



Study on
Industry-wise Awareness Building Plan
and Training Needs Assessment for the
Plastics Sector

Industry-wise Awareness Building Plan and Training Needs Assessment for the Plastics Sector

Submitted to:

Project Name: Export Competitiveness for Jobs (EC4J)

Ministry of Commerce

Government of the People's Republic of Bangladesh

Funded By: The World Bank Group

Prepared and Submitted by:

Bangladesh Foreign Trade Institute (BFTI)

1, TCB Bhaban, Karwan Bazar

Dhaka 1215, Bangladesh

March 2019.

Table of Contents

List of Acronyms and Abbreviations	5
Executive Summary.....	6
Chapter 1: Introduction	7
Chapter 2: Current Scenario of the Plastics Industry in Bangladesh	11
Chapter 3: International and National Standards on ESQ Compliance	17
Chapter-4: Gap Analysis by Comparing International Requirements on ESQ Compliance	43
Chapter-5: Training Needs Assessments on ESQ Compliance for the Plastic Goods Industry in Bangladesh.....	60
Chapter 6: Development of Industry-wise and firm-level awareness-building strategy and plan on ESQ Compliance.....	75
Activity Plan	89
Bibliography	91
Annex 1	92
Annex 2	107
Annex 3	112

List of Tables

Table-2.2: The Export of Plastic Goods	14
Table -4.1 Bangladesh Plastics Sector exiting Environmental Compliance gaps with the nature of gaps and factors responsible.....	44
Table-4.2: Bangladesh plastics sector’s existing social compliance gaps with the nature of nature of gaps and factors responsible	47
Table-5.1: Training Needs Assessment for Environmental Compliances of the Plastics Sector in Bangladesh.....	62
Table-5.2: Training Needs Assessment for Social Compliances of the Plastics Sector in Bangladesh .	66
Table-5.3: Training Needs Assessment for Quality Compliances of the Plastics Sector in Bangladesh	70
Table-6.1: List of strategies and activities to address information/knowledge gap.....	77
Table-6.2: List of strategies and activities to address motivation gap	79
Table-6.3: Strategic plan for estimating resource gap.....	80
Table-6.4: Strategic plan for Policy-level compliance facilitating strategy.....	83
Table-6.5: Strategic plan for Publicity Strategy	85
Table-6.6: Strategic plan for Capacity Development Strategy.....	87

List of Acronyms and Abbreviations

TNA	Training Needs Assessment
CNC	Computer Numerical Control
RMG	Ready-Made Garments
BPGMEA	Bangladesh Plastic Goods Manufacturers & Exporters Association
BIPET	Bangladesh Institute of Plastic Engineering and Technology
RSL	Restricted Substance List
MSDS	Materials Safety Data Sheet
GMP	Good Manufacturing Practice
EPR	Extended producer responsibility
Sedex	Supplier Ethical Data Exchange
BSI	British Standards Institution
WRAP	Worldwide Responsible Accredited Production Code of Conduct
BSCI	Business Social Compliance Initiative Code of Conduct
PC	Participation Committee
EMS	Environmental Management System
PPE	Personal Protective Equipment
TPM	Total Productive Maintenance
SOP	Standard Operating Procedures
QMS	Quality Management System
BDS	Bangladesh Standards

Executive Summary

In the last two decades, the plastics sector has become one of the leading sectors in the economy of the country. This booming sector, has started contributing significantly to the national economy and growing at a rapid pace. The growth of the industry has a multiplying effect on numerous vital sectors of the economy. This sector has been playing a pivotal role in the growth of the garments, pharmaceuticals, food processing, electronics, and light engineering industries by serving the sectors' strong backward linkage. It has huge potential to grow further. Most of the export factories are enhancing their capacity to meet overseas demand. Considering its growing demand in both domestic and international markets, the government in its different policies has given immense priority to the plastics sector.

In all these trails, maintaining environmental, social and quality (ESQ) compliances requirements is very important for the plastics sector to reach international markets as buyers give topmost priority to quality. Due to the limited knowledge on the standards, the plastics industry of Bangladesh is still lagging behind in terms of ensuring the ESQ compliances. This is impeding the access to many developed country markets.

The study conducted Under Component 1: Market Access Support Programme of the Export Competitiveness for Jobs (EC4J) Project, Ministry of Commerce, Government of Bangladesh, funded by the World Bank Group, is an initiative to chalk-out the areas where awareness, capacities and knowledge are required at all levels of the sector. The study identifies the gaps in compliance and recommends actions to mitigate those.

From the firm-level interviews, consultations and through experts' opinions, the study has figured out the areas where gaps lie. Some of the major areas include:

- 1. Owners' and top-managers' knowledge, information and sensitivity towards compliance;**
- 2. Absence of standard testing laboratory;**
- 3. Limited knowledge of latest technology, mould design, equipment and machinery;**
- 4. Labeling, documentation and traceability system;**
- 5. GMP Policy and Standard Operating Procedure (SOPs);**
- 6. Waste management and efficient energy consumption;**
- 7. Workplace safety issues; and**
- 8. Compulsory regulations of the labour law of Bangladesh for workers' welfare.**

These major areas are to be focused in capacity-building, and while implementing the strategies for developing ESQ Compliance. The study has developed Training Needs Assessment (TNA) and strategic plans for the sector based on the gaps for standardisation of plastics products. With a time-bound action plan, and co-ordinated approach involving the firms, associations, academia and policy-makers, the Plastics sector can develop its compliance situation and improve its international image resulting in improved export performance in the next couple of years.

Chapter 1: Introduction

1.1 Background of the Study

In order to enhance growth in international trade, export diversification is set out to be a key mandate of the Government of Bangladesh. Diversification is expected to lead enhancement of export value, creation of quality jobs for all and, hence, would contribute in reducing country's poverty situation. To ensure a sustainable socio-economic development of the country, diversifying exportable items and export markets, therefore, is very important.

Necessary compliances relating to environmental, social and quality (ESQ) issues are prerequisites for accessing the developed country markets. There are ample scopes to enhance the ESQ situation prevailing in Bangladesh as they often do not meet the international requirements and, hence, fails to capture such markets. The Export Competitiveness for Jobs (EC4J) is an initiative to improve the overall ESQ compliance situation of Bangladesh in its drive not only to improve its export figures by some selected sector, but also improves the overall quality of jobs in these sectors, namely Leather & Leather Goods, Footwear, Plastics and Light Engineering. These sectors are believed to have the potential to contribute a lot to the export earnings of the country and, are, therefore, considered as priority sector in different government policies. Despite various supports and incentives from the government, they are not proving able to play the desired role in export earnings, mainly due to their non-compliance in ESQ issues.

Against this backdrop, under the Component 1- Market Access Support Programme of the Exports Competitiveness for Jobs (EC4J) project, the sub-component 1.1 Sector-level ESQ Awareness and readiness aims to directly address the importance of ESQ compliance in achieving international compliance certification and getting accesses to developed country markets. With this objective in mind, this study has been carried out to develop an industry-wise and firm-level awareness-building strategy, plan and training needs assessment (Gap Analysis, TNA) for the Plastics in their ESQ compliance issues in the current study. It has been observed that only social or some labour standards alone cannot meet the compliance regulations required by international buyers. A combined approach to address all issues related to compliance, namely environmental, social, including labour and health and safety standards, and most importantly quality parameters are needed. It has also been observed that although some works have been done, particularly in some labour and environmental parameters with regard to attaining international best practices, quality compliance necessities and the position of Bangladesh in that respect have not been analysed properly for these sectors. This assignment, therefore, has the unique approach to look at the quality perspective in meeting international standard compliance issues for these sectors.

1.2 Objective of the Study:

The main objective of the assignment is to develop Industry-wise and firm-level awareness-building strategy, plan and training need assessment (Gap Analysis, TNA) on ESQ compliance issues for plastics sector of Bangladesh.

To achieve the broad objective, the assignment will conduct the following tasks:

- To identify the present ESQ compliance gaps in the plastic sector of Bangladesh;
- To select and prioritise major ESQ issues that need to be addressed in this sector;
- To review the existing trainings being conducted on ESQ compliance issues;
- To identify specific training programmes, both basic and specialised, needed for top,-mid-and operational- level managers, in order to develop their capacities to comply with international ESQ standards in the plastics sector of Bangladesh; and
- To develop an awareness-building strategy, plan on ESQ compliance for the sector.

1.3 Methodology of the Study

A mixed method approach was employed for conducting the study. It primarily was based on qualitative approaches like interviews, surveys and stakeholders' consultation. In addition, a careful desk review was also carried out to assess and scrutinise information available in the form of secondary data, relevant policy and legal papers, and literature on the sector. Collected data were analysed mostly using qualitative analysis techniques. An assessment of the training needs at both basic and specialised levels for the selected sector has been developed along with an awareness-building strategy for improving the overall ESQ standards of the sector to make it a more competitive one in terms of market access.

The following steps were followed before the collection of data:

- Desk Review:** An in-depth desk review was undertaken to have a baseline idea on the issue of ESQ compliances, particularly on the Plastics industry and how they are managed in Bangladesh. In addition, their international requirements and best practices were also identified through the desk review.
- Development of Survey Questionnaire:** Based on the findings from the desk review, opinions from industry experts, and other recommended compliance materials, a structured questionnaire was developed for conducting the survey. The questionnaire included basic information on firms, specific questions on Environmental, Social and Quality Compliance requirements and current practices by the firms, questions on type and nature of existing training at different levels, if any and future need assessment for the firms to meet ever stringent compliance requirements for accessing global markets. The questionnaire was validated by sector experts and compliance specialists. In addition, a pilot survey was also conducted to finalise the draft questionnaire. Two broad categories of questionnaire were designed for the collection of data from two different sources. These were:
 - **Questionnaire for Association:** This questionnaire was developed for gathering information from the association on their knowledge on ESQ compliance issues, and to get an understanding on their existing on-the-job training facilities, if any and future needs assessments to improve firm and industry-level ESQ compliance capacities. It also tried to explore the roles of associations with other major stakeholders that can help the sector to improve its competitiveness.
 - **Questionnaire for Firms:** The questionnaire developed for collecting data from individual firms included questions on their knowledge and understanding on ESQ

compliance issues, existing state of ESQ compliance policies followed by the firms, areas of further improvements, etc. It mainly targeted firms' views on the ESQ issues and how the standards can be developed to make the firms more competitive in the global market.

c) **Data Collection:** The collection of survey data, as necessitated, involved the following two major sources:

I. Data Collection by the BFTI:

- **Interviews of the association:** Association was interviewed by the enumerators from BFTI.
- **Firm-level interviews:** Firm-level interviews were conducted by appointing specially trained enumerators by BFTI. For ensuring a representative sampling, the survey followed a policy of selecting at least three firms from each of the Micro, Small, Medium and Large- sized enterprises for the data collection purpose. Data collection involved face-to-face in person interviews with responsible officials/insiders to avoid any bias in data collection.

II. Data Collection through the Association:

The association of Plastics, namely Bangladesh Plastic Goods Manufacturers & Exporters Association (BPGMEA) provided with the structured questionnaire for collecting data from their member firms on their existing practices of ESQ, their needs and requirements for making the firms ESQ compliant.

d) **Data Input:** Data collected through questionnaire surveys from firms and association were given input in MS Excel sheet. Once data input work was over, data were cleaned carefully to make them readily useable.

e) **Consultation Meeting:** In addition to field data collected through surveys, one consultation meeting was also conducted. These included participants from relevant stakeholders, including farm-owners, top managers and sector experts, academicians and relevant government officials. This meeting was conducted aiming to collect additional information on the existing ESQ practices, areas of further attention, need assessment, and identification of scopes and training requirements at different levels.

f) **Data Analysis:** The data gathered from the interviews and other inputs collected through one consultation meeting were analysed to identify the ESQ gaps and to list the priority areas in ESQ compliance. This was mostly done by using descriptive quantitative analytical tools like measures of central values and dispersions. In addition, data were presented by using tables, graphs and flow-charts, wherever necessary to make them presentable. Based on the findings on the existing practices of the ESQ compliance by the selected sector, gaps are identified by comparing them with the prescribed standards of ESQ compliance values. Finally, training needs were suggested on the basis of identified gaps on ESQ issues. These were suggested aiming to be implemented at different levels and thus categorised as basic and specialised training, top-level training, mid-level training and operational-level training for supervisors and managers.

Validation Workshop: A validation workshop will be organised to share the preliminary findings on the plastics sector of Bangladesh on 31st March 2019. It is expected that experts, industry insiders and other stakeholders' opinions on the draft outcomes will help BFTI to finalise the outcomes of this study.

Chapter 2: Current Scenario of the Plastics Industry in Bangladesh

The plastic industry in Bangladesh has emerged as a promising industrial sector over the last two decades, with a potential to become a large global player in plastic products, and made an important contribution to the economy. After 2010, plastic products in the country were developed by automated Computer Numerical Control (CNC) machines with automated moulding machines. Major emphasis from the Government of Bangladesh has been given to this industry. Bangladesh comprises 0.6% share of the US\$ 546 billion global plastic trade. The average consumption of plastic is about 2 kg per person in Bangladesh. Total investment is around Tk 20,550 crore in the plastic sector¹. According to the Bangladesh Plastic Goods Manufacturers & Exporters Association (BPGMEA), there are about 5,110 small, medium and large manufacturing units under the plastic good industry in the country². In details, about 1,75,500 people are employed in small units, 4,44,000 people in 1,480 medium units and 10,000 people in large manufacturing units³.

Currently, Bangladesh produces about 142⁴ plastic items like house hold items, furniture, PVC pipes and fittings, flexible packaging, building materials, engineering parts and industrial parts, disposable plastic product, electric components and accessories, electronics components and accessories automobile spare and accessories, shopping bags, garbage bags, butcher bags, oven sacks, film and sheets, pharmaceutical packaging products, health care products ,bag, sachet, bottle and container, engineering plastic, toys, plastic sheet, melamine table ware, travel luggage, pet recycle and export, office file and stationary, water sewage pipes, ball point pen, garments accessories, plastic slipper sandal shoes, battery casing, PVC compounding, etc. The export of plastic products has increased significantly in the fiscal year 2018-19 (July-October), compared to 2017–18 (July-October). The increase of quality products and export of products to new and untapped destinations is promoting Bangladesh to flourish in the market fast. Bangladesh exports intermediate products film plastic, household items and garment accessories to Poland, China, the UK, Belgium, France, Germany, the USA, Canada, Spain, India, Nepal, Bhutan, Australia, Sri Lanka, Japan, Malaysia, the UAE, Hong Kong, Bahrain, Italy, New Zealand and the Netherlands, etc.⁵.

Despite having so importance, Bangladesh has not been able to take full advantage of preferential market access in the exports of plastics products mainly due to supply-side related constraints and lack of skilled workforce. Compliance is a big issue of concern for this sector as the international buyers are concentrating on this issue before placing any orders.

¹The Daily Star. March 19, 2018. *Plastic industry shows promise as demand rises* (Source: <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>)

²Current status of plastic production, prospects and training of manpower in Bangladesh. (Source: <https://www.banglajol.info/index.php/JCE/article/view/34801>)

³JagaranChakma. (March 19, 2018).Plastic industry shows promise as demand rises *The Daily Star*. Retrieved from <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>

⁴JagaranChakma. (March 19, 2018).Plastic industry shows promise as demand rises *The Daily Star*. Retrieved from <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>

⁵JagaranChakma. (March 19, 2018).Plastic industry shows promise as demand rises *The Daily Star*. Retrieved from <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>

This sector faces challenges that need to be addressed for further expansion and its sustainable growth. Major constraints are lack of an institutional arrangements dedicated to the sector to provide supporting services including skilled manpower (shortage of technical expertise), testing facilities for quality control, innovative technology, mould designs and mould making facilities, proper management of plastics wastes, appropriate training facilities, business advisory services including access to information and marketing, operation costs for meeting compliance issue etc. that have to be resolved for ensuring fast growth of the sector. Nearly 100% of the capital machines for this industry are imported where the use of modern technology is a must to excel and expand operations. Only a few simple moulds and dices are made locally, but are of low grades. Small and low-end product manufacturers import cheaper machines from India, China and Thailand, whereas high-end product manufactures import and use sophisticated and automated high-end machines from Taiwan, Japan, Korea, Europe and America⁶. For producing plastic goods, main raw materials like poly-olefin and petrochemical have to be imported from India, China, Formosa, Vietnam and Taiwan as there is no unit to produce these raw materials in the country⁷. Each year around 1,08,862.1688 MT of raw materials is imported for producing plastic goods. In 2016-17, total plastics raw materials import was about 12,58,091.80 MT, while the volume was 6,61386.59 MT in 2008-09⁸.

The volatile price of imported raw materials increase the production cost for the plastic makers, and also disrupt the export trend of the plastic goods. As this industry is solely dependent on imported raw materials, Plastic wastes can also be used as raw material after cleaning and sorting. Very recently, Bangladesh comes towards to plastics recycling. Nearly 100 percent of wastages from the production process are being used as sources of raw materials for the sector in the country. Besides, in the year 2017 in Bangladesh, 70% of the post-use plastics waste was recycled resulting in a saving of US\$ 1500 million on import of virgin raw materials⁹ which is really a positive sign for the environment as well as the sector.

2.1 Export Trend:

Total export earnings of the plastics products were US\$ 100.58 million in 2014-15, whereas the value was US\$ 89 million in the year 2015-16. During 2016-17, the value amounted to US\$ 116.95 million, whereas the figure dropped to US\$ 98.48 million in the year 2017-18. It is seen that export earnings fluctuates over the years. But in the last fiscal year, as compared to the previous year, export earnings from the sector declined notably. The sector was dependent on raw material imports and its price fluctuations affected production and exports too. It is found that high prices of plastic raw materials globally are one of the major reasons behind the decline

⁶ BPGMEA (Bangladesh Plastic Goods Manufacturers & Exporters Association)

⁷The Daily Star. March 19, 2018. Plastic industry shows promise as demand rises.

(Retrieved from <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>)

⁸BPGMEA

⁹BPGMEA

in export trend. Plastic producers use about 25 categories of raw materials¹⁰. Global prices of raw materials increased to US\$ 1,350 per tonne in 2017-18 from \$1,150 in the 2016-17¹¹. Besides, another reason behind the decrease in export of plastic drastically is restrictions imposed by China, which put a negative impact on the overall export earnings from plastics products by Bangladesh. The Chinese government announced a ban on imports of 24 categories of solid wastes, including certain types of plastics, paper and textiles in July, 2017 which came into force from January 01, 2018¹².

Table-2.1: Export Trend for Bangladesh Plastics Sector

Year	Total Export (Value in Million US\$)	Growth Rate (%)
2013-14	85.70	1.41
2014-15	100.57	17.35
2015-16	88.99	-11.50
2016-17	116.95	31.40
2017-18	98.48	-15.79

Source: Export Promotion Bureau (EPB).

¹⁰ The Financial Express, Exports of plastic products slump, July 24, 2018.

(Retrieved from <https://thefinancialexpress.com.bd/trade/exports-of-plastic-products-slump-1532407552>)

¹¹ The Daily Star, Plastic export tumbles, August 12, 2018. (Retrieved from: <https://www.thedailystar.net/news/business/plastic-export-tumbles-1619485>)

¹² The Financial Express, Exports of plastic products slump, July 24, 2018. Retrieved from <https://thefinancialexpress.com.bd/trade/exports-of-plastic-products-slump-1532407552>

Figure-2.1: Plastics Export of Bangladesh



Source: Export Promotion Bureau (EPB).

Table-2.2: The Export of Plastic Goods

Year (July-January)	Plastic Export (Value in Million US\$)	Growth Rate (%)
2017-18	56.04	-25.67
2018-19	67.06	19.66

Source: Export Promotion Bureau (EPB).

From the above table, the export value of plastics was US\$ 67.06 million in 2018-19 (July-January). This figure represents an increased volume compared to export earnings of US\$ 56.04 million during the same period of the previous fiscal year 2017-18 (July-January). The main cause of this upward trend in export of plastics is the increase in purchase of plastics products by the US and European countries from Bangladesh¹³.

2.2 Literature Review:

A report by Ahamed¹⁴ (2014) addressed the multi-dimensional constraints and future prospect of the plastics sector in Bangladesh. It has been specified that some large-scale plastic manufacturers have the capability to be global standard in in terms of technology and quality.

¹³ The Independent, Plastic exports maintain rising trend, 2 January, 2019.

(Retrieved from: <http://www.theindependentbd.com/post/181467>)

¹⁴ Dr. Mansur Ahamed. A Report on Plastic Industry of Bangladesh. *Japan Bangla Business Center*. Retrieved from <http://jbbc.co.jp/wp-content/uploads/2014/08/A-Report-on-Plastic-Industry-of-Bangladesh.pdf>

But SMEs who are facing challenges now have to be given priority in terms of innovative technology, products diversity and operation costs in order to make the SMEs competitive in the global market by upgrading them. It has been also stated that availability of cheap labour and the fast developing plastic wastes recycling industry can make Bangladesh competitive in the global market. It has emphasised on appropriate institutional arrangements i.e. establishment of a *Plastic Institute* and strengthening of *Plastic Foundation* are appropriate institutional arrangements for sustainable development of the plastics sector.

