BANGLADESH FOREIGN TRADE INSTITUTE

Study on
Analysing the Gap in Issuing Certificates of Standards for Export

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List of Acronyms and Abbreviations

APLAC	Asia Pacific Laboratory Accreditation Co-operation
BAB	Bangladesh Accreditation Board
BAEC	Bangladesh Atomic Energy Commission
BARI	Bangladesh Agricultural Research Institute
BCSIR	Bangladesh Council of Scientific and Industrial Research
BFFEA	Bangladesh Frozen Foods Exporters' Association
BFTI	Bangladesh Foreign Trade Institute
BFSA	Bangladesh Food Safety Authority
BFVAPEA	Bangladesh Fruits, Vegetables & Allied Products Exporters' Association
BJGEA	Bangladesh Jute Goods Exporter's Association
BJMC	Bangladesh Jute Mills Corporation
BMDC	Bangladesh Medical and Dental Council
BNC	Bangladesh Nursing Council
BPC	Business Promotion Council
BPGMEA	Bangladesh Plastic Goods Manufacturer and Exporters Association
BSTI	Bangladesh Standards and Testing Institute
BTRC	Bangladesh Telecommunication Regulatory Commission
C of A	Certificate of Analysis
CBC	Carpet Backing Cloth
CPP	Certificate of Pharmaceutical Products
CGMP	Current Good Manufacturing Practice
DAE	Department of Agricultural Extension
DGHS	Directorate General of Health Services
DGDA	Directorate General of Drug Administration

DLS	Department of Livestock Services
EPB	Export Promotion Bureau
EU	European Union
FAO	Food and Agricultural Organisation
FGD	Focus Group Discussion
FIQC	Fish Inspection and Quality Control
FMD	Foot-and-mouth disease
FY	Fiscal Year
GAP	Good Agricultural Practices
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council Countries
GMP	Good Manufacturing Practice
GoB	Government of Bangladesh
GSP	Generalised System of Preferences
HACCP	Hazard Analysis and Critical Control Point
HS	Harmonized System
IEC	International Electro Technical Commission
ILAC	International Laboratory Accreditation Co-operation
ISO	International Organisation for Standardisation
KII	Key Informant Interview
LDC	Least Developed Country
LFMEAB	Leathergoods and Footwear Manufacturers and Exporters Association, Bangladesh
NABCB	National Accreditation Board for Certification Bodies
NQI	National Quality Infrastructure
NTB	Non-tariff Barrier
OIE	World Organisation for Animal Health

PAC	Pacific Accreditation Co-operation
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
SME	Small and Medium Enterprises
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
TICI	Training Institute for Chemical Industries
UK	United Kingdom
US	United States
US FDA	US Food and Drug Administration
WTO	World Trade Organisation

Executive Summary

Nowadays, there is a remarkable change in global trade flows. And this change has increased the concern over standards, testing and quality requirements. Countries, especially the developed ones, impose stringent conditions on import products for the safety and security of their consumers. As a result, exporters have to submit proof from internationally-recognised organisations that those products meet the stringent requirements. Though exporters initially face difficulties to meet rigid conditions, higher standards ultimately benefit export volume, consumer well-being, and environment as well.

With increased competition in the trade field, developing and least developed countries (LDCs) are adopting export-led growth strategies. It is, however, challenging for a country like ours to build national capacities for quality infrastructure to support exporters in terms of testing procedures, product quality, certifications etc. The Government of Bangladesh (GoB) gives special emphasis also on the issues of quality and standards in its different policies and initiatives in order to modernise the local standards system. One of the objectives of the Export Policy 2018-21 is to encourage coordinated activities to upgrade the testing facilities to match global standards, and improvement in product quality. Besides, the National Industrial Policy 2016 highlights on undertaking necessary steps to strengthen the BAB and the BSTI, and harmonise domestic standards with international ones to confirm easy access of local products into the international markets.

The significance of the Study:

Due to the existence of several legitimate non-tariff barriers faced by the exporters, traders need to adopt and maintain international standards to remain competitive in the global market. Consequently, it has become a growing concern for the policy makers and the private sector to develop a modern certification system to conform compliance with international standards. From that standpoint, the study was carried out as it aimed to conduct an in-depth analysis of gaps in issuing certificates of standards for export from Bangladesh. By doing so, analysis of capacity needs and gaps of local certifying institutions to provide globally recognised certificates of standards for some product groups with export potential was conducted, and proper recommendations for strengthening the BAB and other relevant certifying agencies have been made.

The study did so on the basis of analysis of the existing standards and certification requirements of selected product groups in the export destinations, and the present status and performance of certificate providing institutions in Bangladesh. It also carried out the capacity assessment and gap analysis of selected testing laboratories/institutes both in the public and private sector, identified the capacity-strengthening activities required for the testing laboratories/certifying bodies/agencies and their quality management systems. Again, it conducted the institutional capacity assessment of the BAB to meet international standards and mutual recognition. It also

recommended probable policy interventions that would enable the country to bring about an effective structural change in issuing certificates of standards for export of selected product groups.

Sectoral Analysis

Giving a special focus on diversification of exports, the study chose the following sectors that have high export potential in major export markets, but faces difficulties, especially with regard to certain certification requirements. These sectors, namely **Jute and Jute Goods; Leather, Leather Goods and Footwear; Plastic Products; Fresh Vegetables and Horticultural Products including Mango; Frozen Food, including Halal Meat; and Herbal Products** (a special focus has been given on this sector).

Jute and Jute Goods:

Bangladesh is the world's second-largest producer of jute and the largest exporter of the fibre. The jute sector has a huge potential to increase export earnings for Bangladesh, due to the growing consciousness among Western consumers of the environmentally-unsafe synthetic products. In fact, diversified jute products have been considered as one of the Special Development Sectors in the *Export Policy 2018-21*.

Around 235 types of diversified jute products are now produced by a total of 636 small and medium entrepreneurs. While the production of the natural fibre in Bangladesh rose from over 42 lakh bales in FY1971-72 to over 82 lakh bales in FY 2016-17, the sector has also experienced good growth in terms of exports. During 2017-18, total exported volume of jute and jute products was worth US$ 1.03 billion. Demand for new types of diversified jute products is very high in the global market. The global market size of jute-made shopping bags is approximately 500 billion pieces. But Bangladesh is lagging behind other countries, even though Bangladesh is one of the top jute producing countries. The Study found that India imports raw jute from Bangladesh and process them into jute products. India has secured its share in international market and foreign buyers are purchasing jute products from India without knowing that the raw materials go from Bangladesh.

To expand the sector, effective strategies need to be taken. Local institutions like the DAE, the BCSIR, etc., are recognised by some buyers for different types of parametres tests, but tests are also carried out by third party service providers like the SGS and the Intertek, according to buyers' requirements. The study also found that buyers do not know that local testing bodies exist in Bangladesh. In such a situation, buyers asked the exporters to test the parametres from third parties. Major initiatives have to be taken to build skilled manpower (e.g. technical manpower), use of modern machinery for labs, strengthen negotiation skills with foreign buyers that would facilitate the export of jute goods from Bangladesh.

Leather, Leather Goods and Footwear:

After readymade garments, the leather sector is considered as a promising one for expansion and diversification of exports. About 90 large firms, 2,500 footwear manufacturing units and 220 tanneries comprise the leather industry (LFMEAB, 2017). Bangladesh produces and exports quality bovine, ovine and caprine leather that have a good international reputation for fine textured skins. High quality of domestic raw hides, high domestic value addition, strong backward and forward linkages, employment generation opportunities are the strengths of this sector. Footwear sector has been recognised as a highest priority sector in the *Export Policy 2018-21*. The annual supply of hides and skins in Bangladesh is estimated at 300 million sft. Again, its estimated domestic value addition is often as high as 80-95 percent. Currently, the size of the global leather market is US$ 220 billion which is forecast to be US$ 271.21 billion by 2021. According to World Footwear Yearbook 2017, Bangladesh ranked eighth in 2016 in terms of footwear production (378 million pairs of shoes) which is about 1.6 percent of total production in the world.

In fact, before placing any orders, buyers from countries like the US and the EU now concentrate on standard requirements, high quality and compliance issues for the factory to export leather items (crust leather, finished leather, leather goods). The study found that exporters face major challenges due to the lack of qualified technicians/laboratories, shortage of testing equipment, and non-recognition by buyers of accreditation of test results that also reduce their ability to export. Buyers refer the different parametres tests, including chemical parametres tests, Physical Parametres tests to be carried out by third parties like SGS, Intertek, TUV, TUV SUD, TÜV Rheinland, and Bureau Veritas at home and abroad. Testing and collection of test certificates are also time-consuming and expensive**.**

To increase testing capacity in order to match it with international standards, necessary initiatives should be taken to strengthen the capacities of local institutions like the BSTI, the BCSIR (especially for chemical tests), the BUET or the Instutite of Leather Technology, Dhaka University, and to upgrade the existing ones for conducting technical quality parameter tests as they are not recognised by the buyers. In this regard, government initiatives are necessary. Besides, major emphasis should be given to make the Central Effluent Treatment Plant (CETP) at the Savar Leather Estate fully functional so as to attract foreign buyers by ensuring compliance with their environmental concerns. In that regard, the assigned authority, Bangladesh Small and Cottage Industries Corporation (BSCIC) has a lot of responsibilities to maintain the standard required in the CETP.

Plastics Products:

The plastic industry has emerged as a promising industrial sector during the last two decades. There are about 3,000 manufacturing units in the plastic sector of which 98 percent are SMEs (Ahmed, 2016). Total export value of plastics products was about US$ 98.48 million in FY 2017-18. There is an increasing trend in its export and global demand which indicate that the sector has

a huge potential in terms of diversifying the country's export basket. In fact, considering the huge potential of plastics products, the sector has been considered as a high priority sector in the *Export Policy 2018-21*. The study found that, in spite of this growing trend, the country has not been able to avail itself of the opportunities. Exporters, especially SMEs, face difficulties in terms of supply-side constraints such as stringent and complicated procedures of certification, inadequate testing facilities for quality control, modern equipment, shortage of technical expertise, and lack of proper management of plastics wastes.

Even the third parties in Bangladesh are not doing the tests for all the parametres necessary for exports. According to them, due to high costs of machinery and equipment, it is not feasible to do these tests only. In such cases, tests are done in their labs in foreign countries, i.e., India and Singapore, which is expensive and time-consuming. It is required to develop domestic testing facilities and establish a standard testing lab to do the different parametres' test for plastics sector. Besides, local testing institutes need to be more equipped so that they have the capacity to test the parametres. The sector needs more investment for modern equipments and to train skilled technicians so that these institutes would be able to reduce production cost, boost the export of their products, and get global recognition.

Fresh Vegetables and Horticultural Products, including Mango:

During the last decade, vegetables production in Bangladesh has more than doubled due to supply of quality vegetable seeds and particularly farmers' adoption of high-yielding and hybrid varieties, and development of varieties suitable for year-long production. In 2017, Bangladesh secured the third position in terms of global vegetables production, next to China and India. The country has also emerged as the seventh largest mango-producing country in the world. Export of fresh fruits and vegetables from Bangladesh has considerably increased from US$51 million in FY2008-09 to US$77.98 million in FY2017-18. Vegetables and fruits are now exported to about 50 countries around the world. 60 percent of the total quantity is exported to the Middle East and the remaining 40 percent to European and other countries. To expand the sector country-wide, the government of Bangladesh has also designed policies. The Export Policy 2018-2021 emphasises the production and export of vegetables and horticultural crops through the support of venture capital, modern transportation and packaging system, contact farming and market promotion.

Despite huge potential for vegetables exports, exporters face different barriers in different market destinations, most of which are related to standards, certification of products and frequent changes in rules and regulations regarding processes to ensure quality and safety through technical standards. The quantity of mangoes exported decreased from 800 tonnes in 2015 to 300 tonnes in 2016 due to tough safety standards in importing countries, particularly in European markets.

Salmonella test and Brown rot tests for vegetables can be done by BCSIR. But it doesn't have any accreditation for these tests. Local certificate providing institution like BFSA should be transformed into a global standard laboratory equipped with modern machinery and skilled human resource that would enable the institution to provide internationally-recognised Sanitary

Certificate/Health Certificate. Besides, the DAE and the BCSIR should be equipped with adequate number of skilled people, adequate modern machinery and accredited laboratory, and the capacity of its manpower should be increased. At present, due to lack of traceability of the products, fresh vegetables are not being exported to the EU and the US. Once the Bangla GAP would be fully operational, it would be helpful to get the market access in the US for vegetables export from Bangladesh. If the pest-free production process within the production region could be ensured, it would create a new market for mango export in many countries, including Japan. Prompt initiatives should be taken by the Upazila Agriculture Offices in order to control the pest in the production region. The Ministry of Commerce, Ministry of Agriculture, the DAE, BARI, EPB, relevant exporters' Associations, and farmers should work together to ensure the quality to meet the requirement of the Japanese authority.

Frozen Food, including Halal Meat:

Bangladesh exports various halal food items, including halal meat, some fresh vegetables and fruits in the ethnic markets. For the purpose of understanding the potential of the sector, the Study emphasises on the frozen food products and halal meat under the following HS Codes: 0202.20: Frozen unboned bovine meat, 0202.30: Frozen boneless bovine meat, 0306.17: Other shrimps and prawns, and 0204.50: Goat meat, fresh, chilled or frozen. During FY 2017-18, total export earnings under the HS Codes, 0306.17, 0202.20, 0202.30, was US$ 408.65 Million, US $0.14 Million, and US$ 0.09 Million, respectively.

In the global market, there is a huge demand for halal meat, which can be exported from Bangladesh. Disease free zones for proper cattle farming and rearing arrangements, compliant with international standards, need to be developed to get disease-free internationally-recognised certification and facilitate the entry of Bangladeshi halal raw and processed meat to potential markets like the EU and Saudi Arabia.

In case of shrimp exports, the country is now capable in assuring high quality and proper health certification of shrimp that is mandatory requirement in the EU. The government has developed specific process and procedure to facilitate shrimp exports by complying with international requirements. Similarly, effective initiatives should be taken in other areas, such as frozen food, cattle and poultry rearing.

Herbal Products:

The herbal products sector has also high export potential like the sectors discussed above. Favourable climate and soil condition for the production of medicinal plants are the strengths of this sector, and these medicinal plants are most commonly used in the preparation of herbal medicines.

Exports of the products remained restricted due to lack of quality control facilities and phytomarkers to assure the quality requirement, high costs of obtaining phytomarkers and cGMP

(Current Good Manufacturing Practice) Certificate for quality assurance, inadequate number of trained analysts, insufficient research works on sustainable harvesting, collection, processing and value addition, lack of co-ordination among the Ministry of Commerce, Ministry of Health and Family Planning and the DGDA, and lack of awareness among exporters about the standard certificate requirements for export of herbal products.

Measures should be taken to establish an international standard certification Institute. A strong backing of the government is needed to set up a WHO-approved laboratory to promote herbal products export. The lab may be established centrally along with BCSIR, BSTI and Dhaka University. Government initiatives are required in this area. A regulatory committee/a dedicated herbal committee is required as there is a lack of co-ordination and resource. Strong coordination among the Ministry of Health and Family Welfare, Ministry of Commerce and the DGDA is essential for enhancing the capacity of certification and standards in Bangladesh. The government has also given importance to medicinal plants and herbal products in its *Export Policy 2018-21*. Accordingly, proper strategies should be taken to avail ourselves of the opportunities of enormous potentials for its export to meet its growing global demand and boost its export that would lead to achieve the government's export diversification objective.

Institution-wise Analysis:

The BCSIR has capabilities to test some parametres but the tests are not recognised by the buyers. Again, the institution does not have any accreditation by the BAB. Some international buyers want this accreditation. However, even if the BCSIR has an accreditation from the BAB, buyers would still prefer third parties for testing and certification. Therefore, some steps may be taken for improving the current testing and certification facilities at the BCSIR. According to the BCSIR mandate, testing is its secondary option, while research on scientific and industrial issues comes first. So the mandates of the BCSIR with regard to research and testing should be specified. The BCSIR needs the BAB accreditation to fulfill the demand of international buyers. This authority needs to be more proactive about the marketing of their services so that local suppliers and international buyers may have knowledge of the standard and quality of testing, research and other services provided by them.

Export promotion Bureau (EPB) should introduce well-managed and hassle-free services in relation to the issuance of GSP and SAFTA preferential certificates of origin.

Department of Agricultural Extension (DAE) provides phyto-sanitary certificates for agricultural products, but the certificate issuance system needs to be better organised and hassle free for exporters. The DAE lab needs to be equipped with modern testing facilities with international accreditation so as to reduce testing time and cost for exporters. Although the DAE is responsible for advising farmers about the use of inputs and production practices, it has a shortage of manpower, and therefore farmers are unable to get the right prescription from the DAE. As a result, they may use wrong pesticides which is dangerous for human life. Hence, the government should

provide the DAE with the required manpower. The institute should introduce the traceability system beginning from the production to the packaging level for ensuring export quality of agricultural products.

Bangladesh Standards and Testing Institution (BSTI) should open offices in each district to ensure its effective operation. They have shortage of manpower in every sector, especially field supervisors, for effective market monitoring. The BSTI needs to sign more bilateral co-operation agreements for export facilitation. The number of required equipment is absent in the BSTI laboratories. They can test limited number of parametres and have a lack of skilled manpower. As a result, their reports are not recognised by buyers. Therefore, these testing laboratories need to be equipped with modern equipment, have necessary skilled manpower and international accreditation.

Bangladesh Food Safety Authority (BFSA) suffers for the lack of manpower, and for that reason this institution has not yet been able to become fully functional. In the case of exports, the BFSA only provides health certificates for agricultural products, and some processed and semi-processed food on a provisional basis. It tests the samples in its nine assigned labs. But these labs are not internationally accredited. Hence, the BFSA should develop a plan to ensure provision of internationally recognised health certificates to exporters.

Fish Inspection and Quality Control (FIQC) should develop the traceability system for farm registration, farm information, depot information, and product information for the shrimp processing industries, urgent for increasing shrimp exports. This sector also suffers from a shortage of production vis-a-vis the demand. As a result, processing plants are running below their capabilities. Hence, to compete effectively in the international market, new species should be introduced for production enhancement, if necessary.

Bangladesh Accreditation Board (BAB) should be equipped with necessary equipment and required manpower and technicians for testing the capabilities of other certification agencies. The BAB services are voluntary. If the testing and certification bodies want to accredit themselves with the BAB, they may do so as per buyer's demand. Otherwise they do not need accreditation from the BAB. Hence, the role of the BAB should be specified. In order to improve the efficiency level for employees of the BAB, initiatives like training and exposure visits to labs of global standards could be effective. A research wing should be established at the BAB, and product development-based research work should be increased.

Conclusion:

Nowadays, due to the growing global concern over quality, standards, safety issues, urgent initiatives should be taken to develop a modern certification system and improve the overall situation of the national quality structure in Bangladesh to ensure international compliance standards. To remain competitive in the global market, exporters have to maintain international standards and need to increase the ability to ensure quality and safety of products and to comply

with all international safety, regulatory and quality standard requirements in target markets. Besides, necessary measures should be taken to build the capacity of standards certifying agencies. We also need to put our efforts for achieving better market access.

The study highlights product-specific, institution-wise initiatives that are necessary to increase the acceptance of certificates issued by Bangladeshi institutions. Overall, it recommends prospective policy interventions that would enable the country to bring about an effective structural change in issuing certificates of standards for export of selected product groups.

A strong information network within the institutions of the quality infrastructure and with other international organisations should be developed to enable the traders to remain aware of the latest requirements for certification in export markets that would create a safe and high-quality environment in the country to boost exports. This study has made some recommendations and mark out a way forward for the sectors included in the study.

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Chapter 1: Introduction

1.1 Introduction

With the phenomenal growth over the years in the volume of international trade, there has also been a massive increase in the number of diverse national and international voluntary and mandatory certification requirements with respect to tradeable goods and services. Due to the growing concern over quality, standards and safety issues, developed and other importing countries are hard pressed to set higher standard requirements resulting in the constantly changing worldwide standardisation in terms of quality, metrology, testing, certification and accreditation.

International trade is governed by multilateral trade rules, and there is no exception in this area. Article 20 of the General Agreement on Tariffs and Trade (GATT) allows governments to undertake trade measures to protect human, animal or plant life or health. However, while recognizing the need for such standards and certification requirements, the Word Trade Organization (WTO) tried to lay out rules, guidelines, standards and codes for their fair and just application to ensure that these are in place in order to serve legitimate policy goals like ensuring a minimum quality of imported products, e.g. food safety issues, and are not adopted in order to discriminate against imported goods or intentionally distort trade. There are two specific WTO agreements namely, the Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT) to deal with food safety and animal and plant health and safety, and with product standards in general.

Due to limitations in meeting such standards and certification requirements, exporters from the developing and Least Developed Countries (LDCs) constantly face challenges to remain competitive in the international market. No wonder, quality, standards and compliance in tradeable goods have emerged as the key elements for competitiveness in the international production network. Traders, especially the SMEs, with their weak institutional settings are often severely affected because of the lack of adequate information on such requirements on the one hand and the resultant negative image on the other. Developing countries and LDCs, therefore, require necessary quality infrastructure to enhance their exporters' understanding of the nature and details of those standards. A national quality infrastructure system should include provisions for standards, testing, certification and accreditation services and availability of information. This will facilitate exporters to achieve compliance, prove the conformity with international standards and thereby connect to global value chains.

While the meaning of the terms 'standards' and 'testing' can easily be understood merely from their names, it is not so in the case of the other two terms, namely 'certification' and 'accreditation', and therefore, some brief analysis is attempted here. Certification is an assurance that the quality of product or service, process or material is at par with one or more standards or specifications. It is beneficial for the suppliers, importers, consumers, and government regulators as it helps differentiate products or services in terms of quality. Certification is generally conducted by

independent third parties, and there are a number of internationally reputed private certification bodies operating in different countries of the world, namely Intertek Group PLC, Bureau Veritas SA, SGS Group, TÜV Rheinland Group, TUV SUD AG, DNV GL Group AS, ASTM International, Asure Quality Ltd, ALS Ltd and so on. According to Transparency Market Research (2016), the global market of the testing, inspection and certification was valued at US$ 184.5 billion, and is anticipated to expand at a compound annual growth rate of 5.8 percent between 2017 and 2025.

Accreditation is the formal recognition from an authoritative body to an organisation or person for performing specific tasks. The accreditation body evaluates certification and inspection bodies, testing and calibration laboratories on a voluntary basis. There are well-recognised criteria for evaluation such as management system, process of testing and inspection, etc. Accreditation in industry and manufacturing involves testing of food products, plastic, consumer goods etc., analysis of chemicals used in products, determination of physical parametres, inspection of the supply chain, and certification. As it ensures the quality and safety of the product, accreditation can provide a competitive advantage and facilitate access to export markets worldwide. Countries may have one or more organisations/accreditation bodies responsible for the accreditation of their laboratories. These bodies have adopted ISO/IEC 17025 as the basis for accrediting their country's testing and calibration laboratories[1].

1.2 Situation in Bangladesh

The National Quality Infrastructure (NQI) is an institutional framework, which includes the establishment and practice of standardisation, quality, conformity assessment, and accreditation. In terms of fundamental elements of a NQI, standards, metrology and accreditation, there are a number of public and private organisations operating in Bangladesh, and a brief exploration of these organisations is in order.

Bangladesh Accreditation Board (BAB), established in 2006 as an autonomous agency under the Ministry of Industries, provides accreditation to the laboratories, certification bodies, inspection bodies, training institutions or persons following the guidelines of International Organisation for Standardisation (ISO), International Electro Technical Commission (IEC) and other regulatory standards and national standards bodies. It is also responsible for upgrading the quality assurance infrastructure and conformity assessment procedures and promoting the acceptability of Bangladeshi products and services in global markets. This autonomous body has been assessed by some internationally recognised organisations, such as- Asia Pacific Accreditation Cooperation(APAC), International Laboratory Accreditation Co-operation (ILAC), and the Pacific Accreditation Co-operation (PAC)[2].

[1] ABOUT ILAC (Source: https://ilac.org/about-ilac/)

[2] *The Daily Star* (September 25, 2011). '*Accreditation board upgraded*', retrieved from https://www.thedailystar.net/news-detail-203807

Bangladesh Standards and Testing Institute (BSTI) is the national body that oversees the implementation of local standards, certification marks, quality control, and compliance of products for local products as well as for exports. Again, SGS, Bureau Veritas, TÜV Rheinland, TÜV SÜD, and Intertek provide certification, testing, auditing, inspection and training services in Bangladesh.

To modernise the local standards system, the Government of Bangladesh (GoB) emphasises the issues of quality and standards in its different policies and initiatives. For example, one of the objectives of the *Export Policy 2018-21* is to encourage coordinated initiatives for upgradation of the testing facilities to the global standard, and improvement of the quality of products. Again, the *National Industrial Policy 2016* emphasises on undertaking necessary initiatives to strengthen the BAB and the BSTI, and harmonise domestic standards with international ones to ensure easy access of local products into the international markets.

With the aim of designing and establishing a world class standardisation, metrology, testing, inspection, certification and accreditation infrastructure, *Bangladesh National Quality Policy for Goods and Services 2015* was approved by the government. Under the 3rd Working Draft of the said Policy (GoB, 2013), the Export Promotion Bureau (EPB) and the Business Promotion Council (BPC) will be made responsible for upgrading their data collection including information of compliance and standards in the targeted markets. It also provides for a formal agreement between the EPB and the BSTI for sharing relevant information to exporters for better access to the international market. The NQI as envisaged in the said Policy (GoB, 2013) is made up of elements that will confirm adherence of international best practice. Those elements of international best practice and the institutions that are responsible for their adherence are provided in Table 1.1 below:

Table 1.1: International Best Practice and Institutions Responsible

Particulars	Institutions
Standards	BSTI
	Bangladesh Telecommunication Regulatory Commission (BTRC)
Scientific and industrial metrology	BSTI
	Designated Reference Institute for Chemical Measurements (DRiCM), Bangladesh Council of Scientific and Industrial Research (BCSIR)
	Bangladesh Atomic Energy Commission (BAEC) for Radiation Dosimetry
Legal metrology	BSTI
Accreditation of test and calibration laboratories	BAB
	A number of foreign laboratory accreditation bodies operate in Bangladesh
Accreditation of certification bodies	BAB
Test laboratories	BSTI

	Government laboratories in several public institutions such as the BCSIR, BAEC, Bangladesh Agricultural Research Institute (BARI), Fish Inspection and Quality Control (FIQC), Universities, and others
	Bangladesh Fisheries Research Institute
	National Food Safety Laboratory, National Control Laboratory for Drugs and Vaccines and the National Polio and Measles Laboratory under the Ministry of Health and Family Welfare
	Private sector laboratories, including foreign ventures
Calibration laboratories	BSTI
	BCSIR
	Training Institute for Chemical Industries (TICI)
	Private calibration laboratories
Certification bodies	BSTI
	Bangladesh Medical and Dental Council (BMDC)
	Directorate General of Health Services (DGHS)
	Bangladesh Nursing Council (BNC)
	Private sector foreign certification bodies (approximately 20)

Source: GoB, 2013.

1.3 Rationale of the Study and Selection of Sectors

As the existence of numerous legitimate non-tariff barriers faced by our exporters in their market destinations hinders and affects their participation in the flourishing international trade, traders need to remain competitive in the global market by adopting and maintaining international standards. Therefore, it has remained a major concern for the policy makers and the private sector as well to develop a modern certification system to ensure compliance with international standards and hygiene. The Study was undertaken from that perspective, as it aimed to conduct an in-depth analysis of gaps in issuing certificates of standards for export from Bangladesh. This was done through identifying the capacity of local certifying institutions to provide internationally-accepted certificates of standards for some potential product groups for their export to several global destinations, and devising appropriate recommendations for strengthening the BAB and other relevant certifying agencies.

The Study did so by analysing the current standards and certification requirements of selected product groups to export destinations and the current status and performance of certificate providing institutions in Bangladesh. It also conducted the capacity assessment and GAP analysis of selected testing laboratories/institutes both in the public and private sector, identified the capacity strengthening activities needed for the testing laboratories/certifying bodies/agencies and their quality management systems. Again, it conducted the institutional capacity assessment of the BAB to meet international standards and mutual recognition. It also suggested prospective policy interventions that would enable the country to bring about an effective structural change in issuing certificates of standards for export of selected product groups.

For conducting the research, the Study chose the following sectors that have high export potential in major export markets, but faces difficulties especially in respect of certain certification requirements:

1. Jute and Jute Goods;
2. Leather, Leather Goods and Footwear;
3. Plastics Products;
4. Fresh Vegetables and Horticultural Products including Mango;
5. Frozen Food including Halal Meat; and
6. Herbal Products (a special focus has been given on this sector).

