





Towards Improved Fire and Building Safety in Bangladesh



The activities and achievements of the International Labour Organization's 'Improving Fire and General Building Safety in Bangladesh' project funded by the US Department of Labor All contents are ©ILO unless otherwise indicated. Text and photographs that are ©ILO may be freely reproduced unedited and for non-commercial purposes with an appropriate credit unless otherwise specified. May 2017



MESSAGE

It is my immense pleasure that the International Labour Organization (ILO) has produced this publication entitled "Towards Better Fire and Building Safety in Bangladesh".

Since November 2013, Bangladesh Fire Service and Civil Defence (FSCD) has worked closely withthe ILO through its 'Improving Fire and General Building Safety project' funded by the US Department of Labor.

This initiative, which came to an end in January 2017, made a significant contribution towards safety in the readymade garment sector. It has also helped greatly to improve the capacity of FSCD to carry out its regulatory mandate.

Over the course of the project, FSCD has worked closely with ILO and a number of other stakeholders to tackle some of the major challenges facing building and fire safety in the RMG industry.

There have been many achievements, which are detailed in this publication. It is important to stress the huge contribution of this project and the initiatives have not only enhanced work-place safety but also capacity and confidence of FSCD were also enriched.

Through training as well as interaction with other regulators and specialists, FSCD now has a body of inspectors which possesses the knowhow and experience to visit any factory or establishment to assess its level of fire safety.

Being the Life Saving Force, FSCD also built up strong links with other regulators as a result of project actions, especially the Department of Inspections for Factories and Establishments with which we are carrying out joint inspections.

FSCD will also play a major role in ongoing efforts as part of the Remediation Coordination Cell that has been established to complete remediation of factories under the National Inspection initiative.

I must again thank all of those involved in the project as well as the US Department of Labor for its valuable support. This initiative has helped to make workplaces safer which have great impact to save lives. We can be proud of these achievements and will continue to build upon them to ensure safe workplaces for all Bangladeshis.

Brigadier General

Engr. Ali Ahmed Khan, PSC Director General, Bangladesh Fire Service and Civil Defence



FORFWORD

The tragic fire and loss of life at Tazreen Fashions in November 2012 was a wakeup call for the government of Bangladesh and various stakeholders to focus attention on fire safety issues. Since that date, and the Rana Plaza disaster, which followed soon after, considerable progress has been made to address safety in Bangladesh with much emphasis placed on what in all reality, was and still remains the number one threat to life: fire.

The International Labour Organization's 'Improving Fire and General Building Safety in Bangladesh' project funded by the US Department of Labor has made a major contribution in this regard.

Through its efforts, significant headway has been made in building the capacity of the Fire Service and Civil Defence department. The fire service is now well on its way to realizing its goal of modernization and having the capacity to provide the services society requires.

Significant work has also been undertaken to help create a more solid regulatory foundation upon which future safety efforts can be built. The project contributed greatly to the harmonisation of inspection standards and remediation protocols for RMG factories. In the aftermath of Rana Plaza this work was vitally important as a number of initiatives sought to rapidly carry out inspections of RMG factories for structural, electrical and fire safety.

Responsibility for the long-term safety of the RMG sector must lie in the hands of the relevant government authorities and coordination between various authorities is vital. The FSCD and Department of Inspections for Factories and Establishments are engaged in a national task force charged with follow-up of preliminary assessments of garment factories. This is a very positive step and it is our hope that this collaborative approach serves as a foundation for further cooperation embracing other regulating authorities.

In addition, the legislative, policy and process environment must keep pace with a fast growing industry. The Bangladesh National Building Code and rules relating to preventing and extinguishing fires need to co-exist and provide complimentary solutions to pressing building and fire safety matters. Efforts to carry out a review in this area are ongoing and a successful conclusion will be another major step towards safety, the impact of which will reach far beyond the RMG industry.

The steps taken and progress made towards creating a safer working environment in Bangladesh can act as an example for other sectors and countries worldwide. We can be proud of what has been achieved but there can be no room for complacency. Efforts to enhance workplace safety must remain a priority for the benefit of Bangladesh and all its workers.