Recycling refers to the process of recovering and re-fabricating a material from waste or plastic scrap and turning it into new products. The aim of recycling plastic is to reduce plastic pollution and virgin materials to produce new products.

A study by UNESCAP (2011) on Country Study on Bangladesh using ‘Global Value Chain Analysis: The Plastics Industry’ pointed out that in Bangladesh, recycling of plastic wastes can save import costs for the industry and help improve overall waste management situation. In the year 2005, small units were estimated to recycle nearly 60% of plastic wastes which saved US\$ 44 million worth imported raw materials. SME units use recycled plastic materials which are collected from the disposed plastic products. Street garbage collectors collect disposed plastic items and sell them to larger collectors. The larger collectors clean and prepare used plastic products to be used as raw materials. These recycled raw materials are used for producing cheap plastic products (e.g., toys, waste bags and household items)¹⁵. However, there is less initiative to upgrade the Resin Identification Code (RIC) system in Bangladesh. Many manufacturers are not aware of the global standards of recycling practices. Because of the very nature of the plastics, environmental and health regulations is a serious concern for the plastics sector. In addition, poor waste disposal system and inefficient treatment of plastic waste another two important issues. There is lack of advocacy campaigns to ensure the occupational health and safety and good working conditions. Moreover, enforcement of the labour law is weak in this sector.

Huq (2015)¹⁶ in his study stated that in the year 2014, 70 % of plastic wastes were recycled. This resulted in saving of US\$ 1 billion by avoiding import of virgin resins. It is important to promote recycle of plastic wastes and to reach 100% recycling rate. Bangladesh government is encouraging the recycling industry by providing 10% cash incentive to the PET exporters. The Minister of Commerce of Bangladesh stressed on the use of recycled plastic in the production process to avoid environmental hazards (“Int'l Plastic Fair Ends”, 2019)¹⁷.

According to a study of PwC (2018)¹⁸, there is no significant environment impact in the plastic production apart from energy consumption. To achieve compliance++ in plastic sector, implementation of Environmental Management System (EMS) is required. As part of EMS, an

¹⁵UNESCAP.(2011). *Enabling Environment for the Successful Integration of Small and Medium-sized Enterprises in Global Value Chains: Country Studies on Bangladesh, Nepal and Sri Lanka*. Retrieved from https://www.unescap.org/sites/default/files/8%20Annex%20I_0.pdf.

¹⁶Mr. Syed Tahsin Huq. (February 6, 2015). *Environmental Challenges of Plastics Waste in Bangladesh*. Retrieved from www.mpma.org.my/Documents/Bangladesh.pdf

¹⁷Int'l Plastic Fair ends with call for govt support to boost export. (January 20,2019). *United News Bangladesh*. Retrieved from www.unb.com.bd/m/category/Business/intl-plastic-fair-ends-with...export/10969.

¹⁸PwC. (August 29, 2018).*Environment performance assessment- Plastic Sector, Bangladesh*.unpublished.

organisation could establish and maintain different programmes like implementation of environmental action plan, identification and delivery of training to personnel, conducting EMS audit and management review etc. All these attempts will ensure efficient energy management and meet the requirements of international buyer.

It is estimated that annually about 3,744 tons of single-use plastics are produced nationwide. This non-recyclable single – use plastic pose a serious threat to the environment¹⁹.

The machineries (injection blow molding, and extrusion blow molding) used in plastic production in Bangladesh are imported from Taiwan, Japan, and Europe. Some plastic makers use locally manufactured by semi-automatic and manually operated machines. These locally produced machines hinder to maintain the product quality as per the requirements and demand of international buyers. In the Import Policy 2015-2018, had a provision for import of second-hand machineries, but the conditions are stringent. (“Increasing export competitiveness....”2018).²⁰ A very few enterprises have own automated mould house.

Another study by Moazzam (2015) noted that, skilled workers such as mould-makers, operators and computer-based designers etc. are required for producing well finished products. The industry suffers due to shortage of skilled workers especially in the small and medium sized enterprises. Most of SMEs show less concern for organising in-house training for their workers to avoid additional cost. In addition, lack of proper knowledge on polymer science is hindrance for developing skilled professionals. Local institutes have limited resources to train up the potential professionals in polymer science and technology. Extended level of training is required to meet the knowledge gap in the sector. To improve the product design, different kinds of training on the use of CAD/CAM, design of software should be arranged²¹.

Islam, Hasan, & Hossain (2017) found that low educational background of the workers results in low productivity and increase the chances of accidents. It is tough to train worker those have low educational background. Though low educational background, some employees have vast knowledge and technical expertise regarding operations through experience. So for current workers on-the-job training using suitable instructor would be effective. New recruits would be placed in plastic training institute²².

¹⁹Mehedi Al Amin .4,000 tons of single-use plastic produced annually. (November 15, 2018). *Dhaka Tribune*. Retrieved from <https://www.dhakatribune.com/bangladesh/environment/2018/11/15/4-000-tons-of-single-use-plastic-produced-annually>

²⁰FerdousAra Begum and JannatulFerdousShetu. Increasing export competitiveness of plastic industry. (June 03, 2018). *The Financial Express*. Retrieved from <https://thefinancialexpress.com.bd/views/increasing-export-competitiveness-of-plastic-industry-1528040722>

²¹Khondaker G Moazzam and FarzanaSehrin. Export-oriented plastic industry of Bangladesh: Opportunities and Challenges. (January 27 ,2015).*The Financial Express*. Retrieved from <https://cpd.org.bd/export-oriented-plastic-industry-bangladesh-khondaker-golam-moazzem-farzana-sehrin-cpd/>

²² Islam, M. S., Hasan, M. M., & Hossain, M. M. (2017). Current status of plastic production, prospects and training of manpower in Bangladesh. *Journal of Chemical Engineering*, 30(1), 69-76. Retrieved from <https://doi.org/10.3329/jce.v30i1.34801>

Chapter 3: International and National Standards on ESQ Compliance

An improvement in the compliances of the plastics industries in Bangladesh is expected to contribute positively in branding Bangladesh as a reliable sourcing destination for plastics products. In order to capture the foreign market, the plastic sector of the country must follow certain environmental, social and quality compliances in different steps in their supply chains. There are several international certifying bodies that have ESQ compliance mandates to follow. Some standards are not easily accessible through internet²³. From the interviews, it is found that leading exporters' opined the below mentioned international standards are widely expected.

Environmental Compliance Requirements

3.1 Higg Index FEM V3 Programme²⁴

There are three levels (1, 2 and 3) in all seven sections. Level 1 must be achieved to unlock levels 2 & 3.

1. Environmental Management System (EMS):

This is a strategy and process to identify and manage the environmental impact of the production facility. The Higg Environmental Management System (EMS)'s requirements-

- Identification of staff responsible for coordinating environmental management activities and ensure technical competence;
- Identification of significant environmental impacts related with current operations;
- Setting up a long-term environmental management strategy
- Development of a system to ensure compliance with all laws, regulations, standards, codes and other legislative and regulatory requirements;
- Maintenance of all factory equipment;
- Engagement of leadership and workers on environmental strategy and performance;
- Engagement of subcontractors and upstream suppliers(chemical, raw material suppliers) on environmental performance using the Higg Index;
- Engagement of local stakeholders on environmental performance improvements.

2. Energy use and greenhouse gas emissions:

Energy use and greenhouse gas emission measure evaluates the progress of implementing the energy programme in the production area. This section requires -

- To track all energy and fuel sources and report quantity used in the last calendar year;
- Identification of factors that contribute most to energy use on site (e.g., machines, processes, or operations that use the most energy);
- To set a normalized baseline for energy use, such as “80 MJ per unit of production in 2016”;
- To set normalized targets for energy reduction, such as “Reduce energy used per unit of production by 70% in 2020;”

²³ Documents collected from leading plastics manufacturing companies.

²⁴Higg Facility Tools. Retrieved from <https://apparelcoalition.org/higg-facility-tools/>

- To set an action plan with specific actions and strategies to achieve energy reduction targets;
- Demonstration of energy reductions against the baseline, such as “Last year we used 60 MJ per unit of production which is a 25% annual reduction.

3. Water use

It is important to understand how much water is withdrawing in order to take action to improve freshwater by any production site.

Water used by companies may come from a number of sources,

- Selection of all water sources used by facility;
- To set baseline of water use;
- To set targets for water use;
- To develop a plan to improve water use.

4. Wastewater:

Any form of industrial waste water or liquid discharge can cause environmental pollution if it is not properly managed or disposed. This measure requires the following initiatives-

- To Track quantity of wastewater generated from industrial and/or domestic operations;
- To report all wastewater quality parameters that were found to not meet permits or industry standard(s);
- To report name and quality results from the offsite wastewater treatment plant (if applicable);
- To describe backup process if regular treatment fails (if applicable);
- To ensure proper sludge disposal (if applicable); and
- To report whether production site reuses and/or recycles process wastewater as process water (if applicable).

5. Emissions to air (if applicable):

Air emissions are commonly generated from production processes (production line equipment and manufacturing processes) and facility operations (boilers, generators, and cooling systems). This index requires the following-

- To track quantity of emissions from facility *operations and refrigeration*, if applicable;
- To track quantity of emissions from *production processes*, if applicable;
- To list control devices / abatement processes and monitoring frequency for *operating and refrigeration*;
- To list control devices / abatement processes and monitoring frequency for *production*;
- To specify achievements of advanced performance in Nitrogen Oxides (NOx), Sulfur Oxides (SOx) and Particulate Matter (PM); and
- To specify whether your facility has a process for modernizing equipment to improve air emissions.

6. Waste Management:

Waste that is discarded from a factory site can pollute and contaminate surrounding environment. This can be divided into two categories -Non-hazardous waste and hazardous waste. Following requirements:

- To understand and track all hazardous and non-hazardous waste streams;
- To record and report the volume generated and disposal method for all hazardous and non-hazardous waste streams;
- To segregate, properly store, and train workers to handle all hazardous and non-hazardous waste streams;
- To forbid open burning and dumping of waste on-site and properly control any onsite incineration;
- To set normalized baselines for waste generated
- To set normalized targets for waste reductions and improvements to preferred disposal methods;
- To set an action plan with specific actions and strategies to achieve waste reduction targets;
- To demonstrate waste reductions against the baseline.

7. Chemicals management

The aim of chemicals management is to drive responsible chemicals management programs at manufacturing facilities. The use of chemicals in a facility's production processes and operations can be extremely toxic and hazardous to the environment and human health if not managed systematically and appropriately. This area covers:

- Chemical management policies, compliance procedures, and commitments
- Employee training and communication
- Chemical procurement and purchasing practices
- Chemical storage, transportation, handling and use practices
- Chemical inventory management
- Emergency Response Plan (ERP), accidents, incidents and spills remediation plan
- Product traceability, quality and integrity
- Chemicals and process innovation

3.2 ISO 14001:2015²⁵:

ISO 14001 is an international standard which sets out the requirements for an environmental management system. It helps organisations to use resources more efficiently, reduce waste, and gain competitive advantage. This environmental management system helps organisations to identify, manage, monitor and control their environmental issues. ISO 14001 is suitable for all types of organisations (private, not-for-profit or government). This requires an organisation to consider all environmental issues related to its operations like air pollution, water and sewage issues, waste management, soil contamination, climate change mitigation and adaptation, and resource use and efficiency.

ISO 14001:2015 covers the following topics related to environmental management systems:

²⁵ ISO 14001:2015 - Environmental management systems.(Source: Documents collected from a reputed plastics organization).

1. Scope
2. Normative reference
3. Terms and definitions
4. Context of the organisation ;
5. Leadership;
6. Planning;
7. Support;
8. Operation;
9. Performance evaluation; and
10. Improvement.

Clause 1: Scope

This clause relates to the scope or coverage of the standard to help organisations achieve the intended outcomes of its EMS.

Clause 2: Normative reference

There are no normative references, for example other additional requirements in other standards, that have to be considered. The clause is retained in order to maintain the same numbering scheme as all the other management system standards. Clause 3: Terms and definitions At first sight, the listing of terms and definitions seems confusing as they are not in alphabetical order. Instead, the approach stipulated by ISO and new to many users, is that terms and definitions have been grouped into organisation and leadership, planning, support and operation and performance evaluation and improvement. It may be easier to use this listing in conjunction with the alphabetical listing in Annex C.

Clause 3: Terms and definitions :

At first sight, the listing of terms and definitions seems confusing as they are not in alphabetical order. Instead, the approach stipulated by ISO and new to many users, is that terms and definitions have been grouped into organisation and leadership, planning, support and operation and performance evaluation and improvement. It may be easier to use this listing in conjunction with the alphabetical listing in Annex C.

Clause 4: Context of the organisation

This topic covers the environmental conditions that can affect ones' business, customers and supply chain. It also assess external social and economic factors (e.g. beliefs and norms of society and its expectation of the organisation, environmental performance of peers and competitors) and internal capabilities (e.g. the organisation's ability to implement new technologies and influence behaviour changes in its employees). This requires an organisation to -

- Understand the organisation and its context;
- Understand the needs and expectations of interested parties;
- Determine the scope of the environmental management system; and
- Establish and maintain environmental management system.

Clause 5: Leadership:

This measure requires top management to understand the leadership requirements in their environmental management system (EMS). Top management has specific tasks to establish environmental management system. These tasks are following- (details are given in the **Annex 3**)

- ✓ *Leadership and commitment*
- ✓ *Environmental policy*
- ✓ *Organisational roles, responsibilities and authorities*

Clause 6: Planning:

This clause focuses on organisation’s plans and actions to identify both risks and opportunities. It concentrates on the development and use of the planning process. The organisation must consider the environmental aspects and impacts of the activities, products, and services which can be controlled and influenced. In addition, changes and other emergency situations are to be taken into account. This clause covers the following two-

- ✓ 6.1 Actions to address risks and opportunities
- ✓ 6.2 Environmental objectives and planning to achieve them

Clause 7: Support:

This clause encompasses the criteria of executing plans and processes related to environmental management system. In this clause, organisations will require to determine the necessary competence of employees related to perform environmental management activities, and ensure they receive the appropriate training. This section covers-

- 10.1 Resources
- 10.2 Competence
- 10.3 Awareness
- 10.4 Communication
- 10.5 Documented information

Clause 8: Operation:

This standard clarifies operational controls are implemented to prevent any inconsistency from the environmental policy and objectives. This also defines the type and degree of control or influence of any outsourced processes which must be defined within the environmental management system. This clause covers the following-

- 8.1 Operational planning and control
- 8.2 Emergency preparedness and response

Clause 9: Performance Evaluation:

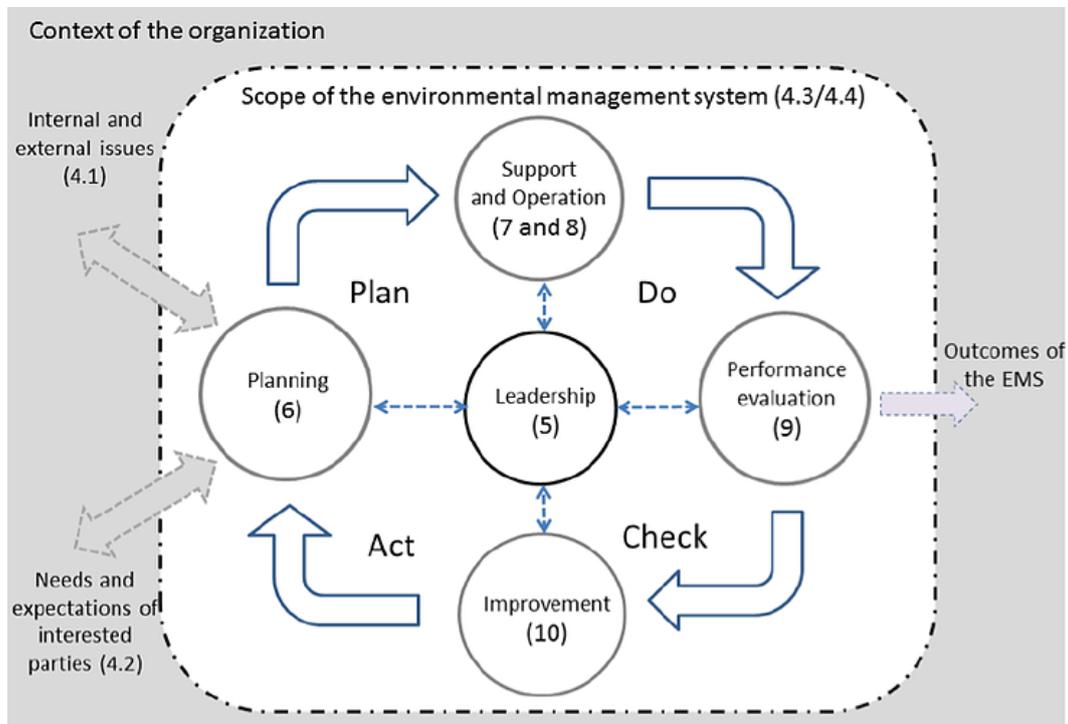
Performance evaluation measures and evaluates organisation ’s environment management system. This also ensures ems is effective and it helps continual improvement.

- 9.1 Monitoring, measurement, analysis and evaluation
- 9.2 Internal audit
- 9.3 Management review

Clause 10: Improvement:

Improvement clause wants organisations to identify opportunities for continual improvement of the EMS. This considers-

- 1.1 General
- 1.2 Nonconformity and corrective action
- 1.3 Continual improvement



Source: ISO 14001:2015

Social Compliance Requirements

3.3 Business Social Compliance Initiative Code of Conduct – BSCI²⁶

The Business Social Compliance Initiative (BSCI) is a major supply chain management system that helps businesses to improve social compliance and working conditions within the factories. It has a set of code of conducts. The code refers to important international conventions, such as the Universal Declaration of Human Rights, the Children's Rights and Business Principles, UN Guiding Principles for Business and Human Rights, OECD Guidelines, UN Global Compact and ILO Conventions and Recommendations relevant to improve the working conditions in the supply chain. The BSCI provides capacity building to develop skills and capacities of participants and their business partners to improve and implement social compliance in their operations.

BSCI Principles:

1. The Rights of Freedom of Association and Collective Bargaining: the auditor must evaluate the effectiveness of a firm’s respect for workers’ rights to bargain collectively. This right should be in coherence with the BSCI principles. The employment contracts of a firm must not include any condition contradictory to the collective bargaining process. Moreover, conditions of a collective agreement should be applied to all workers in the same category.

²⁶ Business Social Compliance Initiative (BSCI). Retrieved from <http://www.saasaccreditation.org/bsci>

Workers must be free to form and join associations of their own choice. Furthermore, the ways in which a firm allows workers' rights must comply with the BSCI values and principles. The workers' participation committee must be allowed to hold meetings.

2. **Fair remuneration:** Fair remuneration practices must be ensured by the firms. For this, governments' minimum wage legislation or the industry standards approved on the basis of collective bargaining must be complied. Gaps between the actual remuneration and the fair remuneration figure should be identified and mitigated.

3. **Occupational health and safety:** Business partners shall comply with occupational health and safety regulations or with international standards where domestic legislation is weak or poorly enforced. The stability and safety of the equipment and buildings used should be checked on a regular basis to protect against any kind of emergency. Detailed tasks are given in Annex 3-

4. **Special protection for young workers:** Firms must ensure that young workers do not work at night and that they are protected against conditions of work which are detrimental to their health, safety. They must not be involved in any work with health hazard. Young workers should have access to Occupational Health and Safety trainings schemes and programmes and effective grievance mechanisms

5. **No bonded labour (Forced Labour):** Bonded or forced labour is unacceptable regardless of the circumstances. Any phase of the supply chain in the company premises must not involve any sort of bonded labour.

6. **Ethical business behaviour:** Businesses must not be involved in any act of corruption, bribery or unethical behaviour. Accepting or giving of any monetary or other incentive illegally is considered unethical.

7. **No discrimination:** Business partners shall not discriminate, exclude or have a certain preference for persons on the basis of gender, age, religion, race, caste, birth, social background, disability, ethnic and national origin, nationality, membership in unions or any other legitimated organisations, political affiliation or opinions, sexual orientation, family responsibilities, marital status, diseases or any other condition that could give rise to discrimination. In particular, workers shall not be harassed or disciplined on any of the grounds listed above.

8. **Decent working hours:** Businesses must ensure that workers are not required to work more than 48 regular hours per week. Workers should be provided with resting periods in every working day and at least one day off in every seven days. Overtime working hours should be absolutely voluntary. The payment for this should be provided at a rate not less than one and one-quarter times the regular rate. Overtime work hours should not involve any occupational hazard.

9. **No precarious employment:** Employment provided to the workers must not be socially or economically vulnerable and should not cause any sort of insecurity for the workers. They should be hired with a formal working contract established in compliance with national legislation, custom or practice and international labour standards.

10. **Protection of the environment:** Protection of the environment requires proper management of inputs, waste and water. In case of waste management, dumping of waste into the environment should be avoided. Plastics and other empty chemical containers must not be disposed in a way that may cause environmental risks or may harm humans. Moreover

businesses must have mechanisms in place to promote water conservation and water waste reduction.