The justifications as to why these 6 sectors were chosen for this Study will become clear from the following discussion of the potential of the selected sectors.

1.3.1 Jute and Jute Goods

Being the world's second-largest producer of jute and the largest exporter of the fiber, Bangladesh considers jute as a vital sector from economic, agricultural, industrial, and commercial perspectives. Again, being biodegradable and recyclable, this natural fiber is considered an environment friendly product. Therefore, the increasing consciousness and awareness among western consumers of the hazards that environmentally unsafe synthetic products represent has meant that the jute sector has a huge potential to enhance export income for Bangladesh. Despite some ups and downs over the years in terms of export performance, the sector has now made a strong comeback in the global market due to the diversification of jute products, as around 235 types of diversified jute products are now being produced by a total of 636 small and medium entrepreneurs[3]. These include different types of bags, shoes, gardening products and a wide range of household and daily items, such as cushions and pillows, baskets, floor covers, table stationeries, ornaments, show-pieces, sharis, dresses for ladies and gents and table mats, etc.

While the production of the natural fiber in Bangladesh rose from over 42 lakh bales in FY1971-72 to over 82 lakh bales in the last fiscal year 2016-17[4], the sector has also experienced good growth in terms of exports. During 2017-18, total exported volume of jute and jute products was US$ 1.03 billion. Bangladeshi jute products are now being exported to at least 40 countries including the United States (US), United Kingdom (UK), Australia, Canada, Japan, China, Singapore and different European countries. For the purpose of understanding the potential of the jute sector, the Study emphasises jute and jute goods under the following Harmonized System (HS) Codes: 5307.10, 5307.20, 5303.10, 5310.90, and 6305.10. Table 1.2 and Figure 1.1 below present the total export earnings from the jute sector during FY13 – FY18 under these HS Codes.

[3] *The Daily Sun* (5th April, 2018), "Diversified jute products open new export avenues".
[4] *The Dhaka Tribune* (07th March, 2018), "Jute production doubled since independence".

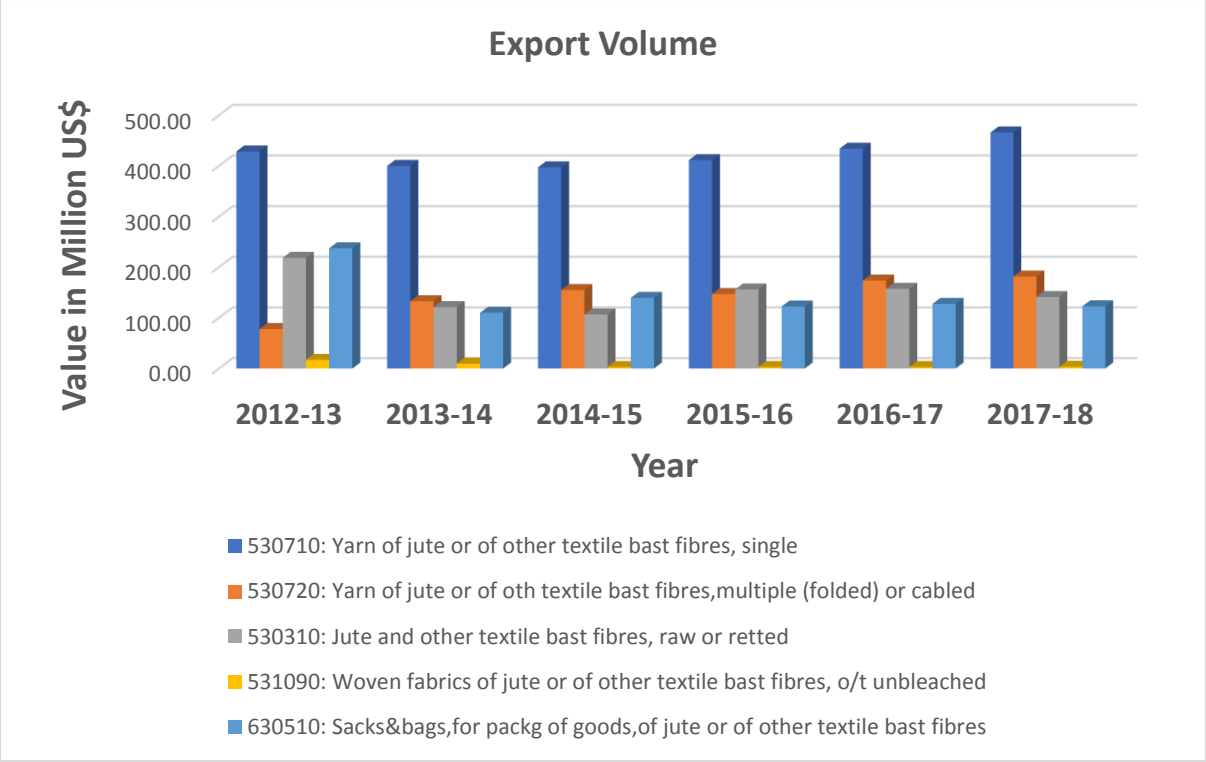
Table 1.2 : Export Earnings from Jute and Jute Goods from FY 2012-13 to FY 2017-18

(Value in Million US$)

HS Code & Description	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
5307.10: Yarn of jute or of other textile bast fibres, single	428.68	400.03	397.37	411.53	434.10	466.05
5307.20: Yarn of jute or of other textile bast fibres, multiple (folded) or cabled	78.05	132.78	154.95	147.20	173.79	181.66
5303.10: Jute and other textile bast fibres, raw or retted	218.70	121.21	106.66	156.22	157.29	141.15
5310.90: Woven fabrics of jute or of other textile bast fibres, other than unbleached	16.96	9.69	3.02	2.91	2.88	3.42
6305.10: Sacks and bags, for packaging of goods, of jute or of other textile bast fibres	237.42	110.05	139.45	122.53	127.53	122.82

Source: EPB

Figure 1.1: Export Earnings from Jute & Jute Goods from FY 2012-13 to FY 2017-18



Demand for new types of diversified jute products, such as blazers, money bags, calendars, hats, caps, hand bags, home textiles, household items, floor mats, carpets, non-woven textiles, shopping bags, etc., is very high in the global market. For example, the global market size of jute-made shopping bags is approximately 500 billion pieces[5]. The Government of Bangladesh (GoB) has also given importance to jute goods in its *Export Policy 2018-21*, as it has been considered as a highest priority sector. Moreover, diversified jute products have been recognised as one of the Special Development Sectors in this *Export Policy 2018-21*.

It would therefore be critically important to ensure that exports of Bangladesh raw jute and jute products do not get hampered due to non-compliance with numerous standards and quality measures in the developed country markets. It is therefore important for the government to have adequate information on the gaps in issuing certificates of standards and on the appropriate policy recommendations and initiatives to comply with different standard requirements and regulations related to jute and jute goods in different export markets.

1.3.2 Leather, Leathergoods and Footwear

The leather sector in Bangladesh includes finished leather, footwear, leather accessories, and leather goods. Bangladesh produces and exports quality bovine, ovine and caprine leather that have a good international reputation for fine textured skins. High domestic value addition, backward and forward linkages, high quality of domestic raw hides, employment generation opportunities are the strengths of this sector. The sector has a strong backward linkage as it uses mostly locally sourced inputs and raw materials. The annual supply of hides and skins in Bangladesh is estimated at 300 million sft. Again, its estimated domestic value addition is often as high as 80-95 percent.
Being the second largest export sector after readymade garments, the leather sector is considered a promising sector for expansion and diversification in exports. About 90 large firms, 2,500 footwear manufacturing units and 220 tanneries comprise the leather industry (LFMEAB, 2017). 90 percent of finished products are exported to various countries including Germany, the US, Japan, China, Italy, UK, France, Canada, Spain, etc. Currently, the size of the global leather market is US$ 220 billion which is forecasted to be US$ 271.21 billion by 2021. According to World Footwear Yearbook 2017, Bangladesh ranked eighth in 2016 in terms of footwear production (378 million pairs of shoes) which is about 1.6 percent of total production[6]. As the developed country buyers, e.g. from the European Union (EU), increasingly look for low-cost suppliers, Bangladesh may find an opportunity to increase its export volume, especially in the EU markets[7]. For the purpose of understanding the potential of the leather sector, the Study emphasises finished leather, leathergoods and footwear under the following HS Chapters and HS Codes: 41, 42, 6403.20,

[5] *The Financial Express* (January 27, 2018), "Bringing back jute's lost lustre", retrieved from https://thefinancialexpress.com.bd/views/views/bringing-back-jutes-lost-lustre-1516991686

[6] *The Financial Express, "* Bangladesh to be leading actor in global footwear market, say experts" (Source: https://thefinancialexpress.com.bd/economy/bangladesh/bd-to-be-leading-actor-in-global-footwear-market-say-experts-1510771658)

[7] The Daily Star (April 22, 2018) : Huge market in Europe for Bangladeshi leather goods, retrieved from https://www.thedailystar.net/business/huge-market-europe-bangladeshi-leather-goods-1565959

6403.59, 6403.99, 6404.20, and 6405.10. Table 1.3 and Figure 1.2 below present the total export earnings from the jute sector during FY13 – FY18 under these HS Chapters and HS Codes.

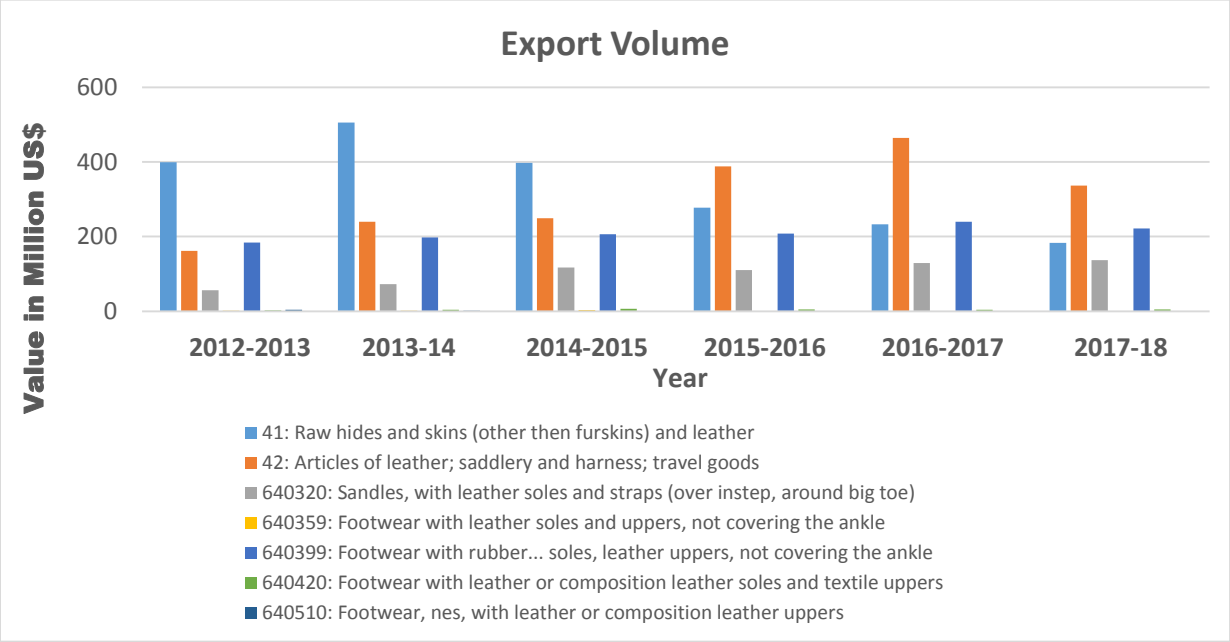
Table 1.3: Export Earnings from the Leather Sector from FY 2012-13 to FY 2017-18

(Value in Million US$)

HS Code	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
41: Raw hides and skins (other than furskins) and leather	399.73	505.54	397.54	277.9	232.61	183.1
42: Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worn gut)	161.6	240.08	249.16	388.22	464.43	336.81
640320: Sandles, with leather soles and straps (over instep, around big toe)	56.04	72.28	116.88	109.98	128.8	136.87
640359: Footwear with leather soles and uppers, not covering the ankle	1.18	1.0	2.88	0.3	0.01	0.16
640399: Footwear with rubber... soles, leather uppers, not covering the ankle	183.7	198.04	206.78	208.24	239.78	221.65
640420: Footwear with leather or composition leather soles and textile uppers	1.98	3.62	6.31	4.4	3.59	4.48
640510: Footwear, nes, with leather or composition leather uppers	3.75	1.08	0.42	0.06	0.02	0.02

Source: EPB

Figure 1.2: Export Earnings from the Leather Sector from FY 2012-13 to FY 2017-18



Source: EPB

However, the changing nature of buyers and the complex rules and regulations in export markets increasingly force exporters to meet high quality and standards. Again, the lack of qualified technicians/laboratories, shortage of testing equipment, and non-recognition by buyers of accreditation of test results also reduced their ability to export. Manufacturers need to do the testing and collect certificates from Hong Kong, Germany and India or by third parties like SGS, Intertek, TUV, TUV SUD, TÜV Rheinland, UL and Bureau Veritas. Testing and collection of test certificates are also time consuming and expensive[8]**.** Therefore, in order to enhance domestic testing capacity that would match international standards, the government emphasises on establishing testing and calibration centers in Bangladesh[9] so that exporters can get the benefit of testing and collecting test certificates from local authorities, as this would contribute to increase in exports. In fact, footwear sector has been recognised as a highest priority sector in the *Export Policy 2018-21*. The Study will thus be of assistance as it aims to identify gaps in certification of standards for finished leather, leathergoods and footwear products under H.S Chapters of 41, 42 and 64.

1.3.3 Plastics Products

During the last two decades, the plastic industry in Bangladesh has emerged as a promising industrial sector, as there are about 3,000 manufacturing units in the plastic sector of which 98 percent are SMEs (Ahmed, 2016). Value addition in manufacturing plastic products is reasonably

[8] *The Daily Star* (July 18, 2008), ''Bangladesh now to certify exportable leather'' (Source: https://www.thedailystar.net/news-detail-46248)

[9] *The Daily Independent* (November 19, 2017), ''Leather sector at cusp of boom'' (Source: http://www.theindependentbd.com/printversion/details/124291)

high, which ranges from 51 percent to 70 percent (ECRL, 2016). The plastic sector constitutes about 1.0 percent of the national GDP. Plastics have some features which make them accepted globally. For example, their light weight, attractive colour, ease of processing, non-rusting property and low cost make them highly demanded worldwide (Islam, 2014).

Bangladesh currently produces 142 plastic items[10], with main export items being intermediate products like plastic films, household items and garment accessories which are exported to the US, the EU (including Germany), Canada, China, India and Nepal. In FY 2017-18, the total export value of plastic under the HS Chapter of 39 (Plastic and articles thereof) was about US$ 98.48 million. The growing trend in exports of plastics products over the years and the substantial increase in global demand reflect that the sector has a huge potential in terms of diversifying the country's export basket. The availability of cheap labor and the fast developing recycling industry in the country for plastics wastes add up in increasing the competitiveness for Bangladesh in the global market (Ahmed, 2016). For the purpose of understanding the potential of the plastic sector, the Study emphasises plastics products under the following HS Headings and HS Codes: 3915.90, 39.24, and 39.26. Table 1.4 and Figure 1.3 below present the total export earnings from the plastics sector during FY13 – FY 18 under these HS Chapters and HS Codes.

Table 1.4: Export Earnings from Plastics from FY 2012-13 to FY 2017-18

(Value in Million US$)

HS Code	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
3915.90: Waste, parings and scrap, of other plastics, nes	**39.02**	**30.04**	**32.33**	**22.35**	**30.65**	**13.53**
39.24: Tableware, kitchenware... and toilet articles, of plastics	**3.73**	**5.83**	**10.85**	**10.93**	**16.42**	**19.97**
39.26: Other articles of plastics, nes	**3.77**	**2.67**	**3.73**	**6.55**	**6.61**	**5.41**

Source: EPB

[10] *The Daily Star*, "Plastic industry shows promise as demand rises", retrieved from https://www.thedailystar.net/business/plastic-industry-shows-promise-demand-rises-1550146

Figure 1.3: Export Earnings from Plastics from FY 2012-13 to FY 2017-18

Source: EPB

Despite the growing trend shown in the above Table and Figure, due to stringent and complicated procedures of certification and testing, exports of these products are being hampered. As most of the exporters of this sector are SMEs, reducing the constraints related to testing and certification will help reduce their cost of production and boost the export of their products. In fact, considering the huge potential of plastics products, the sector has been considered as a highest priority sector in the *Export Policy 2018-21*. For the purpose of understanding the potential of the sector, the study aims at finding out the causes and solutions of these constraints so that entrepreneurs can improve their competitiveness by achieving compliance with requirements in market destinations.

1.3.4 Fresh Vegetables and Horticultural Products including Mango

Vegetables production in Bangladesh has more than doubled during the last decade. According to the Food and Agriculture Organisation (FAO), during the last 40 years vegetables production has increased by five times. Bangladesh ranked 3rd in terms of global vegetable production, next to China and India[11]. The growth is similarly spectacular in the area of horticulture, as Bangladesh has emerged as the seventh largest mango-producing country in the world, with its rate of mango production being the highest. The vegetables and horticultural sector's growth is mainly due to policy support, supply of quality vegetable seeds and particularly farmers' adoption of high-yielding and hybrid varieties, home gardening and development of varieties suitable for the yearlong production which had a huge impact on the growth in production. One of the major reasons for this boom is the increase in cultivation of off-season and all-season vegetables.

Export of fresh fruits and vegetables from Bangladesh have considerably increased from US$51 million in FY2008-09 to US$77.98 million in FY2017-18[12]. Vegetable and fruits are now exported

[11] The Financial Express (January 26, 2017), "Bangladesh vegetable production has increased five times in 40 years " retrieved from http://www.freshplaza.com/article/169946/Bangladesh-vegetable-production-has-increased-five-times-in-40-years

[12] http://www.hortex.org/produces.htm

to about 50 countries around the world. 60 percent of the total quantity is exported to the Middle East and the remaining 40 percent to European and other countries[13]. In FY2016-17, the main vegetable export destinations were - Saudi Arabia (26 percent), Malaysia (17 percent), United Kingdom (11 percent), UAE (11 percent), Qatar (7 percent) and Kuwait (6 percent). For the purpose of understanding the potential of the sector, the Study emphasises vegetables and horticultural products including mango under the following HS Codes: 0701.90, 0702.00, 0709.30, 0711.90, 0804.50, and 0805.50. Table 1.5 and Figure 1.4 below present the total export earnings from the vegetables and horticultural sector during FY13 – FY18 under these HS Codes.

Table 1.5: Export Earnings from the Vegetables Sector from FY2012-13 to FY2016-18

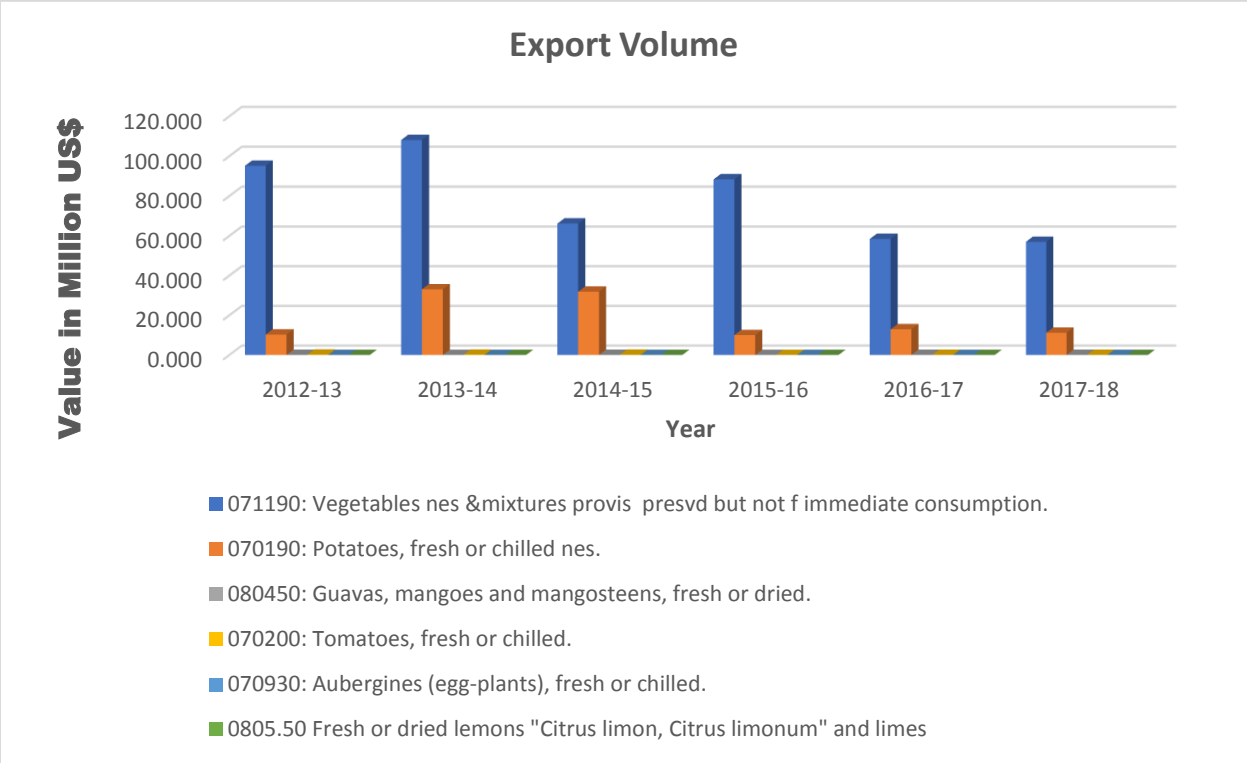
(Value in Million US$)

HS Code	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
0711.90: Vegetables nes & mixtures preserved but not for immediate consumption.	95.15	108.09	66.20	88.38	58.49	57.01
0701.90: Potatoes, fresh or chilled nes.	10.31	33.09	31.90	10.03	12.96	11.22
0804.50: Guavas, mangoes and mangosteens, fresh or dried.	0.03	0.02	0.02	0.00	0.03	0.04
0702.00: Tomatoes, fresh or chilled.	0.18	0.14	0.09	0.01	0.03	0.032
0709.30: Aubergines (egg-plants), fresh or chilled.	0.00	0.00	0.00	0.004	0.00	0.00
0805.50: Fresh or dried lemons "Citrus limon, Citrus limonum" and limes	0.00	0.00	0.00	0.00	0.00	0.00

Source: EPB

[13] http://www.freshplaza.com/article/169946/Bangladesh-vegetable-production-has-increased-five-times-in-40-years

Figure 1.4: Export Earnings from the Vegetables Sector from FY 2012-13 to FY 2017-18



Source: EPB

The government has recognised the importance of this sector, as the *Export Policy 2018-2021* emphasises the production and export of vegetables and horticultural crops through facilitating venture capital, modern transportation and packaging system, contact farming and market promotion. Again, to increase exports, the government has taken some initiatives such as exportsof salmonella-free betel leaf and bacteria-free vegetables, preparation of Good Agricultural Practices (GAP), traceability system, strict compliance of sanitary and phyto-sanitary measures including good packaging, etc.

Exporters of vegetables and horticultural products face different barriers in different market destinations, most of which are related to standards, certification of products and frequent changes in rules and regulations regarding processes to ensure quality and safety through technical standards. For example, Saudi Arabia follows separate regulations for different ports. Authorities in Dammam, a province of the country, do not allow betel leaves through this port while Jeddah allows the product packaged in basket[14]. Again, in the case of mango, exports are hampered due to the country's inability to maintain quality in production and comply with stringent standards in international markets[15]. The quantity of mango exported decreased from 800 tonnes in 2015 to 300

[14] http://bibd.info/bangladesh-food-products-face-non-tariff-barriers-in-saudi-arabia/
[15] https://thefinancialexpress.com.bd/views/promoting-mango-export

tonnes in 2016 due to tough safety standards in importing countries particularly in European markets. The Study, therefore, focused on different trade barriers in terms of issuing certificates of standards to export fresh vegetables and horticultural products including mango.

1.3.5 Frozen Food including Halal meat

Frozen food export might play a significant role in our efforts to diversify the export basket. As the global population rises and people gets busier involving themselves in economic activities, the frozen food market expands day by day. The world market for frozen food is expected to rise about US$306 billion by 2020. Its rate of growth during 2015-2020 is estimated to be 4.1 percent. Rise in disposable income along with changes in the lifestyle and food habits are the driving factors that boost the global demand for frozen food. Moreover, increase in the number of retail chains including hypermarkets and supermarkets has also boosted the demand of frozen food in developing Asian countries[16].

The large export destinations for Bangladeshi frozen foods are Belgium, the UK, the Netherlands, Germany, the US, France, Russia, Japan, China and Saudi Arabia, where we have ethnic markets due the presence of a huge number of migrant workers from Bangladesh. In the ethnic markets, Bangladesh mainly exports various halal food items including halal meat, some fresh vegetables and fruits. Despite huge potential, exports of frozen food and live fish often shows a negative trend. For example, according to EPB data, shipment of frozen food products dropped 96.88 percent in the first month of 2017. In FY 2017-18 foreign exchange earnings in this sector was US$50.78 million. For the purpose of understanding the potential of the sector, the Study emphasises frozen food products and halal meat under the following HS Codes: 0202.20, 0202.30, 0204.50, and 0306.17. Table 1.6 and Figure 1.5 below present the total export earnings from the sector during FY13 – FY18 under these HS Codes.

Table 1.6: Export Earnings from Frozen Food including Halal Meat from FY2012-13 to FY2017-18

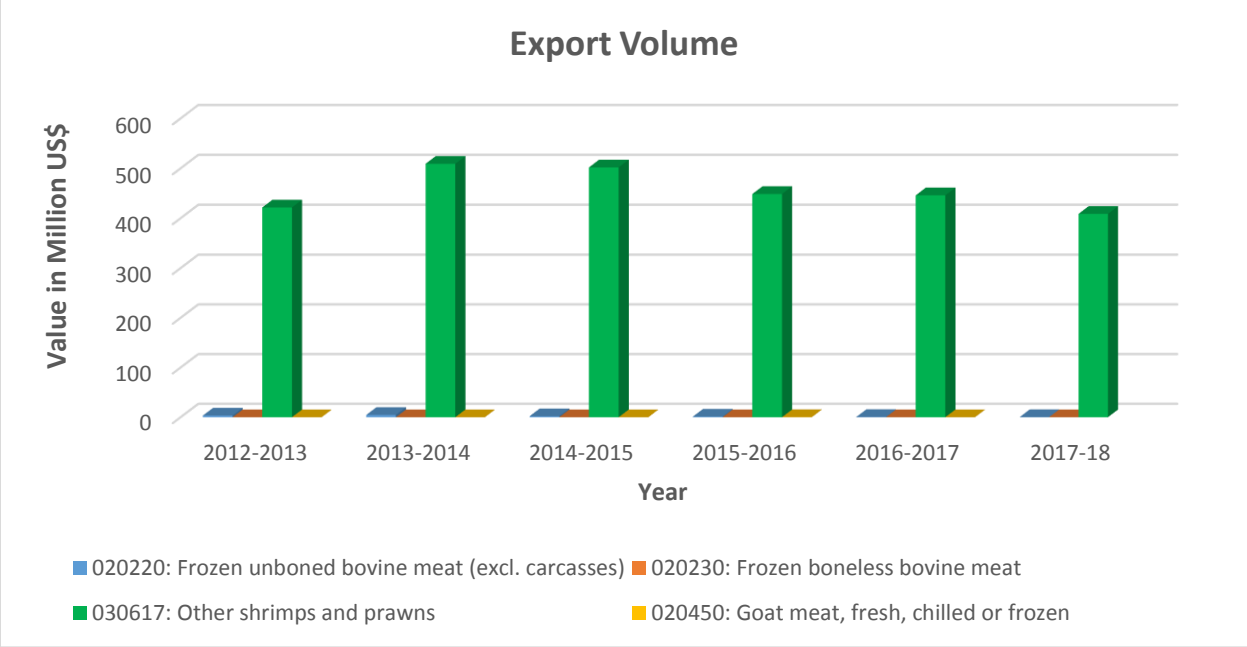
(Value in Million US$)

HS Code	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
0202.20: Frozen unboned bovine meat (excl. carcasses)	**3.36**	**4.61**	**1.94**	**1.29**	**0.54**	**0.14**
0202.30: Frozen boneless bovine meat	**0.00**	**0.05**	**0.06**	**0.03**	**0.08**	**0.09**
0306.17: Other shrimps and prawns	**421.59**	**509.06**	**501.79**	**448.55**	**445.85**	**408.65**
0204.50: Goat meat, fresh, chilled or frozen	**0.00**	**0.00**	**0.05**	**0.14**	**0.06**	**0.00**

[16] https://www.alliedmarketresearch.com/frozen-food-market

Source: EPB

Figure 1.5: Export Earnings from Frozen Food including Halal Meat from FY 2012-13 to FY 2017-18



Source: EPB

The above statistics shows that Bangladesh mostly exports shrimps as frozen food, and that there are no significant amount of exports in other categories. A small quantity of potato is exported in chilled condition. Major Bangladeshi companies operating in the sector face various certification related challenges while exporting their frozen foods to export destinations. Many a times these certification requirements involve a huge cost for exporters, as these tests are carried out in various private labs at home and abroad. As a result, our frozen food products become less competitive in foreign markets.