Srinivas Reddy

Country Director ILO Bangladesh

A Need

to improve fire and building safety



The fire that started from an electrical short circuit on the ground floor of the Tazreen Fashions factory in the late afternoon of 24 November 2012 spread quickly.

The nine-story building just outside Dhaka contained large amounts of fabric and it took some 17 hours before the fire was out. By this time 117 garment workers were dead and a further 200 badly injured. Most of the bodies were found on the second floor of the building from where they could not escape due to inadequate fire exits. A further 12 died leaping from windows to escape the flames.

At the time this was the worst factory fire to have occurred in Bangladesh. Yet just four months later a worse disaster took place when the Rana Plaza building which housed five RMG factories collapsed. This tragedy led to the death of 1,136 of whom the majority were garment workers.

Both incidents highlighted the lack of safety in the Bangladesh garment sector. From just a handful of companies in the 1980s the sector had undergone massive expansion in just a few short decades. By the time of Tazreen and Rana Plaza over 5,000 RMG factories employing some four million workers had helped catapult Bangladesh to become the world's number two exporter.

However, it was apparent from the twin disasters that the regulatory framework and the capacity of authorities to oversee and ensure safety simply had not been able to keep pace with the development of the industry. Issues brought to light included weak enforcement of construction standards, insufficiently developed inspection systems, an absence of collaboration amongst authorities, a chronic lack of staff to carry out building and fire approvals as well as an overall lack of a culture of compliance.

The regulatory framework and the capacity of authorities to oversee and ensure safety simply had not been able to keep pace with the development of the industry.

The National

Tripartite Plan of Action on Fire Safety for the Ready-Made Garment Sector in Bangladesh

The activities of the Improving Fire and General Building Safety in Bangladesh project largely took place within the context of the National Tripartite Plan of Action on Fire Safety for the Ready-Made Garment Sector in Bangladesh.

The Plan of Action focuses on adopting a preventive approach to fire safety.

This was developed in the aftermath of the devastating fire at Tazreen Fashions by the Government of Bangladesh in collaboration with employers and workers organisations and with the technical support of ILO. The plan was devised with a view to taking comprehensive action to prevent further loss of life, limb and property from workplace fires and fire-related accidents and incidents. Through the plan, the partners committed to actively develop,

promote and implement collaborative, participatory, and transparent mechanisms to ensure fire safety in Bangladesh.

It identifies activities on three levels: legislation and policy, administrative and practical activities. It also set up a High-Level Tripartite Committee to monitor progress, review and update the Plan as necessary and develop ways through which other stakeholders could support it.

Formally adopted on 24 March 2013, the collapse of Rana Plaza just a month later on 24 April 2013 led to an urgent need to reassess the Plan of Action so that it also included structural integrity issues. This revised document, now entitled the National Tripartite Plan of Action on Fire Safety and Structural Integrity for the Ready-Made Garment Sector in Bangladesh was subsequently adopted on the 25 July 2013.



The National Tripartite Plan of Action on Fire Safety and Structural Integrity for the Ready-Made Garment Sector in Bangladesh can be accessed at this link: www.ilo.org/dhaka/Informationresources/WCMS 221543/lang-en/index.htm

The Improving

Fire and General Building Safety in Bangladesh project



In response to the safety issues affecting the RMG sector, the International Labour Organization launched a number of initiatives through the support of its development partners. Amongst these was the 'Improving Fire and General Building Safety in Bangladesh' project funded by the US Department of Labor.

Running from January 2014 to December 2016 this project has made a major contribution to enhancing building and fire safety in Bangladesh. Achievements include the better enforcement of relevant fire and general building safety laws and regulations.

This project has made a major contribution to enhancing building and fire safety in Bangladesh.

Protocols and harmonised standards for factory inspection and remediation have been developed and implemented. The capacity of the Bangladesh Fire Service and Civil Defence department to systematically carry out inspections is now far more effective. In addition, coordination between regulatory bodies such as the Fire Service and Department of Inspections for Factories and Establishments is now commonplace.