3.4 Worldwide Responsible Accredited Production Code of Conduct– WRAP:

The WRAP is an independent certification program which is dedicated to monitor and certify its members based on the criteria that their whole production process follows ethical, lawful and humane conditions. WRAP has in total 12 principles regarding the social issues which are based on generally accepted international workplace standards and, regulations local laws and conventions of ILO. The principles of WRAP are as follows:

1. Compliance with Laws and Workplace Regulations:

Irrespective of the place of conducting business, all facilities must comply with the existing national and international laws, which includes labour and employment laws, environment laws, transparency and ethical standards as well as the standards of the respective industry.

2. Prohibition of Forced Labour:

Facilities must avoid using any forced, bound, prisoned or trafficked labour. All the workers employed, must voluntarily agree to work. In addition, hiring process should comply with the legal requirements and hiring fees should not be borne by the workers. All workers should be provided with a written contract in the native language at the time of recruitment.

3. Prohibition of Child Labour:

Facilities will not employ any worker who is aged below 14 or below the minimum age set by the employment law. Even if employed, facilities must make sure that the employed child labourers don't get engaged in any kind of hazardous task and also compulsory schooling facilities for the child workers must be ensured.

4. Prohibition of Harassment or Abuse:

Facilities must ensure a friendly, respectful and secure working environment for the workers. Any kind of physical or mental abuse and punishment is extremely prohibited, which also includes abusive tone or gesture, corporal punishment, undesired contact, sexual harassment, bullying, etc.

5. Compensation and Benefits:

The wages, allowance and benefits paid to workers by the facilities must comply with the local law. Facilities must ensure timely payment to the workers, which also include the overtime payment as well as the benefits such as, social insurance, group insurance, etc.

6. Hours of Work:

Facilities are required to comply with the daily and weekly working hours of the workers, set by the local labour law. Other than the situation of meeting urgent business needs, workers must get at least one-day off weekly. In case, workers have to work on weekly holiday, they must get the overtime payment for that.

7. Prohibition of Discrimination:

Facilities will ensure that in the case of hiring, firing, assigning work, promoting, decisions are only made based on the workers' job performance, without any discrimination based on race, color, national origin, gender, sex, religion, disability, or other factors.

8. Health and Safety:

Facilities will give priority to provide a safe, clean, healthy and productive working environment for the workers. This includes, providing safe drinking water, availability of adequate medical resources and fire safety measures, clean toilets, etc. Relevant training programmes should also be arranged in order to train the workers to do their job safely and productively.

9. Freedom of Association and Collective Bargaining:

Facilities will acknowledge and respect the right of the workers to engage with worker's association in order to exercise their lawful rights and engaging in collective bargaining. There must not be any discrimination based on any worker's involvement with the association and facilities should ensure an effective mechanism to address the issues raised by the worker's association.

10. Environment:

Facilities will commit to protect the environment by complying with the environmental laws, rules, regulations and standards. Facilities will closely monitor the activities which may affect the environment through proper waste management, awareness building and clean environment practices, with a view to minimising the effects.

11. Customs Compliance:

Facilities will comply with the existing customs laws, prevent illegal transshipment of products, keep detailed production records and mark or label all the products as per the guidance of custom law.

12. Security:

Facilities will ensure adequate security measures in order to prevent the introduction of any non-manifested cargo, such as drugs, explosive materials, etc. In this regard, WRAP recognizes the United States Customs and Border Protection (CBP)'s C-TPAT Guidelines for Foreign Manufacturers as those guidelines under this Principle.

3.5 Sedex Members Ethical Trade Audit (SMETA)²⁷:

SMETA is a widely known audit methodology of Sedex, which provides the Sedex members a guideline of best practice ethical audit techniques. It covers Sedex's four pillars of Labour, Health and Safety, Environment and Business Ethics which helps the auditors to conduct premium quality audits that covers all aspects of responsible business practices. SMETA consists of the following set of criteria:

1. Freely Chosen Employment:

All the workers will be voluntarily chosen. Firm cannot force, bind or prison any worker to do the job. Any worker is allowed to leave the job after giving reasonable notice. Workers are not bound to submit any deposit or their identity papers to their employer.

2. Freedom of Association:

Workers have the right to form or join workers' union or association and engage in collective bargaining. Employer will show a respectful attitude towards the union or association and no worker will face any discrimination depending on his/her engagement with union or

²⁷ SMETA Audit. <https://www.sedexglobal.com/smeta-audit/>

association. If the right to freedom of association and collective bargaining is restricted by law, then employer will encourage the formation of independent and free association and bargaining.

3. Health and Safety:

Workers should be provided with a safe and hygienic working environment, which includes proper fire safety measures, clean and sufficient toilets clean drinking water. If housing facility is provided, then it should clean, safe and meet the basic requirements. Workers should get training on health and safety issues on a regular basis and firm will form a health and safety committee assigning a senior management representative.

4. Child Labour:

Recruitment of child labour is totally prohibited. Firms will arrange educational programmes for the young workers in order to ensure their better future and no worker aged below 18 will engage in any kind of hazardous work. Firm's policies and procedures will comply with the relevant ILO standards.

5. Wages and Benefits:

Wages paid to the workers should be sufficient to meet basic needs of the workers and comply with the standard wage set by national law or industry benchmark standards, whichever is higher. Workers should be provided with a written document containing detailed information about their employment conditions and wages at the time of recruitment. All disciplinary measures should be recorded and deduction due to any disciplinary measures without the consent of the concerned worker is not permitted.

6. Working Hours:

Working hours must be complying with national labour law, collective bargaining whichever servers for higher protection to the workers and shall not exceed 48 hours per week, including overtime. Overtime work must be voluntarily done by the workers and they will get paid at a premium rate which is not less than 125% of the regular payment. Only based on the support of local law, negotiation with the workers association ensuring workers safety and due to extreme workload working hours can exceed 70 hours in 7 days. Workers must get one day-off in a week, even 2 days, if permitted by local law.

7. Discrimination:

There should not be any kind of discrimination in recruiting, promoting, access to work or retirement based on race, nationality, religion, age, disability, caste, gender, marital status, union membership or political engagement.

8. Regular Employment:

Obligations to employees under social security or labour laws and regulations arising from the regular employment relationship shall not be avoided through the use of labour-only contracting, sub-contracting, or home-working arrangements, apprenticeship schemes or through the excessive use of fixed-term contracts of employment.

9. Harsh or Inhumane Treatment:

Any kind of physical abuse, threat of physical abuse, sexual or other harassment and verbal abuse be totally prohibited.

10. Other Issues:

(a) Entitlement to Work:

Supplier will only employ or use the workers with a legal right to work. The supplier must validate all workers' including employment agency staff's legal right to work by reviewing original documentation. Employment agencies must only supply their registered workers and supplier should enable adequate control over agencies.

(b) Environment 2-Pillar (Shortened Version):

Suppliers must comply with the environmental standards set by local, national and international laws and they should be aware and fulfill their client's environmental requirements.

(c) Environment 4-Pillar (Extended Version):

Suppliers must comply with the local, national and international laws regarding the environmental standards and must have valid permits for use and disposal of resources. They should be aware of the environmental impacts of their actions and fulfill their client's environmental requirements. Suppliers should have an environmental policy in place and should make continuous efforts to improve their environmental conditions. Suppliers should have a nominated individual responsible for coordinating the efforts to improve environmental performance and shall review any environmental certifications or any environmental management systems documentation.

(d) Business Ethics:

The Business Ethics policy of the auditor/audit company should have received and acknowledged by the supplier. Suppliers shall conduct their business ethically without bribery, corruption, or any type of foul business practice and shall be aware of the relevant laws, their end client's Business Ethics standards and have a system to monitor their performance against these. Supplier should have a Business Ethics policy in place and have a designated person responsible for implementing Business Ethics standards. Suppliers should have a transparent system for reporting, and dealing with unethical business practices confidentially.

11. Community Benefits:

There should be programmes of the firm that will positively benefit the local community. This may include, hospitals, school, community programmes, transport facility, markets or any kind of programmes that may aid the local community.

Quality Compliance Requirements

3.6 Guidelines for Good Manufacturing Practice for plastic materials and articles intended for food contact applications, PlasticsEurope, EuPC and Cefic-FCA²⁸, 2011:

Good Manufacturing Practice (GMP): According to the GMP guidelines, food contact materials and articles must be reliably produced ensuring conformity with the quality standards. The materials must have be preventing from causing any danger to human health or creating an unacceptable change in the composition of the food. For production of food contact materials and articles, GMP guidelines cover all the chains of production under it, from the

²⁸ [Food Contact Additives Sector Group of the European Chemical Industry Council (**Cefic-FCA**), European Plastics Converters (**EuPC**) and **PlasticsEurope** (Associations of Plastics Manufacturers.)

approval and acceptance of the starting materials for polymer production and ending with the materials and articles coming into contact with food.²⁹

Quality assurance system and quality policy:

- The GMP guideline has a quality policy in compliance with the applicable regulations which is suitable to consistently produced materials and articles for food contact.
- The guideline also emphasises on the formulation of an effective quality assurance system involving the active participation of management and relevant personnel.
- There should be a quality control department with responsibility and authority to independently approve/reject all materials in the process.

Management leadership:

- For GMP implementation, responsibilities at the management level are assigned, defined and documented.
- The individual supervising or performing the manufacture or control of food contact materials and articles should have the education, training and experience to perform the assigned duties.
- Each individual in the management level must be provided with training on 'good manufacturing practice'.

Hygiene policy:

- Adequate and appropriate hygiene measures, when relevant, should be maintained for personnel, factories, warehouses and transportation, depending on the position in the supply chain.
- A pest control program should be maintained or the justification for lack of one should be documented.

Documentation, labeling, document retention and traceability:

- The GMP guidelines include a system which ensures information related to product formulation, operating procedures, operating windows, product release specifications are documented.
- In factories where both food contact and non-food contact materials and articles are produced, there might be risk of cross contamination between materials of the two types. This may cause harm to the food containing materials. Such factories must have production of food contact materials and articles to be marked.
- The GMP guidelines also include procedures on how to cover traceability of raw materials from start to the finish of production. Those procedures also take into account

²⁹ GUIDELINES FOR GOOD MANUFACTURING PRACTICE FOR PLASTIC MATERIALS AND ARTICLES INTENDED FOR FOOD CONTACT APPLICATIONS, PlasticsEurope, EuPC and Cefic-FCA, 2011.
https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf

the use of raw material recovered from a production process and the recording and traceability of their use.

- All the major equipment, transfer lines, containers and tanks that are used for processing, filling or holding food contact materials and articles should be identified either by labeling or by electronic control systems to indicate contents, batch designation, control status and other relevant information.
- Appropriate documentation should be maintained for quality critical items.

Production starting and/or raw material specifications and acceptance:

- The GMP guideline has a procedure to approve suppliers of starting and raw materials. And depending on the position in the supply chain, these procedures can contain different components.
- The guideline has also a procedure to approve starting and raw materials. Only the approved materials are used. The materials must be stored and handled in a way which prevents their mix-up and adulteration.
- Starting materials should be verified for acceptance before use
- Materials not meeting the agreed acceptance criteria must be properly identified and controlled to prevent misuse.
- Water used in the production of food contact materials should be of good quality.

Management of change procedure:

- Operation procedures and process operating windows must be well documented. In need of the operating procedures to be changed, there is a management of change procedure. Changes in product formulations, starting or raw materials or suppliers of these materials are subject to the procedure.
- It helps in detecting potential changes in the composition or increased risk of contamination and the impact of such changes on the final product quality, performance, composition and regulatory compliance status.

Storage, packaging, warehousing and transportation:

- There should be sufficient storage facility for raw materials. The storage system should be maintained in way that avoids adulteration of the food contact materials or articles.
- Procedures to maintain correct labelling should be followed.

Quality control and specifications:

- The raw materials and finished products should have documented specifications. Unique specifications are given to each kind of food contact material product code.
- The raw materials and finished products should be monitored to verify their compliance and conformity with the required specifications.

Work contracted out:

- Any linked or contracted out operation should be conducted based on a formal written contract according to GMP.

Complaint handling:

- The GMP guideline has system implemented for recording and investigating complaints including product recalls. When a manufacturer requests the consumer to return back a defected product that may cause health hazard or may be subject to legal actions, is called product recall. On investigation of compliant, corrective actions may sometimes be recommended.
- The GMP ensures that the non-conforming or the recalled products are not released for food contact use further use without investigation and proper approval from an authority.

Regular internal and supplier audits:

- The guideline has procedure to ensure internal audits or self-assessments to monitor the implementation of GMP.

3.7 British Standards Institution (BSI):³⁰

BSI is the national body, incorporated by Royal Charter, which is responsible for the preparation of British Standards and other standards-related publications, information and services. The quality management principles of BSI are focused on leadership, customer focus, engagement of people, process approach, improvement, evidence-based decision making, and relationship management.

The BSI suggests to follow a PDCA (Plan-Do-Check-Act) cycle for all processes and the overall quality management system. The PDCA cycle can be briefly described as,

- Plan (P): The objectives of the system and its processes should be established, and resources are required to deliver results following the consumer's requirements and policies of the organisation and also the possible risks and opportunities should be addressed.
- Do (D): The plan should be correctly and successfully implemented.
- Check (C): The resulting products and services against policies, objectives, requirements and planned activities will be monitored and results will be reported.
- Act (A): If necessary, take actions to improve the performance quality.

1. Quality Management Systems- Requirements:

This International Standard specifies requirements for a quality management system when an organisation:

- needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements; and
- aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

³⁰Source: BSI Standards Publication, BS EN ISO 9001:2015, Quality management systems Requirements. The British Standards Institution ((BSI) 2015. BSI Standards Limited 2015. ISBN 978 0 580 918162. ICS 03.120.10

All the requirements of this International Standard are generic and are intended to be applicable to any organisation, regardless of its type or size, or the products and services it provides.

Quality Management system and Its Processes:

According to BSI, the organisation shall establish, implement, maintain and improve a quality management system, in accordance with the requirements of International Standard. The processes needed for the quality management system their application will be determined by the organisation. Processes are presented in the Annex 3-

2. Leadership:

(a) Leadership and Commitment:

Top management shall demonstrate leadership and commitment with respect to the quality management system by:

- taking accountability for the effectiveness of the quality management system;
- ensuring that the quality policy and quality objectives are established for the quality management system and are compatible with the context and strategic direction of the organisation ;
- ensuring the integration of the quality management system requirements into the organisation 's business processes;
- promoting the use of the process approach and risk-based thinking;
- ensuring that the resources needed for the quality management system are available;
- communicating the importance of effective quality management and of conforming to the quality management system requirements;
- ensuring that the quality management system achieves its intended results;
- engaging, directing and supporting persons to contribute to the effectiveness of quality;
- management system;
- promoting improvement;
- supporting other relevant management roles to demonstrate their leadership as it applies;
- to their areas of responsibility.

Customer Focus:

Top management shall demonstrate leadership and commitment with respect to customer focus by ensuring that:

- customer and applicable statutory and regulatory requirements are determined, understood and consistently met;
- the risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed;
- the focus on enhancing customer satisfaction is maintained.

(b) Policy:

Quality Policy:

According to BSI, top management of the organisation shall establish, implement and maintain a quality policy that:

- is convenient to the objective and context of the organisation and supports its strategic direction;
- provides a framework for setting quality objectives;
- includes a commitment to satisfy applicable requirements;
- includes a commitment to continual improvement of the quality management system;
- shall be available and be maintained as documented information;
- shall be communicated, understood and applied within the organisation;
- shall be available to relevant interested parties, as appropriate.

(c) Organisational Roles, Responsibilities and Authorities:

The responsibilities and authorities for relevant roles are correctly assigned, communicated and well understood within the organisation. Responsibilities of top management are attached in the Annex 3.

3. Planning:

(a) Actions to Address Risks and Opportunities: When planning for the quality management system, the organisation shall consider the issues:

- give assurance that the quality management system can achieve its intended results;
- enhance desirable effects;
- prevent, or reduce, undesired effects; and
- achieve improvement.

The organisation shall plan:

- actions to address these risks and opportunities;
- how to: integrate and implement the actions into its quality management system processes; and evaluate the effectiveness of these actions.

Actions taken to address risks and opportunities shall be proportionate to the potential impact on the conformity of products and services.

(b) Quality objectives and planning to achieve them

The organisation shall establish quality objectives at relevant functions, levels and processes needed for the quality management system. The quality objectives shall:

- be consistent with the quality policy;
- be measurable;
- take into account applicable requirements;
- be relevant to conformity of products and services and to enhancement of customer satisfaction;
- be monitored;
- be communicated; and
- be updated as appropriate.

The organisation shall maintain documented information on the quality objectives. When planning how to achieve its quality objectives, the organisation shall determine:

- what will be done;
- what resources will be required;
- who will be responsible;
- when it will be completed;
- how the results will be evaluated.

(c) Planning of changes:

When the organisation determines the need for changes to the quality management system, the changes shall be carried out in a planned manner. The organisation shall consider:

- a) the purpose of the changes and their potential consequences;
- b) the integrity of the quality management system;
- c) the availability of resources;
- d) the allocation or reallocation of responsibilities and authorities.

4. Support:

(a) Resources:

The organisation shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the quality management system.

✓ **People:**

The organisation shall determine and provide the persons necessary for the effective implementation of its quality management system and for the operation and control of its processes.

✓ **Infrastructure:**

The organisation shall determine, provide and maintain the infrastructure necessary for the operation of its processes and to achieve conformity of products and services.

✓ **Environment for the operation of processes:**

The organisation shall determine, provide and maintain the environment necessary for the operation of its processes and to achieve conformity of products and services.

✓ **Monitoring and measuring resources**

The organisation shall determine and provide the resources needed to ensure valid and reliable results when monitoring or measuring is used to verify the conformity of products and services to requirements.

(b) Measurement traceability

When measurement traceability is a requirement, or is considered by the organisation to be an essential part of providing confidence in the validity of measurement results, measuring equipment shall be:

- calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; when no such standards exist, the basis used for calibration or verification shall be retained as documented information;
- identified in order to determine their status;
- safeguarded from adjustments, damage or deterioration that would invalidate the calibration status and subsequent measurement results.

✓ **Organisational knowledge**

The organisation shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This knowledge shall be maintained and be made available to the extent necessary. When addressing changing needs and trends, the organisation shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates.

5. Support-Others:

(a) Competence: The organisation shall:

- determine the necessary competence of persons doing work under its control that affects the performance and effectiveness of the quality management system;
- ensure that these persons are competent on the basis of appropriate education, training, or experience;
- where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken;
- retain appropriate documented information as evidence of competence.

(b) Awareness:

The organisation shall ensure that persons doing work under the organisation's control are aware of:

- the quality policy;
- relevant quality objectives;
- their contribution to the effectiveness of the quality management system, including the benefits of improved performance;
- the implications of not conforming with the quality management system requirements.

(c) Communication

The organisation shall determine the internal and external communications relevant to the quality management system, including:

- on what it will communicate;
- when to communicate;
- with whom to communicate;
- how to communicate;
- who communicates.

(d) Documented information

The organisation's quality management system shall include:

- documented information required by this International Standard;
- documented information determined by the organisation as being necessary for the effectiveness of the quality management system.

Creating and updating:

When creating and updating documented information, the organisation shall ensure appropriate:

- identification and description (e.g. a title, date, author, or reference number);
- format (e.g. language, software version, graphics) and media (e.g. paper, electronic);
- review and approval for suitability and adequacy.

Control of documented information:

Documented information required by the quality management system and by this International Standard shall be controlled to ensure:

- it is available and suitable for use, where and when it is needed;
- it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity).

For the control of documented information, the organisation shall address the following activities, as applicable:

- distribution, access, retrieval and use;
- storage and preservation, including preservation of legibility;
- control of changes (e.g. version control);
- retention and disposition.

6. Operation:

(a) Operational planning and control:

The organisation shall plan, implement and control the processes needed to meet the requirements for the provision of products and services, and to implement the actions determined. Actions are listed in Annex 3:

(b) Requirements for products and services: Requirements are detailed in the Annex 3.

(c) Design and development of products and services:

The organisation shall establish, implement and maintain a design and development process that is appropriate to ensure the subsequent provision of products and services. This stages are detailed in the Annex 3.

(d) Production and service provision:

Control of production and service provision:

The organisation shall implement production and service provision under controlled conditions. Controlled conditions shall include, as applicable:

- the availability of documented information that defines: the characteristics of the products to be produced, the services to be provided, or the activities to be performed; and the results to be achieved;

- the availability and use of suitable monitoring and measuring resources;
- the implementation of monitoring and measurement activities at appropriate stages to verify that criteria for control of processes or outputs, and acceptance criteria for products and services, have been met;
- the use of suitable infrastructure and environment for the operation of processes;
- the appointment of competent persons, including any required qualification;
- the validation, and periodic revalidation, of the ability to achieve planned results of the processes for production and service provision, where the resulting output cannot be verified by subsequent monitoring or measurement;
- the implementation of actions to prevent human error;
- the implementation of release, delivery and post-delivery activities.