Again, there is a huge demand for halal meat in the world market, which can be exported from Bangladesh. But strict standards and certification requirements affect their exports. The EU does not permit the import of meat from Bangladesh as the country is yet to develop proper cattle farming and rearing arrangements and factories of international standard. While the Saudi government was willing to import raw and processed meat from Bangladesh, its exporters could not comply with the Saudi stringent conditions for certification[17].

It is worth mentioning that, in the area of shrimp exports, the government has developed specific process and procedure in Bangladesh to facilitate its exports by complying with international requirements. Similar process and system may also be developed in other areas of frozen foods,

[17] Untapped potential of exporting halal meat.Source:http://smhgroup.com.bd/2017/03/12/untapped-potential-exporting-halal-meat/

such as in cattle and poultry rearing. As we have a huge export potential for frozen food and halal meat, a Study aiming to identify different trade barriers in terms of issuing certificates of standards to export of products in this sector will be of immense assistance.

1.3.6 Herbal Products

Like the sectors discussed above, the herbal products sector that comprises products made from medicinal plants also has high export potential. Having the climate and soil favourable for the production of medicinal plants, the country has about 550 medicinal plants of which 300 are most commonly used in the preparation of herbal medicines (Jahan, 2016a). About 75 percent of total population in Bangladesh use herbal medicine for primary healthcare, and internationally over 4 billion people use these for the same purpose, as such medicines are free from any kind of side effects and therefore are the most popular forms of traditional medicines globally (BFTI, 2016b). In the US, about US$ 5 million are spent every year on herbal products. In China, about 40 percent of the total healthcare delivery is made through herbal medicines which covers around 200 million patients per year. Moreover, herbal products are preferred by about 70 percent of the population in Chile, 40 percent in Colombia, 48 percent in Australia, 70 percent in Canada, 38 percent in Belgium and 75 percent in France.

Therefore, the potential of the herbal products sector can be utilized by tapping its growing global demand thereby achieving the government's export diversification objectives. The government has also given importance to medicinal plants and herbal products in its *Export Policy 2018-21*, as herbal products have been recognised as a sector having enormous potentials for export. The policy also encourages stakeholders to produce and boost up the export herbal products and medicinal plants. For the purpose of understanding the potential of the sector, the Study emphasises herbal products under the following HS Heading of 13.02 and HS Code of 1211.90. Table 1.7 and Figure 1.6 below present the total export earnings from the vegetables and horticultural sector during FY13- FY18 under these HS Chapters and HS Codes.

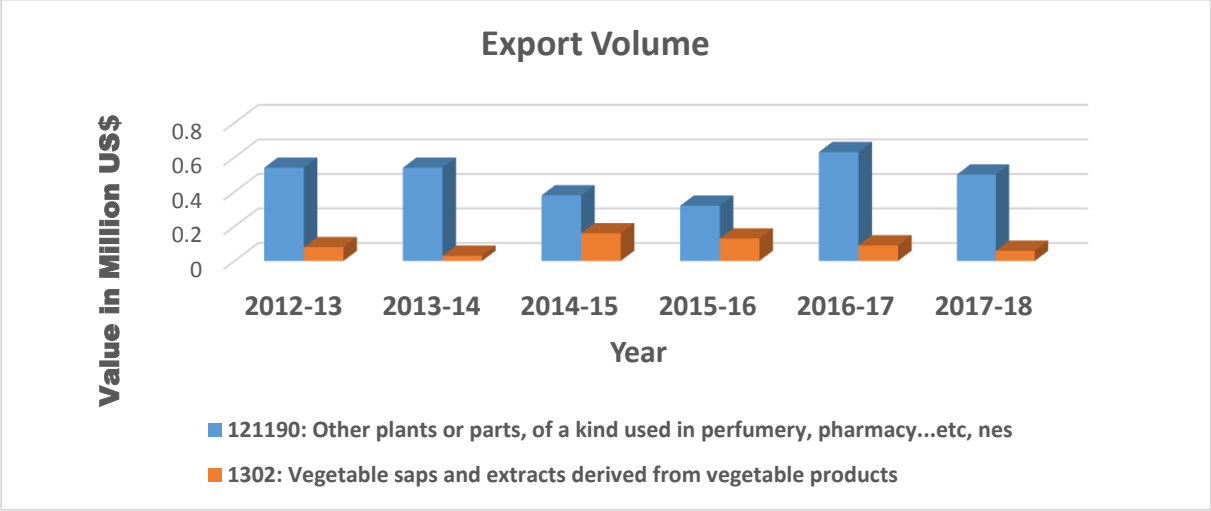
Table 1.7: Export Earnings from Herbal Products from FY 2012-13 to FY 2017-18

(Value in Million US$)

HS Code	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1211.90: Other plants or parts, of a kind used in perfumery, pharmacy... etc, nes	**0.54**	**0.54**	**0.38**	**0.32**	**0.63**	**0.49**
13.02: Vegetable saps and extracts derived from vegetable products	**0.08**	**0.03**	**0.16**	**0.13**	**0.09**	**0.059**

Source: EPB

Figure 1.6: Export Earnings of Herbal Products from FY2012-13 to FY2017-18



Source: EPB

The above statistics shows that exports have been the highest in FY2016-17 reflecting a substantial increase in global demand. Herbal liquid, kalomegh, korpur kachi, galangal, dry bitter gourd chips, ginger powder are among herbal products exported but in very small amount. However, due to stringent and complicated procedures of certification and testing, exports of these products remained restricted. For example, due to lack of quality control facilities, lack of phytomarkers to assure the quality requirement and high costs of obtaining phytomarkers our manufacturers cannot afford to maintain proper quality of their products. Moreover, the country lacks international standard certification institute, there is an absence of toxicity tests for herbal medicines and there is a lack of cGMP (Current Good Manufacturing Practice) Certificate for quality assurance (BFTI, 2016b). Our study aims at finding out the causes and solutions of these certification and testing problems.

Therefore, a Study aiming to identify different trade barriers in terms of issuing certificates of standards to export of products in this sector will be of immense assistance, especially because most of the exporters of this sector are SMEs, and reducing the constraints related to testing and certification will help them reduce their cost of production and increase export competitiveness.

1.4 Literature Review

As there has been changes in global trade flows reflecting a significant increase in both way trade between developed and developed countries, there has also been an enhanced focus on the issue of health, safety, quality and standards and the role they play in affecting that trade flows. The academic attention on quality and standards have therefore come to focus on the interplay between quality, standards in importing countries and the system of standardization and how that weighs in terms of the export competitiveness of firms.

Guasch et al. (2007) stresses that standards have increased competition in the international marketplace, which in turn helps enhance transparency and allows producers to set product and process characteristics or performance. Standards has reduced the transaction costs and information asymmetries between distant countries. It has also reduced the geographical and cultural distances and technological complexities between importers and exporters. This has in turn enabled exporters to adopt internationally reputed standards certification, improve the marketability of their products and raise their firms' export competitiveness (Bangwayo-Skeete & Moore, 2015).

Participation of exporters in the international market depends on several factors. Stakeholders often find it difficult to participate in the standardisation system due to lack of information on new standards, lack of information on changing requirements in importing countries, and costs associated with obtaining certificates, etc. Fernandes et al. (2015) opines that the restrictiveness of product standards in importing countries and the characteristics of exporting firms affect the entry of the firms in the global market. Smaller firms face more difficulties in making decisions for market entry and exits than the larger ones. Again, there are more challenges associated with the countries' infrastructure. Rahmat et al. (2015) points to challenges like outdated laws, lack of knowledge, awareness, limited funding for national research institutes, low level of co-ordination among organisations accompanied with complying with the standards. In response to such challenges, countries need to have an effective and coherent national quality system. In Bangladesh, the infrastructure related to ensuring sanitary, hygiene and standards is extremely weak because of the absence of adequate human resources and technical capacity to identify the area of standardisation. These may act as market access barriers to exporters (CUTS International, 2002). To reduce these barriers, domestic support from relevant partners/agencies is required. The Seventh Five Year Plan of Bangladesh (GoB, 2015) aims to allocate resources to support and fund activities or institutions (Bangladesh Standards and Testing Institute) that helps to facilitate trade and create market access.

Let us now look for the existing literature in the six areas selected for this Study, and begin with the leather sector. We find that there are many studies and published articles that deal with the leather sector. These stresses that the leather and leathergoods industry in Bangladesh requires sustainable long term policy to achieve the target of US$ 5 billion of export by 2021, and implores that the current slow progress of industry is due to the lack of sustainability and compliance issues[18]. Emphasising on sustaining exports in the international market, they suggest that better price of finished leather and leather products through export is achievable if Bangladesh can ensure environment friendly production facilities (Khaled, 2015). An environmentally sound leather sector in Bangladesh has the prospect of capturing a larger share of the global leather export market as China gradually withdraws from it. Again, the availability of local raw materials, knowledge of the supply management within the export industry, and the existence of policy support imply that the leather and leathergoods sector has a huge prospect for transformation, making billions of

[18] https://textiletoday.com.bd/sustainability-compliance-main-issues-achieving-5-billion-export-target-llg-goods/

dollars in additional export earnings (Razzaque, 2018). Thus we find that while there are many studies and published articles that look into the export potential of the leather and leathergoods from Bangladesh, there are not much literature focusing on the issue of certification requirements related to exports.

Prospects and challenges of the jute industry and their solutions were the focus of analysis in several studies. Rahman & Khaled (2011) examined tariff, non-tariff barriers (NTBs) related to SPS, TBT, Rules of Origin, visa requirements, labelling requirements, quantitative restrictions, consular information, etc. faced by Bangladeshi exporters in export markets for jute and the preferential treatment accorded to jute products under various Generalised System of Preferences (GSP) schemes. Moazzem and Chowdhury (2010) analyses the performance of public and private sector jute mills to understand the state of comparative performance of the two sectors for evaluating their relative contribution, level of efficiency and productivity. Thus we find that though there are many studies related to export potential of the jute sector and the NTBs faced by the exporters of jute and jute products in export destinations, there are not much literature related to the sanitary and phyto-sanitary issues that jute exporters face in their market destinations.

In the vegetables and horticultural products sector, there is an study conducted by BFTI (BFTI, 2016a) that highlights the necessity of maintaining sanitary and phyto-sanitary measures and quality standards of vegetables. According to Seraj (2016), quality control, sound transport system are the key to vegetable export success. It emphasises that Bangladesh must ensure consistent quality and efficient delivery to achieve desired export volume. Azad (2015) stresses on Bangladesh's variable record in complying with sanitary and phytosanitary standards. Henson et. al. (2000) attempts to determine the impact of sanitary and phytosanitary measures on developing country exports of agricultural and food products. According to these studies, appropriate food safety regulations and ensuring harmonious regulatory compliance is crucial for consumer welfare as well as boosting trade in high-value agricultural products. The above review of existing research on Bangladeshi vegetables reveals that, appropriate food safety regulation is a must to enhance exports of fresh vegetables from Bangladesh. However, we still require a comprehensive study focusing on quality issues affecting exports in this sector, as a rigorous, in-depth and analytical study will no doubt contribute to enabling the country to effectively tap the export potential of its vegetables and horticultural sector.

Obstacles in the export of halal meat from Bangladesh are mostly related to rearing of cattle in disease-free locations and the processing mechanism at pre- and post-slaughter stages. Certification is mandatory to affirm compliance with the set process. The responsibility to ensure compliance of our exports with this requirement by arranging for necessary facilities lies entirely on the government. Once the government attains the capacity to provide for the required certification, be it country-specific, it is expected that meat exports from Bangladesh would pick

up[19]. Research conducted so far in the area of frozen food and halal meat merely looked at obstacles and problems in exports and tried to recommended policy guidelines for the government to boost the export of these products. But there is no study related to certification requirements, during export, of frozen food items, and there is no assessment of gaps in the certification capacity in the country. As the frozen food sector, including the potential halal meat subsector, has immense export potential, it is necessary to take steps to address the challenges and obstacles that exporters face in this regard.

Most of the researches in the plastics sector are related to the prospects, opportunities and challenges. While providing a detailed overview of the plastic industry in Bangladesh, Hossain (2016) identifies the lack of institutional arrangements in the industry as the main constraint in its growth. This leads to the absence of standard mold designs, skilled manpower, improper plastics waste management system and testing for quality control services, and the lack of quality infrastructure. Other researches (Moazzem & Sehrin, 2015; Begum & Shetu, 2018) identify maintenance of quality as one of the major concerns in the Plastics sector since it is largely dominated by SMEs. There is a lack of product-specific quality standards which hinder the technical product quality, which in turn affects the competitiveness of the sector in the global arena (Begum & Shetu, 2018). Again, the development of a plastic testing laboratory and testing centre is emphasised, as there is a lack of testing laboratory in Bangladesh to test quality and strength of plastics goods (Moazzem & Sehrin, 2015).

There has been very few research in the herbal products sector in Bangladesh. Among them only one (BFTI, 2016b) could give a detailed idea about the sector. The study shows the export trend of medicinal plants and herbal products including the major export destinations and the potential ones from Bangladesh, and identifies the major challenges behind lackluster performance in exports. Challenges identified include the lack of good manufacturing practices, good quality control practices, quality assurance and distribution practices, non-existence of quality marketing practices, lack of good storage practices etc. Among the major challenges faced by the exporters, absence of own herbal pharmacopeia in Bangladesh, absence of international standard certification institutes for toxicity tests of herbal medicines, cGMP for quality assurance, dependency on import for quality herbal extract have also been mentioned. Jahan (2016b) identifies the absence of safe, effective and quality products as the main hindrances in the progress of the herbal products sector. It suggests conducting more research and maintaining strict compliance in the manufacture of herbal medicines. However, as in the cases of other selected sectors, there is not much literature relating to different standard certification requirements and regulations in different export markets as well as mutual recognition of certifying institutions.

It has been amply clear from the above analysis that there has not been any significant research, with respect to the six specific sectors selected for the purpose of conducting this Study that

[19] *The Financial Express* (March 11. 2017), "Bangladesh's untapped potential of exporting halal meat", retrieved from https://halalfocus.net/opinion-bangladeshs-untapped-potential-of-exporting-halal-meat/

specifically looks into the issue of certification requirements related to exports and the existing gaps in Bangladesh in terms of the capacity for certification and standards. Our Study in that sense is a unique one as its made an exhaustive focus on the certification gap and mutual recognition of the certifying institutions. The aim of our Study was to ease off the obstacles to exports of – (a) jute and jute products, (b) leather, leathergoods and footwear, (c) plastics, (d) frozen food and halal meat, (e) vegetables and horticultural products, and (f) herbal products by chalking out possible ways to address the certification gap that exporters of this industry currently face and to identify the ways to overcome the gaps by developing and modernizing our testing authorities.

1.3 Approach and Methodology

In order to carry out the research, the Study used data obtained from both primary and secondary sources. For data collection, it selected the following product groups, namely – (i) Jute and Jute Goods; (ii) Leather and Leather Goods; (iii) Plastics; (iv) Fresh Vegetables and Horticultural Products including Mango; (v) Herbal Products; and (vi) Frozen Food including Halal Meat. The Study then carried out the research using the following methodological principles, namely –

(i) Stakeholder Consultation

The Study focused mainly on collecting primary data from the six selected product groups. It conducted interviews with key stakeholders using a Structured Questionnaire, attached as Annex-1, designed for the purpose. Stakeholders in this case were the product group specific associations, exporters, government agencies/ departments related to the product groups, policy makers, the BAB, the BSTI, etc. (List of stakeholders is attached as Annex-2). A total of representative of 44 institutions were interviewed for the study.

A Key Informant Interview (KII) approach was also used to identify the possible challenges for Bangladesh to meet international standard requirements and identify potential strategies to cope with such situations from the national policy level.

(ii) Desk Review

As part of its secondary data collection techniques, the Study conducted extensive desk review of the existing research, information and literature relating to selected product groups, the certification regimes in different export destinations of these products and the capacity of certifying authorities. These relate to a review of - (a) the existing literature on national policy frameworks and key government regulations regarding issuance of certificate of standards, (b) the existing literature on the needs and requirements for specific certification in different market destinations; and (c) the capacity of Bangladeshi certifying agencies. Again, the prevailing guidelines and policies and the capacity of certifying institutions of Bangladesh were analysed to develop a roadmap for Bangladesh.

(iii) Broad Analysis of a Specific Product Group, Namely the Herbal Products

The Study made an in-depth analysis of the state of certification in case of herbal products, as Bangladesh has a huge export potential for herbal products made from medicinal plants. It

aimed at finding out the causes and solutions of the certification and testing problems faced by exports of herbal products from Bangladesh.

(iv) Focus Group Discussion

To ensure an in-depth analysis and research for the selected product groups, the Study also conducted a number of focus group discussions (FGDs) of all major stakeholders of the six selected product groups, the research groups and think tanks. Inputs generated from the FGDs were very much useful for the Study in collecting relevant information, verifying and obtaining in-depth details of information collected with other tools, and supplementing data received through the above three means (viz., stakeholder consultation, desk review and KII).

(v) Data Analysis and Report Writing

The Study synthesised all the data and information received through stakeholders' interview. The process included - (a) analysis of data, obtained from both primary and secondary sources, on the provision certificate of standards of selected product groups; (b) identification of gaps between requirements and capacities of certifying institutions, and formulation of suggestions and recommendations based on them; and (c) identification of steps required to enhance the capacity of the BAB and equip it adequately, and formulation of appropriate recommendations.

The draft findings of the study were finalised through a validation workshop, which was organised with key stakeholders where the draft findings were presented and validated. After completion of the workshop, this final report was prepared incorporating feedback and suggestions made by participants of the workshop.

This final product of the Study is a comprehensive report that will serve as a guideline for the relevant stakeholders (including the exporters/certifying institutes) and government policy makers by identifying the gap in issuing certificate of standards for export of those selected product groups, as well as by highlighting the appropriate strategies to enhance exports to these product groups.

Chapter 2 : Certification Regime of Selected Product Groups in Export Destinations

The introductory chapter has identified the six key sectors that have high export potential in major export markets, but confronts problems in terms of compliance in respect of certain certification requirements, and provided the rationale and justification for their selection for this Study. This chapter attempts to examine and analyse the certification regimes of those selected product groups, namely (i) Jute and Jute Goods, Leather, (ii) Leather Goods and Footwear, (iii) Plastics Products, (iv) Fresh Vegetables and Horticultural Products including Mango, (v) Frozen Food including Halal Meat, and (v) Herbal Products.

2.1 Certification Regime of Jute and Jute Goods

The traditional jute goods exports of Bangladesh are mainly hessian, twine and carpets. There are more than 200 diversified jute products in Bangladesh. The country exports jute bags, hessian cloths and sacking cloths. Jute yarn is another basic export product of Bangladesh. Currently a type of jeans clothing is made blending jute and cotton which has a high demand in the global market. Besides, we also export Carpet Backing Cloth (CBC), whose market is very dull recently. Jute ropes are also being exported. Another type of diversified product is Charcoal which is produced from jute sticks and is often used as medicine and as ink of photocopy machines. Exports of diversified jute products receive 20 percent cash incentive ,while jute bags and hessian products get 10 percent and yarn export gets 5 percent cash incentives respe tively[20].

2.1.1. Product-wise Major Export Destinations:

Product-wise major export destinations for jute and jute goods are highlighted below:

- Jute bags are mainly being exported to Africa, Indonesia, South America, Russia, Sudan, Papua New Guinea, Turkey, Middle East, Syria, and China.
- Middle East is the main destination for hessian products. Besides, hessian bag has a high demand in the global arena.
- The African countries, such as Sudan, Tanzania, Uganda, Mozambique, etc., are the main destinations for sacking cloths exports.
- CBC is exported to Japan, Australia, Mozambique.
- India and China are the major export destinations for yarn of jute.
- In case of jute ropes, major export destinations are the EU, African countries, Turkey, India, etc.

2.1.2 Certain Testing and Standard Certification Requirements in Export Destinations:

For exporting jute and jute products to our export destinations, exporters face a variety of testing and standard certification requirements. Some of them are highlighted below:

[20] Interview findings from the Bangladesh Jute Goods Exporter's Association, BJGEA.

- Pre-shipment inspection has to be carried out from the third party. Inspection certificates from the 3rd parties according to the buyers' requirements.
- Some of the test parametres are: Specific gravity, freezing point, cloud point, clear point, Kinematic Viscosity, melting point, free of fatty acid test, unsaponifiable matter test, PH level, colour test etc.
- Food Grade Test for jute bags has to be done.
- A testing called Parts Per Million (PPM) is carried out to detect the existence of harmful organisms and unsaponifiable matter. For food grade sacks testing is done to detect whether the bag is prepared using palm oil or JB oil (Jute Batching Oil) [21].
- Phyto-sanitary certificate and fumigation certificate have to be taken also[22].

Table 2.1 below shows the required parametres for testing jute and jute products, including those additional parametres required for testing jute bags.

Table 2.1 Required Parametres for Testing Jute and Jute Products

Required Parametres for All Products	Additional Parametres for Jute Bags
• Gross weight of bales	• Outside height of the bag
• Tare weight of bales	• Outside width of the bag
• Net weight of bales	• No. of WARP threads per 10 cm
• Weight per bag	• No. of WEFT threads per 10 cm
• Measurement per bag	• Percent of moisture regain
• Construction of cloth and bag	• Percent of oil
• Weaving faults	• Net weight of bale
• Stripe	• No. of bags per one bale
• Sewn	• No. of bags per one bundle
• Stitch per decimeter	• No. bundles per one bale
• Oil Content	• No. of joint bags per one bale
• Color	• Sewn
• Moisture	• Colour
• Joint bag	• Capacity
• Capacity	
• Breaking strengths	
• Seam strength	
• Packing and marking	

[21] Interview findings from the Bangladesh Jute Mills Corporation, BJMC.
[22] Interview findings from Bangladesh Jute Goods Exporter's Association, BJGEA.

2.1.3 Country-wise Specific Standard Certification Regime for Jute and Jute Products:

Country-specific testing and certification requirements for jute and jute products in India, China and the African countries are highlighted below:

(A) India:

Testing Requirements:

To test the level of oil content in the jute bags, laboratory test is required. In Bangladesh, this test is done by the Bangladesh Jute Goods Laboratory (BJGL).

Certification Requirements:

The following cerfiticates are required in India:

- SAPTA certificate
- Country of Origin Certificate
- Oil Content test
- Phyto-sanitary Certificate

(B) China:

Usually, China imports a large volume of raw jute from Bangladesh in order to produce different types of jute products like jute bags, sacks, hessian and other goods to meet its domestic and export demands. In that context, the following GB standards are required:

- GB/T 2696-2008: Jute yarns and threads: This standard provides a mechanism for jute twine twisted package, test methods, cable wire and rope core yarn requirements for inspection rules, packaging and identification technologies such content. This standard applies to jute, mechanism as the main raw material of kenaf and jute line[23].

- GB/T 12411-2006: Test methods for jute and kenaf fibres-This standard specifies the yellow, kenaf fiber bundle fiber breaking strength test, fiber linear density, sampling and testing methods impurity rate, regain. This standard applies to yellow, kenaf fiber physical performance test sample, apply to yellow, tests impurity rate, fiber linear density, regain kenaf fiber bundle breaking strength[24].

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[23] https://www.chinesestandard.net/PDF/English.aspx/GBT2696-2008

https://books.google.com.bd/books?id=j1UEBAAAQBAJ&pg=PA5309&lpg=PA5309&dq=required+GB+standard+to+export+jute+%26+jute+products+to+China&source=bl&ots=9VEyBYlvU5&sig=k-gtPHM6QVdDxI_rRrnKaFnxSMQ&hl=en&sa=X&ved=0ahUKEwjNh6jf1-vbAhVDU30KHSEeBZQQ6AEIXjAL#v=onepage&q=jute&f=false (Chinese Standard, June 2018)

[24] https://www.chinesestandard.net/PDF/English.aspx/GBT12411-2006

(C) Africa:
Taking certificates from SGS is solely a buyer's requirement. African countries ask for SGS inspection and certification.
(D) The EU: To export to the EU countries, SGS certificate is not required.

2.2 Certification Regime of Leather and Leathergoods

For exporting leather, chemical tests are required to certify the chrome-free leather. These tests include Chromium VI and Azo-Dyes testing. The presence of Chromium VI and Azo-Dyes in leather and leathergoods are considered a threat to the health safety of consumers.
Chemicals originated from synthetic or natural source is important in the tanning industry. Final leather products contain these chemicals or chemicals transformed into waste. Importers of leather are concerned with the use of chemicals to ensure the safety of consumers and environment[25]. Tanners need to comply with the rapidly changing regulations and specifications related to the hazardous or toxic properties in chemicals.

Restricted Substance List (RSL) is a common issue for the tanning industry. There are two types of restrictions, namely the Product Restricted Substance List (PRSL)[26] and the Material Restricted Substance List (MRSL)[27] which are regulated by national regulations or manufacturers.

2.2.1 National Regulations and Laws of Major Countries:

The national laws and regulations related to leather and leathergoods in the major export destinations are highlighted below:

(A) The EU:

For the EU, the exporters need to comply with REACH substance requirements for the leather products. They must maintain caution with regard to the selection of chemicals used in leather products, that are considered hazardous to people or the environment. Some EU countries have additional national restrictions.

- **REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals):** REACH is a regulation of the EU for the chemicals. This regulation is mandatory for all the EU countries. This regulation addresses the production and use of the chemicals and their impact on the environment and health. As per the REACH regulation (EU Regulation

https://www.export.gov/article?id=China-Trade-Standards

[25] Restricted substances in leather- TFL Eco Guidelines (Source: https://www.tfl.com/media/03-tfl.com-and-intranet/salesfolder/sf_tfl_eco_tec_restricted_substances_in_leather_glo_en.pdf)
[26] **Product Restricted Substance List (PRSL)** restricts the use of chemicals in the final product.
[27] **Material Restricted Substance Lists (MRSL)** which addresses restricted chemicals in the chemical product used for making leather.

XIV (REACH), the Substances of High Concern (SVHC) must not be present in the leather products at more than 0.1 % (= 1000 ppm)[28].

- **Examples of restricted substances relevant for footwear:**

  - ✓ **Azo dyes (leather and textiles):**
    In the case of dyed leather, product must not contain any azo dyes that releases any of the 22 aromatic amines that are restricted.

  - ✓ **Chromium VI (leather):**
    The use of Chromium VI is restricted in the EU. The EU law limits the use of chromium in leather products to max. 3 ppm. According to *Bureau Veritas.* Chromium VI causes strong contact dermatitis in humans and concentrations of 3 mg/kg can trigger allergic reactions. The EU issued regulation EU 301/2014[29], which states that 'articles with leather parts, which come into contact with the skin, shall not contain Chromium VI with 3 mg/kg or more'.

  - ✓ **Perfluorooctane sulphonate (PFOS)**:
    This chemical is used to make leather (and textiles) resistant to water and dirt. According to Regulation (EC) No. 850/2004 (Stockholm Convention), it is restricted in Europe and the maximum limit for PFOS is 1 µg/sqm.

    There are restrictions on parts made of Polyvinyl Chloride (PVC), Organostannic compounds, short-chain chlorinated paraffins (SCCPs) etc.

  - ✓ **Labelling of footwear:**
    Labels with information regarding the three main parts of footwear (the upper, the lining and sock, the outer sole) must be provided. The tour label must indicate the material- leather, coated leather, textile or other that can be either in words or in symbols[30]. Made-in label is optional in the EU, but buyers require the made-in labelling from their suppliers.