Partners in the project include the Fire Service and Civil Defence department, Department of Inspections for Factories and Establishments (DIFE), Bangladesh Employers Federation (BEF), Bangladesh Garment Manufacturers

"A lot of developments have taken place since 2013. Before then many incidents took place in the RMG sector. Fires are still happening but people are being evacuated safety with no one killed or injured. This is a very good sign."

Brigadier General Ali Ahmed, Chief of Bangladesh Fire Service & Civil Defence



and Exporters Association (BGMEA), Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA), National Coordination Committee for Workers Education (NCCWE) and IndustriALL Bangladesh Council (IBC).

The project collaborated closely with the Bangladesh Accord on Fire and Building Safety and the Alliance for Bangladesh Worker Safety. The Bangladesh University for Engineering and Technology (BUET) provided valuable technical input in various areas. The initiative has also worked with ILO's Improving Working Conditions in the Bangladesh RMG sector programme funded by Canada, the Netherlands and the United Kingdom to ensure that their joint efforts maximise delivery and results in common areas.

Efforts from the 'Improving Fire and General Building Safety in Bangladesh' project and a wide range of other initiatives have had an impact.

According to government statistics, the greater focus on fire prevention, coupled with enhanced fire service capacity and awareness has led to a reduction of fire incidences and less loss of life and property since Tazreen.

Bangladesh RMG sector fire statistics

Year	Fire Incidents	Deaths
2012	257	116
2013	253	19
2014	152	1
2015	30	0
2016	311 (143*)	0

^{*311} reported, 143 responded to as others dealt with by factory Source: Fire Service and Civil Defence

Developing

harmonised standards and procedures upon which the future of Bangladesh building and fire safety will be based



In the aftermath of the Rana Plaza collapse the priority was to inspect exporting RMG factories for structural fire and electrical safety.

This work was undertaken by three initiatives. The Bangladesh Accord on Fire and Building Safety and the Alliance for Bangladesh Worker Safety inspected some 2,231 factories. Those factories not covered by the Accord and Alliance, (1,549), were inspected by a government initiative supported by ILO.

As the three initiatives commenced their work, it soon became apparent that there was an urgent need for harmonisation with regards to safety and inspection standards as well as to agree a common approach towards the inspections, reporting and subsequent follow up work.

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Key harmonisation steps supported by the project:

- Development of protocol for building inspections and remediation
- Harmonised core concrete strength values
- Qualifications for consultants
- Safety equipment standards
- Inspection reporting system and format
- Detailed Engineering Assessment (DEA) guidelines



The need for harmonization became apparent at the review panel established under DIFE to decide on whether factories believed to pose imminent danger to workers should be closed. Although the Accord, Alliance and National Initiative agreed to comply with the National Tripartite Plan of Action on Fire Safety and Structural Integrity for the Ready-Made Garment Sector in Bangladesh, the Accord and Alliance also followed additional measures required by their brands. This led to some differences of opinion about the safety of factories which had been inspected to slightly different criteria. Through the work of the project, the Accord, Alliance, and National Initiative agreed on a number of measures to ensure harmonization, such as core concrete strength values for structural safety assessments of the three initiatives.

In late 2014, the project brought together key stakeholders from the RMG sector and relevant government agencies including the factories inspection department and fire service to share information on approaches taken by different initiatives on building, fire and electrical safety remediation measures. Stakeholders exchanged experiences and explored areas and challenges for potential collaboration. This process contributed to the development of a common protocol for fire, electrical and building safety remediation and oversight of the RMG factories. The protocol is important as it sets out the steps to be taken, time lines and responsibilities relating to the inspection and remediation process.

A harmonised system of reporting for factory inspections was also established.

Of special interest were the experiences of the Accord and Alliance which had carried out a large number of inspections and were facilitating remediation in the factories from which their members source. Other important areas of progress included the formation of two task forces – one for structural issues and one for fire and electrical issues – responsible for endorsing engineering consultants, tracking corrective action plans and monitoring the status of remediation work.