Identification and traceability:

The organisation shall use suitable means to identify outputs when it is necessary to ensure the conformity of products and services. The organisation shall identify the status of outputs with respect to monitoring and measurement requirements throughout production and service provision. The organisation shall control the unique identification of the outputs when traceability is a requirement, and shall retain the documented information necessary to enable traceability.

Post-delivery activities:

The organisation shall meet requirements for post-delivery activities associated with the products and services. In determining the extent of post-delivery activities that are required, the organisation shall consider:

- statutory and regulatory requirements;
- the potential undesired consequences associated with its products and services;
- the nature, use and intended lifetime of its products and services;
- customer requirements;
- customer feedback.

(e) Release of products and services:

The organisation shall implement planned arrangements, at appropriate stages, to verify that the product and service requirements have been met. The release of products and services to the customer shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, as applicable, by the customer. The organisation shall retain documented information on the release of products and services. The documented information shall include:

- evidence of conformity with the acceptance criteria;
- traceability to the persons authorizing the release.

7. Performance Evaluation:

(a) Monitoring, measurement, analysis and evaluation:

The organisation shall determine:

- what needs to be monitored and measured;

- the methods for monitoring, measurement, analysis and evaluation needed to ensure valid results;
- when the monitoring and measuring shall be performed;
- when the results from monitoring and measurement shall be analysed and evaluated.

Customer satisfaction:

The organisation shall monitor customers' perceptions of the degree to which their needs and expectations have been fulfilled. The organisation shall determine the methods for obtaining, monitoring and reviewing this information.

Analysis and evaluation:

The organisation shall analyse and evaluate appropriate data and information arising from monitoring and measurement. The results of analysis shall be used to evaluate:

- conformity of products and services;
- the degree of customer satisfaction;
- the performance and effectiveness of the quality management system;
- if planning has been implemented effectively;
- the effectiveness of actions taken to address risks and opportunities;
- the performance of external providers;
- the need for improvements to the quality management system.

(b) Internal audit:

The organisation shall conduct internal audits at planned intervals to provide information on whether the quality management system:

- conforms to: the organisation's own requirements for its quality management system; and the requirements of this International Standard;
- is effectively implemented and maintained.

Activities of the organisation are detailed in the Annex 3.

(c) Management review:

Top management shall review the organisation's quality management system, at planned intervals, to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organisation .

Management review inputs:

The management review shall be planned and carried out taking into consideration:

- the status of actions from previous management reviews;
- changes in external and internal issues that are relevant to the quality management system;
- information on the performance and effectiveness of the quality management system, including trends in: customer satisfaction and feedback from relevant interested parties; the extent to which quality objectives have been met; process performance and conformity of products and services; nonconformities and corrective actions; monitoring and measurement results; audit results; and the performance of external providers;
- the adequacy of resources;
- the effectiveness of actions taken to address risks and opportunities; and

- opportunities for improvement.

Management review outputs:

The outputs of the management review shall include decisions and actions related to:

- opportunities for improvement;
- any need for changes to the quality management system;
- resource needs.

8. Improvement:

The organisation shall determine and select opportunities for improvement and implement any necessary actions to meet customer requirements and enhance customer satisfaction. These shall include:

- improving products and services to meet requirements as well as to address future needs and expectations;
- correcting, preventing or reducing undesired effects;
- improving the performance and effectiveness of the quality management system.

Non-conformity and corrective actions are detailed in Annex 3.

3.8 Guidelines of European Commission for Plastic goods³¹:

European Commission has some guidelines under Regulation (EU) No 10/2011 mainly targeted to plastic materials and articles intended to come into contact with food. The guidelines mainly have two main aims:

1. It assures the customer that the compliance of the product are taken care of with the relevant requirements of the Plastics Regulation and the Framework Regulation.
2. Customer can get relevant information which are necessary to establish or check the compliance of the product with relevant legislation.

The guidelines under EC Regulation for plastic materials and articles intended to come into contact with food, are given below:

- The labeling of the materials and articles not yet in contact with food should contain specific instructions for safe and appropriate use;
- The products must be easily identifiable in order to create a traceability system by means of labelling or relevant documentation which will allow the consumer to know about the product's origin;
- The producing company should operate under good manufacturing practice, as guided in the Framework Regulation and in the GMP Regulation;
- The material must not cause any kind of contamination to the food or a deterioration in the organoleptic properties of the food;

³¹ Union Guidance on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food as regards information in the supply chain. Retrieved from https://ec.europa.eu/food/sites/food/files/safety/docs/cs_fcm_plastic-guidance_201110_reg_en.pdf

- The labelling, advertising and packaging of a material must not does not mislead the consumers;
- The company should establish a quality assurance system and a quality control system; and
- The production operations and finished product should comply with the pre-established instruction and pre-selected specifications under the Plastics Regulation and the Framework Regulation.

3.9 ISO 9001:2008

This is an International Standard based on the quality management principles described in the ISO 9001:2008. The standard is based on some principles. The main aim of the standard is to enhance the ability of an organisation to provide products that are satisfactory to the customers, maintaining the applicable statutory and regulatory requirements. All the requirements of this International Standard are generic and are applicable to any organization irrespective of its size and products produced.

The quality management principles mainly focus on:

- Customer focus;
- Leadership;
- Engagement of people;
- Process approach;
- Improvement;
- Evidence-based decision making;
- Relationship management;
- Support System;
- Operation;
- Performance evaluation; and
- Improvement.

Details are given in the Annex 3.

3.10 National Standards for Environmental, Social and Quality Compliance:

Environmental Compliance Regulations in Bangladesh:

The environmental standards and compliances in Bangladesh are regulated under the Environmental Conservation Act 1995 and Rules 1997. The Act has been amended in 2010. The Act and other environment-related laws mainly focus on environment, ecology and ecosystem. There are seventeen clauses in the Environment Conservation Rules, 1997, covers pollution, certificate issuance, instructions related to importation etc. Among seventeen clauses, clause seven, eight and fourteen are related to industrial production.

The Environment Conservation Rules 1997 classify the production of Plastics sector as Orange B.

Obtaining environmental clearance certificate for orange B category requires General information on the industrial unit or project, description of the manufactured product and raw materials, “No Objection Certificate” from the local authority. For red category industries, additional documentation are required. Additional document include planned industrial unit, feasibility report and an Initial Environmental Examination (IEE) report, including Process Flow Diagram, Layout Plan, showing ETP and diagram of ETP; Environmental Management Plan (EMP), Pollution Effect Abatement Plan along with Emergency Plan for adverse environmental impact.

There is also an National Environmental Policy (NEP) was framed with the aim of providing protection and sustainable management of the environment. The objectives of the Policy include:

- Maintaining the ecological balance and overall development through protection and improvement of the environment;
- Identifying and regulate polluting and environmentally degrading activities;
- Ensuring environmentally sound development;
- Ensuring sustainable and environmentally sound use of all natural resources; and
- Actively remain associated with all international environmental initiatives

Social Compliance Regulations in Bangladesh:

The labour issue in Bangladesh are regulated and governed by the Bangladesh Labour Act, 2006 (amended in 2013) and the Bangladesh Labour Rules, 2015. These legislation not only protect the rights and power of the labour force, but also sets rules for their occupational health and safety while in the factory premise.

The proposed Bangladesh Labour (Amendment) Act, 2018, has widen the coverage area for workers. It has also included better maternity facilities, post- retirement facilities, benefits for workers’ families etc.

The labour act and rules are developed in line with the international standards and the ILO conventions. The issues and areas that the Bangladesh Labour Act, 2006 cover include,

- Conditions of employment and service
- Employment of adolescent worker
- Maternity benefit
- Health and hygiene
- Safety
- Special provisions relating to health, hygiene and safety
- Welfare measures
- Working hour and leave
- Wages and payment
- Compensation for injury caused by accident

- Trade unions and industrial relations
- Settlement of dispute, labour court, labour appellate tribunal, legal proceedings etc.

National Quality Standards

Bangladesh Standards and Testing Institution (BSTI) is the only National Standards body of Bangladesh. It is not recognised by the international buyers due to lack of transparency, integrity and service quality.

BSTI has some standards set for Plastics sector. Some of them include,

BSTI Standards Catalogue 2018³²

Standards	Description
BDS 479:1999 Rubber and plastics containers for lead-acid storage batteries (First Revision)	Requirements and methods of test for rubber and plastics containers of single cell or monobloc construction for all types of lead-acid batteries.
BDS 882:1978 Plastic testing methods PTM-13 Method for measuring the melt flow rate (MFR) of thermoplastics	Covers procedures for determining the melt flow rate (MFR) of various thermoplastics, in arbitrary units. Under specified conditions of temperature and pressure.
BDS 883:1978 Plastic testing methods PTM-14 Method for measuring the density of plastics by the density gradient technique	Covers procedure for filling and calibrating the density gradient columns and for determining the density of solid non cellular plastic.
BDS 886:1978 Plastics testing methods PTM-3 Method for direct measuring the specific gravity of plastics	Covers a laboratory procedure for determining the specific gravity of various non-cellular thermoplastic materials, rubbers and rubber and rubber like materials by the immersion method.
BDS 890:1978 Plastic testing methods PTM-5 Method for measuring the water absorption at room temperature and boiling water absorption of plastics.	Describes the procedure for determining the water absorbed by moulded test specimen
BDS 891:1978 Plastic testing methods PTM-9 Method for measuring the flexural modulus of plastics	Requirements and dimensions for rubber insulated flexible cords upto and including 450 V to earth & 750 V between conductors

³² BSTI STANDARDS CATALOGUE 2018. Retrieved from [https://bsti.portal.gov.bd/...bd/.../BSTI%20Standards%20Catalogue-2018%20\(1\).pdf](https://bsti.portal.gov.bd/...bd/.../BSTI%20Standards%20Catalogue-2018%20(1).pdf)

BDS 1446 (Part-1):1994 Methods of testing plastics	It describes procedure for the determination water absorbed by a plastic test specimen.
BDS 1446 (Part-2):1994 Methods of testing plastics	Specifies two methods for the determination of the temperature of deflection under load (bending stress) of plastics and ebonite.
BDS 1446 (Part-3):1994 Methods of testing plastics	Specifies a colorimetric comparison method for the semi-quantitative determination of the amount of ammonia in phenol formaldehyde mouldings.
BDS 1446 (Part-4):1994	Specifies a method of determining the bulk factor of a moulding material from its apparent density in the unmoulded form and its density in the moulding form.
BDS 1631 (Part-1):2000 Plastics materials for food contact use Part-1, Poly (Vinyl chloride) (PVC) compound Covers the requirements for poly (Vinyl chloride) (PVC)	Covers the requirements for poly (Vinyl chloride) (PVC) compound plastics materials (in the form of granules or powder) for the manufacture of plastics items for food contact use
BDS 1662:2000 Guide to the manufacture of plastics items for food content applications	Describes the procedures that should be followed during the various stages of production, coating and printing of plastics items for food contact such as packages, domestic containers, wrapping, utensils on any other plastics items intended for contact applications.
BDS ISO 580:2007 Plastic piping and ducting systems — Injectionmoulded thermoplastics fitting — Methods for visually assessing the effects of heating	This international standard specifies two methods for the effects of heating on Injection-moulded thermoplastics fitting— Method A, using an air oven, and method B, using a liquid bath. In case of disagreement, method A is thereference method.

Chapter-4: Gap Analysis by Comparing International Requirements on ESQ Compliance

4.1 Bangladesh plastics sector's exiting social compliance gaps with the nature of gaps and factors responsible

Analysing the gaps by comparing and contrasting the existing practices followed by the firms in terms of all the compliance indicators and the international standards required and best practices followed for those is one of the major objectives of the study. The gap analysis is carried out in that context to identify the gaps and the reasons associated with those, which can be addressed with appropriate initiatives and interventions. The gap analysis is, therefore, the diagnostic part of the study, based on which future strategic plan and training needs assessments will be developed. The present study on ESQ compliance issues of the plastics sector has been carried out to identify possible gaps that are existed in these sector of the country with an aim to undertake necessary actions to make the sector globally more competitive. It is expected that by making these sector ESQ complaint and thus more competitive, not only the country's export earnings can significantly be increased, but that may also contribute to creating more descent and quality jobs.

Against this backdrop, the present study collected data through questionnaire surveys conducted from the firms operating under the plastics industry of Bangladesh and their associations. In addition, two consultation meetings involving all major stakeholders were also conducted to identify the existing gaps and possible solutions. The major findings from the surveys and consultation meetings are presented in this section. Data are presented by mentioning the recommended standards against the existing practices to identify the gaps in ESQ compliance issues, while nature of gap and possible reasons behind such gaps are also identified. The ESQ compliance gaps, although not quantified and categorized on the basis of any score, are classified into three broad headings on the basis of the findings from surveys and consultation meetings i.e. *critical*, *major* and *minor* gap. These categories are based on the number of firms non-complying with the international standards.

- *Major Gap*: Major levels of gaps are identified where most of the firms interviewed have shown minimum level of practices.
- *Moderate Gap*: This category is attached when a moderate number of firms are following the national & international ESQ compliance standards for the indicators at their factories, some of the firms are lacking in that regard.
- *Minor Gap*: It implies that most of the firms are following the national and international ESQ compliance requirements and a very minimum level of interventions are required to make the sub-sector fully ESQ complaint in those indicators.

Table -4.1 Bangladesh Plastics Sector exiting Environmental Compliance gaps with the nature of gaps and factors responsible

Indicator	Reference Standard	Existing Practice	Nature of Gap (Association /Firms /Regulatory Level)	Applicable to	Factors Responsible for this Gap
Environmental Management System (EMS)	To identify and manage the environmental impact of the production facility.	Only large firms can fulfill the requirements for EMS.	Moderate	Firm level (Small & Medium)	Lack of financial resources and capacity of the firms
Water use	To set target for water use and plan to improve water use.	Most of the firms interviewed use water meter to track water use.	Minor	Firm level (Small & Medium)	Lack of technical knowledge
Wastewater	To track quantity of wastewater generated from industrial and/or domestic operations and report the quality parameters of the waste water.	In the Plastics sector, water is reused and recycled for machine operation. There are little initiatives from the medium and small firms to track the waste water discharge.	Minor	Firm level (Small & Medium)	Lack of awareness to track waste water generated from the facility
Waste Management	To track, record and report the volume of waste. It also requires to segregate, store and train workers to handle all hazardous and non-hazardous waste streams.	Most of the plastics waste in the plastics industry in Bangladesh are recyclable. Solid waste other than plastic waste are managed accordingly in the large and medium firms. In small factories, no formal trainings are provided and hardly record the volume of waste.	Moderate	Firm level (Small & Medium); Sector Level	Inadequate knowledge; Lack of raining regarding waste management.
Environmental policy	Top management will develop, implement and maintain an environmental policy within the scope of the environmental management system of the organisation.	Large firms maintain separate environmental policy. Medium and smaller ones do not develop any written policy.	Moderate	Firm level (Small & Medium)	Limited awareness to develop a written policy for the environment

Energy use and greenhouse gas emissions	To track all energy and fuel sources and report quantity. And also, to identify factors that contribute most to energy use.	Larger firms track monthly energy use and take measures to reduce energy cost by using efficient equipment, solar PV, sensor etc. It's quite tough for the small ones to keep track to the all energy sources.	Moderate	Firm level (Small & Medium)	Lack of awareness and training on efficient energy use
---	---	---	----------	-----------------------------	--



Bengal Plastics Ltd., country's first plastic processing company, was established and has been operating since 1969. A set of quality policy, product quality, strong commitment to its customers, and timely delivery have contributed to the success of its growth. It is the licensee manufacturer of Mainetti-the largest hanger manufacturing company in the world with more than 50 distribution centres in over 28 countries.

The company is ISO 9001:2015 (quality management systems), ISO 14001:2015 (environmental management systems) certified company. The company also holds Alliance, ICS, GSV, BSCI, SEDEX, Higg certifications, which has created a positive brand image of its company among the buyers. With a vision to make its factory global standard, the company has emphasised on maintaining compliance at the factory premises. Requirements from buyers mainly motivate the company to invest in compliance in making the company compliant. It had to do both financial (Infrastructure development, ensure electrical, fire safety with proper equipment, occupational health & safety etc.) and non-financial investment (Training and awareness programme, knowledge sharing, training of workers etc.). Right quantity, right quality at right time delivery have contributed to gain buyers' trust.

The above table shows the overall situation in maintaining environmental compliance issues in the plastics sector of Bangladesh. Different indicators from various international and national standards are used to analyse the present practices of the firms to comply with the environmental compliance. Information is based on the responses from the firm-level and association interviews, opinions from consultation meeting, organised under the study. Larger firms certified under ISO 14001:2015 or Higg Index or any other international standard, are fully compliant. Some of the large firms also maintain separate environmental policy to improve the environmental compliance issues. From the discussion of the consultation meeting, it was agreed that, plastics sector is considered as green industry. In the production end, comparatively there is less environmental pollution than other industries. Plastics waste generated from the production site are recycled. Most of the factories interviewed, recycle plastic waste through crusher machine/cutting machine. But there is matter of concern in the area of solid waste management. Moulds, which are obsolete, are not properly managed. Large factories with mould factories, return the obsolete moulds. Others stored it in the storage or sell it as scrap. There is no proper disposal mechanism of the obsolete moulds. This is because of lack of proper training and information regarding managing wastages. Other issues in the environmental compliance are water use and waste water management. Water is used in the plastic production for cooling machines (e.g. injection moulding, blow moulding etc.). This water is chemically treated to prevent bacterial growth or any other contamination. Water can be reused for a certain period, it varies from firm to firm. After a certain period, this water is disposed in the drainage system. It can cause ecological imbalance. Most firms install water meters to keep track on the water use, but they hardly maintain documentation for this. To be compliant, energy management is another major issue in the field of environment compliance. International standard requires to track all the energy, fuel sources and reports the volume used and makes solutions. It is easier for the larger

and medium firms to invest in proper energy management. Smaller one's face challenges to comply with the requirements.

Table-4.2: Bangladesh plastics sector's existing social compliance gaps with the nature of nature of gaps and factors responsible

Indicator	Reference Standard	Existing Practice	Nature of Gap (Associations/Firms /Regulatory Level)	Applicable to	Factors Responsible for this Gap
General Standard					
Officials to implement social compliances	At least an official for implementing & monitoring social compliance standards;	No personnel is assigned for implementing social compliance standards in most of the small and medium sized factories.	Major	Firm level (Small & Medium)	Limited knowledge on labour law.
Welfare Officer	To appoint at least one welfare officer in factories with more than 500 workers;	Welfare officers exist in the large firms. But, other factories do not have an Welfare Officer.	Moderate	Firm level (Small & Medium)	Lack of initiatives by the firms to disseminate knowledge on labour law rules.
Group Insurance Policy	Group insurance for all staff from a recognised insurance company	In most of the medium and small factories, group insurance covering each individual staff member and worker is missing.	Major	Firm level (Small & Medium)	Lack of motivation by owners to invest in group insurance policy ;
Labour Rights and Freedom of Association					
Participation Committee (PC)	Allow valid and properly elected union or workers' Participation Committee	In small firms, properly elected union or workers' PC are not available/allowed.	Major	Firm level (Small & Medium)	Limited knowledge on labour issues results in less initiatives for implementation.
Right to Organise and Collective Bargaining	To allow a union or workers' representative to bargain with the management and negotiate demands on behalf of the workers	Most of the medium and small firms do not allow workers to negotiate with management.	Major	Firm level (Small & Medium)	Lack of knowledge of workers on their rights; Lack of interest of the owners.
Regular Employment					

Personal files	Maintain complete personal files must for all workers;	Personal files are not available for all levels of workers and are not complete in small firms mainly.	Major	Firm level (Small & Medium)	Lack of initiatives by firms, Limited knowledge on labour laws.
Formal Working Contracts	Workers must be hired with formal working contract (by mentioning non-disclosure agreement;	Most of the factories do not maintain formal working contracts of all the employees and hence none of the required files are maintained. Large firms maintain formal working contracts.	Major	Firm level (Small & Medium)	Lack of bargaining power by labours and weak regulatory mechanism.
Photo ID	Provide photo ID to all the employees	Small sized factories do not maintain photo ID of workers	Major	Firm level (Small)	Lack of interest of the owners.
Service book	Maintain a service book with information on current designation, wage/salary, increments, promotion and disciplinary records, etc.	Not all factories maintain service book including all the mentioned information.	Major	Firm level (Small & Medium)	Lack of initiatives by firms.
Working Hours					
Time recording system	Workers' in and out time should be monitored by a proper time recording system	Large firms maintain automatic time recording system. Other firms do not have proper time recording system to monitor workers' entry and exit time, they maintain manual time recording system.	Minor	Firm level (Small)	Limited awareness of the management.
Wages and Benefits					
Absent deduction	Make absent deduction on the basic salary only	Most firms follow a practice of deducting salary from absent in job from gross salary.	Minor	Firm level (Small & Medium)	Poor labor standards by firms, weak regulatory mechanism.
Overtime payment	Overtime payment should be twice of the basic salary	Large and medium sized firms provide overtime payment as per the guideline.	Minor	Firm level (Small)	Limited knowledge on the overtime payment issues.