(B) The US:

In the national level in the US, the Federal Agencies, EPA (Environmental Protection Agency), and CPSC (Consumer Product Safety Commission) control regulations and guidelines. The state level regulations are different. For example, the state of California has its "Proposition 65" regulation, which protects people from the exposure to harmful materials[31]. If any items of leather

[28] Restricted substances in leather- TFL Eco Guidelines (Source: https://www.tfl.com/media/03-tfl.com-and-intranet/salesfolder/sf_tfl_eco_tec_restricted_substances_in_leather_glo_en.pdf)

[29] COMMISSION REGULATION (EU) No 301/2014 of 25 March 2014 (Source: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_090_R_0001_01&from=EN)

[30] http://exporthelp.europa.eu/update/requirements/ehir_eu14_04v001/eu/auxi/eu_lblfootw_annex1.pdf

[31] Restricted substances in leather- TFL Eco Guidelines (Source: https://www.tfl.com/media/03-tfl.com-and-intranet/salesfolder/sf_tfl_eco_tec_restricted_substances_in_leather_glo_en.pdf)

and leather products fall under the regulation of animal quarantine department, the importers of such products must obtain a certificate from Animal Quarantine Office of the importing country.

(C) Japan:

Law 112 of Japan regulates the use of the harmful substances (e.g. formaldehyde, azo dye) in household products (leather/fur products also included in the list)[32].

(D) China:

GB standards (GuoBiao Standards) are Chinese national standards provided by the Standardization Administration of China (SAC), the Chinese National Committee of the International Organization for Standardization (ISO) and International Electro Technical Commission (IEC). GB standards of China are classified in two stages- mandatory and recommended. Mandatory standards are related to the protection of human health, personal property and safety enforced by the law of China. In China, all the products and services (domestic or foreign) need to comply with the GB standards.

- **GB 20400-2006-Leather and Fur - Limit of Harmful Matter:**
  China issued a mandatory requirement- "*Chinese Standard GB 20400-2006, Leather and Fur - Limit of Harmful Matter"*. This *stipulates* the leather and fur consumer products produced, sold or imported in China have to comply with certain test methods to detect harmful substances. All the restricted substances listed in the standard are consistent with the regulations in the EU and Japan[33].

- **GB 21550-2008-Restriction of Hazardous Materials in Polyvinyl Chloride (PVC) Artificial**
  - ✓ **Leather:** GB 21550-2008 standard regulates the use vinyl chloride monomer (VCM), soluble heavy metals including soluble lead and soluble cadmium and other volatile substances contained in PVC artificial leather. This is a mandatory standard for PVC artificial leather- foamed or non-foamed form[34].
  - ✓ **Other GB standards:** For vulcanized shoes GB 25038-2010 and children's canvas vulcanized shoes, GB 25036-2010, and GB 30585-2014 is mandatory[35].

[32] Bureau Veritas (Sep 2015, Bulletin 15B-034), Japan – Act on Control of Household Products Containing Harmful Substances Updated (Source: https://www.bureauveritas.com/be4b6e2c-5515-4e07-bdb5-d6e9f3041b55/Bulletin_15B-034.pdf?MOD=AJPERES)

[33] Bureau Veritas- Bulletins. Chinese Standard Bans Harmful Substances in Leather and Fur. (Source: http://www.bureauveritas.ee/f73861804b58cc1e98eb9a1d88542a4e/Bulletin_07B_112.pdf?MOD=AJPERES)

[34] CHINA NATIONAL GB 21550 (Source: http://newsletter.sgs.com/eNewsletterPro/uploadedimages/000006/SGS-Safeguards-08810-China-National-GB-21550-EN-10.pdf)

[35] Intertek-GB Testing on Footwear for the China Market. (source: http://www.intertek.com/consumer/testing/gb/footwear/)

2.3 Certification Regime of Plastics Products

Plastics products are the 12th largest export items for Bangladesh if only direct export products[36] are considered. Major export items are Furniture (HS Code: 9403.70.00: Furniture items-Chair, Table, Stool, Wardrobe, etc.), Household items (HS Code: 3924.90.90: Food Container, Jug, Mug, Bucket, Bowl, Basket, Rack etc.).

Raw materials are imported from the Middle East, such as Qatar, United Arab Emirates (Dubai) etc. and suppliers also do the tests for raw materials but buyers do not want these, and they only require product-base certificates. Plastics products are exported to 160 countries. Major destinations are the SAARC countries, the EU, the US, Japan, North America, Latin America, South America, Canada, the Oceania, the Philippines, Vietnam, Cambodia, India. For the US and the EU, formal buyers like Dollar general, Walmart etc. impose requirements. According to the buyer's requirements, different test parametres (final product based) are done by the 3rd parties.

2.3.1 Country-wise Specific Standard Certification Regime:

Country-specific standard certification regime for plastics products in major export destinations are highlighted below:

(A) SAARC Countries: No extra certificates or requirements are needed if EU regulations are maintained.

(B) India: No standard certification requirement for India[37].

(C) USA: Standards are required for the US. Test of different parametres are done. The leading international certification of standards providing institutions are SGS, Intertek, Bureau Veritas, TUV, ULAB. The offices of the standard certification providing agencies are present in Bangladesh, but most of those tests are done in India or China as the labs in Bangladesh are not accredited[38].

(D) European Union: Certification for entering into the EU is named LFGB test (EU 2011)[39].

(E) Middle East: the Middle East has more stringent requirement. Each article needs to be tested and verified.

(F) China: All plastics products to be exported to China must comply with the Chinese standards[40]. Different tests are required for different plastics products. For example, a toy to be exported will be required to test for mechanical and physical properties, flammability, chemical properties, including migration of heavy metals, phthalate content, and other hazardous substances.

[36] This means that if we could deemed exports of plastic products from our consideration.
[37] Interview findings from the Bengal Plastic.
[38] Interview findings from the Bengal Plastic.
[39] Interview findings from the Bengal Plastic.
[40] https://www.export2asia.com/blog/lab-testing-requirements-exporting-china/

If the toy is electrically powered, electrical properties test will also be necessary. Plastics that are exported as food contact materials to China are subject to some compliance steps.

Step 1: Complying with the corresponding product National standard. For imported plastic food contact materials the standards are as follows:

- GB 9687-1988 Hygienic standard for polyethylene product used as food container and tablewares.
- GB 9688-1988 Hygienic standard for polypropylene product used as food container and tablewares.
- GB 9689-1988 Hygienic standard for polystyrene product used as food container and tablewares.

Step 2: Checking the safety and quality of the product by analysing the ingredients used as additives[41]. For this tests are required to be done on-

I. Food contact additive review
II. Safety and Hygienic Items Testing

The ingredients used as additives should be among the 107 ingredients that can be used in plastics products.

Step 3: labeling should be done in the Chinese standard. The products must have the following information accordingly.

I. Product name
II. Product material
III. Original country or region
IV. Overseas manufacturer name
V. Name, address and contact of importer or agent
VI. If the product has the shelf lift, the best before date is necessary.
VII. If necessary, the applicable condition, warning mark and Chinese wary specification shall be indicated.
VIII. Other mandatory contents based on specific product national standard.

With the implementation of new Food Safety Law in China, exports of plastics products has become more stringent. In recent times, China has imposed a ban on import of plastics wastes which are contaminated with dirty or hazardous material. Plastics, including PVC and polyethylene, will be covered by the ban[42]. This ban has created trouble in recycling for most of

[41] http://www.cirsreach.com/news/Chinese_Regulation_Requirements_on_Imported_Food_Contact_Materials_ad_Articles.html

[42] https://www.ft.com/content/27d5733c-da85-11e7-a039-c64b1c09b482

the plastics waste exporters of countries like the UK and others. Bangladesh will also be affected by this.

(G) Saudi Arabia:

Rules regarding the export of plastics products to Saudi Arabia have become more stringent. The country has mandated plastics products to be made of an approved oxo-biodegradable material. Non-compliant materials cannot be exported to the country anymore. Plastics products and packaging made with polyethylene or polypropylene must comply with the new rules and contain an oxo-biodegradable master batch from a supplier approved by the Saudi Arabian government. Even the disposable plasticsa products are made of polyethylene or polypropylene with a film thickness of 250 microns or less, which are commonly used for packaging (such as carrier bags, wrappings and similar applications), should also be oxo-biodegradable. For this the products should have "biodegradable" logo in its packaging. Without the corresponding logo, the exports cannot be imported into Saudi Arabia.

In order to use the logo, the importers and manufacturers need a license from a responsible Saudi organisation, the SASO (Saudi Standards, Metrology and Quality Organisation)[43]. In order to check imported products accurately, the customs authority in Saudi Arabia work with a laboratory.

(H) Japan:

Bangladesh exports plastics products to Japan under HS code 3926 (Article of plastic nes). Under the Food Sanitation Act in Japan, plastics portions that come into direct contact with food are prohibited to contain lead or cadmium[44]. After importation, a plastics product (tableware, kitchenware) is subject to quarantine inspection and testing. In case of failure to provide test reports, the imported products are destroyed or shipped back. For colored tableware, separate testing of coloring agents is required.

2.4 Certification Regime of Fresh Vegetables and Horticultural Products including Mango

In case of fresh vegetables and fruits, same certificates are required to export.

2.4.1 Certain Testing and Standard Certification Requirements in Export Destinations:

- For exporting vegetables and horticultural products including mango to our export destinations, exporters face a variety of testing and standard certification requirements. Some of them are highlighted below: Pest free and Disease-free Product Certificate.
- For vegetable exports, the exporters need Phyto-sanitary certificates.
- Sanitary Certificate/Health Certificate is mandatory globally on the basis of buyers requirement to export in order to detect mycotoxin, aflatoxin.

[43] https://www.s-ge.com/en/article/news/20173-saudi-arabia-clean-plastic-legislation
[44] https://www.jetro.go.jp/ext_images/en/reports/market/pdf/guidebook_interior_goods.pdf

- Pest-free Certificate is required in order to ensure that the product is free from Fruit fly, Stoneweevile, Pulpweevile, etc.
- Salmonella test and Brown rot tests have to be done. Traceability and pesticide control is a requirement in the EU. The traceability is recorded by the local agricultural officer in each belt of production.
- Standard Requirement: GAP (Good Agriculture Practice) is emphasised. This is the requirement from the the EU buyers but not implemented yet. The Department of Agriculture Extension along with the exporters associations and farmers have been working on the preparatory phase in Bangladesh under the guidance of the EU. It would be known as the Bangla GAP. The Department of Agricultural Extension (DAE) would be the competent authority, with the technical assistance from BARI, to provide this standard certificate. In terms of providing GAP certificate, MRL, fertilizer, labour issue-labour health, labour hygiene, Hazard Analysis Critical Control Point (HACCP) are considered. GAP mainly ensure the traceability of the products on every aspect of the production process.
- Contract Farming: Production through contract farming is mandatory to ensure the traceability of the product.
- SOP (Standard Operational Procedure): It is mandatory in each of the stages, such as the production process, inspection, etc. Documentation is mandatory in each stage. Laboratory testing is also necessary.
- Voluntary Certificate: ISO certificate is needed.

2.4.2 Country-wise Specific Standard Certification Regime:

Country-specific standard certification regime for vegetables and horticultural products in major export destinations are highlighted below:

(A) Russia:

Mandatory Requirement:

- Health Certificate and Phytosanitary Certificate are required for exporting potato to Russia.
- Potato exports to Russia need to meet four conditions.. It is required to ensure that potato is free from brown rot disease (bacteria disease), and potato tuber moth (insect). Russia stopped importing potatoes from Bangladesh due to issues of food safety and disease.

(B) Malaysia:

Mandatory Requirement:

- Phytosanitary certificate is mandatory to export to Malaysia.

Voluntary Requirement: (Buyer requirement):

- Some buyers from Malaysia demand some parametres of pesticide test. Buyers also recommend SGS to do this test. SGS in Bangladesh has no facility to test this. In that case, they outsource this from the SGS in India.

- Health certificate is required to export vegetables, peanuts & banana.
- At present, no health certificate is required to export potato to Malaysia. But hygienically production system and standard adoption is growing demand for potato export to Malaysia.
- HACCP certification will be added for exporting potato to Malaysia. But this is not mandatory at this moment. Some buyers demand this certificate sometimes.

(C) European Union:

The following requirements have to be fulfilled in the case of exports to the EU:

I. Limited use of pesticides:

Maximum residue levels (MRLs) for pesticides on food products have been set by the EU to avoid health and environmental damage. European buyers of fresh produce are very concerned about product quality. The MRLs laid down in European regulations are less strict than MRLs used by the buyers in its different member states including the UK, Germany, the Netherlands and Austria. Moreover, supermarket chains are the strictest in this regard, as they demand 33 percent to 70 percent of the legal MRL[45].

II. Control of food imported into the EU:

Fresh agricultural products is subject to several legal and other buyer requirements to export to the EU as it is very sensitive about food safety. In fact the EU has restricted the use of certain chemicals (MRLs) in its various rules and regulations in order to ensure food safety and avoid environmental damage. This is why products will be subject to official controls to make sure that all foods marketed in the EU are safe and also in compliance with all related regulatory requirements. Three types of checks are done:

a. Documentary checks
b. Identity checks
c. Physical checks

Product traceability is compulsory for importers of fresh vegetables and fruits. In that context, in order to fulfill this obligation, European importers will require the exporters to provide proof of origin of all vegetables and fruits with Bill of Lading, phytosanitary certificate, packing list and custom documentation.

III. Plant Health:

The European legislation on plant health has to be fulfilled in order to export vegetables and fruit. Moreover, they have placed conditions on phytosanitary requirements in order to prevent spread

[45] https://www.cbi.eu/market-information/fresh-fruit-vegetables/buyer-requirements/

of organisms harmful to plants and plant products in this region. The food safety authorities in the importing and exporting countries manage these requirements.

IV. Contaminant:

Due to the consequences of several stages of its production, packaging, transport or holding, contaminants may be present although these have not been deliberately added to food. In this regard, the EU has set limits for several contaminants to avoid negative impact on the food quality and risks to human health. Especially the limits for nitrate (in spinach and lettuce) and metals (cadmium, lead, mercury and inorganic tin) are relevant for fresh fruit and vegetables.

Additional Requirements:

Certification as guarantee:

I. Most of the buyers want and request extra guarantees from the exporters in the form of a certification as food safety has been given top priority in all European food sectors. In fact they require the implementation of a food safety management system based on Hazard Analysis and Critical Control Point (HACCP).

II. Another essential food safety certification scheme to export is GLOBAL G.A.P which has become a minimum standard for most European supermarkets. This is a pre-farm-gate standard that covers the whole agricultural production process, from before the plant is in the ground to the non-processed product (processing not covered)[46].

III. Beside this, other food safety management systems are needed also. Almost all buyers on the North-Western European market want the exporters to comply with the British Retail Consortium (BRC) global standards that are applied to maintain the standard for hygiene and safety.

IV. It is also required to comply with the IFS food standard, Safe Quality Food (SQF) programme, FSSC22000 or other industry-developed standards[47].

Health Certificate: Presently Health Certificate is not necessary for the export of Mango and Zara Lemon to the EU.

(D) UK: The Department for Environment, Food and Rural Affairs (DEFRA) is a food safety authority in the UK, which sets the standards for importing goods in the UK.

(E) ASEAN:

At present, we are not exporting potato in this region. Sanitary certificate is required to export there.

(E) GCC (Gulf Cooperation Council) Countries: Health certificate is required to export there.

[46] https://www.cbi.eu/market-information/fresh-fruit-vegetables/buyer-requirements/
[47] https://www.cbi.eu/market-information/fresh-fruit-vegetables/buyer-requirements/

(F) USA:

Phytosanitary standard certificate is required in the US to ensure the traceability of the product. Currently Bangladesh cannot export fresh vegetables to the US due to traceability and integrity of the product.

(G) United Arab Emirates:

The following requirements are to export fresh vegetables and fruit to the UAE:

I. Animal & Plant Health Inspection Service (APHIS) Phytosanitary Certificate is needed to quarantine pests and insect free confirmation[48].
II. Health Certificate.

(H) Saudi Arabia:

In case of Saudi Arabia the requirements are:

I. Phyto-sanitary Certificate is needed to ensure food safety.
II. Health certificate[49].

(I) Kuwait:

Following requirements will have to met while exporting fresh fruit and vegetables to Kuwait:

I. All food shipments ought to be followed by a health certificate which is issued by the relevant government agency in the country of origin, confirming the product's fitness for human consumption.
II. In order to ensure pest and insect free confirmation, Animal & Plant Health Inspection Service (APHIS), Phyto-sanitary certificate is required[50].

(J) Singapore:

Singapore has strict regulatory rules in order to ensure the safety of food supplies imported into the country. Major governing bodies of food trade are the Agri – Food and Veterinary Authority of Singapore (AVA) and Food Control Department. Exports to Singapore are regulated through regulations that are imposed on the importers. Under the Control of Plants Act, the import of fresh fruits and vegetables is controlled. According to the Act, the produce must not contain any banned

[48] http://agritrade.iift.ac.in/html/Training/Market%20study/UAE_Final_Report.pdf

[49] http://www.chilealimentos.com/medios/Servicios/Normas_internacionales/Norma_otros_paises/Normativa_Arabia_SAudita/Food_and_Agricultural_Import_Regulations_and_Standards_Certification_Arabia_saudita_USDA.pdf

[50] https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20and%20Agricultural%20Import%20Regulations%20and%20Standards%20-%20Narrative_Dubai_Kuwait_6-14-2011.pdf

pesticide, and the levels of pesticide residue or toxic chemical residue should not exceed approved levels[51].

(K) Japan:

Phyto-sanitary Certificate and Sanitary Certificate are required to export vegetables and fruties to Japan. But due to the Fruit fly problem, Bangladesh cannot meet the standard requirement of Japan, and hence Bangladeshi vegetables are not currently exported to Japan. However, there is a huge demand for fruits specially Mango in Japan. If Bangladesh could ensure the pest free production process within the production region, it will be able to open up the market for Mango export in Japan.

(L) India:

Food import clearance certificates are issued by the Food Safety and Standard Authority of India (FSSAI) for all food articles[52].

Mandatory Documents regarding security and safety issue are:

I. Import- Export Code from DGFT and Import License from FSSAI.
II. Complete Certificate of Analysis including safety parametres from Country of Origin (Mandatory for Proprietary Food).

2.5 Certification Regime of Frozen Food including Halal Meat

2.5.1 Product-wise Major Export Destinations:

Product-wise major export destinations for frozen food including hala meat are highlighted below:

- Shrimp, Catfish and all kinds of fish other fishes are exported from Bangladesh. Shrimp is exported to the mainstream markets the EU, the US, Japan, Russia. Italy, the UK, Middle East are the destinations for catfish.
- In Bangladesh, Bengal Meat is the only exporter of halal meat. Bengal Meat exports both raw and processed meat (Beef and Mutton). (HS Code-02 (Meat and edible meat offal - 0202 (Meat of bovine animals, frozen) and 0204 (Meat of sheep or goats - fresh, chilled or frozen) to Middle East (Kuwait, UAE, Bahrain), Maldives**.**

[51] https://www.guidemesingapore.com/business-guides/industry-guides/restaurant-and-food-industry/importing-food-products-into-singapore

[52] https://fics.fssai.gov.in/pdf/FAQs_Import.pdf

2.5.2 Country-wise Specific Standard Certification Regime:

Country-specific standard certification regime for frozen food including halal meat in major export destinations are highlighted below:

(A) EU: Suppliers have to meet the certification requirements given by the buyers. In the EU, all the foods -frozen food including halal meat (produced or imported) must be safe for consumption. The European Commission's Directorate-General for Health and Consumer Protection (DG SANCO) is the regularity authority for food safety in the EU.

Health standards for fishery products[53] : The fishery products have to comply with certain health and safety requirements. For exports to the EU, shrimps must be from an authorised country, caught by approved vessels or cultured in registered farms (aquaculture). To become an approved country, the exporting country's national authority have to submit a formal request to the Directorate-General for Health and Consumer Protection of the European Commission. This approval is given on the basis of public health and control system. The exporting country must be able to ensure strict health requirements for fish products. Again, the seafood products must have a health certificate provided by the Competent Authority of the country of origin/exporting country.[54] Exporters need to submit a catch certificate which certifies the legal fishing. A regulation related to prevent and eliminate illegal, unreported and unregulated fishing (IUU)[55] entered into force on 1st January, 2010. In case of sea fish export, IUU (Illegal, Unreported and Unregulated) test is mandatory in USA, EU.

To export meat in EU, the cattle has to be free from disease. There are various diseases of cattle, such as, Foot-and-mouth disease (FMD)[56], Influenza, and Anthrax. The exported meat must be free from such disease. Currently, Bangladesh cannot export to the EU as FMD (Foot and Mouth Disease) prevails in Bangladesh.

(B) the UAE:

To export products to the UAE, exporters must submit the country of origin and health certificates in order to verify the products' origin and safe for human consumption. The Customs Authority and Health Department of the UAE are the regularity body respectively for issuing those certificates. For meat and poultry products, Food Safety Inspection Service (FSIS) Export Health Certificate and Halal Slaughter Certificate from the health department is required. These certificates certify that the animals are slaughtered and processed according to the UAE regulation

[53] How to export… shrimps to the European Union. (Source http://trade.ec.europa.eu/doclib/docs/2013/may/tradoc_151157.pdf)

[54]Bulletin of International Trade Centre- EXPORTING SEAFOOD TO THE EU; (Source: http://www.intracen.org/uploadedFiles/intracenorg/Content/Exporters/Exporting_Better/Quality_Management/Redesign/EQB84_Rev%201_eng_Exporting%20Seafood%20to%20the%20EU_FINAL_11.08_Blaha.pdf)

[55] IUU or illegal, unreported and unregulated fishing is fishing that is conducted contradictory to legal conservation and management measures currently in place around the world. (source: http://imcsnet.org/resources/iuu/)

[56] Foot-and-mouth disease (Source: https://ec.europa.eu/food/animals/animal-diseases/control-measures/foot-and-mouth-disease_en)

and Islamic/Sharia laws and requirements. Halal slaughter and health certificates need to be endorsed by the UAE Embassy or Consulate (or any other Arab Embassy or Consulate in the absence of the UAE Embassy). Bi- lingual labels are required including product description, ingredients, net weight, country of origin, production and expiry dates etc.[57].

(C) South Korea:

Exporters need to submit the Certificate of Origin with the products exported to Korea. For shipments of live animals, animal products, plants, and plant products the US Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) issues inspection certificates indicating conformity of health and sanitary standards. For the export of meat and poultry products a certificate of wholesomeness is needed. Frozen Shrimp exports to Korea have to follow the quarantine regulations[58].

(D) Maldives:

To export meat to the Maldives, following certificates are required-

- Meat and Poultry Export Certificate of Wholesomeness.
- Certificate of origin for meat product.
- Health certificate from the country of Origin.
- Halal free certificate for halal meat export[59].

[57]All you should know before exporting to UAE. (Source: http://agritrade.iift.ac.in/html/Training/Market%20study/UAE_Final_Report.pdf)

[58] http://www.mfds.go.kr/eng/index.do?nMenuCode=116

[59] https://www.fsis.usda.gov/wps/portal/fsis/topics/international-affairs/exporting-products/export-library-requirements-by-country/Maldives

Chapter 3 : Certificate Providing Institutions in Bangladesh and their Level of Acceptance in Export Destinations

There are a number of institutions in Bangladesh that conduct testing and do product certification, and in that way monitor product quality and acceptability. Besides, they inspect the products in accordance with applicable internationally recognised product standards and safety regulations, and issue product certifications ensuring health and food safety. But all testing labs are not accredited by the Bangladesh Accreditation Board (BAB). In fact, even after receiving accreditation from the BAB, in some cases these testing and certifying bodies are not recognised globally. Absence of globally approved labs, huge shortage of manpower, inadequate capability to test all parametres, etc. are the main reasons behind the non-recognition of these certifying bodies. In fact, it is also found that buyers do not accept the test reports and certifications of these labs although these are well-equipped with proper facilities. Sometimes it is also seen that buyers do not know that these labs exist in Bangladesh. In such a situation, buyers asked the exporters to test the parametres from international leading 3rd party service providers at home and abroad instead of doing these tests from local testing bodies. Against this background, this chapter attempts an in-depth analysis of the level of global acceptance of the certification providing institutions in Bangladesh.

3.1 Level of Acceptance in the Area of Frozen Food including Halal Meat

- **Fish Inspection and Quality Control (FIQC):**

The fisheries sector has been playing a vital role in the overall socio-economic development of Bangladesh by alleviating poverty, generating employment and earning valuable foreign currency. Shrimp culture is of central importance to the fisheries sector in Bangladesh particularly in the context of export earnings. 80 percent of our total shrimp exports are destined to the US and the EU together[60].

To export fish/shrimp, quality control of the export item is a must. The Fish Inspection and Quality Control (FIQC) in Bangladesh serves to assure the quality and safety of fish/shrimp products in Bangladesh. The service provided by the FIQC in this regard has been quite satisfactory. The FIQC has three laboratories in Dhaka, Khulna and Chittagong, which are accredited by BAB. These laboratories are also accredited with International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Laboratory Accreditation Cooperation (APLAC). FIQC laboratories provide testing services which are recognised internationally. FIQC follows the HACCP (Hazard Analysis and Critical Control Points) guidelines. HACCP is a management approach to food safety. It is the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. This is supervised by the FIQC inspection team. Sometimes it is also done by international third

[60]https://www.jscimedcentral.com/Aquaculture/aquaculture-1-1001.php

parties. All the steps are certified by HACCP[61]. The level of acceptance of FIQC as a certificate providing institute is very high. In case of testing done for fish/shrimp export, international method is followed in the FIQC. Some countries have specific requirements, and those are also followed if needed. For the selection of any country specific tests, in house validation method is used. For exportation of shrimp, the following 2 types of tests are done at the FIQC:

1. Monitoring Tests. Based on 'On- check' system. Not mandatory. This test is of two types-
    i. FRCP, and
    ii. NRCP.
2. Pre- Export Tests. All the tests under pre-exports tests are done from FIQC. This is mandatory before export[62].

According to requirements from importing countries, the following parametres are tested for pre-export samples of fish and fish products:

i. **Microbiological Test[63]**:

- Aerobic Plate Count, Total Coliforms, Faecal Coliforms/E. coli, Salmonella spp., Vibrio cholerae.
- Vibrio parahaemolyticus, Staphylococcus aureus, Listeria monocytogenes, Shigella

ii. **Chemical Test**: (Applicable for EU countries and Russia):

- Chloramphenicol, Nitrofuran metabolites (AHD, AMOZ, AOZ, SEM), Tetracycline, Oxy-tetracycline, Chlor-tetracycline, Dyes (Crystal violet, Leucocrystal violet, Malachite green, Leucomalachite green), Flubendazole)

The FIQC has the facilities also to conduct some other tests, such as -

iii. Organo Leptic Test
iv. Dryness Test
v. Heavy Metal Test
vi. Antibiotic Test
vii. Pesticide Test
viii. Hormone
ix. Bacteria & Mesophiles Test.

[61] Interview Findings from the Fish Inspection and Quality Control (FIQC)
[62]Interview Findings from the Fish Inspection and Quality Control (FIQC)
[63] Interview findings from the Fish Inspection and Quality Control (FIQC)

Because of quality test of FIQC laboratories shipment rejection rate has been decreased from 54% to 1%. In addition, EU has also withdrawn mandatory 20% sample re-testing[64]. At the same time, the demand for Bangladeshi shrimp has also increased in the US.

- **Department of Livestock Services (DLS):**

Department of Livestock Services is a government authority that mainly provides veterinary coverage. It also works for development and extension services for livestock. Its objective is to work for fulfilling the protein requirement of country. Other objectives include creating employment opportunities by nurturing livestock and poultry, and marketing and processing of products.

Currently the health certificate of the cattle is given by the DLS at the time of export. But its certificate is not recognised by the buyers in export destinations. The DLS has its own Central Disease and Investigation Laboratory, where the necessary tests are done. If it fails to test some parametres, it seeks help from the ICDDRB and the BCSIR. Currently buyers (except those from the EU) do not require in-depth analysis. Halal certification is given by Islamic Foundation in Bangladesh. The DLS is currently working with the Food and Agricultural Organisation (FAO) to prepare some guidelines of food safety standards. Currently the DLS is carrying out zoning farming at Pabna, as this zone is free from the Foot and Mouth Disease (FMD). There is also plan to pilot such zoning farming in Bhola and Shirajgoang. There is a special zoning for goats in Jhikargacha of Jessore, where the goats are free of PPR (Peste des petits ruminants) commonly known as the goat plague. But these zones need more manpower[65].

The World Organisation for Animal Health (OIE) is the custodian of animal health care. They review the health standard of animals from every country each year. The report of animal health, disease must be sent to OIE from government agencies like livestock department. But there is no initiatives of the government agencies currently. Bangladesh is risky according to OIE report. FMD prevails in Bangladesh[66]. Due to FMD (Foot and Mouth Disease), Bangladeshi meat can not enter the EU market as the criteria are very strict. The main requirement for meat export is that the cattle has to be free from disease[67]. The rules in the EU and Saudi Arabia requires that not just the particular cattle, but the whole area needs to be FMD free. This is a very stringent criterion to meet for Bangladesh[68]. Middle East Countries do the Sampling test in its testing institute. After that exporters will get the permission to export.

