set up rewards for factories based on compliance with fire and building safety measures. For instance, buyers may confer awards on factories that have consistently exhibited good practices on fire and building safety based on buyers' own factory assessment or in coordination with BWJ or relevant government agencies. This can encourage factories that do not prioritize such initiatives to consider making improvements. The award can serve as a marketing tool for factories, which would encourage them to compete for the distinction. Factories that receive such awards benefit from exposure, increased reputation and confidence from buyers.

Employer Association

Jordan Garment, Accessories, & Textiles Exporter's Association (JGATE), the employer association of garment factories in Jordan, has an essential role to play in driving improvements on fire and building safety in garment factories. One factor that can hinder a factory's initiative to improve fire and building safety conditions is lack of awareness. JGATE's role could be focused on addressing this issue, including gathering and disseminating information on fire and building safety good practices. The organization, as an employer association, can act as liaison for other stakeholders, and is therefore well-positioned to facilitate information exchange among factory management.

Given its network, JGATE already has the infrastructure to organize an annual industry seminar/conference on the importance of fire and building safety. This can be coupled with regular information dissemination on fire and building safety guidelines including contact details of service providers conducting structural assessments.

JGATE can also partner with other stakeholders and institutions to create a culture in the industry where fire and building safety is a norm. Besides seminars, the association can conduct specialized hands-on trainings on fire and building safety for factory OSH officers in collaboration with experts and service providers. This training should guide and enable OSH officers to conduct their own in-house emergency preparedness trainings or seminars for factory workers.

With BWJ, it can also initiate industry-wide competitions for factories and workers on these issues. JGATE can also partner with the programme in organizing an annual trade fair where factories can gather information on equipment and systems available for purchase that will improve fire and building safety. The organization can also collaborate with the government in maintaining the repository for fire and building accidents. Lastly, it has the capacity to reach out to garment associations in other countries to form strategic partnerships and exchange knowledge and information.

Workers and Trade Unions

Workers and trade unions can pressure other stakeholders to implement positive change. They can push for the creation of the legally mandated joint worker-management OSH committee and a fire brigade in factories that have not formed them yet. They can also lobby for the inclusion of fire and building safety in national OSH plans and policies.

While employer associations promote awareness among factories, trade unions can do the same with workers. Unions can encourage their members to actively participate in available trainings on fire and building safety and in emergency drills, or provide these training opportunities themselves. Unions should also instill in workers the value of workplace safety to them as individuals as well as to their employer, in order to discourage them from tolerating poor working conditions just to stay employed.

Individually, workers can make themselves proactively aware of internal fire and building safety measures in the factory, such as the emergency evacuation plan and the location of emergency exits and fire extinguishers. Doing so makes them ready to respond appropriately in times of emergency. Additionally, workers who come across dangerous fire and structural conditions should report them to supervisors/managers or to the factory's OSH committee. Dangerous conditions may include unsafe acts of other workers, potential sources of fire such as substandard electrical wirings and unprotected flammable materials, and noticeable building damage like cracks and bending of steel structures.

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International Finance Corporation (IFC)

IFC is a member of the World Bank Group. It finances and provides advice for private sector ventures and projects in developing countries in partnership with private investors and, through its advisory work, helps governments create conditions that stimulate the flow of both domestic and foreign private savings and investment.

International Labour Organization (ILO)

The International Labour Organization (ILO) is the tripartite UN agency that brings together governments, employers and workers of its 183 member states in common action to promote decent work throughout the world. The main aims of the ILO are to promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.

Better Work

Better Work is an innovative partnership programme between the ILO and the IFC. Operational since 2009, the programme aims to improve both compliance with labour standards and competitiveness in global supply chains. Better Work aims to have a significant and direct impact through its own country-based programmes in the garment sector, as well as indirect impact through its influence, knowledge sharing and partnerships.

ECC International

ECC International is a leading people and process improvement solutions provider in Southeast Asia, focused on process improvement, process automation solutions and learning solutions. With HQ in the Philippines, ECCI operates in 5 countries across South and Southeast Asia including Vietnam, Malaysia, Indonesia and India.

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