Minimum wage	Strictly follow the minimum wage requirement	Only few firms are found to violate minimum wage requirements	Minor	Firm level (Small & Medium), Regulatory level	Lack of regulatory measure; lack of factory-owner level initiatives.
Hiring children	To stop hiring children below minimum age and remove child workers from works that are considered harmful for them	Workers below minimum age are sometimes hired by some firms, but not widely exercised now	Minor	Firm level (Small), Regulatory level	Lack of ignorance by firms, weak regulatory mechanism.
Health Examination & Work Safety					
Health safety training	Regular training on health and safety issues	Most of the factories do not provide such trainings. Only large firms maintain training schedule.	Major	Firm level (Small & Medium)	Lack of awareness at the Top-level management; Awareness gap about health benefits among the top-level management and workers
Health safety committee	Formation of a health and safety committee at the factory premises	Health safety committee is missing in the most of the small and medium sized firms.	Moderate	Firm level (Small & Medium)	Lack of awareness at the Top-level management; Awareness gap about health benefits among the top & mid-level management and workers
Health examinations	Conduct health examinations of workers involved in dangerous and hazardous works on a regular-basis	Most of the cases Health examinations are not conducted in the small ones.	Moderate	Firm level (Small & Medium)	Lack of awareness at the Top-level management; Awareness gap about health benefits among the top-level management and workers
Appropriate safety guard for machines	Provide adequate and appropriate safety guards at all machines with rotating or moving parts	Machine safety guards were present in the large and medium sized factories.	Minor	Firm level (Small)	Lack of initiatives by firms, weak regulatory mechanism
Monitoring mechanism to ensure use of PPE	Provide adequate and appropriate PPE to all workers and introduce a	Most firms provide PPE for the workers but is not sufficient and there is no monitoring system.	Minor	Firm level (Small &	Lack of initiatives by firms, lack of technical know-how, weak regulatory mechanism

	monitoring system to ensure that the workers are using appropriate PPE			Medium), Regulatory level	
First Aid Box	Ensure availability of sufficient first aid box and emergency treatment facilities for the worker	Number of first aid boxes are limited and some cases absent at some factories.	Minor	Firm level (Small & Medium)	Lack of awareness among the Top and mid-level management
First aid provider	Ensure availability of trained first aid provider at the factory premises	Not all factories have trained first aid provider	Minor	Firm level (Small & Medium)	Lack of awareness about health benefits
Medical room	Dedicated medical room with adequate equipment as per legal requirement	Most of the factories do not have medical room facility.	Major	Firm level (Small & Medium)	Awareness gap about health benefits among the top-level management and workers
Full-time doctor	Appoint full-time doctor for the health care of workers	Most of the factories do not appointed full-time doctor	Major	Firm level (Small & Medium)	Awareness gap about health benefits among the top-level management
Electric and Fire Safety					
Regular check-up of electrical machinery	A system to ensure electrical machineries are regularly checked and check-up procedures, processes and results should be documented	Some firms regularly check-up the conditions of electric machineries but no documentation is present.	Minor	Firm level (Small & Medium)	Lack of technical knowhow
Adequate number of fire extinguisher	Provide the necessary number of fire extinguishers and firefighting equipment as defined in the fire license.	Most small and medium sized firms don't have the sufficient number of fire extinguishers.	Minor	Firm level (Small & Medium)	Lack of initiatives by firms.
Perfect Fire Evacuation Drill	Fire drills must be conducted in presence of	Fire drills are not conducted regular-basis also as per the legal requirement.	Moderate	Firm level (Small & Medium)	Absence of proper initiatives among the factory owners.

	appropriate Fire and Civil Defense Authority				
Fire Fighters	Ensure adequate trained fire fighters through appropriate training	Some factories have no or few trained fire fighters	Moderate	Firm level (Small & Medium)	Lack of initiative from the factory owners.
Firefighting equipment	Adequate and appropriate firefighting equipment must be available	Firefighting equipment are not adequate in some factories.	Minor	Firm level (Small & Medium)	Awareness Gap of factory-owners and Top-level managers, lack of regulatory measure.
Emergency and evacuation plan	Existence of proper Emergency and Evacuation Plan with proper marking	Most of the factories have proper Emergency and Evacuation Plan.	Minor	Firm level (Small & Medium), Sector level	Lack of awareness among the Top and mid-level management; information gap and absence of technical knowhow among the mid-level managers
Hygiene and Housekeeping					
Drinking water test	Test the quality of the drinking water on a regular basis	Quality of the drinking water is not tested in all factories.	Moderate	Firm level (Small & Medium)	Awareness gap among top-mid and workers level; lack of technical knowledge of top & mid-level management
Monitoring of factory cleanliness	Ensure and monitor cleanliness at factory compound, factory floors, workplaces, etc.	Factories regularly monitor cleanliness of the factory	Minor	Firm level (Small & Medium)	Lack of proper monitoring and documentation procedures
Documentation of Cleanliness	The whole cleanliness system should be properly documented	Large firms maintain documentation of cleanliness.	Major	Firm level (Small & Medium)	Lack of initiatives by firms, weak regulatory mechanism
Separate Toilets	Establish separate toilets for male and female workers and mark it clearly	Firms have separate toilets for male and female workers.	Minor	Firm level (Small & Medium)	Lack of implementation of by the firms.
Chemical Management					

Chemical handling	Proper handling of chemicals by maintaining MSDS	Chemicals are handled according to the MSDS.	Minor	Firm level (Small & Medium), Sector- level, Regulatory level	Lack of awareness among the Top and mid-level management; information gap and absence of technical knowhow among the mid-level managers and workers;
Maintaining MSDS	Store chemicals by using the MSDS system	Most of the firms maintain MSDS.	Minor	Firm level (Small & Medium)	Information gap and absence of technical knowhow among the mid-level managers;

In identifying the social compliance gaps in the plastics sector, it was found that almost all the large and medium firms comply with the social compliances, whereas the small firms are seen to be failing to comply.

In order to show the social compliance gaps along with their nature and factors responsible, we tried to cover different indicators related to the social compliance issues. Critical level of gaps were identified in case of indicators such as appointing officials to implement social compliances, welfare officer, providing group insurance policy, formation of participation committee (pc), ensuring right to collective bargaining, maintenance of personal files, formal working contracts and photo IDs of the employees. Lack of awareness of the firms on labour rights and lack of regulatory mechanism are found to be the main reasons behind these gaps.

Moreover, lack of a proper time recording system of the workers, rules regarding absent deduction and minimum wages and ensuring regular health examination and work safety, Monitoring mechanism to ensure use of PPE, lack of first aid box are some of the other indicators where critical or moderate gaps were found. Major gaps were found in ensuring regular check-up of electrical machinery and adequate number of fire extinguisher, documentation of cleanliness. Lack of awareness among the top and mid-level management; information gap and absence of technical knowhow among the mid-level managers are the main reasons behind these gaps.



RFL PLASTICS

PRAN-RFL Group initiated its journey in 1981 with cast iron (CI) products. Today it has wide ranges of products. RFL broadened its operation into PVC category in 1996 and in plastics business in 2003. At present PRAN-RFL Plastics Limited is one of the largest plastic manufacturers around the world (3rd largest in Asia). The company received its first ISO certification in 2011. Total export volume was US\$ 3.6 million before ISO certification. But now the scenario has been changed drastically, whereas its total export value amounted to US\$ 18 million in 2018.

Besides, the company also holds ISO 9001:2008, ISO 14001:2004, SEDEX, SMETA, ICS, ESC, CGMP, BSCI certification for its strict compliance with the standard set by the organisations. Despite its export since 2008, the company was unable to enter the European & North American markets as it did not have compliance certification from a recognised body. They have successfully entered the developed markets after getting compliance certificate in 2011. At present, its products are being exported to Europe, Gulf, Asia, Africa, and America with more than 60 countries in the globe. The company received the recognition of *Number One Bangladeshi Brand* in 2011 awarded by Neilson and Brand Forum in Bangladesh. In addition, it received Best Brand Award for eight times during 2011-18.

The owner's vision for market expansion motivated him to invest in compliance issues. The company has made detailed business policies and procedures to ensure that the company's commitment to legal compliance is followed. To gain compliance status and expand its market, it had to develop strong investment capacity for both financial and non-financial terms. Financial investment involved investing in compliance ensuring infrastructure, in-house testing laboratory and R&D facilities, PPE, facilities for workers, electrical, fire and structural safety as per standard, compliant factory design etc. Some of the non-financial investment included awareness-programme within the factories, knowledge sharing, training of workers etc. It also adopted "GO GREEN" policy to protect the environment. Through this process international new buyers' eye on this market ultimately benefits the company although this investment had to be made to make sure compliance at the factory.

Table-4.3: Bangladesh plastics sector’s existing quality compliance gaps with the nature of nature of gaps and factors responsible

Indicator	Reference Standard	Existing Standard	Nature of Gap (Association /Firms /Regulatory Level)	Applicable to	Factors Responsible for this Gap
Raw material collection, verification and acceptance	Raw materials have to be collected from reliable sources, ³³ and raw materials must be verified for acceptance before use in the production process through test.	Large factories verify raw materials for final approval, some medium firms do the same, but small factories are able to verify raw materials before use in production due to availability of testing facilities.	Moderate	Firm level (Small & Medium)	Limited knowledge on proper raw material collection.
Labeling, documentation and document retention	To ensure correct labeling ³⁴ or electronic control systems to identify major equipment, transfer lines, containers and tanks that are used for processing, filling or holding food contact materials to indicate contents, batch designation and other relevant information ³⁵ . Maintain an appropriate documented information i.e. product formulation, operating procedures, product release specifications and other critical information on quality critical items to support the operation of its processes.	Only large firms ensure correct labeling, documentation and retain documented information, some medium factories go through the same process but it doesn’t happen in case of small firms.	Moderate	Firm level (Small & Medium)	Lack of technical knowledge on labelling, documentation.

³³ PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf)

³⁴ Union Guidance on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food as regards information in the supply chain, Labelling requirements (Article 15 of the Framework Regulation), 28.11.2013. (Source: https://ec.europa.eu/food/sites/food/files/safety/docs/cs_fcm_plastic-guidance_201110_reg_en.pdf).

³⁵ PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf)

	Retain documented information to have confidence that the processes are being carried out as planned ³⁶ .				
Traceability system	To ensure to establish a traceability system from incoming raw material to outgoing food contact material which allows the identification of the goods easily ³⁷ .	Only large firms ensure traceability, some medium factories do the same but it doesn't happen in case of small firms.	Moderate	Firm level (Small & Medium), Sector level	Information gap and absence of modern technology in the whole sector.
Preservation of the raw materials: storage, packaging, warehousing and transportation	Ensure adequate facilities to preserve the raw materials: sufficient and well managed storage for raw materials to prevent their mix-up and/or adulteration.	Only large firms and some medium firms have well managed storage system, but small firms have inadequate facilities to preserve the raw materials in proper way and do not have sufficient storage system.	Moderate	Firm level (Small & Medium), Sector level	Limited investment from the factory owners, and information gap in the sector.
	Ensure the properly identification of the materials and control to prevent misuse of the materials that are not meeting the agreed acceptance criteria.	Only very few large firms have the mechanism to detect the materials, but most firms specifically small-sized firms are now aware of detecting materials and not aware of using specific equipment for only food contact materials.			
	Ensure dedicated equipment receiving only required materials/food contact materials or follow effective procedures (i.e. cleaning/transition procedures) to ensure that the containers do not contain any adulterants ³⁸ .				
Testing Facility	Ensure adequate testing facility.	As a whole, not a single standard testing laboratory for plastic products and materials has been setup in the country.	Major	Firm level (Small, Medium, and Large), Sector level & Regulatory level	Information gap; Lack of policy decision; & lack of regulatory measure

³⁶ BSI Standards Publication, BS EN ISO 9001:2015, Quality management systems Requirements. The British Standards Institution ((BSI) 2015. BSI Standards Limited 2015. ISBN 978 0 580 918162. ICS 03.120.10

³⁷ Union Guidance on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food as regards information in the supply chain, Traceability (Article 17 of the Framework Regulation). (Source: https://ec.europa.eu/food/sites/food/files/safety/docs/cs_fcm_plastic-guidance_201110_reg_en.pdf).

³⁸ PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf)

Establishing the Separate Quality Policy	Top management will ensure the establishment, implementation and maintenance of the quality policy which includes a commitment to continual improvement of the quality management system to regularly produce materials for food contact in compliance with the applicable requirements ³⁹ .	Maintenance of the quality policy is visible in only large firms. But in some medium and small firms don't have such policies.	Moderate	Firm level (Small & Medium), Sector level.	Lack of initiative by the management; Limited awareness raising programmes from the sector
Quality Assurance Team with responsibility and authority to independently approve/reject all materials in the process	Ensure a dedicated quality assurance team involving the active participation of management and personnel.	Specific quality assurance team is not formed in most firms except very few large firms and some medium firms.	Moderate	Firm level (Small & Medium)	Lack of specialised skills in this field
In-house Quality Control Department	Ensure fully functioning and well-documented quality management system and its processes in accordance with the requirements of the International Standard in place to assure traceability for products and services that Plastics factories provides ⁴⁰ . As a whole, PDCA (Plan-Do-Check-Act) cycle (Plan-Do-Check-Act) can be applied to the quality management system ⁴¹ . Maintain an effective Quality Control Department to meet quality standards set by	Fully functioning quality management system is not followed in most firms except very large factories and some medium factories.	Moderate	Firm level (Small & Medium)	Limited knowledge on necessity of the in-house quality control department; Lack of resources of the firms.

³⁹ BSI Standards Publication, BS EN ISO 9001:2015, Quality management systems Requirements. The British Standards Institution ((BSI) 2015. BSI Standards Limited 2015. ISBN 978 0 580 918162. ICS 03.120.10.

PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf).

⁴⁰ BSI Standards Publication, BS EN ISO 9001:2015, Quality management systems Requirements. The British Standards Institution ((BSI) 2015. BSI Standards Limited 2015. ISBN 978 0 580 918162. ICS 03.120.10.

ISO 9001 certification, (Source:<https://www.curbellplastics.com/Research-Solutions/Industry-Solutions/Certifications/ISO-Certification>)

⁴¹ BSI Standards Publication, BS EN ISO 9001:2015, Quality management systems Requirements. The British Standards Institution ((BSI) 2015. BSI Standards Limited 2015. ISBN 978 0 580 918162. ICS 03.120.10.

	buyers' and relevant international organisations ⁴² .				
Quality control and final products specifications	Follow a documented specifications for finished products.	Large factories and some medium factories verify specifications for finished products in line with their compliance for finished products. But small firms don't follow the same approach.	Moderate	Firm level (Small & Medium)	Limited understanding on verification of specification, documentation.
	Monitor the finished products to verify their compliance with specifications.				
	Ensure that every food contact material product code has one unique specification ⁴³ .				
Use of modern technology, modern equipment-machinery	Ensure use of modern technology i.e. advances in materials technology, mould design and modern machinery to go for advanced plastic materials to improve product quality and reduce cost ⁴⁴ .	Only large factories on an individual basis has own Design and Technology Centre. But as a whole, any Design and Technology Centre/research and development centre/a technology bank has not yet been established to develop materials technology, produce new moulds /dice domestically and modern machinery, develop new designs and innovative ideas.	Major	Firm level (Small, Medium,& Large), Sector Level	Limited capacity of the sector to avail modern technology, equipment or machinery.
Good Manufacturing Practices (GMP) Policy	Implement the Guidelines for Good Manufacturing Practices (GMP) for plastic materials specifically for food contact materials.	Good Manufacturing Practices (GMP) Policy is not followed in most firms except large factories and some medium factories.	Moderate	Firm level (Small & Medium)	Information gap in the management level.
Standard Operating Procedures (SOPs)	Awareness of the factories regarding Standard Operating Procedures (SOPs) and existence of these SOPs for each production process.	Very few large firms and some medium firms have the SOPs. Most firms don't maintain SOPs in the process.	Moderate	Firm level (Small & Medium), Sector level	Lack of understanding on the related issue; Limited awareness from the sector-association
	Monitor and maintain SOPs for different sections of plastics production.				
Comply with international food	Specific migration limits (SML) and maximum overall migration limits (OML) for		Minor		Low level of understanding

⁴² PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf)

⁴³ PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf)

⁴⁴ Plastic Solutions for a Wide Range of Markets, Source: <https://www.curbellplastics.com/Research-Solutions/Industry-Solutions/Markets>

contact regulation for plastic food contact materials	the plastic food contact materials to be 60mg/kg food ⁴⁵ .	Very few large firms and medium firms are able to comply with international food contact regulation and testing requirements.		Firm level (Small & Medium)	regarding international regulation
	Compliance testing requirements (for example, food simulants, test duration & temperature).				
Identification and prevention of difficulties and bottlenecks in the production process	Ensure the removal of the barriers identified in the production process.	Very few large firms have the mechanism to identify bottlenecks.	Minor	Firm level (Small & Medium), Sector level	Knowledge gap in the management level regarding the techniques.
Record of product rejection and identification of prevention mechanism	Ensure the record of product rejection, reasons behind this rejection and identify the prevention mechanism to reduce the number of rejections.	Very few firms identify the reasons behind the rejection and take prevention measures except large factories and very few medium firms.	Moderate	Firm level (Small)	Lack of initiative by the authority
Complaint handling, product recall and incident management	Implement the system for recording and investigating complaints including product recall if necessary to get recommendations for remedial actions ⁴⁶ .	Very few large firms have the system for complaint handling, product recall and incident management.	Moderate	Firm level (Small & Medium)	Limited knowledge on complaint management.
	Follow the measures to confirm that recalled products are not released for food contact use without extensive investigation and proper authorisation .				
Regular internal and supplier audits	Ensure regular internal audits or self-assessments to monitor the implementation of GMP.	Internal and supplier audits on a regular basis are done in very few firms' i.e. large factories and some medium firms.	Moderate	Firm level (Small & Medium)	Limited resources of the firms;

⁴⁶ PlasticsEurope, EuPC and Cefic-FCA, Guidelines for Good Manufacturing Practice for Plastic Materials and Articles Intended for Food Contact Applications, June 2011. (Source: https://www.plasticseurope.org/application/files/7315/1862/2612/PlasticsEurope_Guidelines_for_GMP_updated_June_2011.pdf).

Quality compliance of the plastics sector plays a crucial role for any firm since the quality and safety of the finished goods are required to be at a standard level, especially for the products or articles that are intended to come into contact with food. That's why, operating firms of the plastics sector need to address the quality compliance issues at all levels of their operations, in order to attain a larger market access, higher price and to become more competitive.

The table above gives us an idea about the international standards and best practices followed globally in terms of quality compliance and where our sampled firms stand. From the table, it can be understood that all the identified indicators of 'quality compliances' mostly have a moderate gap with their recommended or standard levels and in the case of some indicators the gap is major. If these moderate and major gaps are correctly addressed and removed, then the plastics sector of Bangladesh will be more compliant sector in terms of quality.



Mr. Aman Ullah, owner of *Aman Plastic Industries*, started his journey in 2008 with only taka 90000 with one injection moulding machine. His dream was to become an icon in plastics toys products. He wanted to ensure safe toys in terms of mechanical, physical and chemical safety. His vision is to brand Bangladesh in the global toy arena and provide employment. In his word "I am Bangladesh".

It has been producing different types of toys for domestic market. Moreover, his company has earned popularity among the international buyers in terms of quality and competitive price. This reputation gave him opportunity for market expansion. He is going to send his first consignment to India. Though he is meeting the quality requirements, still he is facing challenges to comply with environmental and social compliance. In this backdrop, this toy-maker wants re-location of his old-Dhaka based factory in the special zone as soon as possible.

Besides market expansion, the company has a plan for product diversification, compliance, innovation, creation of its own brand. Huge investment is required to execute its plan. According to Mr. Aman, the government agencies are already providing support for the SMEs; but further support from the government is necessary for the SME exporters. SME exporters' face challenges to meet the international standards and compliance (environmental, social and quality) requirements and also face difficulties for limited testing facility and high dependency on imported raw materials. Besides, Local producers' have to rely on the technical professionals from abroad for product design and quality. Allocation of special industrial zone with required amenities and technical support will help SME exporters' to produce standard products to flourish its export destinations.

Major gaps were found in case of quality compliance indicators such as existence of testing facility and use of modern technology, modern equipment-machinery. In addition to these, moderate gaps were identified in case of indicators such as raw materials supplier selection, specifications, verification and acceptance of raw materials, labeling and labeling documentation, traceability system, storage and preservation, packaging, warehousing and transportation of raw materials, quality control department, policy and team, Good Manufacturing Practices (GMP) Policy, Standard Operating Procedures (SOPs), record of product rejection and identification of prevention mechanism, complaint handling, product recall and incident management, regular internal and supplier audits. Lack of initiative by the authority and lack of technical knowledge are the main reasons behind these.