- **Islamic Foundation:**

The Islamic Foundation has establablished a collaborative arrangement with the JAKIM certification authority, which is an international body that recognises slaughter house and its standards in Bangladesh. For each consignment a halal certificate is needed. Sometimes certificate

[64] http://imed.portal.gov.bd/sites/default/files/files/imed.portal.gov.bd/page/e773d5bf_182e_4fc5_a856_dfd3c8d05ced/2013_Fish%20Inspection%20and%20Quality%20Control.pdf

[65] Interview findings from the Department of Livestock.

[66] Interview findings from the Bengal Meat.

[67] Interview findings from the Department of Livestock.

[68] Interview Findings from the Department of Livestock Services.

is required from abroad in order to export abroad. . JAKIM certificate is required in order to export abroad. This JAKIM certification authority comes to Bangladesh, visits domestic slaughter house and verifies the standards. This certification is accepted in Middle East Countries including Dubai, Kuwait, Bahrain & Maldives. The license needs to be renewed each year[69]. Two appointed personnels from Islamic Foundation remain in the slaughterhouse, and are responsible for ensuring halal slaughtering.

3.2 Level of Acceptance in the Area of Jute and Jute Products

- **Bangladesh Council of Scientific and Industrial Research (BCSIR):**

Bangladesh Council of Scientific and Industrial Research (BCSIR) is the leading scientific research institute in the country. Though its main objective is to pursue scientific research, it also provides testing certificates for certain export products. BCSIR currently tests RMG products, jute products and plastics products, etc. However, all the laboratories of the BCSIR are not accredited by the BAB, which causes hindrance when it comes to export any product with the certificate of the BCSIR. Even if the BCSIR has an accreditation, the Study found during the interviewing and consultation that buyers still tend to accept and rely onprivate testing institutes, such as SGS, Intertek, etc. These private testing agencies have a well-managed syndicate and have connections with the buyers. The Study found that majority of the tests of jute and jute goods are carried out in the BSTI and BCSIR. The tests carried out by the BCSIR is recognised and accepted by the buyers. Some product specific testing done by BCSIR are highlighted in Table 3.1:

Table 3.1: Specific Tests Conducted at the BCSIR

Product	Testing Parametres
Jute and Jute Goods	• Banned Azo- dye • Formaldehyde, Acetaldehyde • API/NPI • Banned Dispersed Dye • Pesticides • Banned Poly Chloro-phenol • Heavy metals • Parts per Million (PPM) (to test the existence of harmful organisms). • For food grade sacks testing [to detect whether the bag is prepared using palm oil or jute batching oil (JB oil)] • Some other test parametres: Specific gravity, freezing point, cloud point, clear point, Kinematic Viscosity, Melting point, free of fatty acid test, unsaponifiable matter test, PH level, colour test etc.[70]

[69] Interview findings from the Bengal Meat.
[70] Interview Findings from the Bangladesh Council of Scientific and Industrial Research (BCSIR).

- **Bangladesh Jute Mills Corporation (BJMC):**

The BJMC was established in order to control, supervise and co-ordinate the activities of jute mills under it. It buys raw jute for the mills from farmers, and for that purpose, has 182 purchase centers located in the jute growing areas in the country. It ensures fair price to the farmers. The BJMC produces mainly hessian cloths, different types of hessian bags, sacking cloth, different types of sacking bags, yarn, geo-jute, blanket, jute canvas and CBC, etc.

The BJMC has testing labs for testing the necessary parametres. Taking certificates from SGS is solely a buyer's requirement. Inspection certificate is given by SGS, as the African countries ask for SGS inspection and certification. For export to the EU, SGS certificate is not required[71].

Tests done by the BJMC are recognised by buyer countries (sample jute bag)[72], and are highlighted in Table 3.2 below:

Table 3.2: Tests Conducted at the BJMC Lab

Product	Testing Parametres
Jute Bag	○ Outside height of the bag ○ Outside width of the bag ○ No of WARP threads per 10 cm ○ No of WEFT threads per 10 cm ○ Percent of moisture regain ○ Percent of oil ○ Net weight of Bale ○ No of Bags per one Bale ○ No of Bags per one Bundle ○ No of bundles per one Bale ○ No of joint bags per on bale ○ SEWN ○ COLOUR ○ Capacity

[71] Interview Findings from the Bangladesh Jute Mills Corporation (BJMC).
[72] Interview Findings from the Bangladesh Jute Mills Corporation (BJMC).

3.3. Level of Acceptance in the Area of Fresh Vegetables and Horticulture Products including Mango

- **Bangladesh Food Safety Authority (BFSA):**

The Bangladesh Food Safety Authority (BFSA) is an autonomous regulatory agency, which was established in February 2015. It works to provide all out support to other food control agencies. In case of export, the BFSA holds the responsibility to provide the heath certificate for agricultural products to the exporters. The Study found during the interviewing and primary consultation that it cannot provide this certificate due to problems like lack of global standard laboratory, lack of machineries and lack of human resource.

- **Department of Agricultural Extension (DAE):**

The vision of the Department of Agricultural Extension (DAE) is to provide eco-friendly, safe, climate resilient, sustainable productive good agricultural practices. It also works for sustaining natural resources to ensure food security. It also aims to accelerate socio-economic development through the promotion of commercial agriculture. When exporters apply for the health certificate to the BFSA, which the BFSA cannot do for reasons explained above, the DAE provides this certificate. Certificate of the DAE is globally accepted, but product can still be rejected due to the buyer's condition. The DAE inspects the whole process from production to the packaging with the support of BARI (Bangladesh Agricultural Research Institute). Health certificate is mandatory globally to export in order to detect mycotoxin, aflatoxin. Phytosanitary certificate is also required which is provided by the DAE. Phyto-sanitary certificate is necessary for export food items from Bangladesh. Plant Quarantine Wing under the DAE is the designated authority to provide the certificate.

3.4 Level of Acceptance in the Area of Plastics Products

- **Bangladesh Council of Scientific and Industrial Research (BCSIR):**

One of the largest divisions under the BCSIR, Dhaka is the Fibre & Polymer Research Division. This advanced Fibre & Polymer Laboratory of BCSIR has been proposed for accreditation as per ISO-17025 standard[73]. This division is now fully functional, and provides service to manufacturers of-

- ✓ Readymade garments
- ✓ Jute
- ✓ Plastics
- ✓ Rubber products etc.

The laboratory is yet to get its ISO certification. It has been proposed for ISO accreditation so that the laboratory can measure food grade quality of plastics and other packaging materials and do the identification and quantification of food grade coloring materials. These qualities are demanded

[73] http://www.fpl-bcsir.gov.bd/

by the EU, the USFDA and other regulatory authorities. The BCSIR also provides some product specific tests for plastics goods which are mentioned in Table 3.3.

Table 3.3: Tests Conducted at BSCIR for Plastics Products

Product	Testing Parametres
Plastics goods	• Banned Bisphenol (BPA) • Food Grade Quality • Banned Thalets • Formaldehyde • Acetaldehyde • Banned Chloro- Benzene, Chloro- toluene, • Poly cyclic aromatic hydrocarbons • Heavy metals

Though BCSIR can provide these tests, the Study found during the interviewing and primary consultation that buyers still tend to accept and rely on private testing institutes, such as SGS, Intertek, etc.

- **Bangladesh Atomic Energy Commission:**

Bangladesh Atomic Energy Commission (BAEC) was established in 1973 as a multidisciplinary research and development organisation with the view to promoting peaceful uses of nuclear energy in Bangladesh. It provides some tests of Plastics products. These include MFI (Met flow Index testing of Polymer), and Radiation test from atomic energy commission. These tests are accepted by the buyers.

3.5 Level of Acceptance of BAB and BSTI (Two Leading Bangladeshi Agencies)

- **Bangladesh Accreditation Board (BAB):**

Bangladesh Accreditation Board (BAB) is the national authority with the responsibility of accreditation in Bangladesh. It accredits different kinds of conformity assessment bodies such as laboratories, certification and inspection bodies, training institutions etc. In doing so, it follows the relevant International Organisation for Standardisation (ISO), International Electro Technical Commission (IEC), and other regulatory standards and national standards. The BAB is an autonomous organisation and is responsible for developing the quality assurance infrastructure in Bangladesh. It is also assigned for upgrading the conformity assessment procedures in Bangladesh that will ensure recognition and acceptance of products and services in international, regional and domestic markets. It mainly provides three kinds of certification, namely product certificate, general certificate and lab accreditation certificate. Demand for accreditation by the BAB depends

on the requirements in the market. Some buyers want that the exported items to be tested in accredited labs, in which cases, the testing labs approaches the BAB for accreditation.
The main functions of the BAB are-

- To accredit the testing, calibration and medical testing laboratories (in accordance to ISO/IEC 17025, ISO 15189)
- To accredit the certification bodies (in accordance to IS0/IEC 17021, IS0/IEC 17024, ISO/IEC 17065)
- To accredit Inspection Bodies (in accordance to ISO/IEC 17020)
- To establish MRA (Mutual Recognition Arrangement) and MLA (Multilateral Recognition Arrangements) with Regional and International Forums and collaborate with the relevant national, regional and international organisations in accreditation.

The BAB is globally recognised by its regional and international associations, i.e. Asia Pacific Accreditation Cooperation (APAC) (formerly APLAC) and International Laboratory Accreditation Corporation (ILAC) since 2015 (January 8th). This recognition refers to the equivalence of all of the conformity assessment activities conducted in Bangladesh through testing laboratories accredited by the BAB[74]. But despite being accredited by the BAB, testing and certification provided by institutions like FIQC and BSTI are not recognised by many of the importers.

- **Bangladesh Standards and Testing Institution (BSTI):**

Ministry of Industry is responsible for the standardisation, certification marks and monitoring quality control of food items through the Bangladesh Standards and Testing Institute (BSTI). The BSTI is playing an important role in promoting industrial standardisation. Quality standards are set and monitored by the BSTI following international standards, such as those established by the ISO.
The BSTI product certification scheme is a third party scheme based on ISO Type 5. It consists of determining conformity of a product with a Bangladesh standard through product sampling, initial testing and assessment of the factory quality management system. The product quality is continuously monitored through surveillance of the factory's quality management system and testing of samples from the factory and open market. Product certification system of the BSTI has been up gradated in accordance with the international standard ISO/IEC Guide 65 (General requirements for bodies operating product certification system) with a view to achieving the satisfaction of local consumers as well as to promoting export.

BSTI laboratories received accreditation by the BAB as per international standard ISO/IEC 17025 in the field of chemical, mechanical and biological testing, covering 35 products and 411 parametres. The BSTI also got accreditation for its product certification system from the National Accreditation Board for Certification Bodies (NABCB), India as per ISO/IEC 17065, till today 14

[74] Source: Bangladesh Accreditation Board (BAB)

products have been accredited (Source: BSTI). The BSTI operates the Certification Marks Scheme under which the manufacturers and importers are permitted to use the standard mark on goods produced or imported by them in conformity with the relevant Bangladesh Standard (BDS)[75]. Twenty-one Bangladeshi food items can enter India with BSTI certification without any sort of test.

[75] Source: Bangladesh Standards and Testing Institution (BSTI)

Table 3.4 : Analysis of the Level of Acceptance of Certification Providing Institutions in Bangladesh

Product Label	Test Reports/ Certificates	Certificate Giving Institutions	International Level of Acceptance	Remarks & International Requirements Gap
Frozen Food				
a) Halal Meat	Health certificate	Department of Livestock Services	Not Accepted	Lack of disease free internationally recognised certification
	Halal Certificate	Islamic Foundation	Accepted (Middle East)	There is joint collaboration between JAKIM certification Authority, Malaysia and Islamic Foundation where JAKIM certification authority come to Bangladesh, visit domestic slaughter house, verify the standards and provide JAKIM certificate.
b) Shrimp	Health Certificate	FIQC	Accepted	Different countries require different health certificates. EU, USA, Russia, China, Saudi Arabia, Korea, Australia have different health certificate form[76].
	Test Report • Microbiological Test • Chemical Test	FIQC	Accepted	Test results depend on importing country's requirement (certificate form). All the conditions placed by different countries are listed down in the certificate forms. Submitting the forms online is mandatory[77].
	Monitoring Tests- FRCP and NRCP	FIQC	Accepted (EU accepts FIQC testing)	Still exporters are not aware of the specific requirements to exports in supermarkets globally. The FIQC can play a significant role in this regard[78].

[76] Interview findings from the FIQC (Fish Inspection and Quality Control).
[77] Interview findings from the FIQC (Fish Inspection and Quality Control).
[78] Interview findings from the FIQC (Fish Inspection and Quality Control).

				Heavy crisis/huge shortage in skilled manpower in the labs, experienced manpower is the major issue here. It takes almost 5 years for training the manpower but most of them after getting trained go to any other post.
				At present, the FIQC is not doing pesticide tests (one of Monitoring Tests) but according to sources FIQC would be able to do the pesticide tests from their own labs soon.
				Currently in terms of testing and inspection, new parametres are set by the importing countries very frequently. Tests like disease test will be needed in the future. For the disease tests new pathogen labs need to be established.
				To test for environmental pollution, PCP contamination and dioxins are needed which require a machine worth 12 crore taka.
	Pesticide test (One of Monitoring Tests)	BARI	Accepted	The 6 parametres of pesticide test are done from the BARI and these tests are accepted globally.
	Mycotoxin tests (One of Monitoring Tests)	BCSIR	Accepted	The 6 parametres of Mycotoxin tests are done from the BCSIR and these tests are accepted globally.
	Traceability certification	FIQC	Accepted	Exporters send traceability certificate in each consignment. But it is not mandatory.
Jute and Jute Goods	Pre-shipment inspection certificate	3rd parties	Accepted	Pre-shipment inspection has to be carried out from 3rd parties according to buyers' requirements.
	*Specific gravity, freezing point, cloud point, clear point, Kinematic Viscosity,	BCSIR	Recognised and accepted	Accepted depending on Buyer's choice.

	melting point, free of fatty acid test, unsaponifiable matter test, PH level. *Banned Azo-dye,Formaldehyde, Acetaldehyde, Heavy Metals, Pesticides		by the buyers[79]	
	Phyto-sanitary certificate and Fumigation certificate	DAE	Accepted	
	Food Grade test	BCSIR, SGS and Intertek[80]	Accepted	Food grade jute bags are tested by SGS. This lab is recognised by buyers. Food Grade test is also carried out in the BCSIR and Intertek.
	BJMC test parametre for jute Bag: Outside height & width of the bag, No of WARP & WEFT threads per 10 cm, Percent of moisture regain, Percent of oil, Net weight of Bale, No of Bags per one Bale, No of Bags per one Bundle, No of bundles per one Bale, No of joint bags per on bale, SEWN, COLOUR, Capacity	BJMC	Accepted	Few test parametres are accepted by the buyers.
	Parametres test: Gross weight of the bales, Tare weight of the bales, Net weight of the bales, Weight per bag, Measurement of the bag, Construction of cloth and bag, Weaving Faults, Stripe, Sewn, Stitch per decimeter, Oil content, Color, Moisture, Joint bag, Capacity, Breaking strengths, Seam strength, Packing and marking.	SGS	Accepted	
Fresh Vegetables and horticulture products	Phyto-sanitary Certificate	Department of Agricultural Extension (DAE)	Accepted	It is accepted but there are many obstacles including inadequate skilled people, capacity of people, inadequate modern machineries, absence of

[79] Interview findings from the Bangladesh Jute Mills Corporation (BJMC).
[80] Interview findings from the Bangladesh Jute Goods Exporter's Association (BJGEA).

including Mango		Plant Quarantine Wing		accredited laboratory exist in both the DAE, the BFSA[81].
	Good Agricultural Practices (GAP) certificate: Global GAP, Regional GAP, Bangla GAP			
	Bangla GAP	DAE		DAE, Field service wing will provide GAP certificate. In terms of providing GAP certificate, MRL, fertilizer, labour issue-labour health, labour hygiene, HACCP are considered. Without approval from the DAE, only certificate of the BSTI isn't acceptable.
	Regional GAP	Indian institutes provide this		Regional Gap Certificate: At present DAE doesnot have the capacity to provide this certificate. In that case it is required to have this from INDIA. Each year this certificate has to be renewed[82].
	Sanitary Certificate/ Health Certificate	DAE	Accepted	Health certificate/ Sanitary certificate for the EU is mandatory globally to export in order to detect mycotoxin, aflatoxin[83].
				The BFSA holds the responsibility to provide this certificate. But due to the problems like lack of global standard laboratory, lack of machineries, lack of human resource, the BFSA cannot provide this certificate[84].

[81] Interview findings from the Department of Agricultural Extension (DAE).
[82] Interview findings from the Department of Agricultural Extension (DAE).
[83] Interview findings from the Department of Agricultural Extension (DAE).
[84] Interview findings from the Department of Agricultural Extension (DAE).

				In that case, when exporters apply for this certificate in the BFSA then the DAE provides this certificate. Certificate of the DAE is globally accepted, but product can be rejected due to the buyer's condition.
	MRL (Maximum Residual Level)	BARI		MRL is a part of sanitary certificate. The BARI do this MRL test. Due to their specific conditions, it is seen that there are fluctuations in vegetables exports in this region.
	Salmonella test and Brown rot tests	BCSIR	Not Accepted	Salmonella test and Brown rot tests can be done by the BCSIR. But they don't have any accreditation[85].
Plastics Product	*BPA (the chemical Bisphenol-A) Food Grade Quality Banned Thalets Formaldehyde Acetaldehyde Heavy Metals (Food Contact Test[86])	BCSIR BSTI	Not Accepted	BSTI, BCSIR do not have the facilities, modern equipment, skilled people, testing facilities and capabilities to test the parametres[87]. They do not have recognition also. Buyers do not know that such institutes exist in Bangladesh[88].
				Tests are done from leading international certification of standards providing institutions, namely- SGS, Bureau Veritas, Intertek TÜV Rheinland (German based company), ULAB from foreign countries as these 3rd parties in Bangladesh are not doing the tests for all the parametres only for few companies due to high costs of machinery and equipment, it is not feasible to do these tests only.

[85] Interview findings from the BFVAPEA.
[86] Samples of the Food Contact Test Report were provided by a renowned Plastics manufacturer.
[87] Interview findings from the Bangladesh Plastic Goods Manufacturer and Exporters Association (BPGMEA).
[88] Interview findings from the Bengal Plastics Ltd.

				So they send the samples to India and Singapore's SGS, Bureau Veritas, Intertek etc. for testing[89].
	MFI (Met flow Index testing of Polymer) and Radiation test	BAEC[90]	Accepted	…..
Leather and Footwear				
Tannery	chemical tests are required such as: Chrome 6 test and Chrome B5, Azodye, Aldehyde[91]	SGS	Accepted	Buyers refer the chemical tests to be carried out by SGS. Tests from SGS Bangladesh are globally recognised.
				Sometimes Chemical tests are also done from other labs in foreign countries on buyers' demand, then they send the sample to SGS Hongkong.
				Tests if needed are done from SATRA in England and Vietnam. Mainly China and Europe want tests to be done from abroad[92].
				The chemical tests that are required cannot be done in BUET and Leather Technology College of DU. Even if they had the ability, they are not recognised by the buyers[93].
		BSCIR	Not accepted	BCSIR might do the chemical tests but they are not recognised by the buyers and they take more time to give test reports.[94]
Footwear		SGS, Intertek, TUV, TUV	Accepted	Chemical parametre tests are done from leading international certification of standards providing institutions, namely-

[89] Interview findings from the Bengal Plastics Ltd., RFL Plastics LTD.
[90] Bangladesh atomic energy commission (BAEC).
[91] Interview findings from the Bay Tannery, Apex Tannery.
[92] Interview findings from the Bay Tannery.
[93] Interview findings from the Apex Tannery.
[94] Interview findings from the Apex Tannery.

	Chemical Test Parametre[95] (Note: List of Parametres are included in Annex 3 in details.)	SUD, TÜV Rheinland, UL and B.V.[96]		SGS, Bureau Veritas, Intertek TÜV Rheinland as these third parties have the capacity to do these tests.
				BSTI, BCSIR is not recognised by the buyers due to lack of transparency and integrity[97].
				Some companies have in-house testing laboratory which is set up fulfilling buyer's requirement and all the tests are carried out in this in house laboratory[98].
				Also there are some tests that companies carry out in SGS and BV.
				In the in-house lab, GOTEC machines are used which are recommended by buyers.
	Physical Test Parametre tests (Note: List of Parametres are included in Annex 3 in details.)	Third Parties like SGS, Bureau Veritas, Intertek TÜV	Accepted	In terms of physical tests, 60 percent of these tests are done from these third parties in Bangladesh but the rest (40 percent) are done from their other labs in foreign countries. (Moreover, there are various customer specific (HAMM RENO-Buyer) testing third party testing body like Testing Laboratory, Hansecontrol (German-based testing laboratory[99]).
		BSTI, BCSIR	Not accepted	BSTI, BCSIR is not recognised by the buyers.
	Audit & Inspection Certificate	Third Parties like SGS,	Accepted	Inspection and audit are done by third parties[100].

[95] Interview findings from the APEX Footwear Limited.
[96] Interview findings from the APEX Footwear Limited.
[97]Interview findings from the the APEX Footwear Limited.
[98] Interview findings from the BAY Footwear.
[99] Interview findings from the APEX Footwear Limited.
[100] Interview findings from the APEX Footwear Limited.

		Bureau Veritas, Intertek TÜV		
Herbal Products	GMP Certificate	DGDA[101]	Accepted (Except USA)	For export GMP[102] is compulsory. The GMP certificate and the exported herbal medicines do not get rejected easily.
				DGDA inspects the whole process in terms of providing GMP certificate whether the exporters maintain the guidelines of WHO, comply with good manufacturing practice[103].
				Sometime importing countries inspect manufacturing process, source and quality of raw materials and check related documents. Then they provide GMP certificate. But it is also mandatory for the exporters to submit GMP certificate provided by the DGDA along with this certificate.
				Herbal products cannot be exported without test report from testing laboratory of DGDA and approval of DGDA[104].
				Buyers from different countries including USA don't recognise/accept DGDA certificate which is a major barrier, because they want the approval from food authority in Bangladesh as FDA[105] in USA to maintain these issues[106].

[101] Directorate General of Drug Administration (DGDA).
[102] Good Manufacturing Practice (GMP).
[103] Interview findings from the Directorate General of Drug Administration (DGDA).
[104] Interview findings from the Directorate General of Drug Administration (DGDA).
[105] Food and Drug Administration (FDA).
[106] Interview findings from the Hamdard Laboratories Bangladesh.

	Certificate of Analysis (CoA)	Provided by the manufacturer /the company	Accepted	Sometimes, CoA has to be collected from third party lab, according to buyers' requirements.
	Heavy metal test/ Toxicity test	BCSIR, Science laboratory, Atomic Energy Commission, Toxicity test is done from BSTI	….	It is found that at present, there is no Globally accepted laboratory/WHO accredited laboratory in Bangladesh for testing (e.g. to detect heavy metal) in order to export more herbal products[107]. Usually done by BCSIR and Atomic Energy Commission but is very costly[108].
	Halal Certificate	Islamic Foundation	Not Accepted	Sometimes it is also needed according to buyer requirements.
				Some countries including Malaysia want Halal Certificate. Islamic Foundation is not recognised in terms of providing Halal Certificate for Herbal Products. In fact the name of Islamic Foundation is not included in International Halal Certification Body[109].
				There is an absence of Halal Certification Body[110].
	Clinical Trial/ legal trail /scientific data	….	….	It needs to be done to ensure safety to export herbal products as medicine. It is also mandatory requirement to enter into USA, Europe. It is difficult to enter into USA, Europe etc. due to the legal trail/clinical trial/scientific data[111].

[107] Interview findings from the Department of Pharmacy, University of Dhaka.
[108] Interview findings from the Department of Pharmacy, University of Dhaka.
[109] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd.
[110] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd.
[111] Interview findings from the Square Pharmaceuticals.

	CPP- Certificate of Pharmaceutical Products	DGDA	Accepted	Products are termed as medicines in Bangladesh and imported by the destination countries as food supplements/medicine based on the destination country's own requirements. It is not a problem in which name products are exported.
	ISO, HACCAP Certificate	BSTI and other third parties including SGS	Accepted (If it is done from 3rd parties)	….
	Traceability	Monitored and checked by importing country	Accepted	• 95 percent herbs are being imported as raw materials for producing herbal products although we have the potentials to produce these herbs. • Sourcing, traceability of the imported raw materials are monitored and checked by importing country, audit must be done in sourcing company for raw materials and buyers also want the tests for raw materials[112].

[112] Interview at SQUARE Herbal & Nutraceuticals Ltd.

Chapter 4: Institutional Capacity Assessment of Key Certifying Agencies in Bangladesh

As tariff barriers around the world are going down, NTBs, including the NTMs, are now emerging as major irritants in international trade. It is often seen that export becomes tough and costly due to the lack of product standards and the time consuming certifying processes. In the absence of a sound institutional infrastructure and capacity in standards and certification agencies in the exporting country itself, it becomes very difficult to comply with NTMs in export destinations. Often the domestic certifying agencies lack manpower, resources and budget. Again, they are often not recognised in the importing countries. Many a times the certifying institutes do not have accredited laboratories. Due to such shortcomings, exporters face serious obstacles while exporting their products, and their products become less and less competitive due to additional costs and time.This has also been the situation in Bangladesh where delay in international trade processes are often caused by domestic institutional weakness and procedural obstacles. In order to analyse this critical situation, this Chapter emphasises on the assessment of the institutional capacity of various domestic certificate providing bodies.

4.1 Bangladesh Council of Scientific and Industrial Research (BCSIR)

Bangladesh Council of Scientific and Industrial Research (BCSIR) is a scientific research organisation and regulatory body, whose main objective is to pursue scientific research. Currently, the BSCIR Dhaka laboratory operates under eight main divisions, such as the Institute of National Analytical Research and Service (INARS), Chemical Research Division, Fiber and Polymer Research Division, Pulp and Paper Research Division, Biological Research Division, Industrial Physics Division, Physical Instrumentation Division and Pharmaceutical Sciences Research Division. It also conducts sample testing and development of chemicals to macromolecules and development of medicinal and aromatic products, biotechnology, tissue culture etc. Although BCSIR has the capacity to test some of the parametres, as per the buyer's requirement, most of the tests are done from third party, namely- SGS, Bureau Veritas, Intertek Testing Services, etc. Exporters sometimes claim that it is often expensive and time consuming for getting the testing certificate/report from them. The BCSIR does not have any accreditation by the BAB. Some buyers want this accreditation. Even if BCSIR has an accreditation, buyers still prefer SGS, Intertek and Bureau Veritas reports mainly due to the following reasons-

- They have better, modern and state of the art lab/testing equipment.
- They (the 3rd party private testing agencies) have a well-managed syndicate and maintain connections with the buyers.
- The BCSIR is not recognised by the buyers.
- The BCSIR has no own initiative to introduce their facilities to international buyers.

4.2 Export Promotion Bureau (EPB)

The Export Promotion Bureau (EPB) is responsible for promoting the nation's export industry in Bangladesh. The EPB provides GSP certificate to exporters which enable them to get tariff preferences in export destinations. It is sometimes tedious/time consuming and costly to get the GSP and SAPTA certificates from the EPB. This indicates that the EPB needs to improve the processes in its certificate regime to avoid delay in export procedures for the exporters.

4.3 Department of Agricultural Extension (DAE)

The Department of Agricultural Extension (DAE) is responsible for advising farmers on input use and production practice. It also provides phyto-sanitary certificates for agricultural products. But the issuance of Phyto-Fumigation Certificatewhich is needed to export jute and jute products, fruits and vegetables is time consuming and adds to costs. Interview findings with different stakeholders reveal that, the Plant Quarantine Wing does not test properly while giving certificates. The time they take for issuing certificate legally is trade restricting. Export suffers and loses its competitiveness (as time is money) if receiving a certificate requires such amount of time. It is also observed by few respondents that farmers do not always get the right prescription from the DAE about the doses of pesticide application. So they resort to wrong use of pesticides, which is dangerous for human health. Further, there is inadequate export quality control system from production process to its packaging in the DAE. There are many obstacles at the DAE, such as lack of skilled people, lack of adequate modern equipment in labs, absence of accredited laboratories, etc.