A harmonised system of reporting for factory inspections was also established. This ensured that inspection reports from the various initiatives presented the same information and could be easily compared.

"The development of these DEA guidelines will not only be valuable for the RMG sector but for buildings in general. They will have long-term beneficial effects for building safety in Bangladesh."

Dr. Jamilur Reza Choudhury, Vice-Chancellor of the University of Asia Pacific (UAP) and renowned as the 'father' of Bangladesh civil engineering.



The inspection process of RMG factories revealed that for many there was insufficient information available to determine the safety of the structure. In such cases it was necessary to carry out a Detailed Engineering Assessment (DEA).

The DEA process can entail the partial removal or destruction of some structural elements, for example taking a core sample out of a concrete column, removing soil for testing or removing wall or beam finishes to see hidden or covered details. With all three inspection initiatives carrying out this work it was vital for common DEA standards to be developed.

The project made a major contribution to this process. It helped to forge consensus on

pragmatic guidelines in collaboration with the other stakeholders that allow Accord and Alliance to carry on with their remediation work and which also help the national initiative factories to carry out DEAs for RMG specific buildings.

Considerable progress has been made relating to inspection harmonisation. This work not only makes a major contribution to the process of ensuring RMG factory safety but has helped leave a legacy upon which future building safety work in Bangladesh – for all industries – can be based.

"The project marked the first time this sector had received international attention and has helped a lot to enhance fire safety in the RMG sector in Bangladesh. In addition to better knowhow, we now have better systems in place both on paper and on the ground."

Major AKM Shakil Newaz, Director of Operations, Fire Service and Civil Defence



Strengthened

capacity to ensure fire and building safety



The Tazreen and Rana Plaza disasters highlighted the difficulties faced by the fire service to carry out its regulatory mandate and inspect buildings for fire safety. The 'Improving Fire and General Building Safety in Bangladesh' project has made a significant contribution in this regard and has helped the FSCD become more proficient and professional in its activities.

Boosting inspection capacity

The project has helped create a core of master trainers within FSCD to build the inspection skills of colleagues nationwide.

Inspectors have undergone intensive training on the theory and practice of fire inspections with some of the latest internationally recognised fire safety management techniques. Fire service staff can now more effectively inspect factories, develop emergency action plans and carry out evacuation drills to ensure factory occupants evacuate buildings safely when the alarm sounds.

As part of the training, participants went to an RMG factory where they spread out through the multi-storey facility to practically apply what they had learned. Following further advanced training, 15 participants then became instructors for other members of the Fire Service, passing on the skills to fire inspectors not only in Dhaka but throughout the country.

Fire Service staff have also been trained on how to effectively follow up on inspection reports in a systematic manner and to collaborate with their counterparts from the Department of Inspections for Factories and Establishments to carry out joint inspections.

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On the fire safety frontline: lessons from Bangladeshi fire fighters

"The training provided by the ILO was of high quality. It equipped us with the technical skills to see the challenges in industrial situations, which have multiple hazards different to those typically found in households. The topics we found particularly useful were labour rights, industrial building design, separation and segregation systems and what hazardous materials are found in ready-made garment factories."

"Before the training, we did not know about different industrial building structures and the strengths and weaknesses of each design. We did not know how to do occupancy calculations, which are critical because there are so many more people on factory floors. We are learning a lot, which is good because factories are changing a lot. They are installing new things, like fire doors and early detection systems. Most owners are positive, they want their factories to be safe, and we are able to make them understand why safety also makes business sense."

"Since receiving the training, we have been taking our skills to fire stations in all seven divisions of Bangladesh. In the last two years I have inspected over 600 garment factories."

"We created our own training module and the 16 of us have trained over 100 additional inspectors, bringing the total number of trained fire inspectors to 140. This means that over half of our inspection workforce is now professionally trained in inspecting industrial establishments. We participate in a weekly exam to make sure we do not forget what we have learnt."

Senior Station Officer Md Shams Arman who participated in fire inspection training provided by ILO's Improving Fire and Building Safety project funded by the US Department of Labor.