Chapter-5: Training Needs Assessments on ESQ Compliance for the Plastic Goods Industry in Bangladesh

5.1 Training Needs Assessment for Plastics Sector in Bangladesh:

The previous chapter (chapter-4) of the present study has clearly identified the existing ESQ gaps, currently the plastics sector are facing. This chapter analyses the current situation of the plastics factories and their association in fulfilling the training requirements and suggests a list of trainings to minimise the compliance-skills gap in the plastics sector of the country. These suggested capacity building programmers- trainings, workshops, and seminars are based on the findings from the secondary literature, consultation meetings, interviews from firms, and associations, etc. The suggested training chart is categorised in to three different sections- environmental, social and quality compliance and indicated the level of participants' for each programme with duration.

5.2 Training Situation Analysis:

Some of the firms interviewed, especially the large and medium ones are organising and managing a formal training schedule for their workers and managers. For an example, the Bengal Plastics, Durable Plastics Ltd. (RFL), Horizon and Erebus Plastics maintain a structured training plan on a regular basis for the newly-recruited workers. Most of the other firms don't offer in-house formal trainings regularly, rather they give instructions on different issues for a basic idea. They provide trainings on different topics covering issues like:

- Health & Safety;
- First Aid;
- QMS/ EMS;
- Fire safety/ Hazard & Evacuation;
- Occupational Safety;
- Uses about PPE;
- Disciplinary action;
- Emergency preparedness;
- Standard Operating Procedures (SOP);
- Internal Audit System etc.

Bangladesh Plastics Goods Manufacturers' & Exporters' Association (BPGMEA) also provides some trainings through Bangladesh Institute of Plastic Engineering and Technology (BIPET) on the following topics-

- Injection moulding machine operation and maintenance;
- Plastic extrusion and blow moulding machine operation and maintenance;
- Plastic film and woven bag processing technology;
- Merchandise;

- Exporting marketing course;
- Production management;
- Entrepreneurship development.

Above-mentioned trainings are provided by experienced professionals of BITAC and BUET.

Suggested Trainings:

- **Environmental Compliance:**

Environmental compliance is becoming an important issue in the plastics sector. To access the international markets, many companies face pressure from the buyers to maintain environmental compliance. Some issues which are critical for environmental compliance came up during the consultation meeting– solid waste management, water management, air pollution, heat reduction management, environmental audit etc. According to the discussants in the consultation meeting, awareness is less among the top level management and worker and supervisory level compared to the mid- level managers. Lack of training is one of the reasons for low level of awareness in this field. Following suggested trainings would help to achieve environmental management in the plastics sector-

Table-5.1: Training Needs Assessment for Environmental Compliances of the Plastics Sector in Bangladesh

Sl No.	Contents	Type of Programme	Expected Outcome	Participants' level	Duration (days)
Pollution Control Management					
1.	Waste Management:				
	• Disposal of Waste	Training	Reduction of environmental hazards formed by waste disposal.	Worker and Supervisor	1-2 day
	• Solid Waste & Waste Water Management	Training	Safe operation of solid waste & improved water management system	Mid	1-2 day
2.	Air & Sound Pollution Management	Training	To get comprehensive knowledge and practices associated with air & sound pollution control.	Mid, Worker and Supervisor	1-2 day
3.	Cleaner Production Method	Training	Reduction of use and release of toxic chemical substances.	Mid, Worker and Supervisor	2-5 days
4.	Cutting Oil Management	Training	Improved management for recycling and disposing of cutting oil.	Mid, Worker and Supervisor	1-2 day
5.	Chemical Management	Training	Improved management for chemicals	Mid, Worker and Supervisor	1-2 day
Environment Management					
6.	Environmental Compliance Monitoring Mechanism & Risk Assessment	Training	To align company policies with current environmental legislation & Identification and assessment of the production threats affecting the environment.	Mid	2-5 days

7.	Environmental Management System (EMS)	Training	Minimization of knowledge gaps in the current EMS practices	Mid	2-5 days
Energy Management					
8.	Heat Reduction Management	Training	To ensure better heat reduction management.	Mid, Worker and Supervisor	1-2 day
9.	Energy Efficiency:				
	• Energy Saving Methods	Training	Reduction of energy cost	Mid, Worker and Supervisor	1-2 days
	• Tracking and Measuring Energy Use	Training	Monitoring energy use	Mid	2-5 days
Recycle Management					
10.	Plastic Waste Recycling Process	Training	Improved waste management for recycling of rigid plastics.	Mid	5-7 days

Awareness Raising Programmes (Seminars, workshops)

Sl.	Contents	Expected Outcome	Participants' level	Duration (days)
1.	Recycling and Sustainability in the Plastics Sector	Minimization of waste generation and its impact on natural resources.	Top	01 day
2.	Selected Countries' Experiences with Plastics Waste Management	To be highly informed about standardized plastic waste management.	Top	01 day
3.	Benefits of Recycled Plastics	Spread awareness about benefits of recycled plastics.	Top	01 day
4.	Impact of recycling of plastic on environment	Reduction of plastics waste generation and conservation of energy use.	Top	01 day
5.	Relocation of small recyclers from old Dhaka	To decrease the existing recyclers pressure of old Dhaka.	Top	01 day
6.	International Best Practices and Strategies to Improve Plastics Recycling in Bangladesh	To comply with international plastics recycling practices and standards.	Top	01 day
7.	Site Selection and Analysis	Minimization of travel distance and saving of energy cost and time.	Top	01 day
8.	Present Status of Plastic Recycling in Bangladesh	To be updated with the current plastics recycling practices in Bangladesh.	Top	01 day
9.	National 3R strategy 2010	To increase awareness for waste management.	Top	01 day

Common Awareness Programme	Expected Outcome	Participants' level	Duration (days)
	Raising awareness about environmental compliance	Top, Mid, Worker and Supervisor	One day

- **Social Compliance**

In the plastic industry of Bangladesh, the implementation of social compliance issues are less compared to other industries. From the findings from the consultation meeting, safety and security (Health, Fire & Electricity), compensation package, working contract, machine safety, labour law implementation are important factors for social compliance. The awareness gap of the top level and mid-level management is moderate. Workers and supervisory level this awareness gap is high. They are not aware of their roles, duties, and responsibilities. The main reason behind the awareness of top level is the lack of motivation for implementing social compliance. Mid-level managers are aware of the issues of compliance but they do not have any proper knowledge on social issues. Following trainings will help the professionals to learn the social compliance issues and monitor the implementation of compliance.

Table-5.2: Training Needs Assessment for Social Compliances of the Plastics Sector in Bangladesh

SL.	Contents	Type of Programme	Expected Outcome	Participants' level	Duration (days)
1.	Fundamentals of Occupational Health & Safety	Training	Ensuring a safe working environment and capacity building by being more informed.	Mid	2-5 days
2.	Occupational Health & Safety: Basic Course: <ul style="list-style-type: none"> • Housekeeping • Accident Prevention • PPE • Machine Safety • Chemical Safety • Personal hygiene • Electric safety • Fire safety 	Training	Making employees more aware of safe working environment	Worker and Supervisor	2-5 days
3.	Fire & Electric Safety Management	Training	To decrease the risks of fire accidents.	Mid, Worker and Supervisor	2-5 days
4.	Machine Guarding & Equipment Safety	Training	To protect against and prevent injury from equipment.	Mid, Worker and Supervisor	2-5 days
5.	Chemical Inventory Management Procedure	Training	Ensuring safe and better handling of Chemicals.	Mid, Worker and Supervisor	2-5 days

6.	Maintenance of Material Safety Data Sheet (MSDS)	Training	Informing employees regarding different format of MSDS	Mid, Worker and Supervisor	2-5 days
7.	Work safety issues and usage of PPE	Training	To know the different work safety issues and usage of PPE.	Worker and Supervisor	2-5 days
8.	Effective monitoring mechanism on use of PPE	Training	To ensure the usage of PPE on regular basis.	Mid	2-5 days
9.	International Standards in Social Compliance	Training	Making employees more aware about the international standards.	Mid and Top	1-2 days
10.	Methods of Housekeeping	Training	Improved cleanliness and housekeeping.	Mid, Worker and Supervisor	1-2 days
11.	Emergency and evacuation management	Training	Efficient Evacuation and Emergency Management.	Mid, Worker and Supervisor	2-5 days
12.	Formation, roles and responsibilities of Participation, health and safety committee	Training	To know the roles and responsibilities of the committee, workers and management.	Mid, Worker and Supervisor	2-5 days
13.	Leadership, Team Building & Complete Management	Workshop	Creating motivation, better communication and strengthening team sprits.	Mid and Top	1-2 days
14.	Gender Discrimination	Workshop	Raising awareness	Mid	1-2 days
15.	Maternal Health Safety Issues	Training	To get better knowledge of health safety issues at work	Female Worker	1-2 days
16.	Bangladesh Labour Law	Workshop	To get better knowledge of BLR.	Mid and Top	1-2 days

17. Necessity of Social Compliance	Seminar	Raising awareness about social compliance.	Top	01 day
18. Corporate Social Responsibility (CSR)	Seminar	Motivating to fulfill social responsibilities.	Top	01 day

Common Awareness Programme	Expected Outcome	Participants' level	Duration (days)
	Raising awareness about social compliance	Top, Mid, Worker and Supervisor	01 day

- **Quality Compliance**

Quality compliance is another crucial factor for any manufacturing process. For ensuring quality, organisations need to fulfill quality requirements demanded by the buyers. The major issues of the quality compliance are - quality lab facility, traceability, global requirements, implementation of Standard Operating Procedures (SOP), production faults etc. Discussants in the consultation meeting agreed, there is higher level of awareness gap among the top, mid and workers. Shortage of skilled manpower, inadequate information, and limited training opportunities are the reason behind the awareness gap.

Table-5.3: Training Needs Assessment for Quality Compliances of the Plastics Sector in Bangladesh

Sl No.	Contents	Type of Programme	Expected Outcome	Participants' level	Duration (days)
Operations and Maintenances					
1.	Different Production Process- Injection, blow, Extruder	Training	To know different production process.	Worker and Supervisor	2-5 days
2.	Different Parts of Machinery	Training	Improvement of machine operation.	Worker and Supervisor	2-5 days
3.	Machine & Mould Maintenance	Training	To reduce mould faults.	Worker and Supervisor	2-5 days
4.	Basics of Resin Types	Training	Effective use of resins.	Worker and Supervisor	2-5 days
5.	Labeling of raw materials and finished product (compound, year, quarter, color-code, size and style)	Training	Improved Traceability.	Mid, Worker and Supervisor	2-5 days
6.	Resin Identification Code (RIC) ⁴⁷	Training	Improved identification of plastic resin.	Mid	2-5 days

⁴⁷A set of symbols appearing on plastic products that identify the plastic resin out of which the product is made.

7.	Suppliers' Selection and Evaluation	Training	Reliable sources of materials.	Mid	1-2 days
Standard Operating Procedure (SOP)					
8.	Guidance for Preparing Standard Operating Procedures	Training	To get better guidance for preparing SOP.	Mid	2-5 days
9.	Good Manufacturing Practice (GMP)	Training	To ensure quality production.	Mid	2-5 days
10.	REACH (Registration, Evaluation and Authorisation of Chemicals) ⁴⁸	Training	To enhance the competitiveness.		2-5 days
11.	Total Quality Management (TQM)	Training	To improve the quality rendered by the products and the productivity of the resources handling the product.	Mid	2-5 days
12.	Step by step approach for ISO 9001:2015	Training	Improvement of organisation s' credibility and image.	Mid	2-5 days

⁴⁸REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry.

13.	Problem Solving Approach	Training	To learn problem solving technique	Mid	2-5 days
14.	Quality Improvement Plan	Training	To improve quality through focused targets and actions.	Mid	2-5 days
15.	Quality Cost Measurement Plan	Training	To track cost for implementation of quality.	Mid	2-5 days
Testing and Quality Improvement					
16.	Designing Plastic Parts	Training	To get better knowledge for designing plastic parts.	Mid	2-5 days
17.	Productivity Improvement	Training	Improved productivity.	Mid	2-5 days
18.	Handling Production Bottlenecks	Training	Reduction of production bottlenecks	Mid	2-5 days
19.	Kaizen Implementation	Training	To ensure continuous improvement.	Mid	2-5 days
20.	Testing of Plastic Raw Material & Product	Training	To ensure the quality of raw materials and finished products.	Mid	2-5 days
21.	Identification of Restricted Substances List (RSL)	Training	To be aware of the restricted substances in the production.	Mid	2-5 days

22.	Material Handling System	Training	Better handling of materials and finished goods.	Mid	2-5 days
23.	New Strategies in Supply Chain Management	Workshop	Better informed regarding the strategies for supply chain management	Top	01 day
24.	New Trends in Plastics Technology	Workshop	To know the new practices of plastics technology.	Top	One day
25.	Hazard Analysis for Risk based thinking	Workshop	To decrease the risk associated with hazard level	Top	One day

Common Awareness Programme	Expected Outcome	Participants' level	Duration (days)
	Raising Awareness about Quality Compliance	Top, Mid, Worker and Supervisor	One day

Chapter 6: Development of Industry-wise and firm-level awareness-building strategy and plan on ESQ Compliance.

This section of the study aims to shed light on the strategic needs of the plastics sector. It will help improve the overall compliance capacity, situation and understanding, especially regarding environmental, social and quality compliance at sector level. In addition to the training needs suggested in chapter 5, the study provides tailor-made interventions through area-specific strategy and action plan. The objectives of the suggested programmes and activities are to improve specific and targeted knowledge, skill and attitude towards ESQ to be performed by all levels of professionals and policy makers.

6.1 Major Strategic Gaps:

This section of the study focuses on the strategic needs of the plastics sector in order to improve the overall compliance especially environmental, social and quality issues. While analysing the gaps in ensuring compliance at factory-level, mostly two kinds of gaps have been found in each level. These gaps are: Awareness Gap and Resource Gap.

Awareness Gap: Awareness Gap can be two types like: Information/Knowledge gap and Motivation Gap.

- **Information/Knowledge Gap:** Where firms have limited knowledge and idea on compliance issues, and how to meet the compliance requirements to get international recognition.
- **Motivation Gap:** In this type of gap firm-owners do have the knowledge and are aware of the non-compliance consequences in some cases, but are not enough motivated to invest in compliance within the factory. They are either happy with their existing level of export and export destinations and do not have any plan to go beyond that, or they find that the associated costs are higher than the expected benefits.

Resource Gap: Resource gap is one of the main matters of concern for plastic processing industry. This industry has lack of unskilled labour force, testing laboratory, use of modern machinery and innovative mould design facilities, plastic waste management & recycling facilities in Bangladesh.

- **Unskilled Labour Force:**

Whole plastic industry especially small and medium sized enterprises suffer skilled labour forces. Skilled workers for operating machines are required for manufacturing well finished products. Severe lack is seen in case of mould making, operating hi-tech machine and computer-based design. Most of the firms hire untrained workers that hinder quality production. So training for the unskilled workers in the plastics sector needs to be ensured. Because of incurring additional cost, medium and small firms have less interest to provide regular training to their workers. On the other hand, local educational institutes have limited capacity to teach and train potential professionals about polymer science and technology.

- **Unavailability of Standard Testing Laboratory:**

One of the major challenges of plastics sector of Bangladesh is the lack of testing facilities. There is no standard testing laboratory in the country to test quality and strength of plastics goods. BSTI, BCSIR do not have the capacities to test the parameters. They do not have recognition also. Buyers do not know that such institutes exist in Bangladesh. Different test parameters (Final Product based) are done by the leading international certification of standards providing institutions-3rd parties (owner-EU, America), like-TÜV Rheinland (German based company), SGS, Bureau Veritas, Intertek etc. from foreign countries as these 3rd parties in Bangladesh are not doing these tests only for few products due to high costs of machinery and equipment, it is not feasible to do these tests only . As a result exporters have to send the samples to China and Singapore's SGS, Bureau Veritas, Intertek etc. for testing . Some tests can be done from Intertek, India but all tests can't be done in India. This increases both the time and money and cost of doing business. So a modern testing laboratory and testing centre should be established as soon as possible.

- **Lack of Modern Machinery Use and Mould Manufacturing:**

Modern technology is highly needed for the rapid growth of this sector. Absence of modern equipment and machinery, partly mould-making units puts Bangladesh at a disadvantage situation. Government incentives and policies are not enough to motivate entrepreneurs to invest in such costly technology. Without investing on high tech machines and mould manufacturing units, Bangladesh would not be able to take advantage of low cost production compared to that of China and India.

- **Lack of Plastic Waste Management & Recycling Facilities:**

Plastic being a boon can turn into threat for mankind if it is not managed properly. Some plastics industries have in house re-cycling facilities of their own . But there is no systematic mechanism of plastic waste recycling in Bangladesh. Government and private sector can come forward to establish central recycling industry. A committee may be formed to oversee plastic waste management, the committee may be formed with the participation of Department of environment, Municipality, NGO's, BPGMEA, experts and relevant stakeholders.

Strategies to Address the Information/Knowledge Gaps:

These strategies focus on enhancing the knowledge level on ESQ compliance issues. The target stakeholders are not limited to firms in this regard and also included associations, government agencies, policy-makers and firms themselves. The strategies include a wide range of programmes from database to information dissemination, awareness and dialogue programme⁴⁹

⁴⁹ (Note: The role of relevant actors for implementing below mentioned activities is explained in details in Action Plan)

Table-6.1: List of strategies and activities to address information/knowledge gap

Objective	Activity	Priority	Outcome/Expected Results
Access to Updated Information on Compliance	<ul style="list-style-type: none"> Establish a database with detailed information on compliance requirements on Environmental, Social and Quality Issues. The database could be managed by the associations/ related government association (e.g. BPGMEA). 	High	Easy access to updated information on Compliance
Dissemination of Compliance-related Information	<ul style="list-style-type: none"> Associations should disseminate updated information to their member-factories. Establish Compliance Cell/ Compliance Help Desk in each association. To establish the One Stop Service Point through online/dedicated institutions. Develop handy manuals/ handbooks/ leaflets on ESQ Compliance issues and parameters. Organise workshop on the importance of following Standard Operating Procedures (SOPs) for owners and top-level managers. 	High	To make all exporters aware of Compliance-related Information
Experience Sharing	Create easily accessible Social Networking Platform for knowledge sharing on ESQ issues.	Medium	Creating a Pool of Experts, Improving and encouraging compliance
Monitoring of ESQ Compliance	<ul style="list-style-type: none"> Establish a regular monitoring mechanism by Associations to strictly monitor compliance situation and for suggesting improvement strategies to member-firms. The plastics sector Business Promotion Council can take a lead in the co-ordination and monitoring. 	High	Ensuring ESQ Compliance with strictly controls

Industry-Academia Collaboration	<ul style="list-style-type: none"> Academia-industry joint platform should be formed so that research findings and latest updates on ESQ compliance issues can be shared with the industry. And the graduates related to the sector can get easy job placement. 	Medium	Development of skilled manpower for the sector. Improvement of product quality and standardisation of plastic materials and products.
Technical support	<ul style="list-style-type: none"> Provide information and supports to receive certification like BSCI, Sedex, etc. Hire international-level technical experts for firms to work directly with the firms, staying inside the firms to develop compliance, especially the quality compliance. Cost may be subsidized by the government/ donor-funded projects or shared by the beneficiary firms. <ul style="list-style-type: none"> SME firms should be given priority Appoint quality production experts to work with the mid-level managers for improving overall quality of products. Initiate mentoring programmes with international experts to create a pool of quality mid-level managers. Initiate special support mechanisms (both financial and technical) for SME firms to improve their compliance situation. 	High	Creating a pool of quality mid-level managers, improving compliance situation within the factory, ensuring quality products
Within the factory meeting	Organise pre-production/co-ordination meeting with each section of workers separately on a regular basis to make understand their individual roles in achieving compliance.	Medium	To make the workers aware of their roles in maintaining compliance
Online learning platform	Develop and offer online courses on compliance for mid-level managers and supervisors which could be accessed free and throughout the year for development of capacity. Possibility of industry-academic co-operation can also be explored in this regard.	Medium	Skill development of mid-level managers and supervisors

Strategies to Address the Motivation Gap:

Motivational strategies are designed to encourage the firm-owners to invest in compliance issues at their factory premises. This involves experience sharing, studies and research findings dissemination, financial support and provisions for awards and recognitions.

Table-6.2: List of strategies and activities to address motivation gap

Objective	Activity	Priority	Outcome/Expected Results
Experience Sharing	Organise visits/ study tours to top plastic factories.	Medium	Motivating factory-owners in implementing compliance issues and developing their expertise.
Sustainable production	Provide technical assistance to firms to encourage and ensure sustainable production with efficient uses of resources.	High	Development of quality products.
Remediation Financing	Provide financial assistance to factories requiring remediation for meeting compliance standard	High	Maintaining compliance standard.
Award and Recognition	Provide awards to champion factories who meet compliance requirement and who show significant progress in implementing compliance measures.	Medium	Encouraging champion producers to make further progress which also will motivate other owners to fulfill compliance requirements.