The government has taken a project named “Strengthening phytosanitary capacity in Bangladesh project (SPCBP). The duration of the project is July, 2012 to June, 2019. It will help the DAE to strengthen its laboratory. According to the progress report of the project, by 2012, most of the targets were achieved and only a few equipment targets were not achieved or on going. On average, the progress report of 2012 was impressive. Moreover, there were some equipment that were not present in 2015. This includes-

- HPLC-MS
- Fluorescence Microscope
- Stereo Microscope
- Compound Microscope
- Seed Germination
- Seed Analyzer
- Seed Blower
- Distilled Water Plant
- Oven (sterilizer)
- Incubator
- Heat Treatment Plant/Dielectric Treatment Plant
- AIPH3 and Methyl Bromide/Fumigation Plants for Sulfuryl Fluoride

- Formalin Kits/Microbiological Testing Kit
- Glass, Glass mask, Bottling papers, Bottle, Jar etc
- PCR
- Biolog
- Software, Hardware, other related equipment for e-Phyto
- Inspection Monitor, Trolley Standard, Software, Tarpaulin and other necessary equipment.

In addition to that, in 2015 some new equipment were added. These newly added equipment were as follows -

- Bearman Funnel
- Machineries of media construction
- Identification of brown rot
- Identification of insecticides for Betel Leaf, Lemon Kanker and Salmonella
- Magnifying glass, Petridis, Blotter paper

A summary table of the above equipment purchase targets and accomplishment is provided below in **Table 4.1**, which shows that most targets for 2015 are on yjr progressing stages compared to the accomplished targets for 2012.

Table 4.1: Purchase of Equipment in the DAE

Equipment	2012		2015		
	Target	Accomplish-ment	Target	Accomplish-ment	On progress
Soft Ex-ray Machine	6	6	11	2	9
Scanner			1	1	
GCMS Machine	3	3	3	1	2
HPLC	5	2	13		
Portable Microscope	70	70	16	16	
Bearman Funnel			16	3	13
Machineries of media construction			16	1	15
Seed Moisterization Meter	16	16	16	1	15
Inspection Table and Inspection equipment	16	16	16	16	
Laminer air flow cabinet	16	16	16		16
Autoclave	12	12	16		16
Computerized seed counter	16	16	16		16

Elaiza Reader	4		16		16
Seed sampler	16		16		16
Analytical Balance	16	16	16		16
Identification of brown rot			90	10	80
Identification of insecticides for Betel leaf, lemon kanker and salmonella			50		50
Magnifying glass, Petridis, Blotter paper					

The progress report was revised in 2016, and some new targets were fixed. The revised progress report is presented in Table 4.2 below:.

Table 4.2: Plant Quarantine Laboratory Equipment's Progress Report

Serial No	Equipment	Revised Target Scale	Amount of Progress	Comment
01.	Soft X-ray Machine	06 Units	06 Units	Identification of harmful insects within the seeds.
02.	HPLC-MS	01 Unit	01 Unit	Identification of the presence of excess amount of insecticide, pesticide or any substances that are harmful for human health. Other than that, MRL test of insecticide is also possible.
03.	HPLC	05 Units	02 Units	Testing of aflatoxin in almond type goods, sudan dye in pepper, uric acid in mustard oil, and MLR in insecticide.
04.	Laminar Air Flow Cabinet/ Biosafety Cabinet	16 Units	16 Units	Identification of germs by isolating from any specimen in sterilized environment.
05.	Fluorescence Microscope	10 Units	10 Units	Helps to identify bacteria.
06.	Stereo Microscope	16 Units	16 Units	Identification of insects that cannot be seen in the empty eyes.
07.	Compound Microscope	12 Units	12 Units	Helps to identify diseases and germs through slide observation.

08.	Autoclave	12 Units	12 Units	Helps to sterilize glass items along with media by steaming.
09.	Seed Germination	11 Units	11 Units	Helps the germination of seeds under specific light, moisture and temperature.
10.	Analytical Balance (digital)	16 Units	16 Units	Used in laboratory for precise weight measurement.
11.	Computerized Seed Counter	16 Units	16 Units	Used in laboratory for counting seeds.
12.	Seed Analyzer	04 Units	-	
13.	Seed Blower	04 Units	-	Helps to cleanse the seeds through air.
14.	Distilled Water Plant	12 Units	-	Helps to produce clean water for laboratory.
15.	Data Logging Moisture Meter	16 Units	16 Units	Identification of the seed's moisture level.
16.	ELISA Reader	04 Units	-	Used for the identification of viruses.
17.	Oven (Sterilizer)	11 Units	11 Units	Sterilize the glass items in dry heat.
18.	Incubator	10 Units	10 Units	Helps to observe the growth of pathogen under certain temperature.
19.	Seed Sampler	16 Units	-	Used for making a sample containing a certain amount from a huge number of seeds.
20.	GCMS/ICPMS	03 Units	03 Units	Testing of aflatoxin in almond type goods, sudan dye in pepper, uric acid in mustard Oil, and MLR in insecticide.
21.	Scanner	01 Unit	01 Unit	Helps to stop the movement of listed/declared product with along with unlisted/undeclared product.
22.	Heat Treatment Plant/Dielectric Treatment Plant	04 Units	Ongoing	Central pack house, Shaympur, Akhaura land port, Mongla and Chittagong sea ports.
23.	$AlPH_3$ and Methyl Bromide/Fumigation Plants for Sulfuryl Fluoride	04 Units	-	Used for fumigation of imported and exported goods.
24.	Formalin Kits/Microbiological Testing Kits	L.S	-	Identification of the presence of formalin and other undesired materials.

25.	Glass, Glass Mask, Blotting Papers, Bottle, Jar etc	L.S	-	
26.	PCR	03 Units	03 Units	Helps to identify even the species of Pathogen.
27.	Biolog	03 Units	03 Units	
28.	Handy Microscope	70 Units	70 Units	Identification of diseases and insects that cannot be seen in empty eyes.
29.	Software, Hardware and other related equipment for e-Phyto	L.S	Ongoing	
30.	Inspection Table	16 Units	16 Units	For the convenience of inspecting imported and exported goods.
31.	Inspection Kit	20 Units	20 Units	For the convenience of inspecting imported and exported goods.
32.	Inspection Monitor, Trolley standard, Software, Tarpaulin and other necessary equipment	L.S	Ongoing	Required to regulate the day to day operations of the laboratory.

4.4 Bangladesh Standards and Testing Institution (BSTI)

Bangladesh Standards and Testing Institution (BSTI) is the only national standards body in the country. But it is not recognised by international buyers in many cases. The International Finance Corporation (IFC) and the BSTI signed an agreement on 26th October, 2014 to strengthen the operational efficiency of the BSTI to do the following: introduction of the e-payment system, automation of activities of the certification mark (CM) wing, enrichment of the BSTI website making it more informative, dynamic and interactive. But the institute is yet to start its full-fledged online services to the customers.

The existing regional offices of BSTI are**:** (1) Dhaka Divisional Metrology Inspectorate, (2) BSTI Regional Office, Rajshahi, (3) BSTI regional Office, Chittagong, (4) BSTI regional Office, Barisal, (5) BSTI Regional Office, Khulna, and (6) BSTI regional office Sylhet. The operational district offices are located at Rangpur, Comilla, Faridpur, and Coxes Bazar. But the district offices at Bogra, Kishorgonj and Mymensingh are underoperational. According to BSTI officials, they need offices in each district for their effective operation.

The BSTI has some Agreements/MoU with other NSBs. These include- MoU between the BSTI and the Pakistan Standards and Quality Control Authority (PSQCA) in the field of standards and quality assurance, MoU between the BSTI and the Bureau of Indian Standards (BIS), Bilateral Cooperation Agreement (BCA) between the BSTI and the Bureau of Indian Standards (BIS) in the

field of standarisation and conformity assessment, Technical Cooperation Program (TCP) between the BSTI and the Saudi Standards, Metrology and Quality Organization (SASO), MoU between the BSTI and the Nepal Bureau of Standards and Metrology, MoU between the BSTI and the Bhutan Standards bureau (BSB), MoU between the BSTI and the Sri Lanka Standards Institution (SLSI). The BSTI needs more bilateral cooperation agreements to facilitate exports.

As shown in Table 4.3 below, according to the Annual Report of the BSTI 2016-2017, the present manpower strength at the BSTI is 607, of which only 398 are currently working, while 209 posts are lying vacant. The BSTI, therefore,needs more manpower in every sector, especially at the level of field supervisors to ensure effective market monitoring.

Table 4.3: Manpower Situation of the BSTI

Approved posts	Appointed posts	Vacant posts
Class-1 : 166	Class-1 : 135	Class-1 : 32
Class -2: 200	Class -2: 102	Class -2: 98
Class-3: 162	Class-3: 108	Class-3: 54
Class-4: 79	Class-4: 54	Class-4: 25
Total: 607	**398**	**209**

The BSTI has Electrical, Electronics and Engineering products testing laboratories, a Textile Testing Laboratory, and a Chemical Testing Wing. But the number of equipment in the laboratory is minimum as per the demand, which causes delay in the delivery of report to the customers. The BSTI can test a limited number of parametre testing facility and has a lack of skilled manpower in the laboratory.

4.5 Bangladesh Food Safety Authority

Bangladesh Food Safety Authority (BFSA) was established in 2015 through the *Food Safety Act, 2013*. The BFSA has provisions for the establishment of an efficient, effective, and scientifically based authority. Its main activities are related to food production, import, processing, stockpiling, supplying, marketing and sales as well as ensuring the people's right toward access to safe food through appropriate application of scientific processes and state of the art technology.

In order to meet the aspirations of the citizens of the country, the BFSA is desirable to ensure safe food for the human health and life. The Authority welcomes the all-out support of all food control agencies, food business operators and people of the country towards the goal of establishing a Modern and Technological Food Safety System in Bangladesh to contribute to the government's Vision 2021. As a newly established institution, it , however, suffers from some technical and manpower limitations to perform its designated responsibilities. For example-

- The BFSA is still not fully functional due to a lack of manpower.

- In the case of exports, the BFSA only provides the health certificates for agricultural products on a provisional basis.
- The BFSA also issues health certificate for processed and semi- processed foods. But currently they do not have any labs. They have nine assigned labs, such as the BCSIR, BSTI, AEC, Dhaka City Corporation's lab, Chittagong City Corporation, etc. where the samples are tested.
- Another problem is the absence of internationally accredited laboratories. As a result, the results obtained from labs in Bangladesh are not uniform. One expert commented during the interviewing that "you run the same tests on the same sample in two accredited labs, and you would get two different results. This is not the case abroad.

4.6 Fish Inspection and Quality Control (FIQC)

Department of Fisheries has completed furnishing the Fish Inspection and Quality Control (FIQC) with modern equipment during early 2010. The existing facilities of the laboratories were limited to: (i) Microbiological Test, (ii) Organo Leptic Test, (iii) Dryness Test, and (iv) Chemical Test that includes TVN, TVBN, Hypoxanthen and Tri-methylamine. Laboratories are now capable to handle diverse nature of test such as: (i) Heavy Metal Test (ii) Antibiotic Test; (iii) Pesticide Test; (iv)Hormone; and (v) Bacteria & Mesophiles Test. As such, FIQC laboratories now can provide testing services with an international reputation.

The EU accepts FIQC testing. This is applicable only for the processing plants who have the European license as per European standards. All these laboratories have adequate skilled manpower to meet the present demand of customers. The current capacity of the laboratories stands at almost four times (1500/month) to that of the previous capacity. As a result of quality testing at the FIQC laboratories, the shipment rejection rate has decreased from 54 to 1. As per the interview conducted by this Study with the processing plant ATLAS fish processing, the EU has also withdrawn mandatory 20% sample re-testing. At present, shrimp exporters are facing NTMs like traceability for shrimp export in the EU. Traceability is an important element in quality assurance, and especially in food safety. Traceability means that through detailed record keeping throughout the value chain, the origin of a faulty product or batch can be easily identified in order to block further supplies until the fault is rectified. Bangladesh needed a proven traceability system. It is particularly difficult in Bangladesh and other similar shrimp exporting countries due to the large number of very small suppliers and a complex and irregular system of intermediaries.

According to Bangladesh Frozen Foods Exporters Association (BFFEA) whose officials were interviewed during the Study, in cooperation with FIQC/DOF and BFFEA, the BQSP/UNIDO Project developed the paper based traceability framework, and introduced a complete traceability system since 2009. The current status of traceability situation in Bangladesh is as follows:

(a) Development of traceability forms: (Farm Registration, Farm Information, Depot information, receiving and product information for the shrimp processing industries).

(b) Piloting in 3(three) Upazillas followed by industry-wide implementation.

(C) Registration of all 1,98,325 shrimp & prawn farms on the basis of area.

(d) Training on Traceability involving: 9,804 farmers, 1,325 collection depot managers & Staff, 409 export processing plant officials, 48 Ice factory managers and 600 DoF's Inspectors, trainers and extension Officers.

4.7 Bangladesh Accreditation Board (BAB):

The national accreditation body, the BAB, is tasked with accrediting conformity assessment bodies, including laboratories, certification bodies, inspection bodies, training institutions, and other regulatory standards and national standards bodies. The BAB is a member of the International Laboratory Accreditation Cooperation (ILAC). The BAB does not have all the necessary equipment for testing the capabilities of other certification agencies due to lack of manpower and technicians. It offers accreditation programs for various types of conformity assessment bodies, such as laboratories, certification bodies, inspection bodies, training institutions or persons in accordance with the relevant International Organization for Standardization (ISO), International Electro Technical Commission (IEC), and other regulatory standards and national standards. But the role of BAB is voluntary services. BAB accreditation is not mandatory for the lab and certification body. If the certification and lab authority want to accredit themselves with the BAB, they can do this as per buyer's demand. We will not dwell on the institutional capacity of the BAB, as a detailed assessment of the institutional capacity of the BAB is offered in Chapter 6 of this Study.

Chapter 5: An Analysis of the State of Certification in the Herbal Products Sector

Chapter 2 has made an examination and analysis of the certification regimes of the selected product groups, namely (i) Jute and Jute Goods, (ii) Leather, Leather Goods and Footwear, (iii) Plastics Products, (iv) Fresh Vegetables and Horticultural Products including Mango, and (v) Frozen Food including Halal Meat. Again, chapters 3 and 4 examined the level of acceptace of the Bangladeshi cerfitifacte providing instiutions and the institutional capacity of certifying institutions related to those five selected groups. This chapter (Chapter 5) attempts to examine and analyse the certification regimes of the remaining product group, that is, the Herbal Products sector. It also highlights the level of acceptance of relevant Bangladeshi certifying institutions, and makes an institutional capacity assessment of these institutions.

5.1 Certification Regime of Herbal Products

Herbal medicines have gained increasing popularity in the modern day world, mainly because these medicines are made of organic substances and are free from side-effects. According to the World Health Organisation (WHO), about 80 per cent of the population in developing countries are dependent on herbal medicines for their primary healthcare. Large-scale use of these medicines have been officially recommended by the WHO as an alternative way to receive primary healthcare. According to the WHO, about 1.5 billion people worldwide currently receive treatment with herbal medicines. Their global annual sales are over US$ 120 billion, which is predicted to reach to US$ 3.0 trillion by 2020[113].

Despite considerable improvement made in the sector, desired targets in line with the national policy and integrated health system have not been attained due to the absence of effective, safe and quality products.[114] Though herbal products are used extensively in Bangladesh, absence of extensive scientific research and analysis, continued manufacturing using traditional ways, and unregulated processing and marketing are the major problems in the country. This not only affects the sale of herbal products in the domestic market but also in the global one. Moreover, the lack of a designated regulatory body to monitor the overall functioning of the sector is also a major drawback for this sector.[115]

The sector can flourish through the adoption of a production procedure based on extensive scientific research. Because of the absence of research, practitioners are unaware of the actual efficacy of herbal products they recommend. Moreover, fake herbal medicines are often marketed which also acts as a detriment to the growth of the sector.[116] To enhance exports of herbal products, compliance with the standard and testing requirements of the export destinations, which are sometimes country-specific, is a must.

[113] https://thefinancialexpress.com.bd/editorial/herbal-research-centre-1512144142
[114] http://www.dhakacourier.com.bd/is-the-future-herbal/
[115] https://thefinancialexpress.com.bd/editorial/herbal-research-centre-1512144142
[116] https://thefinancialexpress.com.bd/editorial/herbal-research-centre-1512144142

Herbal products can be of different types namely, herbal food, medicine or cosmetics. Bangladesh does not export herbal products directly as medicine, and instead does so as food supplements.[117] Even though the Directorate General of Drug Administration (DGDA) permits their exports as medicine, exporters prefer them being exported levelled as food supplements. It is not a problem for export whether it is being exported as food supplements,[118] often because importing countries treat herbal products as food supplements, and because any claim of herbal products being therapeutic medicine requires to be accompanied with scientific data.

According to statistics of medicine exports in FY2016-17, major exporters from Bangladesh were Square Herbal & Neutraceuticals Ltd., Incepta Herbal & Nutricare Ltd., The ACME Laboratories Ltd. (Herbal Division), Drug International Ltd. (Herbal Division), Hamdard Laboratories (Waqf) Bangladesh (Herbal Division), Kemiko Pharmaceuticals Ltd. (Herbal Division), and Ibn Sina Pharmaceuticals Industries Ltd. (Herbal)[119].

Herbal products are exported from Bangladesh as medicinal plants mainly under HS Heading of 12.11 (Medicinal plants) with HS Code of 1211.90 (Dry jute leaves, Tokma, Fruits of Mahogany tree, Neem powder, Leaves of papaya tree), and HS Heading of 13.02 (Herbal extract, Canned Aloevera (HS Code 1302.19), Vegetable saps & extracts). Further, Honey (HS Code of 0409.00), Kalmegh, Korpur kachi, Galangal, Dry bitter gourd chips, Ginger powder (HS Code of 0910.12) are also produced and sold in Bangladeshi domestic market and exhibit high potential for exports. A list of herbal products being exporterd from Bangladesh is presented in the following table (Table 5.1)

Table 5.1:List of Herbal Products Exported from Bangladesh

Name of the product	Type of the product	Herbal Ingredient used in the Product
Adovas	Cough Syrup	Basak extract
AmCivit	Vitamin C Supplement	Amlaki Rashayan
Arubin	Herbal Haematinic	Nabayas Louha
Colmint	For irritable bowel syndrome	Peppermint oil
Enerton	For physical weakness	Balarist
Eprim	For women health	Evening Primrose oil
Eredex	For male enhancement	Yohimbine
Eyebil 160	For eye problems, cataract	Billberry extract
Giloba	For blood circulation in brain	Ginkgo biloba extract
Garlin	For heart problems like hyperlipidemia, atherosclerosis, mild hypertension	Garlic oil
Gintex	For strength and energy	Ginseng

[117] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[118] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd., 06th March, 2018.
[119] Interview findings from the ACME Laboratories Ltd.

Ispergul	For constipation, ulcerative colitis	Plantago ovate husk
Livolite	For viral fever and flu, cold	Andrograhis paniculata
Jorvan	For arthritis pain	Jogaraj guggulu
Lecor	For Leucorrhea	Pantrangasav
Monera	For memory retention	Brahmi Rashayan
Pepnor	Carminative syrup	Cumin extract
Probio	For diarrhoea	Probiotic combination
Navit	For Natural vitamin, mineral, protein	Spirulina
Revatol	For Chronic Obstructive Pulmonary Disease (COPD)	Mahadrakkharist
Redclov	For menopausal symptoms	Red clover Isoflavones
Silybin	For liver disorders, jaundice, viral hepatitis	Silymarin
Torel	Pain reliever	I-menthol, d-Camphor, methyl salicylate, oleoresin capsicum
Ulpep	For gastric inflamation	Hingastak Churna

Source: SQUARE Herbal & Nutraceuticals Ltd.

5.1.1 Product-wise Major Export Destinations for Herbal Products:

Herbal products are being exported to about 40 countries including Canada, Kenya, Tanzania, the Middle East, the UAE, Germany, Saudi Arabia, the United States, Vietnam, Singapore, Uganda, Yemen, Sudan, Fiji, Jordan, Hong Kong, Cambodia and Botswana. Requirements, rules and regulations for these products vary from country to country. Again, Bangladeshi herbal products cannot exported to some other destinations due to lack of proper channel. In terms of export potential of herbal products, it is seen that turmeric (India, China export this to the US), amla, neem can be directly exported as herbs. Shajna leaves dried and powdered can be exported as food supplements. Aloe vera has also got a high export potential.

An attempt is made below to highlight the product-wise major export destinations for the herbal products currently being exported.

- Adovas: It is being exported to Myanmar, America and Canada through square pharmaceuticals.
- According to the DGDA, destinations of Herbal Products exported during FY 2016-17 were as follows:
    - ✓ Silmarin, Ginseng, Probio, St. Johon's Wort, Ginkgo biloba, Basak Extract, PanaxGinseng, Ispaghula husk, Jeerakaddarist (SQUARE Herbal & Nutraceuticals Ltd. exported these products): These were exported to Kenya, Somalia and Uganda.
    - ✓ Ispaghula husk BP, Ginkgo biloba (Incepta Herbal & Nutraceuticals Ltd. exported these products): These were exported to Afghanistan and Vietnam.

- ✓ Evening Primrose Oil (500 mg/600mg/1000mg) Coenzyme Q10, Fish Oil & Vit-E (Drug International Ltd, Herbal Division exported these products): These were exported to Thailand.

- According to the ACME Laboratories Ltd., it exports Allopathic, Herbal & Nutraceuticals, Ayurvedic and Veterinary. Major export destinations were Bhutan, Botswana, Cambodia, Ethiopia, Fiji, Ghana, Guatemala, Hong Kong, Kenya, Lao PDR, Mongolia, Myanmar, Nepal, Nigeria, Philippines, Somalia, Sri Lanka, Vietnam, Peru, Afghanistan, and Yemen.
- Amla and Neem: Bangladesh exports Amla and Neem to Japan and Malaysia.
- Some herbs are exported in very small scale.
- Turmeric: Bangladesh export turmeric to the US, which the US uses for making turmeric capsules.
- Cough syrup products, such as Adovas, Silybin, zincobabla, ziloba, torel, pepnor, etc., are exported by Square Herbal & Nutraceuticals Ltd. Main export destinations of these herbal products are Hong Kong, Uganda, Cambodia, Fiji, Vietnam, Georgia, Sudan, Kenya, Tajikistan, and Canada,[120]
- Canned Aloevera: it is being exported to Taiwan.

5.1.2 Certain Tests and Standard Certification Requirements in Export Destinations:

- **Drug Registration Certificate:**
  In order to export herbal medicine abroad the drug registration certificate is mandatory, and accordingly, the exporters need to do the registration in the importing countries. The following documents are needed for getting the drug registration.
    - ✓ Manufacturing License
    - ✓ GMP Certificate
    - ✓ Manufacturing Process
    - ✓ Material Source
    - ✓ Quality Control Promotion Measures
    - ✓ Stability Report
    - ✓ Responsible Person
    - ✓ Certificate of Analysis (CoA)

Before getting the registration, the exporters also require to prove that these products are free from heavy metals, arsenic and pesticides.

[120] Interview findings from the Square Pharmaceuticals.

- **GMP certificate:**
  To get the certification on maintenance of standard the exporters require to follow the WHO Good Manufacturing Practices (GMP) guidelines.[121] Here, the GMP certificate provides details of the entire manufacturing process, assigned personnels, material source, quality of the raw materials, etc. Exported herbal medicines accompanying GMP certificates do not get rejected easily. We just need to ensure that the roots and leaves used are not exposed to heavy metals like arsenic. After submission of these documents, exporters are allowed to ship their products.[122] (Annex 4: Certificate of Good Manufacturing Practice (GMP)).

- **Product registration dossiers:**
  To get the certification on maintenance of standard the exporters need to submit a number of documents, including the Product Registration Dossiers, which are explained below:[123]

  1. **Product Registration Dossiers** need to be prepared according to-

     a. **WHO Guidelines: The** main objectives of the WHO 2003 Guidelines are[124]:

        - ✓ To improve the quality, safety and efficacy of finished herbal products through quality assurance of medicinal plants used as the source for herbal medicines.
        - ✓ To encourage and support sustainable cultivation and collection of good quality medicinal plants in ways that respect and support conservation of medicinal plants and the environment.
        - ✓ To guide the formulation of national and/or regional GACP guidelines/ monographs for medicinal plants and standard operating procedures.

     Salient features of the WHO Guidelines are as follows:[125]

        - ✓ **Quality control of crude drugs material, plant preparations and finished products:** Botanical evaluation- sensory characters, foreign organic matter, microscopical, histological, etc.
        - ✓ **Stability assessment and shelf-life:** Physicochemical character of drug- physical and chemical identity, chromatographic fingerprints, ash values, extractive values, moisture content, volatile oil and alkaloidal assays etc.
        - ✓ **Safety assessment:** Toxicity details- pesticide residues, heavy metals, microbial contamination pathogens like E.coli, Salmonella, Pseudomonas aeruginosa, Staphylococcus aureus, etc.

[121] Interview findings from the ACME Laboratories Ltd.
[122] Interview findings from the Square Pharmaceuticals.
[123] Interview findings from the ACME Laboratories Ltd.
[124] Saha, M.K., "Prospects of agro-medicinal plants and herbal products in Bangladesh-major challenges faced by the exporters", 2016.
[125] Saha, M.K., "Prospects of agro-medicinal plants and herbal products in Bangladesh-major challenges faced by the exporters", 2016.

- ✓ **Assessment of efficacy** by ethnomedical informations, pharmacological parametres, biological activity profiles etc.

b. ACTD Dossier

c. CTD Dossier

2. **Certificate of Pharmaceutical Products (CPP):**
   This certificate is needed to register for exports into the importing countries.[126] This is needed, because as mentioned earlier products are termed as medicines in Bangladesh but exported to the destination countries as either food supplement or medicine based on the respective destination country's own requirements.
3. Product Packaging and Labeling Artwork
4. Actual Product Sample
5. **Certificate of Analysis (CoA) and Form 10:**
   These are also needed in order to export herbal products. HS Code, product details and volume of export are mentioned in Form 10. Certificate of Analysis (COA) is required for each shipment,[127] which shows the ingredients present in the herbal product. For this, exporters specially make Technical Dossier for each herbal product showing each ingredient present and in what degree they are used, their efficacy, dosage, safety issue, aflatoxins, heavy metal and pesticide residuals and data. This Dossier is sent to the importing countries before exporting herbal products[128].
6. Batch Certificate.

- **Sampling test:**
  All countries do the sampling test. In fact, exporters must provide all documents, different test reports and product sample to the importing countries. After that importing countries inspect all these documents, and do some tests in order to ensure the products fulfil all requirements, rules and regulations of their countries, they allow these products.

- **Sourcing and Traceability:**
  95 percent of herbs are being imported as raw materials for producing herbal products although Bangladesh has the potential to produce these herbs. Raw materials are imported mainly from South Korea, China, the US, Denmark and New Zealand. Sourcing andtraceability of imported raw materials are monitored and checked by the importing country. Further, audit must be done in the sourcing company for raw materials. Buyers also often want the tests for raw materials.[129]

[126] Interview findings from the Directorate General of Drug Administration (DGDA), 01st March, 2018.
[127] Interview findings from the Square Pharmaceuticals.
[128] Interview findings from the Square Pharmaceuticals.
[129] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd., 06th March, 2018.

- Although import of finished herbal product is currently restricted, this is taking place despite the restrictions.
- **Clinical Trial:**

  It needs to be done to ensure safety if we want to export herbal products as medicine.
- **Quality certificate**:

  It shows the effective dose of the ingredients that are used.
- **Toxicity Test/Heavy Metal Test for plants and finished products to detect heavy metal:**
  - ✓ **Name of Metals:** Arsenic, Lead, Cadmium, Mercury, and Copper.
  - ✓ **The detection of metals (Acceptance level) by standard method:** Aluminum 2500, Arsenic 2500, Boron 2000, Cadmium 2000, Calcium 2000, Zinc 2000, Tin 2000, Strontium 2000, Silver 2000, Selenium 2500, Nickel 2000, Molybdenum 2000, Mercury 3500, Lead 2000, Iron 2000, Chromium 2000, Cobalt 2000.[130]
- **Microbiological test:**

  Microbiological parametres, aflatoxin, and pesticide residue are also required to be done for any finished product export[131]**.**
- **Radiation Certificate[132]**
- **Halal Certificate:**

  Sometimes Halal Certificate is also needed according to buyer requirements.
- **HACCAP Certificate**
- **No Objection Certificate**[133]
- **Non-Narcotic and Non-Poisonous Good Declaration**[134]
- **TSE BSE Certificate** [135]

  It shows that that the products do not contain any prohibited materials and that the manufacturing process and packaging are equally free of contamination[136].