Understanding the electrical causes of fires

Electrical faults are the cause of some 75 percent of fires in the RMG sector. In September 2016 a major new training course was launched for fire inspectors on electrical safety. The training sets out to raise awareness of potential electrical safety hazards, build understanding on the design of fire detection and alarm systems as well as provide a basic understanding of schematics. As part of the programme a core group of inspectors were also trained as trainers in electrical safety.

Safety staff from the Department of Inspections for Factories and Establishments

(DIFE), Bangladesh Garment Manufacturers and Exporters Association (BGMEA) and Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) have also joined the course in the spirit of collaboration that the project has sought to foster. This also helps strengthen the institutional capacity of these organizations relating to fire safety.

Electrical faults are the cause of some 75 percent of fires in the RMG sector.

"Electrical short circuits are the main cause of fires in the RMG sector. This training will better equip the fire service to reduce this risk and ensure compliance with national codes and standards on building and worker safety, not only in the RMG sector but across all industries."

Brig. Gen Ali Ahmed Khan, Director General, FSCD

Shahjadi puts electrical safety training to good use

In the year since being promoted to Warehouse Inspector, Shahjadi Sultana has checked about 500 establishments for fire safety. However after taking part in electrical safety training offered by ILO's 'Improving Fire and General Building Safety in Bangladesh' project she now looks more closely at electrical systems while carrying out inspections.

"I had little idea about these things before really. I would have never imagined there are so many things to watch out for."

The inspector who worked her way up through the ranks begun her career with the Fire Service in 1992 as a telephone operator. At that time women were not allowed to work in the field. Things have since changed. Shahjadi is now one of five women working in fire service operations. She has been in the field for almost 14 years, four as a sub officer and another 10 as the station officer at Chittagong's Kalurghat, when she had to go out to numerous fires many of which were caused by electric short circuits. She now knows a lot more about reducing the danger of fires caused by electrical faults.

"There are factories with their substations above the ground floor which should be on the ground floor. I have also found on a number of occasions that the earthing is not quite right and immediately drew the attention of the management to this."

Shahajadi explains that the standard checklist of points to cover while on inspections did not go into great detail when it came to electrical issues as fire personnel did not have the skills or knowledge to look out for certain things.

"In light of the training on electrical safety, new points will be added to the checklist to make the inspections more robust," she says.



Shahjadi Sultana

Remediation

follow up

By December 2015 all export oriented RMG factories had been inspected for structural, electrical and fire safety. Following this milestone, emphasis moved to the remediation phase during which factories would need to address all safety issues identified by the assessments.

A sustained and effective approach to following up on preliminary assessment findings.

The fire service has a vital role to play in this regard, ensuring that the practical steps needed to avoid fire risk in factories are taken. The project worked closely with the FSCD to build the capacity of its staff to have a sustained and effective approach to following up on preliminary assessment findings.

A series of training activities were held that brought together senior fire prevention officers to help them better manage the follow-up process and collaborate with counterparts from the Department of Inspection for Factories and Establishments (DIFE).

These activities have helped develop a systematic approach to following up preliminary assessments and oversee the implementation of remediation measures. They have also sought to strengthen the technical capacity of the process managers as well as fire inspectors to facilitate a smooth process flow and the ability to communicate with factory management to implement remediation recommendations. These skills and processes will be put to use by FSCD staff who will play an integral role in a Remediation Coordination Cell that is being established by the government with ILO support to oversee remediation in National Initiative factories.



Online

course builds fire inspection capacity

The availability of trained fire inspections makes a major contribution to workplace safety. However access to quality training material and courses is limited. For this reason in 2016 the project launched an interactive online course to help enhance the capacity of inspectors working for the Fire Service and Civil Defence Department to carry out inspections of ready-made garment factories.

The course comprises two online modules. The first covers Fire Safety Inspections and will help inspectors understand basic design principles in the Bangladesh National Building Code (BNBC) and RMG sector guidelines as well as other international standards.

The module will also help inspections become more familiar with common problems they are likely to face during an inspection.

The availability of trained fire inspections makes a major contribution to workplace safety. However access to quality training material and courses is limited.