- **Strategic Plans for Resource Gap:**

Table-6.3: Strategic plan for estimating resource gap

Objective	Activity	Priority	Outcome/Expected Results
Improving Human capital in plastics sector	<p><i>Strengthening Bangladesh Institute of Plastic Engineering and Technology (BIPET):</i></p> <p>To become an apex institute in the field of polymer science & technology and sustainable growth of plastics sector, BIPET was formed. Since then this institute is working for the plastics sector development through capacity building programme.</p>	High	<ul style="list-style-type: none"> • Development of skilled manpower for plastics sector. • Improvement of quality control and standardization of plastic materials and products • Advancement of design and development of mould dies and plastic products • Conducting advance research on plastics sector like waste management, recycling and polymer science
	<p><i>Industry and university collaboration:</i></p> <p>The collaboration between university and industry is very important. The industry will suggest the university about the skill gap of the sector. The university will produce graduates according</p>	Medium	<ul style="list-style-type: none"> • Making expert plastic technologist and entrepreneurs.

	the industry demand. This will mitigate the skill shortage within the industry.		<ul style="list-style-type: none"> • Conducting effective research on polymer science and plastics sector.
Facilitating testing facilities for the exporters	<p><i>Establishing modern testing lab with collaboration of existing international testing and certification providing bodies:</i></p> <p>Modern testing lab for plastic products is very urgent for the competitiveness of this sector. There is no testing facilities for export oriented products in our country. Exporters test their products in SGS, BV, 2Intertek in Hongkong, Singapore, India, and China etc. These international testing and certification bodies have no testing facilities in Bangladesh. Due to this reason, Exporters incur loss with both time and money.</p>	High	<ul style="list-style-type: none"> • Testing facilities will be available • Testing and certification cost of the exporters will reduce. • Lead time of the exporters will reduce and exporters will be more competitive in global market.
Establishing mould design and manufacturing centre	Bangladesh is at the disadvantage situation for using modern machinery for plastic goods production. On the other hand, Bangladesh needs investing to mould design centre and manufacturing unit in the country.	High	<ul style="list-style-type: none"> • Backward linkage industry will improve • Product diversification • Competitive price in the global market
Plastic waste management & recycling facilities	Bangladesh has no central plastic waste management and recycling facilities. Some industries have some recycling facilities for their own use. Bangladesh need to develop a central plastic waste management system and establish recycling unit.	High	<ul style="list-style-type: none"> • Sourcing of Plastic raw materials will be easy • Protection and saving of environmental resources • Society will be clean, beautiful and healthy place to live

Policy-level compliance facilitating strategy:

Besides the strategies to improve the levels of knowledge, awareness and motivations, and for improving the sectoral capacities in handling compliances, some policy-level interventions that are required to develop the overall ESQ situation of the plastics sector. These strategies will make an enabling environment for effective implementation of strategies taken by the firms or associations. The strategies include some infrastructural up-gradation, policy-level incentives etc. these strategies.

Table-6.4: Strategic plan for Policy-level compliance facilitating strategy

Objective	Activity	Priority	Outcome/Expected Results
Infrastructure development	<p><i>Plastic Industrial park:</i> Plastic Industrial park should be set up immediately and industries located at old Dhaka needs to relocate in the industrial park. Government of Bangladesh has decided to set up Industrial park at Baraborta, Sirajdikhan, Munshiganj.</p> <p><i>Special Economic Zone:</i> BPGMEA has plan to establish Special Economic Zone on plastic near Dhaka at Araihasar, Narayangonj, Narshindi Area. For the benefit of economy Government may help this initiative by BEZA.</p>	High	Relocation of old Dhaka based factories which will ultimately enhance the quality production and exports.
Dialogue Platform	Establish a stakeholder's platform to conduct dialogue and improve co-ordination firms, association, government agencies, NGOs and any other organisation working in the sector.	Medium	Improving co-ordination among the relevant authorities.
Policy Incentive	Suggest higher incentives in policies for firms maintaining compliance gradually decrease	High	Improving compliance scenario.
Learning from the RMG	<p>Replicate the learnings, experience and strategies taken by the RMG industry for improving and encouraging compliance</p> <ul style="list-style-type: none"> Follow corrective action plans/ guidelines set by Accord/ Alliance where applicable; <p>Factory inspection/ audit should be conducted/ monitored by relevant government agencies in collaboration with donor organization.</p> <ul style="list-style-type: none"> Categorise firms on their level of compliance; and Develop national-level corrective action plan. 	High	Improving compliance scenario at the factory level.
Introduction of placement-based training programmes	<ul style="list-style-type: none"> To motivate and encouraged skill enhancement and for Recognition of Prior Learning (RPL). Piloting of placement programmes 	Medium	Skill development.

Publicity Strategy:

These strategies look into the overall branding and market access situation of the sector. This includes branding, exposure of the compliance situation of the sector and international meet-ups. The focus to these publicity strategies would be to highlight the compliance present in the sector and to highlight the compliant factories in the global plastics market.

Table-6.5: Strategic plan for Publicity Strategy

Objective	Activity	Priority	Outcome/Expected Results
Branding of the plastics sector	<ul style="list-style-type: none"> • Develop a database with information on compliant ESQ factories showcasing their products • Develop publicity materials, audio visuals, documentary etc. on plastics sector industry to be showcased in international trade fairs. 	High	Proper branding will create a competitive edge in the international markets.
Exhibition of products	Assist firms financially, especially SMEs to participate in international sourcing fairs, trade fairs, expo etc. with quality products.	Medium	To familiarise products in the global market.
Forward Marketing	Establish liaison of compliant factories with brand buyers with own design products.	Medium	To capture international market share through own design; Competitive edge in the plastics products design.
Get featured in international magazines/ journals	Publish articles on Bangladesh’s plastics sector and its prospects on international journals, magazines, plastic-related publications etc.	Medium	Promotion of plastics products of Bangladesh.
International Meet-up	Organise buyers-sellers meet-up with international buyers and investors to showcase products and sector potentials.	Medium	To get new buyers for the plastics products.

Capacity Development Strategy:

Development of capacities carries the utmost importance in improving compliance, especially for quality compliance. Moreover, the SME firms also need knowledge and skills for every level, in maintaining and ensuring social and environmental compliance. Strategies are necessary in order to ensure implementation of suggested training programme. Strategies should be developed in a manner that long-term benefits could be get through the developed programmes.

Table-6.6: Strategic plan for Capacity Development Strategy

Objective	Activity	Priority	Outcome/Expected Results
<p>Capacity development</p>	<ul style="list-style-type: none"> • Develop detailed reference training modules on ESQ issues including inputs from international standards. • Modules can be clustered based on issues and their relevance. The modules should mostly include graphical representations, where required for easy understanding of the trainees. Possible modules may include: <ul style="list-style-type: none"> • Training module for standard techniques of production; • Training module for improved knowledge on occupational health and safety and other labour issues; • Handbook/ module on labour laws of Bangladesh; • Training module for understanding the quality of raw materials and finished products; • Training modules on managerial skills: Negotiation, pricing strategies and supply chain management for plastic goods; • Training module on machine operation (Injection moulding, Extrusion and Blow moulding, Roto-moulding etc. machine operation and maintenance); <ul style="list-style-type: none"> • Training modules for quality managers for total quality management; and • Training programmes should be carried out for Trainers to create a pool of experts and master trainers in the related issues. The Trainers would later provide trainings at factory ends or at trainings organised by the associations. The objective is to disseminate the knowledge to a larger group of beneficiaries. 	<p>High</p>	<p>Building a skilled workforce in the sector</p>

	<ul style="list-style-type: none"> • International experts should be involved to create quality expert pools. 	Medium	
Trainings at Firm-level	<ul style="list-style-type: none"> • Individual arrangement should be developed to conduct training programmes at a firm-level. • Trainings could be provided by the associations, the <i>Plastic Sector Business Promotion Council and BIPET</i>. 	High	Skill development

Activity Plan

Sl.	Activity	Responsible Authority	Y ₁ Q ₁ ⁵⁰	Y ₁ Q ₂	Y ₁ Q ₃	Y ₂ Q ₁	Y ₂ Q ₂	Y ₂ Q ₃
1.	Development of Training Modules for Workers and Mid-level Managers	PIU, BPGMEA						
2.	Awareness-building Workshops for Top-level managers and owners on benefits of compliance	PIU						
3.	Establish database with detailed information on compliance requirements	PIU, BPGMEA						
4.	Implementation of Training Programmes for Trainers based on module	PIU, BPC, BPGMEA						
5.	Development of Social Networking Platform on ESQ compliance	PIU, BPC, BPGMEA						
6.	Development of online course for mid-level managers	PIU, BPC						
7.	Mentorship programme with international technical experts on product design and quality	PIU, BPGMEA						
8.	Orientation programme for association officers on compliance guidelines	PIU, BPGMEA						
9.	Establish compliance monitoring cell	PIU, BPGMEA						
10.	Handbook / leaflets/ brochures on: <ul style="list-style-type: none"> • Environmental, Social and Quality Compliance 	PIU, BPGMEA						

⁵⁰ Y and Q are Year and Quarters respectively

11.	Policy-level dialogue programme for encouraging compliance at a national-level (award/ recognition/ incentives)	MoC, PIU, BPGMEA						
12.	Research works on - <ul style="list-style-type: none"> • cost- benefit analysis of compliance vs. compliance • compliance requirements • international experience • international standards etc. 	MoC, PIU, BPC						
13.	Establish a central plastic waste management and recycling facility	PIU, BPGMEA						
14.	Establish a mould design and manufacturing centre	PIU, BPGMEA						
15.	Establish a dedicated accredited lab for testing chemicals and plastics products	PIU, BPGMEA						
16.	Establish a design and technology center	PIU, BPGMEA						
17.	Develop documentary showcasing compliant factories	PIU						
18.	Study tour at international compliant factories	PIU, BPGMEA						
19.	Collaborated training programmes with international institutes	PIU, BPGMEA						
20.	Strengthening BIPET for sector development (e.g. Skilled manpower, quality control, standardisation of design & products)	PIU, BPGMEA						

Bibliography

1. Chakma, J. (2018, March 19). Plastic industry shows promise as demand rises. *The Daily Star*. Retrieved from <https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146>.
2. Current status of plastic production, prospects and training of manpower in Bangladesh. Retrieved from <https://www.banglajol.info/index.php/JCE/article/view/34801>.
3. Ara, A. (2018, July 24). Exports of plastic products slump. *The Financial Express*. Retrieved from <https://thefinancialexpress.com.bd/trade/exports-of-plastic-products-slump-1532407552>.
4. Phan, A. (2018, October 3). The true value of plastic waste. *The Dhaka Tribune*. Retrieved from <https://www.dhakatribune.com/opinion/op-ed/2018/10/03/the-true-value-of-plastic-waste>
5. Chakma, J. (2018, August 12). Plastic export tumbles. *The Daily Star*, Retrieved from <https://www.thedailystar.net/news/business/plastic-export-tumbles-1619485>.
6. Ahmed, S. (2019, January 2). Plastic exports maintain rising trend. *The Independent Bangladesh*. Retrieved from <http://www.theindependentbd.com/post/181467>.
7. Ahamed, M. A Report on Plastic Industry of Bangladesh. *Japan Bangla Business Centre*. Retrieved from <http://jbbc.co.jp/wp-content/uploads/2014/08/A-Report-on-Plastic-Industry-of-Bangladesh.pdf> .
8. UNESCAP. (2011). Enabling Environment for the Successful Integration of Small and Medium-sized Enterprises in Global Value Chains: Country Studies on Bangladesh, Nepal and Sri Lanka. Retrieved from https://www.unescap.org/sites/default/files/8%20Annex%20I_0.pdf.
9. Moazzam, G.K & Sehrin, F. Export-oriented plastic industry of Bangladesh: Opportunities and Challenges. (January 27 ,2015). *The Financial Express*. Retrieved from <https://cpd.org.bd/export-oriented-plastic-industry-bangladesh-khondaker-golam-moazzem-farzana-sehrin-cpd/> .
10. Islam, M. S., Hasan, M. M., & Hossain, M. M. (2017). Current status of plastic production, prospects and training of manpower in Bangladesh. *Journal of Chemical Engineering*, 30(1), 69-76. <https://doi.org/10.3329/jce.v30i1.34801>.
11. Sadek, M. A. Z., (2017). Demand Dynamics of Bangladeshi Plastic Products: A Case on Pharmaceutical Primary Packaging Materials. *Arabian J Business Management Review* 7:291. Retrieved from <https://www.omicsonline.org/open-access/demand-dynamics-of-bangladeshi-plastic-products-a-case-on-pharmaceuticalprimary-packaging-materials-.php?aid=86676> .
12. Huq, T. S. (2015, February 6). *Environmental Challenges of Plastics Waste in Bangladesh. [PowerPoint slides]*. Retrieved from www.mpma.org.my/Documents/Bangladesh.pdf.
13. Khan, R. A. (2019, January 17). Plastic pervades all. *The Independent Bangladesh*. Retrieved from <http://www.theindependentbd.com/post/183549>.
14. Islam, S. (2017, February 16). Plastic industry zone completion by 2018. Plastic industry zone completion by. 2018. *The Daily Asian Age*. Retrieved from <https://dailyasianage.com/news/48613/plastic-industry-zone-completion-by-2018>.
15. Per capita plastic use to grow five-fold by 2030. (2018, January 30). *The Financial Express* Retrieved from <http://www.today.thefinancialexpress.com.bd/print/per-capita-plastic-use-to-grow-five-fold-by-2030-1517244272> .

Annex 1



Export Competitiveness for Jobs (EC4J) Project

Questionnaire for
Industry-wise Awareness-building Plan and Training Needs Assessment (Gap analysis) for
Environmental, Social and Quality (ESQ) Compliance
Under the Component 1: Market Access Support Programme of the Export Competitiveness for Jobs
(EC4J) Project of the World Bank Group
Ministry of Commerce, Government of Bangladesh

Plastics Sector

A. General Information:

Name of the factory:	
Factory Address:	
Name of the Respondent:	Designation:
Phone number:	Email Address:
Operating Since:	Production Capacity:
	Actual Production:
Product type:	
Major Export Destinations:	
Are some of the similar products destined for home consumption also? :	
Any International Certification:	Membership in Association:
Signature of the Interviewer:	Signature of the Interviewee

B. Environmental Compliance

SL	Compliance Requirements	Yes	No	Remarks
1.	Do you hold a valid Environmental Clearance Certificate (ECC)?			
	If no, then why?			
2.	How do you manage the solid plastic wastes?			
	a. Recyclable waste			
	b. Unrecyclable waste (e.g. other than plastic waste)			
3.	Do you practice <i>National 3R (Reduce, Reuse, Recycle) Strategy</i> for Waste Management?			
4.	Do you have any recycling facility?			
	If yes, please give a brief description.			
5.	Does your production process go through any oil leakage? If yes, how do you mitigate that? (e.g. filtering, regenerating.)			
6.	Do you have any mechanism for recycling waste water for plastic production?			
7.	If yes, how much waste water is recycled?			
8.	Do you have waste water disposal system?			
	If yes, please describe your disposal mechanism?			
9.	What do you do to ensure efficient energy consumption?			
10.	Do you have an effective energy management process?			
	a. Installation of Solar PV (Solar Photovoltaic) technology			
	b. Use of Efficient Equipment			
	c. Tracking Monthly Energy Costs and Use			
	d. Others			
11.	Any other issue to be addressed?			

B1. Training Needs Assessment:

1. Did you ever organise/conduct any training regarding overall environmental compliances for your employees? If yes, then describe briefly.

Basic	
Workers	Management

Specialised	
Worker	Management

2. What kind of training would you suggest to ensure overall environmental compliance in your factory?

Basic	
Workers	Management

Specialised	
Workers	Management

C. Social Compliance

C1. Labour Standards:

SL	Compliance Standard	Yes	No	Remarks												
1.	What is the total number of employees in your factory? <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Management</th> <th colspan="2">Worker</th> </tr> <tr> <th>Male</th> <th>Female</th> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Management		Worker		Male	Female	Male	Female							
Management		Worker														
Male	Female	Male	Female													
2.	Does your company/Factory follow any international Compliance Regulation/Code of Conduct? (e.g. BSCI, SEDEX) If yes, please mention the name (s).															
3.	Do you have any official dedicated to implement and monitor Social Compliance Standards or codes of conduct?															
4.	Do you have welfare officer(s)? (Applicable for factories with more than 500 employees)															
5.	Do you have fire licence covering all units/buildings/floors of your factory?															
6.	Is the factory layout/Floor Plan of your factory approved by the appropriate Government Authority (Rajuk/LGED/CDA)?															
7.	Do you hold a valid factory licence from the Department of Inspection for Factory and Establishment (DIFE)?															

SL	Compliance Standard	Yes	No	Remarks
8.	Do you have a group insurance covering each individual staff member and worker?			
	Freedom of Association and Right to Organise and Collective Bargaining			
9.	Are you aware of the provision of workers' union/ Participation Committee of the Bangladesh Labour Rules 2015 (BLR 2015)? (<100 workers)			
	If yes, do you allow their function/ election process?			
10.	Do the union or workers' representatives (PC) have the right to negotiate with the factory management on their rights (e.g. wages, health and safety issues, etc.)? (<100 workers)			
	Remuneration and Discrimination			
11.	Do you have any anti-discriminatory policy? If yes then how do you practice from recruitment to wage, and staff development process?			
12.	Do you give equal remuneration to male and female workers for the same types of work?			
	Minimum Age			
13.	Are you aware of the minimum age requirement for employment set by the BLR?			
	If yes, do you maintain proper age verification process/ documentation (copy of the personal identification, NID, Birth Certificate; Passport) for workers?			
	If not, are the child workers involved in works that are considered dangerous/ hazardous (heavy loads, night work, heavy machinery) for them?			
14.	Do you follow- a. Arrangement for children below the minimum working age to have access to appropriate education (Technical and Vocational Education and training)? b. special/ limited working hours (5 hours normal and max 1 hour overtime) c. engagement of adolescent workers in hazardous works			
15.	Any other special arrangement for child and adolescent workers?			
	Regular Employment			
16.	Do you maintain personal files for all your workers?			
17.	If yes, which of the information do you document? a. Photograph of the employee b. Copy of working contract with worker's acknowledgement c. Service book d. Copy of photo ID card e. Leave records f. Fitness certificate including proof of age g. Employment application h. Résumé i. Copy of certificates			
18.	Do you have formal working contracts with all employees? (Yes/No)			

SL	Compliance Standard	Yes	No	Remarks
19.	If yes, Does your contract include the following information?			
	a) non-disclosure agreement;			
	b) responsibilities of the employees, benefits, vacation and sick day policies;			
	c) Method for resolving disputes.			
20.	Do you provide photo ID to all your employees?			
21.	Do you maintain a service book, including the following information?			
	a. Current designation			
	b. Wage/salary			
	c. Increments			
	d. Promotion			
	e. Disciplinary records			
22.	Do you take/ provide subcontract to other companies?			
	If yes, do you have any monitoring mechanism to ensure compliance at their end?			
Working Hours				
23.	Do you maintain a time recording system (record of beginning and end of workday) for each individual worker			
24.	What is the average working time of your workers per week including overtime? <input type="checkbox"/> 50 hrs - 60 hrs <input type="checkbox"/> 60-70 hrs <input type="checkbox"/> 70-80 hrs <input type="checkbox"/> more than 80 hrs			
25.	On average, do the workers get one day off after working for 6 consecutive days?			
26.	Do you employ female workers in night shifts?			
	If yes, do you ask for any written consent from each female worker for working in night shifts (10 pm and 6 am)			
27.	How do you ensure a safe way to and from work for female workers working in night shifts?			
Wages and Benefits				
28.	What is the minimum wage of workers in your factory?			
29.	On average, within what time do you pay the wages?			
30.	Do you contribute to the statutory group insurance facilities for each employee?			
31.	Are you aware of the benefits that should be provided to the female workers or new mothers?			
32.	What benefit do you provide to pregnant female workers or new mothers (maternity leave, benefits as per labour policy etc?)			
33.	Any other special arrangement/programme for female workers.			
34.	Do you ensure overtime payment to workers?			
	If yes, what is the rate of overtime payment?			

SL	Compliance Standard	Yes	No	Remarks
35.	How is the absent deduction made? Based on gross salary/ based on basic salary?			
	Others			
36.	Is the number of female workers limited in the managerial-level positions in your factory?			
	If yes, why do you think is this the case?			
37.	Any other issues to be addressed?			

C2. Occupational Health and Safety

SL	Compliance	Yes	No	Remarks
	Health and Safety Committee			
1.	Do you have a health and safety committee in your factory according to the legal requirements (Bangladesh Labour Rules 2015)? (functions in the remarks section)			
	Emergency and Evacuation			
2.	Does your factory have proper marks of escape routes? a. Floor marking, b. Arrows, c. Exit signs indicating the direction of emergency exits.			
3.	What is the width of the escape route? <input type="checkbox"/> <5 cm <input type="checkbox"/> 5-100 cm <input type="checkbox"/> >100 cm			
4.	Are your exit signs clear enough to be visible under extreme conditions like smoke?			
5.	Are your exit signs/ emergency lights/fire alarms connected with independent power supply or supported by individual battery?			
6.	Does your fire alarm include smoke sensors and alarm devices?			
7.	Is your fire alarm visible flashing-light alarm in noisy areas where employees wear ear protection?			
8.	Have you posted evacuation plans on every floor of your factory?			
9.	Do your emergency doors open outwards?			
10.	Are your emergency staircases & exits are in good conditions & free from obstruction?			
11.	Do you provide training to your workers on evacuation plan in case of emergency?			