[130] Interview findings from the Modern Herbal Group, 15th January, 2018.
[131] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[132] Interview findings from the ACME Laboratories Ltd.
[133] Interview findings from the ACME Laboratories Ltd.
[134] Interview findings from the ACME Laboratories Ltd.
[135] Interview findings from the ACME Laboratories Ltd.
[136] https://www.moph.gov.qa/about-us/Documents/Product%20Registration%20Requirements.pdf

- **Phytosanitary Certificate**[137]

At present, there is no WHO-approved laboratory in the country. Bangladesh must establish a laboratory for testing that is recognised by the WHO in order to export more herbal products. It needs to be ensured that the herbs are grown in arsenic free land and are free of pesticides. In fact, all the tests are cross-checked in the export destinations. The countries scrutinise the methods and results of the processes used for the production of the products.

5.1.3 Country-wise Specific Standard Certification Regime:

After elaborating on various tests and standards certification requirements for herbal products in export destinations in sub-section 5.1.2, this sub-section (sub-section 5.1.3) will highlight the country-wise specific certification regime for herbal products. The Study found that country-wise requirements in terms of standards are different, as the EU, the US, Australia, and Canada are highly regulated countries, while regulatory requirements are low in Africa, Myanmar, and Sri Lanka and medium in Vietnam .

❖ **The EU:**

Bangladesh canno export herbal medicines to the EU, because legal trial/clinical trial is needed which is very costly although there are huge opportunities to enter into the European market.[138]

❖ **The US:**

In case of the US, clinical trial needs to be done from Clinical Research Organisations (CRO) with research oriented expertise to ensure safety and this clinical trial has to be approved by the US Food and Drug Administration (FDA). Therefore, Bangladesh cannot export herbal products to the US as medicines because legal trail/clinical trial is also required which is very costly[139]. Hence , herbal products are being exported as food supplements. The US FDA controls the herbal products as food supplements into the country, and after inspection and reformulation supply it to the patients.[140] For exporting to the US, nutritional facts of the herbal products are also required.

Herbs, such as ginger, garlic, ginseng, astragalus root, etc., are allowed to be marketed in the US as food/spices, but it requires general health claims. Most of the herbs and herbal medicinal products are permitted to be marketed as dietary supplements, provided that the labelling requirements for dietary supplements are complied.[141] The US wants the approval from the food authority in Bangladesh, similar to the US FDA, to monitor these issues. But there is no such authority in our country to provide certificate and give approval to the exporters to export herbal products as food supplements.

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[137] Interview findings from the ACME Laboratories Ltd.

[138] Interview findings from the Square Pharmaceuticals.

[139] Interview findings from the Square Pharmaceuticals.

[140] Interview findings from the Modern Herbal Group, 15th January, 2018.

[141] https://ac.els-cdn.com/S0378874112001134/1-s2.0-S0378874112001134-main.pdf?_tid=e36966d0-b785-4d30-88e9-5a0b4dcfb9d9&acdnat=1531727949_e44d991a9e977af96470222e4a8fa13c

❖ **Taiwan:**

The following certification requirements are required to export canned aloe vera to Taiwan:

- HACCP (Hazard Analysis Critical Control Point)
- GAP
- ISO 22000: 2005
- Halal Certificate

Mandatory certificates required for export are:

- Phytosanitary certificate
- Laboratory test (PH, brisk level, shelf life)

Voluntary certificates required for export:

- Some buyers often demand health certificate, which implies that in the future it may emerge as one of the concerns.

❖ **Singapore:**

In Singapore, the traditional medicinal plants/materials should not contain any substance controlled under their Act of Poisons and any other prohibited substance. Prohibited substances include Pangamic acid and its salts, Danthron, Suprofen including its salts and Rhodamine B. Again, heavy metal contents should not exceed a certain limit in herbal/medicinal products. The limits include Arsenic (5 parts per million), Copper (150 parts per million), Lead (20 parts per million) and Mercury (0.5 parts per million). In the case of herbal products produced without extraction and heat processing, microbial compliance is required to be maintained. The following table (**Table 5.2**) shows the microbial/microbiological contamination limits in case of such herbal products:[142]

Table 5.2: Microbial/Microbiologial Contaimation Limits in Singapore for Herbal Products

SL No	Microbiological/ microbial counts	Limits
1.	Total aerobic microbial count	Not more than 10^5 per gram or ml
2.	Yeast and mould	Not more than 5 x 10^2 per gram or ml
3.	Escherichia coli, Salmonellae and Staphylococcus aureus	Nil in 1 gm or ml of the product

[142]http://www.hsa.gov.sg/content/dam/HSA/HPRG/Complementary_Health_Products/Overview_Framework_Policies/Health_Supplements/HSGuidelines.pdf

The packaging and labelling materials of medicinal products should not create any of the diseases mentioned in the Schedule of the Medicines of Singapore. These diseases include blindness, cancer, cataract, drug addiction, deafness, diabetes, epilepsy, hypertension, insanity, kidney diseases, leprosy, menstrual disorders, paralysis, tuberculosis, infertility, impotency, frigidity, conception and pregnancy etc.[143]

- **Canada:**

In Canada herbal products or supplements are classified as Natural Health Products (NHPs) and are subject to the Natural Health Products Regulations. To export NHPs all the exporters must meet Good Manufacturing Practice (GMP) to ensure the identity, strength and quality of the product by incorporating good operational practices regarding manufacturing, storage, handling and distribution.[144] Compliance with the GMP is mandatory as it ensures quality and buyers' confidence on the products.

- **China:**

Herbal products in China are governed by the State Food and Drug Administration (SFDA) and are defined as functional food or drugs.[145] Herbal medicines are regulated by the Department of Drug Registration in China, and functional food is regulated by the Department of Food License. The herbal medicinal products imported in China must follow the national drug standards and provincial standards. Registration of herbal medicines is subject to strict technical evaluation and clinical trial. Again, provision of safety data is compulsory.

- **Brazil:**

In Brazil, herbal medicines require medical claims and are given the same status as any other medicine. For the medicines, submission of GMP certificate by the exporters is mandatory. Again, safety and efficacy data must be provided through pre-clinical and clinical data or evidence of traditional use. Traditional use of a product confirms the safety of a product being used for at least 20 years.

Different tests are also required to be done to ensure product quality. The tests should be convincing enough to confirm the level of any contaminant in its acceptable limit. Exporters are required to maintain a herbal medicine dossier for registration of a specific herbal medicine. The

[143]http://www.hsa.gov.sg/content/hsa/en/Health_Products_Regulation/Complementary_Health_Products/Guidelines_for_Traditional_Medicinal_Materials.html

[144] https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Exporter%20Guide_Ottawa_Canada_12-21-2012.pdf

[145] https://ac.els-cdn.com/S0378874112001134/1-s2.0-S0378874112001134-main.pdf?_tid=e36966d0-b785-4d30-88e9-5a0b4dcfb9d9&acdnat=1531727949_e44d991a9e977af96470222e4a8fa13c

dossier should be prepared following the instructions given in the pharmacopeias followed in Brazil.[146]

❖ **Japan:**

Japan applies the same GMP rules and safety requirements on herbal medicines that are applied to the conventional pharmaceuticals. The herbal medicines require medical, nutrient content and structure/function claims to be exported in Japan.

❖ **India:**

The following inspections /certifications are required in India for herbal products:

- Consignment-wise inspection for ensuring safety with regard to contaminants like heavy metals, pesticides, aflatoxins.
- Good Manufacturing (GMP) requirements to be followed and GMP requirements based on WHO Guidelines.

5.2 Certificate Providing Institutions in Bangladesh and their Level of Acceptance in Export Destinations

Exporters of herbal products in Bangladesh need to get the certificates from different institutions. Depending on the different requirements in the export destinations, such certificates may either be obtained from the target country (or, the export destination) or from the exporting country (or, the home of exporters). For example, the certificate providing agencies in Bangladesh (the home country) are:[147]

a. Directorate General of Drug Administration (DGDA)
b. Bangladesh Association of Pharmaceutical Industry
c. Dhaka Chamber of Commerce
d. Ministry of Commerce
e. Ministry of Foreign Affairs
f. Embassy of the Desired Country

On the other hand, the certificate providing agencies in foreign countries are:[148]

a. Drug Regulatory Authority
b. Ministry of Health
c.

[146] https://ac.els-cdn.com/S0378874112001134/1-s2.0-S0378874112001134-main.pdf?_tid=e36966d0-b785-4d30-88e9-5a0b4dcfb9d9&acdnat=1531727949_e44d991a9e977af96470222e4a8fa13c
[147] Interview findings from the ACME Laboratories Ltd.
[148] Interview findings from the ACME Laboratories Ltd.

5.2.1 Certain Certificate Providing Institutions and their Acceptance Level:

This sub-section highlights the major certitying institutions related to herbal products and their level of acceptance, beginging with the DGDA, the most relevant certifying institution for herbal products in Bangladesh.

- **Directorate General of Drug Administration (DGDA):**

Exports of herbal products from Bangladesh cannot be done without the the test report from the testing laboratory of the Directorate General of Drug Administration (DGDA) and the approval from the DGDA..[149] The products are approved from the DGDA as medicines to export, but these are imported by the destination countries as food supplements based on the destination country's own requirements. In a nutshell, if a foreign buyer wants the herbal product to be termed as food supplement, it is exported as such, depending on buyers' requirements[150].

The GMP certificate is a prerequisite for the entire process. The DGDA provides the GMP certificate outlining whether the exporters maintain the WHO Guidelines, and comply with good manufacturing practice. The DGDA inspects the whole process in terms of providing the GMP certificate.[151] GMP is compulsory to be approved for export. The DGDA also provides the Certificate of Pharmaceutical Products (CPP).

The Certificate of Analysis (CoA) is provided by the manufacturer/the company and endorsed by the DGDA which is needed to register for exporting in importing countries. Sometimes, the CoA needs to be collected from the third party lab, according to buyers' requirements. Form 10 are needed to be approved by the DGDA in order to export herbal medicines.

- **Inspection by the Importing Countries:**

Sometimes the relevang agencies from the importing countries visit Bangladesh for inspection. They can inspect manufacturing process, source and quality of raw materials and check related documents. After that the importing countries also provide the GMP certificate. However, along with this certificate it is also mandatory for the exporters to submit the GMP certificate provided by the DGDA.

- **Atomic Energy Commission and BCSIR:**

Heavy metal test for plants and finished products is usually done by the Bangladesh Council of Scientific and Industrial Research (BCSIR) and the Atomic Energy Commission but is very costly[152]. In that case some manufacturers have the capacity to do this heavy metal test but the DGDA forces the exporters to do this heavy metal test from BCSIR.[153] Toxicity test is done from

[149] Interview findings from the Directorate General of Drug Administration (DGDA), 01st March, 2018.
[150] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd.
[151] Interview findings from the Directorate General of Drug Administration (DGDA), 01st March, 2018.
[152] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[153] Interview findings from the Modern Herbal Group, 15th January, 2018.

the BSTI.[154] It is also found that there is no standard lab to detect heavy metal.[155] Radiation Certificate has been provided by the Atomic Energy Commission but the certificate has to be collected from the institution specified by the importing countries/importers[156].

- **Islamic Foundation:**

Sometimes the Halal Certificate is also needed according to buyers' requirements. The Halal Certificate is given by the Islamic Foundation. Some countries including Malaysia require the Halal Certificate. Islamic Foundation is not recognised in terms of providing Halal Certificate for herbal products. In fact the name of Islamic Foundation is not included in International Halal Certification Body.[157]

- **BSTI and Other Third Parties:** The BSTI and other third parties including the SGS issue ISO and HACCAP Certificates.
- **Manufacturers:** Microbiological test is conducted by the manufacturers. Manufacturers provide Non-Narcotic and Non-Poisonous Good Declaration and Batch Certificate.
- **Sourcing Company for Raw Materials:**

The TSE (Transmissible Spongiform Encephalopathy) Certificate and the BSE (Bovine Spongiform Encephalopathy) Certificate for raw materials are issued by the sourcing company as buyers want the tests and certificate for raw materials[158].

5.3 Assessment of Capacity of Certificate Issuing Institutions in Bangladesh

The Study found that the local certificate providing institutions for exporters of herbal products do not have enough capacities in terms of providing standard certificates. In fact, foreign buyers/countries do not recognise these certifications on the maintenance of standard. Major reasons as to why the exporters are not able to comply with the certification on the maintenance of international standard and hygiene can be as follows:[159]

a. The Good Manufacturing Practices followed in the manufacturing sites do not meet the requirements of international standards.

b. Raw materials and excipients used in the manufacturing do not meet the requirements of international standards.

c. sometimes existing country regulations in Bangladesh do not match the requirements of export destinations.

[154] Interview findings from the Hamdard Laboratories Bangladesh.
[155] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[156] Interview findings from the ACME Laboratories Ltd.
[157] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd.
[158] Interview findings from the ACME Laboratories Ltd.
[159] Interview findings from the ACME Laboratories Ltd.

The Study also found that local institutes are often unable to provide the certificates, as they are not recognised/accredited/certified internationally. In fact, they are not recognised/accredited/certified even by the Bangladesh Accreditation Board (BAB) in Bangladesh. In that circumstances, the exporters get the certificates of standard from (a) the stringent regulatory authorities like the WHO, US FDA, UK MHRA, Australian TGA, PMDA Japan, etc.; (b) the Specific Country Drug Regulatory Authority; (c) the Ministry of Health; and (d) Embassy[160]. Moreover, these foreign institutes provide standard certificate to exporters on the basis of:

I. Following Documents submitted:
    a. Certificate of Pharmaceutical Products (CPP);
    b. Certificate of Analysis (CoA); and
    c. Dossier.

II. Tests report of the samples submitted.

5.3.1 Institutional Capacity Assessment:

The Study identified the following reasons behind the difficulties faced by the exporters in respect of certain certification requirements while exporting herbal products from Bangladesh:[161]

a) Raw materials for herbal products, e.g. plants are not updated.

b) Sources are not certified.

c) No accredited testing bodies.

In Bangladesh there is no WHO approved laboratory. Therefore, to facilitate exports of herbal products, we need to establish a laboratory for testing that should be globally accepted for certification and recognised by the WHO.[162] As mentioned earlier that it is difficult to enter into the US, Europe etc. due to the mandatory requirement for legal trail/clinical trial/scientific data. In that context, some companies, such as Square Herbal & Nutraceuticals Ltd, have identified herebal products where clinical trial is not required. In the case of foreign delegation visiting Bangladesh for on-site inspection, more documentation will be needed, and these companies are prepared to do that. But the others are not. Besides, advertisement, campaign, sampling, high marketing cost, packaging also act as barriers.[163]

Another major problem identified by this Study is that buyers from different countries including the US do not recognise or accept DGDA certificate, because they want the approval from a food authority similar to the US FDA, to ensure food safety issues. As Bangladesh does not a similar institution at the moment, the government may consider establishing such an authority which will be able to provide certificate and give approval to the exporters to export herbal products as food

[160] Interview findings from the ACME Laboratories Ltd.
[161] Interview findings from the ACME Laboratories Ltd.
[162] Interview findings from the Square Pharmaceuticals.
[163] Interview findings from the Square Pharmaceuticals.

supplements. India can be an example in this context as they are exporting herbal products as food supplements.[164]

In this regard, the *Drug Act, 1982* needs to be changed. Under the *Drug Act 1982*, it is really difficult to evaluate and to register herbal products according to the same sections/rules and regulations of allopathic medicine. Because, allopathic medicine deals with only one area of medicine while herbal products have several dimensions. For example, herbal products can be used both as food supplement and as medicine. There is no justification to consider the same conditions/rules of allopathic medicine for herbal products under this Act.[165] In that case, instead of the existing Drug Authority, a Food and Drug Authority need to be established in the country, which will separately deal with the food issuses (for food supplements(and drug issues (for medicine). Which products among the herbal products are medicine and which are food supplements will then be easily identified by this authority. In this context of establishing this Food and Drug Authority, we can also look at the rules and regulations of US FDA so that their rules and regulations can be maintained by this new Food and Drug Authority and the approval for our own herbal products from this Authority can be globally accepted.[166]

Other major constraints identified by this Study are highlighted below:

- The certification centers in Bangladesh, such as the Bangabandhu Sheikh Mujib Medical University (BSMMU), and the ICDDRB are not accepted in developed countries.[167]
- There is a lack of trained analysts.
- There is an absence of a scientific committee.
- There is an absence of a herbal council that needs to be developed.[168]
- Sluggish operation of regulatory bodies for export promotion.
- Absence of its own herbal pharmacopeia in Bangladesh.
- Absence of international standard certification institute[169]-
    - ✓ Absence of Toxicity tests of herbal medicines; and
    - ✓ Absence of cGMP (Current Good Manufacturing Practise) certificate for quality assurance.

[164] Interview findings from the Hamdard Laboratories Bangladesh.
[165] Interview findings from the Hamdard Laboratories Bangladesh.
[166] Interview findings from the Hamdard Laboratories Bangladesh.
[167] Interview findings from the Square Pharmaceuticals.
[168] Interview findings from the Square Pharmaceuticals.
[169] A Study on Sector-based Need Assessment of Business Promotion Council- Herbal Products and Medicinal Plants, BFTI, June, 2016.

- Insufficient research works on sustainable harvesting, collection, processing and value addition.[170]
- Most of our traditional manufacturers cannot afford to maintain proper quality of the traditional products due to-
    - ✓ Lack of quality control facilities;
    - ✓ Phytomarkers to assure the quality requirement; and
    - ✓ High cost of phytomarkers.
- Unofficially, the herbal products of modern herbal group are being exported through sub-contracting. Other companies buy their final products and export these to Myanmar, our seven sisters in Northeast India and so on. Therefore, despite their having the potential to export these herbal products, the certificate barriers affect their direct exports[171]
- There is a lack of coordination among the Ministry of Commerce, Ministry of Health and Family Planning and the DGDA.
- Islamic Foundation is not accepted for providing Halal Certificate for herbal products. It is also found that Islamic Foundation is excluded from the International Halal Certification Body.[172]
- There is a lack of awareness among exporters about the standard certificate requirements for export of herbal products.[173]

Data on global trade in herbal products reveal that India, after China, is now the second largest exporter of medicinal plants in the world, and together the two countries produce more than 70 percent of the global demand for herbal products.[174] In 2014, India created a separate ministry for AYUSH (Ayurveda, Yoga, Naturapathy, Unani, Siddha, Sowa-Rigpa and Homeopathy) , a Department under the Ministry of Health and Family Welfare, Government of India. They also signed an agreement with the WHO to develop benchmarks for Yoga, Ayurveda and Unani. Five AYUSH information cells have been set up in Israel, Tajikistan, Peru, Russia and Tanzania.[175] More than 30,000 branded and 1,500 traditional AYUSH products are available in India. The government is also offering incentives to AYUSH industry for international cooperation and encouraging certification of AYUSH products to facilitate exports. The value of AYUSH systems is widely recognised worldwide.

[170] Findings of the Study on "Sector-based Need Assessment of Business Promotion Council- Herbal Products and Medicinal Plants", BFTI, June, 2016.
[171] Interview findings from the Modern Herbal Group, 15th January, 2018.
[172] Interview findings from the Square Pharmaceuticals.
[173] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[174] India eyes more global AYUSH market, bdnews24.com, 4th December, 2017.
https://bdnews24.com/neighbours/2017/12/04/india-eyes-more-global-ayush-market
[175] https://bdnews24.com/neighbours/2017/12/04/india-eyes-more-global-ayush-market

Chapter 6: Assessment of Institutional Capacity of Bangladesh Accreditation Board

This chapter attemps an assessment of the institutional capacity of the Bangladesh Accreditation Board , which is the national authority with responsibility of accreditation in Bangladesh.

The BAB offers accreditation programmes for various types of conformity assessment bodies, such as laboratories, certification bodies, inspection bodies, training institutions or persons in accordance with the relevant International Organisation for Standardisation (ISO), International Electro Technical Commission (IEC), and other regulatory standards and national standards. The BAB is a statutory body established in 2006 as an autonomous organisation responsible for upgrading the quality assurance infrastructure and conformity assessment procedures in Bangladesh, and enhancing the recognition and acceptance of products and services in international, regional and domestic markets.

The mission of the BAB is to maintain mutual recognition arrangement efficiently by maintaining international standard and providing globally accepted accreditation services to expand businesses, increase consumer confidence and protect public welfare. Its vision is to assist the overall development of Bangladesh by improving the national capacity in testing, measurement, certification, inspection that will strengthen the production capability, competition, consumer protection and trade facilitation.

As illustrated in the previous chapters in this Study report, different exporters face different kinds of standards and certification requirements and challenges with regard of six categories of selected products, which affect their export performance. In this regard, accreditation is a globally recognised and acceptable way to face such challenges. Because this process will give easy access to enter into the potential markets as the products get certified by an accredited laboratory.[176]

The BAB provides accreditation certificates to expedite export and import activities and strengthen the country's position in export business. Accreditation is a certification of goods or services for quality assessment based on the international standard requirements. Through this process, this accreditation creates confidence among the parties involved in a supply chain process worldwide. In fact, the theme of the World Accreditation Day-2019 is "Accreditation: Adding Value to Supply Chain".[177]

6.1 Functions of the BAB

a. Accreditation of Testing & Calibration and Medical Laboratories accrediting to ISO/IEC 17025, ISO 15189;
b. Accreditation of Certification Bodies IS0/IEC 17021, IS0/IEC 17024, ISO/IEC 17065;
c. Accreditation of Inspection Bodies ISO/IEC 17020;

[176] The Daily Sun, 16 entities get BAB accreditation, 1 February, 2019. https://www.daily-sun.com/printversion/details/368011/2019/02/01/16-entities-get-BAB-accreditation

[177] The Independent, 71 organisations get accreditation certificates from BAB, 10 June, 2019. http://www.theindependentbd.com/post/202732

d. Establishing MRA and MLA with Regional and International Forums, and co-operate with relevant national, regional and international organizations in accreditation;

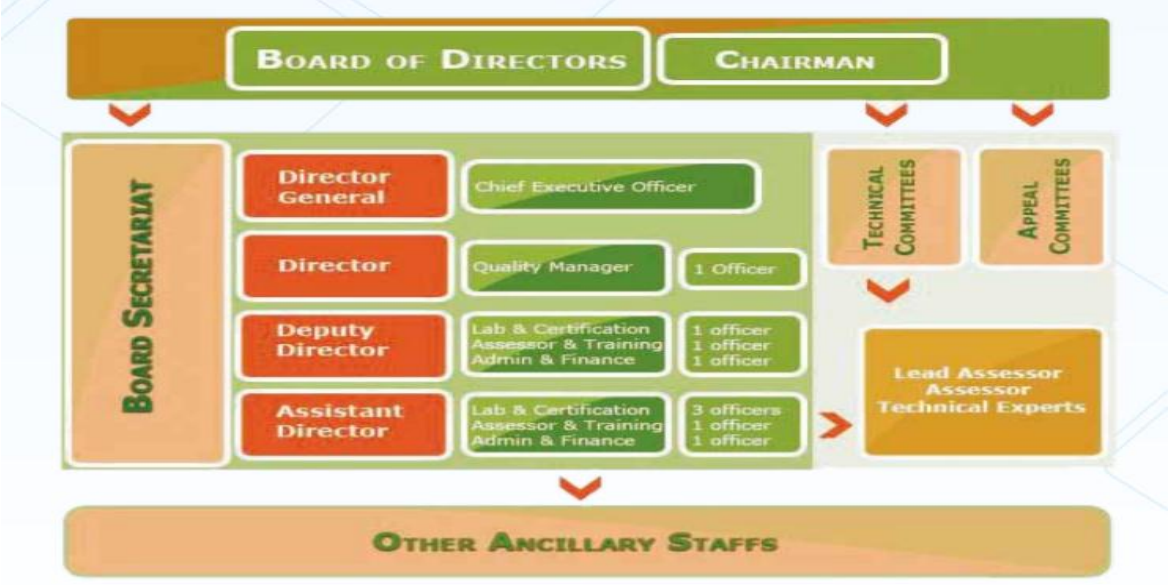
e. To arrange training programmes, seminar-symposium, and proficiency testing; and

f. Harmonisation of standards and requirements and exchange of information.

6.2 Organisational Structure and Workforce

The Director-General is the Chief Executive Officer of the Board. There is one Director responsible for the supervision of the overall official activities and operation. As shown in Figure 6.1, there are three deputy directors (currently working two) and five assistant directors (currently working three) in-charge of three divisions. These divisions are supported by other sections.

Figure 6.1: Organisational Structure of the BAB



6.3 International Recognition and Collaborations

- **The Asia Pacific Accreditation Cooperation (APAC):**

The Asia Pacific Accreditation Cooperation (APAC) was established on 1st January, 2019 through the merger of two former regional accreditation co-operations – the Asia Pacific Laboratory Accreditation Co-operation (APLAC) and the Pacific Accreditation Co-operation (PAC). The primary role of APAC is to manage and expand Mutual Recognition Arrangement (MRA) among accreditation bodies in the Asia Pacific region.

In 2015, the BAB signed the APLAC Mutual Recognition Arrangement for testing laboratories and calibration (ISO/IEC 17025) for four years. As per regulation, renewal of the MRA is subject to re-evaluation. A team from the APAC conducted re-evaluation in 2018. The purpose of this

evaluation was to determine whether the BAB should be recommended as a renewal of signatory status for testing and calibration and extend MRA scope for inspection and medical.

- **International Laboratory Accreditation Co-operation:**

The BAB is a full member and MRA signatory to the International Laboratory Accreditation Co-operation (ILAC) for testing and calibration via the APAC (former APLAC) MRA. The ILAC arrangement supports international trade by promoting international confidence and acceptance of accredited laboratory data. Technical barriers to trade, such as the retesting of products each time they enter a new economy would be reduced.

The BAB has established a good relationship and rapport with other related bodies, such as the IAF, PAC, SMIIC, SEGA, SARSO etc. to increase regional and international co-operation. Furthermore, the BAB has signed Memorandum of Understanding (MOU) with Belarus State Centre for Accreditation (BSCA) which has strengthened relationships between this two organisations and opened up more opportunities in the area of accreditation. BAB is also working with Standard Malaysia, Norsk Accreditation, ONAC- Thailand, NABL-India and PTB-Germany for enhancing activities.

6.4 Training –workshops conducted by the BAB

To create a pool of assessors and capacity of the technicians including laboratory statisticians, the BAB orgnaises general and technical trainings and workshop on a regular basis. Some courses offered include - understanding course on ISO/IEC 17025:2005, BAB assessors' refreshers' course, assessors course, etc. The BAB has trained about 1,150 persons through 20 assessor courses and 41 technical training workshops.[178]

6.5 Financial Structure of the BAB

The BAB is annually financed by the government (Three Crore taka from the Government) and revenues from its own income generating activities (around Seventy-Five lakh taka from its own income generating activities).[179] Figures 6.2 and 6.3 shows the financial structure of the BAB.

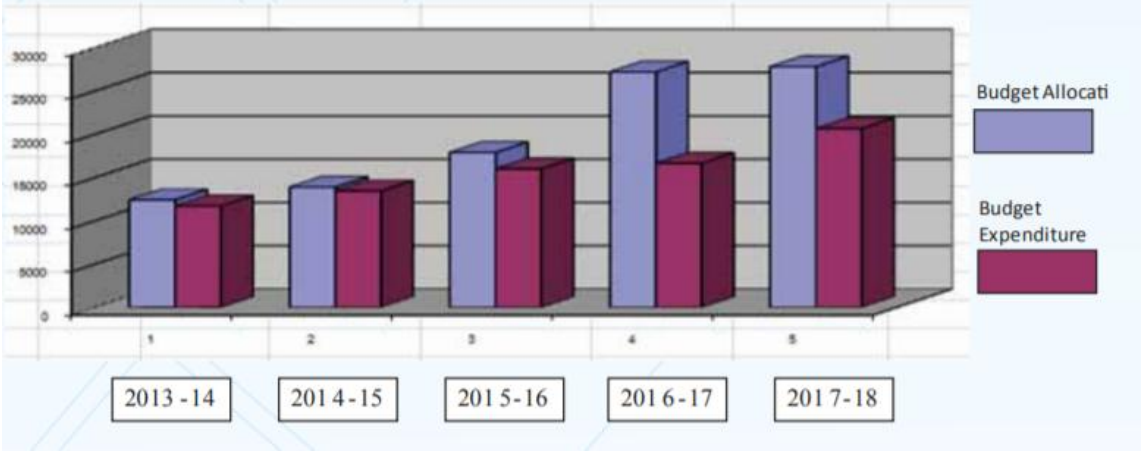
[178] Annual Report of BAB, 2017-18.

[179] Interview findings from the Bangladesh Accreditation Board (BAB).