The second module covers Emergency Action Plans (EAP). It explains the importance of the Plans and how they should be implemented in Bangladesh RMG factories. The module also explains how to develop a draft EAP.

Designed by the ILO's International Training Centre, the modules include interactive multi-media sessions that take participants on a virtual inspection visit of RMG factories and give them the chance to find issues of concern. Free of charge to use, the course has also been followed by staff of DIFE, BGMEA and BKMEA who are also involved in fire inspections as part of their jobs.



The course is available online in both English and Bangla at:

https://ecampus.itcilo.org/course/view.php?id=145

"The fire service is constantly seeking to increase its skills, professionalism and effectiveness. The course will help current and future fire inspectors enhance safety in the RMG sector as well as all industries across Bangladesh."

Brig Gen Ali Ahmed, Director General of the Fire Service and Civil Defence Department

Online database tracking system

Upon the recommendation of an Information Knowledge Management report completed under the project, the Fire Service will host a database that tracks and monitors implementation of remedial measures and keeps track of fire and building safety issues.

Combining all key information in a single repository of such information, it will become easier for government agencies and other interested parties to monitor the development for a particular factory or the sector in general. The project has supported the development of this data tracking system for FSCD that will merge with the national RMG Database in order to support a one-stop-shop for information sharing between regulatory bodies, and streamline factory permits and licensing.

"We have very good collaboration with ILO which has given a lot of support to develop the capacity of the Fire Service and Civil Defense. Before Rana Plaza our people had very shallow knowledge about fire safety inspections. Now after being trained our staff are very confident about carrying out inspections and providing safety advice. This is really helping the fire service, factory owners and workers. In addition, there is now a really good platform established that sees inspectors from the labour inspectorate and the fire service working together. This has built up bonds at ground level which are essential."

Major AKM Shakil Newaz, Director of Operations, Fire Service and Civil Defence



Facilitating

enhanced collaboration



One of the major shortfalls highlighted by the Rana Plaza collapse was the lack of collaboration between government regulators.

In this regard, the project has systematically brought together fire inspectors with their counterparts from DIFE as well as Bangladesh Garment Manufacturers and Exporters Association (BGMEA), Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA), the capital development authority

RAJUK, Accord and Alliance in a variety of actions.

These have included joint training sessions which have also led to the undertaking of joint inspections carried out by Fire Service and DIFE staff. This represents a small but major step towards more systematic and harmonised inspection procedures that bring together key areas of expertise.

Fire service inspectors now go on joint inspections with the Department of Inspections for Factories and Establishments. The joint inspections make it easier to pinpoint problems at the factories and help arrive at joint decisions on what remediation needs to be carried out. This benefits the industry as well as the fire service by giving us exposure and interaction with another agency.

Brigadier General Ali Ahmed, Chief of Bangladesh Fire Service & Civil Defence

Collaboration boosts inspection efficiency

"You can deal with all issues in one go since all the experts are at hand. It is easier to address any confusions or contradictory recommendations," says Warehouse Inspector Rabiul Islam Akanda.

Rabiul is taking part in inspections of ready-made garment factories alongside an inspector from the Department of Inspections for Factories and Establishments (DIFE). While he looks at fire related issues, the labour inspector can focus on other safety and labour areas.

Rabiul, who joined the fire service in 2004 as a station officer, has taken part in ILO organised training sessions on electrical and building safety. He explains that the fire inspectors usually look at overall safety of establishments.

"That includes things like sprinklers, hydrants or the number of fire extinguishers required depending on the area of a certain factory. But with joint inspections, the team looks at the entire building and operation and immediately make recommendations."

If any issues are identified the inspectors discuss a realistic deadline with factory management for remediation measures to take place.

"Only the other day, I recommended that a substation had to be moved to the ground floor from the second floor. It was naturally not something that the factory management could accomplish overnight. But we arrived at an agreement regarding the deadline."

"With the joint inspections, we have occasion to exchange and share knowledge as well. This will naturally lead to safer establishments and more knowledgeable inspectors, he says."



Rabiul Islam Akanda





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