SL	Compliance	Yes	No	Remarks
12.	How regularly do you conduct fire drill?			
13.	How many trained fire fighters do you have?			
	Health Examination			
14.	How do you ensure health safety for all workers who are involved in dangerous and hazardous works? (e.g. health/ illness records of the employees)			
15.	Is there any risk assessment procedures in your company? (e.g. New expectant mothers and vulnerable workers' risk assessment, Health and safety risk assessment etc.)			
16.	Do you have any agreement with the nearest hospital/clinic?			
	Lighting System			
17.	Do you use natural light in factories?			
18.	Do you have regular maintenance system for lamps and other sources of lights?			
	Housekeeping			
19.	How do you ensure cleanliness at your factory?			
20.	Do you have any monitoring system to ensure that the production area, factory compound, factory floors, all workplaces, rest areas, and facilities are cleaned on a regular basis?			
21.	Do you have dedicated staff with proper knowledge and training on cleaning up and disposal of chemicals?			
22.	Do you provide adequate and sufficient drinking water facilities for workers in suitable places?			
23.	Do you have provisions to test the quality of the drinking water (physical, chemical and bacteriological parameters) on a regular basis?			
	If yes, which institution conduct the testing?			
24.	Do you have a. sufficient toilets at the factory premises b. separate toilets both for male and female workers?			
25.	Are you aware of providing proper sanitation facilities to women workers?			
	Electrical Safety			
26.	Do you regularly check-up the conditions of distribution boards, fuse boxes, panels, outlets, wires, switches etc.?			
27.	Are electrical insulations and wires properly fixed on a regular basis?			
28.	Do you have high voltage/danger and warning signs posted at relevant working areas?			
29.	Do you have emergency switch-off devices installed which prevent hazards in case of equipment failure?			

SL	Compliance	Yes	No	Remarks
30.	Do you ensure that only authorised and specially trained personnel work at high voltage/danger zones?			
31.	Do you have a certified electrician appointed at the factory?			
Fire Safety				
32.	Do you have adequate number of fire extinguishers and firefighting equipment as defined in the fire licence?			
33.	Do you properly mark the fire extinguishers?			
34.	a. Do you have adequate fire alarm?			
35.	b. Do you have adequate heat detection system?			
36.	Do you hold a valid fire insurance?			
Machine Safety				
37.	Have you posted machine safety instructions in the work area?			
38.	Do you provide adequate and appropriate safety guards at all machines with rotating or moving parts?			
39.	Do you have a valid generator (captive power) operation licence provided by the Bangladesh Energy Regulatory Commission?			
Personal Protective Equipment				
40.	Do you have adequate and appropriate personal protective equipment (PPE) for the workers? a. Eye Protection (e.g. safety glasses, face shield) b. Hand protection (impervious gloves) c. Body protection (if applicable) (e.g. lab coat, apron, protective suit) d. Foot protection (Suitable footwear to avoid slips and trips) e. Others			
41.	How do you monitor that workers are using PPE in the health hazardous working areas?			
42.	Do you conduct trainings on the proper usage of PPE?			
43.	How often do you conduct trainings on the proper usage of PPE?			
Work safety issues				
44.	Do you consider the following work safety issues at work? a. Using /storing chemicals and what harmful effects on them b. Protective control for reducing hand knife injuries (e.g. right knives, right PPE etc.) c. Manual hazardous moving and handling tasks in case of moving finished goods or baled waste d. Uneven, Damaged, Slippery Floors e. Ensure appropriate flooring f. Equipment of Work at height is properly inspected g. High noise level due to machines such as granulators and shredders-			
45.	Do you maintain the records of the following issues-			

SL	Compliance	Yes	No	Remarks
	a. Electric maintenance records			
	b. Generator maintenance records			
	c. PPE maintenance records			
	d. Sound level measurement records			
	e. Accident register			
	f. Suggestion box register			
	g. Worker medical check-up records			
	h. List of chemicals			
46.	Any other issues to be considered?			
Ventilation				
47.	Do you have thermometers in the working areas to monitor the room temperature?			
48.	Do you have adequate exhaust fans to keep the room temperature at acceptable conditions?			
49.	Do you ensure a sufficient airflow to improve the ventilation in the production floor(s)?			
Chemical Management				
50.	What do you do to source/procure safe/compliant chemicals?			
51.	Do you maintain a list of all chemicals in the inventory?			
52.	Are you aware of the Material Safety Data Sheet (MSDS)?			
53.	Do you store chemicals properly as per the instruction of Material Safety Data Sheet (MSDS)?			
54.	Do you properly label chemicals containers?			
55.	Do you have officials with adequate knowledge on chemical inventory management?			
First Aid				
56.	Do you provide fully-equipped, and with durable medicine, first-aid kit for your workers? What is the ratio of first aid kit for workers?			
57.	Do you have any trained and certified First Aid Provider to ensure the first aid medication to the worker?			
	If yes, have your first providers received a six-months training course on first aid medication from any recognised institution?			
58.	How many trained first aid provider do you have (one trained first provider for every 150 workers)?			
59.	Do you provide a medical room with adequate and appropriate equipment as per legal requirement (Employers employing 300 or more workers are legally required to provide a medical room)?			
60.	Do you have a full-time doctor /trained compounder/medical assistant or nurse in the medical room?			

SL	Compliance	Yes	No	Remarks
61.	Do you conduct systematic and regular training on health and safety issues?			
	If yes, how often do you conduct such training?			

C3. Training Needs Assessment

1. What training programmes do you conduct to improve the labour conditions, occupational health and safety and other labour-related issues in your factory?

Basic	Specialised

2. What training programmes/ awareness campaign do you suggest to improve the social compliance related awareness in your factory? (a. Use of PPE; b. Emergency Evacuation; c. Occupational Health and Safety Management; d. Inventory Management/ MSDS; e. Maintaining factory cleanliness; f. Chemical handling;)

Workers	Mid-level Managers	Top-level managers

3. Do you have any special training/ programme for female workers?

4. Do you suggest any programme for the female workers to bring them upward in the production chain/ to involve them more on supervisory/ managerial jobs?

5. Do you recommend any programme for improving the knowledge and awareness level of top management on the social compliance issues?

D. Quality Compliance

SL	Quality Standard	Yes	No	Remarks
1.	Do you follow any specification for a. raw material b. finished product			
2.	Do you document those specifications?			

SL	Quality Standard	Yes	No	Remarks
3.	Do you monitor if the production process matches those specifications?			
4.	Do you have any supplier selection procedure? (What are the selection criteria e.g. certification, qualification).			
5.	Do you have any traceability system for raw materials and finished products?			
6.	Are there adequate facilities to preserve the raw materials?			
7.	Do you have any quality control department?			
8.	Do you display the approved sample in the production area?			
9.	Do you conduct Pre-production Meeting (PPM) on a regular basis?			
10.	Do you ensure the presence of quality representatives in the PPM?			
11.	Do you have any Good Manufacturing Practices (GMP) policy/ Standard Operating Procedures (SOP)?			
12.	Are you aware of the Hazard Analysis and Critical Control Points (HACCP) plan?			
13.	Do you have any Hazard Analysis and Critical Control Points (HACCP) plan?			
14.	Do you provide any training regarding Good Manufacturing Practices (GMP)?			
15.	Do you follow any standard to maintain quality? a. AQL (Acceptance Quality Limit) (e.g. Standard 4) b. Others			
	Standard Operating Procedures (SOP)			
16.	Are you aware of Standard Operating Procedures (SOP)?			
17.	Do you have any Standard Operating Procedures (SOP)?			
18.	If yes, do you follow the SOP?			
19.	What are the SOPs for different sections of plastics production?			
20.	Do you have separate quality policy? Is the SOP reflected in your company vision and policy?			
21.	Are the Standard Operating Procedures (SOP) displayed in the production area?			
22.	Do you monitor those procedures (SOP)?			
23.	Which method do you follow for manufacturing plastics? (e.g. Injection Moulding, Extrusion Moulding, Blow Moulding, Roto-Moulding etc.)			
24.	Do you face any difficulties in this process?(e.g. safety ,durability and performance)			
25.	How do you identify the bottlenecks in the production process? (e.g. fishbone diagram)			
26.	Do you follow any method to prevent those bottlenecks?			

SL	Quality Standard	Yes	No	Remarks
27.	Do you keep record of production rejection/ error?			
28.	Do you have any review and action mechanism to reduce the number of rejections?			
29.	What measures do you take to improve the overall quality of your plastics products?			
30.	Any other issues to be addressed?			

D1. Training Needs Assessment

1. What training programmes are you conducting in order to improve the production quality?

Basic	
Workers	Management

Specialised	
Workers	Management

--	--

2. What trainings would you suggest to improve production quality?

Basic	
Workers	Management

Specialised	
Workers	Management

Annex 2

**Questionnaire for
Industry-wise Awareness-building Plan and Training Needs Assessment (Gap analysis) for
Environmental, Social and Quality (ESQ) Compliance**
Under the Component 1: Market Access Support Programme of the Export Competitiveness for Jobs
(EC4J) Project of the World Bank Group
Ministry of Commerce, Government of Bangladesh
(For Association)
Plastics Sector

General Information:			
Name of the Association:			
Address:			
Name of the Respondent:		Designation:	
Phone number:		E-mail Address:	
Number of Member-Factories:		Operating Since:	
Signature of the Interviewer:		Signature of the Interviewee:	

1. Is your association aware of/ concerned about the Environmental, Social and Quality Compliance issues in the plastics sector?
.....
2. Do you have detailed knowledge on the international standards on ESQ Compliance requirements? (Yes/No).....
If yes, how do you disseminate that information to your member-factories?
.....
.....
3. Do you have/maintain any database/ checklist on ESQ Compliance demanded by the buyers? (Yes/No).....
If yes, do you regularly update the database? (Yes/No).....
4. Do you have any dedicated desk/ official to monitor ESQ Compliance issues of your member-factories? (Yes/No).....

If yes, do you provide any training to them? (Yes/No).....

If yes, please mention the name/s of the trainings and their durations

1.
2.
3.
4.
5.

5. What support do you provide to your member-factories to improve their ESQ Compliance capacity?

6. Where do you think the firms lack/ struggle the most in terms of complying with ESQ Standards?

- a) Lack of awareness
- b) Frequent change of requirements from Buyers' end
- c) Strict regulations
- d) Lack of skilled manpower
- e) Lack of technical personnel
- f) Lack of Technological facilities
- g) Involvement of Costs

7. Please tell us of five/ ten priority compliance issues required mostly by buyers.

Environmental	Social	Quality

8. Do you provide any basic training to member-firms on Environmental, Social and Quality Compliance?

If yes, please provide details:

Workers	Mid-level Managers	Top-level Managers

9. Do you provide any specialised training to member-firms on Environmental, Social and Quality Compliance?

Workers	Mid-level Managers	Top-level Managers

10. Which trainings do you suggest for workers to develop their capacities on ESQ?

Basic	Specialised

--	--

11. Which trainings do you suggest for mid-level managers to develop their capacities on ESQ Compliance?

Basic	Specialised

12. Which trainings do you suggest for top-level managers to develop their capacities on ESQ Compliance?

Basic	Specialised

13. What support do you get from the government to improve the ESQ Compliance situation of the sector?

14. What supports do you seek from the government to develop ESQ issues?

15. What else is required to develop the overall situation of the ESQ Compliance of the plastics sector?

Annex 3

✓ ISO 14001:2015:

Clause 5: Leadership:

✓ *Leadership and commitment*

- To take accountability of the effective environmental management system;
- To ensure environmental policy objectives are compatible with strategic direction and context of the organisation;
- Integration of the environmental management requirements in the process of business;
- To ensure sufficient resources;
- To communicating the importance environmental management system;
- Directing and supporting subordinates for effective implementation of environmental management system;
- To promote continual improvement; and
- To support other relevant management roles.

✓ *Environmental policy:*

Top management will develop, implement and maintain an environmental policy within the scope of the environmental management system of the organisation. They will ensure its appropriate documentation, communication and availability to the interested parties.

✓ *Organisational roles, responsibilities and authorities*

Top management assigns roles and responsibilities for ensuring environmental management system and reporting its performance to the top level.

BSCI Principles:

Occupational health and safety:

- Verification and maintenance of buildings safety: the auditor must verify that the equipment and buildings used for production are stable and safe and that the firms are aware of the national legal requirements concerning stability and safety of its building to conduct the business activities;
- Fire preparedness (drills, equipment, signs): factories must have sufficient firefighting equipment installed in their premises;
- Emergency exits and evacuation procedures: Business partners must respect the workers' right to exit the premises from imminent danger without seeking permission;
- Publicly available evacuation procedures;

- Regular and scheduled emergency exit maintenance; and
- Continuous education and training at each level of work is essential, particularly with regard to Occupational Health and Safety.

British Standards Institution (BSI)

- ***Quality Management system and Its Processes:***

- ✓ determine the required inputs and the outputs expected from these processes;
- ✓ determine and apply the requirements and methods which are needed to ensure the effective operation and proper control of these processes;
- ✓ determine the sequence and interaction of these processes;
- ✓ determine the resources required for these processes and make sure their availability;
- ✓ assign the responsibilities and authorities for these processes;
- ✓ address the possible risks and opportunities;
- ✓ evaluate these processes and make any changes needed to achieve their intended results;
- ✓ improve the processes and the quality management system;
- ✓ maintain proper documentation of information in order to support the operation of its processes; and
- ✓ possess documented information to have confidence that the processes are being carried out as planned.

(c) Organisational Roles, Responsibilities and Authorities:

- ✓ ensuring the conformity of quality management system to the requirements of this international standard;
- ✓ ensuring that the processes are delivering their expected outputs;
- ✓ the performance of the quality management system should be reported and there should be opportunities for improvement, specially to top management;
- ✓ promoting the customer focus throughout the organisation ;
- ✓ the case when changes to the quality management system are planned and implemented, the integrity of the quality management system shall be maintained.

6. Operation:

(a) Operational planning and control:

- a) determining the requirements for the products and services;
- b) establishing criteria for: the processes; and the acceptance of products and services;
- c) determining the resources needed to achieve conformity to the product and service requirements;
- d) implementing control of the processes in accordance with the criteria;

e) determining, maintaining and retaining documented information to the extent necessary: to have confidence that the processes have been carried out as planned; and to demonstrate the conformity of products and services to their requirements.

(b) Requirements for products and services:

Customer communication:

Communication with customers shall include:

- providing information relating to products and services;
- handling enquiries, contracts or orders, including changes;
- obtaining customer feedback relating to products and services, including customer complaints;
- handling or controlling customer property;
- establishing specific requirements for contingency actions, when relevant.

Determining the requirements for products and services:

When determining the requirements for the products and services to be offered to customers, the organisation shall ensure that:

- a) the requirements for the products and services are defined, including any applicable statutory and regulatory requirements; and those considered necessary by the organisation ;
- b) the organisation can meet the claims for the products and services it offers.

Review of the requirements for products and services:

The organisation shall ensure that it has the ability to meet the requirements for products and services to be offered to customers. The organisation shall conduct a review before committing to supply products and services to a customer.

- requirements specified by the customer, including the requirements for delivery and post delivery activities;
- requirements not stated by the customer, but necessary for the specified or intended use, when known;
- requirements specified by the organisation ;
- statutory and regulatory requirements applicable to the products and services;
- contract or order requirements differing from those previously expressed.

Changes to requirements for products and services:

The organisation shall ensure that relevant documented information is amended, and that relevant persons are made aware of the changed requirements, when the requirements for products and services are changed.

(c) Design and development of products and services:

Design and development planning:

In determining the stages and controls for design and development, the organisation shall consider:

- the nature, duration and complexity of the design and development activities;
- the required process stages, including applicable design and development reviews;
- the required design and development verification and validation activities;
- the responsibilities and authorities involved in the design and development process;
- the internal and external resource needs for the design and development of products and services;
- the need to control interfaces between persons involved in the design and development process;
- the need for involvement of customers and users in the design and development process;
- the requirements for subsequent provision of products and services;
- the level of control expected for the design and development process by customers and other relevant interested parties;
- the documented information needed to demonstrate that design and development requirements have been met.

Design and development inputs:

The organisation shall determine the requirements essential for the specific types of products and services to be designed and developed. The organisation shall consider:

- functional and performance requirements;
- information derived from previous similar design and development activities;
- statutory and regulatory requirements;
- standards or codes of practice that the organisation has committed to implement;
- potential consequences of failure due to the nature of the products and services.
-

Design and development controls:

The organisation shall apply controls to the design and development process to ensure that:

- the results to be achieved are defined;
- reviews are conducted to evaluate the ability of the results of design and development to meet requirements;
- verification activities are conducted to ensure that the design and development outputs meet the input requirements;
- validation activities are conducted to ensure that the resulting products and services meet the requirements for the specified application or intended use;
- any necessary actions are taken on problems determined during the reviews, or verification and validation activities;
- documented information of these activities is retained.

Design and development outputs:

The organisation shall ensure that design and development outputs:

- meet the input requirements;
- are adequate for the subsequent processes for the provision of products and services;
- include or reference monitoring and measuring requirements, as appropriate, and acceptance criteria;
- specify the characteristics of the products and services that are essential for their intended purpose and their safe and proper provision.

Design and development changes:

The organisation shall identify, review and control changes made during, or subsequent to, the design and development of products and services, to the extent necessary to ensure that there is no adverse impact on conformity to requirements. The organisation shall retain documented information on:

- design and development changes;
- the results of reviews;
- the authorization of the changes;
- the actions taken to prevent adverse impacts.

7. Performance Evaluation:

(b) Internal audit:

The organisation shall:

- plan, establish, implement and maintain an audit programme(s) including the frequency, methods, responsibilities, planning requirements and reporting, which shall take into consideration the importance of the processes concerned, changes affecting the organisation, and the results of previous audits;
- define the audit criteria and scope for each audit;
- select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;
- ensure that the results of the audits are reported to relevant management;
- take appropriate correction and corrective actions without undue delay;
- retain documented information as evidence of the implementation of the audit programme and the audit results.

8. Improvement

Non-conformity and corrective action:

When a non-conformity occurs, including any arising from complaints, the organisation shall:

- react to the nonconformity and, as applicable: take action to control and correct it; and deal with the consequences;

- evaluate the need for action to eliminate the cause(s) of the nonconformity, in order that it does not recur or occur elsewhere, by: reviewing and analysing the nonconformity; determining the causes of the nonconformity; and determining if similar nonconformities exist, or could potentially occur;
- implement any action needed;
- review the effectiveness of any corrective action taken;
- update risks and opportunities determined during planning, if necessary;
- make changes to the quality management system, if necessary.

Continual improvement:

The organisation shall continually improve the suitability, adequacy and effectiveness of the quality management system. The organisation shall consider the results of analysis and evaluation, and the outputs from management review, to determine if there are needs or opportunities that shall be addressed as part of continual improvement.

ISO 9001:2008

Quality management system and its processes:

The quality management system emphasises on maintenance and retention of a well-documented system to document different operations of an organisation.

- **Leadership and commitment:**

The top management of each organisation has to showcase its leadership and commitment to the quality management system through ensuring –

- accountability for the effectiveness of the system;
- formation of consistent and compatible quality policy and objectives;
- integration of the quality management system requirements into business processes.

Planning:

- **Actions to address risks and opportunities:** The firm will make an action plan to address these risks and opportunities and incorporate them in its quality management system processes.
- **Quality objectives and planning to achieve them:** To ensure quality management system, firms are required to establish quality objectives consistent with the quality policy. The objectives should be measurable, monitored and updated as required.
- **Planning of changes:** In time of need for changing the quality management system, the changes should be brought in a planned way. While making the plan for changes, firms should take into consideration the purpose, consequences of the changes, the available resources,

Support System:

Considering the capacities and constraints of existing internal resources and the need to obtain external resources, the organization will determine and supply the resources which will in turn help to establish, implement, maintain and improve the quality management system. The resources include,

- People
- Infrastructure
- Environment for the operation of processes
- Monitoring and measuring resources
- Measurement traceability
- Organizational knowledge
- Competence
- Awareness
- Communication
- Documented information.

Operation:

The organisation shall plan and implement the processes needed to determine the product's and service's requirements and acceptance, resources needed to achieve uniformity to the product and service requirements and maintain documented information. The organisation shall control planned changes and review the results of unintended changes, and will take action if necessary.

- Customer communication:
- Determining and reviewing the requirements for products and services:
Design and development planning:
- Identification and traceability:
- Post-delivery activities:
- Release of products and services:

Performance evaluation:

The organization shall determine the components that are needed to be monitored and measured, the method and time of monitoring, when and how the results from the monitoring and measurement will be analyzed and method of retaining all the relevant documents.

- Customer satisfaction
- Analysis and evaluation
- Internal audit