Figure 6.2: Yearly Budget and Expenditure of the BAB

Yearly Budget, Expenditures & Difference

Year	2013-14	2014 -15	2015 -16	2016 -17	2017 -18
Budget (BDT in thousands)	1,24,27	1,38,90	1,79,00	2,71,90	2,78,00
Expenditure (BDT in thousands)	1,17,10	1,34,56	1,59,99	1,66,55	2,06,65
Difference (BDT in thousands)	7,17	4,34	19,01	1,05,35	71,35

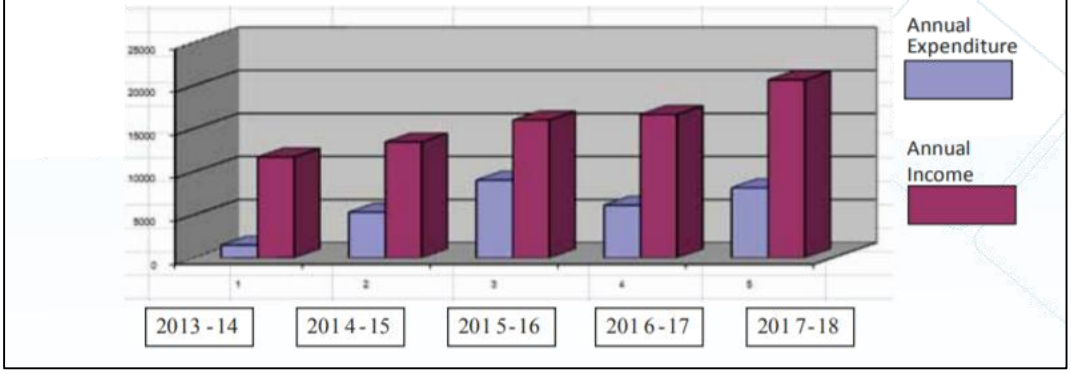


Source: Annual Report-2017-18

Figure 6.3: Annual Income and Expenditure of the BAB

BAB Annual Income & Expenditure

Year	2013 -14	2014 -15	2015 -16	2016 -17	2017 -18
Income (BDT in thousands)	14,86.00	52,97.00	90,28.00	61,22.00	81,30.00
Expenditure (BDT in thousands)	1,17,10.00	1,34,56.00	1,59,99.00	1,66,55.00	2,06,65.00
Deficit (BDT in thousands)	1,02,24.00	81,59.00	69,71.00	1,05,33.00	1,25,35.00



Source: Annual Report-2017-18

6.6 Skilled Workforce

The BAB is now working to upgrade the quality infrastructure in Bangladesh in order to strengthen the country's position in export business. Briefly, the BAB accredits organisations which test, calibrate or inspect goods meant for exports and for conforming to national regulations[180]. Earlier the BAB did nothave adequate workforce from technical background with experience in inspection, certification, testing and calibration. But this problem has been resolved.[181]

6.7 Accreditation of Testing Institutions by the BAB

Till date, the BAB has accredited 55 testing laboratory, 10 calibrations, certification authority in Bangladesh. Conformity Assessment Bodies (CAB) examine samples, products, services and management systems against specifies standard requirements.[182] Conformity assessment is used to ensure that products are fit and safe for consumption against a standard, a code of practice or regulatory requirements. It provides certificates to its clients meeting all standard requirements and it also audits and issues certificates on a regular basis. The list of accredited CABs is provided below in Table 6.1.

Table 6.1: Conformity Assessment Bodies

Sl. No	Testing	Calibration	Medical Laboratory	Certification	Inspection
01	SGS Bangladesh Limited	National Metrology Laboratory (NML-BSTI)	United Hospital, Pathology Laboratory	BSTI, Management System Certification Wing, Dhaka	Qtex Solutions Limited
02	ASM Testing Laboratory, Gazipur	Training Institute for Chemical Industries, Polash, Narshindi	Labaid Limited, Pathology Laboratory	United Certification Services Limited, Dhaka	Envirotech International Ltd, Uttara, Dhaka.
03	Interstoff Apparels Ltd	Calibration Laboratory, Dysin International Ltd.			GREENBUD Testing and Inspection Services
04	Fish Inspection and Quality Control (FIQC) Laboratory, Dhaka	OTS (Pvt.) Ltd., Dhaka			ITS Labtest Bangladesh Ltd. (Inspection Division), Dhaka
05	Dysin International Ltd.	Instrumentation Engineering Services Ltd., Dhaka			Bureau Veritas Consumer Products Services (BVCPS)
06	TTSL	Resource Instrument &			

[180] The Daily Star, Accreditation Board spreads its wings, March 08, 2015. https://www.thedailystar.net/accreditation-board-spreads-its-wings-29718
[181] Interview findings from the Bangladesh Accreditation Board (BAB).
[182] Source: Bangladesh Accreditation Board (BAB).

		Measurement Enterprise (RIME), Dhaka			Bangladesh Ltd., Dhaka
07	ITS Labtest Bangladesh Ltd.,Dhaka	SGS Bangladesh Limited, Calibration Lab, Dhaka			
08	Concrete Innovation & Application Centre (CIAC)	Quality Calibration Solutions (QCS) Private Limited			
09	Lub-rref (Bangladesh) Ltd.	Standard Calibration Services (SCS) Private Limited, Mirpur, Dhaka			
10	Bureau Veritas Consumer Products Services (Bangladesh) Ltd.	Calibration Laboratory, Biman Bangladesh Airlines Ltd.			
11	Nestlé Sreepur QA Laboratory, Nestlé Bangladesh Ltd.				
12	Fish Inspection and Quality Control (FIQC) Laboratory, Chattogram				
13	Fish Inspection and Quality Control (FIQC) Laboratory, Khulna				
14	Modern Testing Services (Bangladesh) Ltd.				
15	Bureau Veritas Consumer Products Services (Chittagong) Ltd.				
16	ITS Labtest Bangladesh Ltd. Chittagong.				
17	Analytical Chemistry Laboratory, Atomic Energy Centre, Dhaka				
18	Central Laboratory, Divine Fabrics Ltd.				
19	Petromax Refinery Ltd., Mongla				
20	Central Laboratory, Samuda Chemical Complex Ltd.				
21	TÜV SÜD Bangladesh (Pvt.) Ltd				
22	Bangladesh Material Testing Laboratory, Dhaka				
23	Quality Control Laboratory, Julphar Bangladesh Ltd., Gazipur				
24	NUSDAT-UTS, Walton Hi-Tech Industries Limited				
25	PRAN Beverage Laboratory, PRAN Dairy Limited, Narshingdi				
26	Fakir Testing Services, Dhaka				

27	TAHA GIYIM Lab Bangladesh, Dhaka				
28	SGS Food & Agricultural Testing Laboratory, Dhaka				
29	UL VS Bangladesh Ltd.				
30	Plasma Plus Application and Research Laboratory, Dhaka				
31	Brachi Testing Service (BD) Ltd.,Dhaka				
32	Amber Textile Services Limited, Gazipur				
33	SGS Bangladesh Limited, Chittagong				
34	TÜV Rheinland Bangladesh Pvt. Ltd				
35	Quality Control Laboratory (Central Laboratory), Renata Limited, Dhaka				
36	Quality Control Laboratory (Potent Product Facility), Renata Limited, Dhaka				
37	Pesticide Analytical Laboratory (PAL), BARI, Gazipur				
38	GMS Testing Laboratory, Kashimpur, Gazipur				
39	Testing Laboratory, Impress-Newtex Composite Textiles Limited, Mirzapur, Tangail.				
41	Premier Testing Laboratory, Plot# 41-47&84, Sector# 07, CEPZ, Chittagong.				
42	Comfit Lab Services Ltd., 6-th Floor, Green Building, Gorai, Mirzapur, Tangail.				
43	Testing Laboratory, BSTI, Dhaka.				
44	ACI Sourcing (BD) Pte. Ltd.				
45	National Control Laboratory (NCL)				
46	Institute of National Analytical Research and Services (INARS),BCSIR, Dhaka-1205.				
47	Urmi Testing Laboratory, Fakhruddin Textile Mills Ltd.				
48	24 Engr. Contr. B De testing Laboratory				
49	Norwest Testing Laboratory				
50	Bangladesh Research and Testing Laboratory, Dhaka				
51	Hohenstein Laboratories Bangladesh Limited				
52	National Food Testing Laboratory				
53	Consumer Testing Laboratories Ltd.				

54	Waffen Research Laboratory, Dhaka				

Chapter 7: Conclusions and Recommendations

With a view to addressing the concerns as to how to address numerous legitimate non-tariff measures related to international standards and hygiene in our export market destinations as well as how to develop a modern certification system to ensure compliance with those NTMs, the Study conducted an in-depth analysis of gaps in issuing certificates of standards for export from Bangladesh. In doing so, the Study analysed the current standards and certification requirements of six selected product groups to export destinations and the current status and performance of certificate providing institutions in Bangladesh. It also conducted the capacity assessment and GAP analysis of selected testing laboratories/institutes both in the public and private sector, and identified the capacity strengthening activities needed for the testing laboratories/certifying bodies/agencies and their quality management systems.

Findings of the Study in relation to five product groups, namely (i) Jute and Jute Goods, (ii) Leather, Leather Goods and Footwear, (iii) Plastics Products, (iv) Fresh Vegetables and Horticultural Products including Mango, and (v) Frozen Food including Halal Meat, have been presented in details in Chapter 2 through Chapter 4. On the other hand, a sepatare chapter (Chapter 5) has been dedicated for the presentation of the findings in relation to the Herbal Products sector to make a special emphasis on this particular export sector. Furthermore, a separate focus has also been made by the Study to make the institutional capacity assessment of the BAB in meeting international standards and mutual recognition, and it has been presented separately in Chapter 6 of this report.

This concluding chapter aims to provide recommendations for improving the overall situation of the national quality structure in Bangladesh. The chapter also aims to prescribe product-specific, institution-wise initiatives required to increase the acceptance of certificates issued by Bangladeshi institutions. Overall, it suggests prospective policy interventions that would enable the country to bring about an effective structural change in issuing certificates of standards for export of selected product groups. These recommendations and policy prescriptions are highlighted below.

7.1 Development of National Quality Infrastructure

Participation in international trade requires optimum adherence to international standards and regulations. A well-developed National Quality Infrastructure (NQI) will ensure that effective participation, and is therefore considered the foundation for economic development and greater prosperity for any country. Coherence of quality infrastructure with international standards help trading nations create better, safer, and sustainable products for the global market as well as ensure consumer protection.

To keep pace with global demand, the government in Bangladesh has formulated the *Bangladesh National Quality Policy for Goods and Services, 2015*. The aim of the policy is to design and establish an internationally accepted standardisation, metrology, testing, inspection, and certification and accreditation infrastructure. Though Bangladesh has made strides in developing

a recognised quality infrastructure, our exporters are still facing difficulties in terms of certificates required in export destinations. To improve the situation, the following initiatives are therefore required from the government -

a) Implementation of National Quality Policy :

A Quality Policy (QP) is a fundamental government instrument for establishing, formalising, and overseeing the development and performance of a Quality Infrastructure (QI). This also details the structure and responsibilities of the organisation related to QI. Fortunately, the government in Bangladesh has already established three fundamental institutions of the National Quality Infrastructure, namely the BSTI, the BAB, and the Bangladesh National Metrology Institute (BNMI), and as mentioned earlier, formulated the national quality policy. Even though preliminary requirements are met in that way, proper implementation of the policy remains crucial. In addition, the national quality policy should reflect other related national policies that address the standardisation and technical regulations.

b) Re-engineering the public NQI organisations:

There are a large number of organisations including public and private enterprises that comprise the quality infrastructure of Bangladesh. There are organisations for standards, metrology, accreditation, test laboratories, certification bodies, etc. These institutions are responsible for overseeing regulatory functions or providing necessary services to the companies. Despite projects taken by the government to upgrade public organisations, many challenges remain regarding the technical capacity and capabilities of the regulatory bodies. Reviewing the strengths and weaknesses of the NQI organisations and taking required steps or making necessary changes for the betterment would help upgrade the services.

c) Improved Co-ordination Mechanism:

As stated above, the number of institutions in the quality infrastructure is considerable. Furthermore, the roles, activities and responsibilities of these organisations in the system are different but overlapping. There is a limited co-ordination mechanism in the public sector to oversee the activities of the infrastructure as a whole. Establishment of a high level co-ordination mechanism or body would, therefore, reduce the existing gaps and ineffectiveness in the system.

d) Information Network and Awareness Building Programmes:

Development of a strong information network within the institutions of the quality infrastructure and with other international organisations will strengthen the environment for ensuring quality. Creation of information sharing platform will enable the traders to remain aware of latest requirements for certification in export markets. Certification authorities and export promotion bodies can work together in this regard. A specific database containing trade information, compliance, standards, rules, and cost of obtaining certificates will be a useful tool for enhancing market access. Moreover, sector-related associations can also play an important role in disseminating information related to compliance, certification and standards to exporters. The

government along with private bodies can arrange seminars, symposiums, workshops, trainings, and other awareness raising programmes in different levels to sensitize relevant stakeholders on the compliance and certification issues.

e) Minimising of market access constraints:

Trade promotion organisations in the country, such as the Export Promotion Bureau (EPB) and the Business Promotion Council (BPC), are responsible for promoting trade and improving market access. To meet international requirements and expand market globally, these organisations can address the constraints related to certification, their issuance and acceptability. In this respect, export promotion related government departments/organisations, the business community, agencies related to the certification and accreditation such as the BSTI the BAB, and private sector testing and certification bodies can form a committee to identify the problems and gaps in this area.

7.2 Capacity Building of Related Institutions

This sub-section highlights the initiatives that are required to be taken on the part of the government to build the capacity of standards certifying agencies in Bangladesh:

a) Bangladesh Council of Scientific and Industrial Research (BCSIR)

The BCSIR has capabilities to test some parametres but the tests are not recognised by the buyers. Again, the institution does not have any accreditation by the BAB. Some international buyers want this accreditation. However, even if the BCSIR has an accreditation from the BAB, buyers would still prefer third parties for testing and certification. Therefore, following steps may be taken for improving the current testing and certification facilities at the BCSIR.

- Interviewees from the BCSIR said that testing is their secondary option, while research on scientific and industrial issues comes first. So their mandates with regard to research and testing should be specified.
- The BCSIR needs the BAB accreditation to fulfill the demand of international buyers.
- The BCSIR needs to be more proactive about the marketing of their services. So that local suppliers and international buyers can have knowledge of the standard and quality of testing, research and other services provided by them.

b) Export promotion Bureau (EPB)

- The EPB should introduce well managed and hassle free services in relation to the issuance of GSP and SAFTA preferential certificates of origin.

c) Department of Agricultural Extension (DAE):

- The DAE provides phyto-sanitary certificates for agricultural products, but the certificate issuance system need to be better organised and hassle free for exporters.
- The DAE lab needs to be equipped with modern testing facilities with international accreditation so as to reduce testing time and cost for exporters.

- Although the DAE is responsible for advising farmers about the use of inputs and production practices, it has a shortage of manpower, and therefore farmers are unable to get the right prescription from the DAE. As a result, they may use wrong pesticides which is dangerous for human life. Hence, the government should provide the DAE with the required manpower.
- The DAE should introduce the traceability system beginning from the production to the packaging level for ensuring export quality of agricultural products.

d) Bangladesh Standards and Testing Institution (BSTI):

- The BSTI should open offices in each districts to ensure its effective operation.
- The BSTI should address the issue of shortage of manpower in every sector, especially field supervisors, for effective market monitoring.
- The BSTI should sign more bilateral cooperation agreements for export facilitation.
- The number of required equipment is absent in the BSTI laboratories. They can test limited number of parametres and have a lack of skilled manpower. As a result, their reports are not recognized by buyers. Therefore, these testing laboratories need to be equipped with modern equipment, have necessary skilled manpower and international accreditation.

e) Bangladesh Food Safety Authority:

- The BFSA suffers for the lack of manpower, and for that reason this institution has not yet been able to become fully functional.
- In the case of exports, the BFSA only provides health certificates for agricultural products, and some processed and semi-processed foods on a provisional basis. It tests the samples in its nine assigned labs. But these labs are not internationally accredited. Hence, the BFSA should devise a plan to ensure provision of internationally recognized health certificates to exporters.

f) Fish Inspection and Quality Control (FIQC):

- Development of the traceability system for farm registration, farm information, depot information, and product information for the shrimp processing industries is urgent for increasing shrimp exports.
- This sector also suffers from the shortage of production as per demand. As a result, processing plants are running below their capabilities. Hence, to compete effectively in the international market, new species should be introduced for production enhancement, if necessary.

g) Bangladesh Accreditation Board (BAB):

- The BAB should be equipped with necessary equipment and required manpower and technicians for testing the capabilities of other certification agencies.
- The BAB services are voluntary. If the testing and certificate bodies want to accredit themselves with the BAB, they can do this as per buyer's demand. Otherwise they do not need accreditation from the BAB. Hence, the role of the BAB should be specified.

- In order to improve the efficiency level for employees of the BAB, initiatives like training and exposure visits to labs of global standards coulde be effective.
- A research wing should be established at the BAB, and product development-based research work should be increased.

7.3 Product-specific Strategies for the Six Selected Product Groups

These sub-section outlines the product-specific strategies that need to taken with respect to the six product groups that were selected for the Study considering their export potential.

a. Jute and Jute Goods:

Even though Bangladesh is the top jute producing country, India has been able to secure its share in the global jute market importing raw jute from Bangladesh and processing them into jute products. Foreign buyers are purchasing jute products from Indian without knowing that the raw materials came from Bangladesh[183]. Therefore, the following strategies need to be taken.

- Bilateral negotiations could be taken up, which may facilitate the export of jute goods from Bangladesh.
- Major emphasis has to be given on building skilled manpower (e.g. technical manpower), use of modern machinery, strengthening marketing/negotiation skills with foreign buyers and enhancing branding capability. Although local institutions like the DAE, the BCSIR, etc., are recognised by buyers for doing different types of parametres and tests including food grade test,[184] some tests are also carried out in third party service providers like the SGS and the Intertek.

b. Leather, Leather Goods and Footwear:

Leather:

Compliance issues are important for the factory to export leather items (crust leather, finished leather, leather goods) to countries like the US and the EU. Compliance issues are also related to cleanliness, light, ventilation, fire exits, etc.[185] Buyers demand factories to be built well with fire safety, social compliance, making good payment to workers, ensuring workers' safety, workplace safety, sufficient electricity, gas, ISO maintenance and traceability. There are some additional and new types of requirements that have emerged in recent years.. Initiatives required in the sector are as follows:

[183]Textile Today, Bangladesh losing international jute product market to India due to poor marketing, April 30, 2019.
https://www.textiletoday.com.bd/bangladesh-losing-international-jute-product-market-india-due-poor-marketing/
[184] Interview findings from the Bangladesh Jute Mills Corporation (BJMC), Bangladesh Jute Goods Exporter's Association (BJGEA).
[185] Interview findings from Bay Tannery.

- Major efforts should be given to make the Central Effluent Treatment Plant (CETP) at the Savar Leather Estate fully functional so as to attract foreign buyers by ensuring compliance with their environmental concerns. In that context, the assigned authority, Bangladesh Small and Cottage Industries Corporation (BSCIC) has a lot of responsibilities to maintain the standard required in the CETP.[186]
- Skilled labour force is badly needed for processing raw hides. Specific trainings need to be provided.
- Currently no tests are carried out by any public authority for leather exports, and all are conducted by private bodies. Very few have in-house testing laboratory fulfilling buyer's requirement, and all tests are carried out in this in-house laboratory.[187] If the government can make an arrangement to carry out the tests necessary for leather exports, it would be very much beneficial to leather exporters. The BUET and the Dhaka University can help leather exporters by carrying out chemical tests and having their labs accredited.[188]
- Required tests are done by the SGS, the Intertek and the CLRI in Chennai as referred by the buyers.[189] In order to make Bangladeshi organisation's certificates recognised by the buyers, mutual recognition of standards of each other is a must.

Leather Footwear:

The Study found that there is a positive trend in exports of footwear in spite of the negative trend in exports from the overall leather sector. If the challenges faced by exporters could be addressed, the volume of exports of footwear could be enhanced. Following initiatives may help in that regard.

- Capacities of local institutions like the BSTI, the BCSIR (especially for chemical tests), the BUET or the Instutite of Leather Technology, Dhaka University need to be strengthened and upgraded for conducting technical quality parametre tests as they are not recognised by the buyers. In fact, the tests are carried out by third parties like the SGS, Intertek, TUV, TUV SUD, TÜV Rheinland, UL and BV due to the inability of Bangladeshi certifying agencies. To grab a sizable share of the growing market for leather footwear all over the world, accredited agencies and testing labs with capacities of testing the chemical parametres need to be created.
- The government has to work with international third parties at first as test, inspection and audit are done by third parties. The government should formulate policies and negotiate testing price. Efforts should be taken to ensure that tests that are done by the counterparts

[186] Interview findings from Apex Tanneries.
[187] Interview findings from BAY Footwear.
[188] Interview findings from Apex Tanneries.
[189] Interview findings from Apex Tanneries

of international agencies abroad are carried out in Bangladesh, and this regulation should be strictly imposed.[190]

- In order to get certification that is compliant with international standards , efforts should be given to improve environmental and social compliances across the supply chain, from the production of finished leather to the production of footwear. Because, it has been made mandatory by brand buyers.
- There are also various unnecessary parametres that must be reduced. The independent testing facility that the government has been trying to set up is a good initiative for the future. In order to make it work, accreditation and recognition by buyers is a must, though this is a challenge for us. But initially the government must collaborate with the third party international agencies.[191] India can be an example of how to maintain testing requirements for ensuring exports to other countries.

c. Plastics:

In terms of exports of plastics products, the country has not been able to avail of the opportunities and full advantages offered by the preferential market access accorded to Bangladesh as a Least Developed Country, due to existence of non-tariff barriers including supply-side related constraints such as inadequate testing facilities for quality control, shortage of technical expertise, and lack of proper management of plastics wastes. In fact, buyers now concentrate on standard requirements before placing any orders. To improve upon the situation, following initiatives may be taken.

- It is necessary to establish a standard testing lab to do the test of different parametres. Private sector initiative should also be there to build up domestic testing facility. The SGS, Bureau Veritas, Intertek and other third parties in Bangladesh are not currently interested in doing these tests, for with high costs of machinery and equipment, it is not feasible to do these tests only for one or two companies.[192] In that case, it would be better to go for collaboration with leading international certificate of standards issuing institutions, such as the SGS, Intratek, Bureau Veritas, TUV, ULAB. The government also need to strive for collaboration with other countries to get mutual recognition of government testing agencies.[193]
- The BSTI and the BCSIR should be more equipped so that they have the capacities to test the parametres. The government can invest in increasing modern equipment facilities and building skilled technicians so that these institutes could be globally recognized.[194]
- Efforts should also be to reduce the time taken for conducting the test procedure.

[190] Interview Findings from APEX Footwear Limited.
[191] Interview findings from APEX Footwear Limited.
[192] Interview findings from PRAN-RFL Plastics Limited, Bengal Plastic.
[193] Interview findings from Erebus & Horizon Plastic, Bangladesh Plastic Goods Manufacturer and Exporters Association (BPGMEA).
[194] Interview findings from Bengal Plastic.

d. Fresh Vegetables and Horticultural Products including Mango:

- The BFSA should be transformed into a global standard laboratory equipped with modern machineries and skilled human resource. This would enable the BFSA to provide globally accepted Sanitary Certificate/Health Certificate.[195]
- The DAE needs to ensure adequate export quality control system from production process to its packaging, and it will have monitor the process regularly.[196]
- The DAE, the BFSA and the BCSIR should be equipped with adequate number of skilled people, adequate modern machineries and accredited laboratory, and the capacity of its manpower should be enhanced.[197]
- The government should ensure that there are adequate testing facilities in the BCSIR, so that Salmonella test and Brown Rot test can be done at the BCSIR. At the moment, the BCSIR does not have any accreditation for these.[198]
- **Implementation of GAP** : Currently Bangladesh cannot export fresh vegetables to the EU and the US due to lack of traceability of the products on every aspect in the production process. Once the Bangla GAP would be fullly operational, it would be helpful to open the US market for vegetables export from Bangladesh. The DAE along with the exporters Associations and farmers are working at the moment at the preparatory phase in Bangladesh under the guidance of the EU. The DAE would be the competent authority with technical assistance from the BARI to provide this standard certificate.[199]
- If we can ensure the pest free production process within the production region, it will open up the market for mango export in many countries including Japan. Upazila Agriculture Offices should take prompt initiative to control the pest in the production region. The Ministry of Commerce, Ministry of Agriculture, the DAE, BARI, EPB, relevant exporters Associations, and farmers should work together to ensure the quality to meet the requirement of the Japanese authority.
- It would be better to go for collaboration with third party service providers like the SGS. Potato importers from Malaysia want the Pesticide test for some parametres from the SGS, but SGS has no facility to test this in Bangladesh, and therefore, they outsource this from the SGS in India.[200]

[195] Interview findings from the Department of Agricultural Extension (DAE).
[196] Interview findings from the Department of Agricultural Extension (DAE).
[197] Interview findings from Bangladesh Fruits, Vegetables & Allied Products Exporters Association (BFVAPEA), Department of Agricultural Extension (DAE).
[198] Interview findings from Bangladesh Fruits, Vegetables & Allied Products Exporters Association (BFVAPEA).
[199] Interview findings from the Department of Agricultural Extension (DAE).
[200] Interview findings from Polygon Resource.

e. Frozen Food including Halal Meat:

Shrimp:

The main export destination for Bangladeshi shrimp is the EU, and the country is now capable of increasing its capacity to assure high quality and proper health certification of shrimp that is required in the EU. For example, the FIQC has three laboratories in Bangladesh, which are accredited by the BAB along with the ILAC and the APLAC. The tests done from the FIQC laboratories are accepted globally, including the EU.[201] However, there are still some additional difficulties that affect our shrimp exports, and in the days ahead there could be some new challenges:

- In terms of testing and inspection, new parametres are set by the importing countries very frequently. To test for environmental pollution, PCP contamination and dioxins are needed which require a machine worth 12 crore taka.[202]
- Food and safety tests have been done so far but at present there is a high chance that newly added tests will be required to be done in Bangladesh. Tests like disease test will be needed in future. To meet these new requirements skilled manpower is required. For the disease tests new pathogen labs need to be established.
- Support from international experts are required to develop skilled manpower and to train our people, cover new rules and comply with new regulations in buyer countries. Government support is required for this.
- At present the traceability certification is not mandatory for non-EU destinations, but in the upcoming days it will become essential. In order to provide this certification, the country needs to set its capacity to issue the traceability certification.
- Due to inadequate information and inadequate HACCP process, it is necessary to provide extensive training on the HACCP.
- An online database needs to be formed on firm and firms' supply chains so that the exporters can get all the information easily. Both the public and private sectors can play a role in that regard.[203]
- There is a huge number of small firms in the business, and all of them are needed to be brought under a single cluster.
- To increase production, intensification is needed. Therefore, instead of using traditional production process, semi intensive method can also be used. Due to the lack of capacity of small-scale shrimp producers in terms of maintaining healthy production chain, it is essential to make them trained and keep them aware of residual antimicrobials and other substances and the good and healthy production system.

[201] Interview findings from Fish Inspection and Quality Control (FIQC).
[202] Interview findings from Fish Inspection and Quality Control (FIQC).
[203] Interview findings from Fish Inspection and Quality Control (FIQC).

Halal Meat:

Even though the demand for halal meat is growing fast globally, unfortunately the potential of exporting halal meat from the Bangladesh is still untapped largely due to deficient compliance in terms of certain certification requirements on the maintenance of standard and hygiene of meat. In that case, the following initiatives need to be taken to turn this sector into a vibrant and self-sustaining one:

- **Create zoning**: It is necessary to ensure that cattle rearing is done in disease-free locations and processing in the pre- and post-slaughter stages is also disease-free. To that end, the government should declare disease free zones, and should provide for vaccination in fixed areas. This can be done by the Department of Livestock Services.[204] If the cows were FMD (Foot and Mouth Disease) free then it would be possible for exporters to obtain export orders from Europe.

- Currently the Department of Livestock Services is carrying out zoning farming at Pabna, which is free from FMD. Although, the government has a plan to pilot such zoning farming in Bhola and Shirajgoang, its implementation is badly needed. [205]

- There is a special zoning for goats in Jhikargacha of Jessore, where the goats are free of PPR (Peste des Petits Ruminants) commonly known as the goat plague. But these Zones need skilled manpower.[206]

- Certification is required to testify compliance with the process for further facilitating the entry of Bangladeshi halal processed meat to potential markets.[207]

- The designated agency, the Department of Livestock Services, has to be equipped to be able to maintain the standard and hygiene of meat, as its capacity lags behind the requirements.

- It is necessary to form an authorised Halal Certification Board to monitor and issue certificates ensuring safe, genuinely certified and diversified halal products so that exporters are able to reach potential markets including those in the Middle East and the South East Asia.[208]

- It is necessary to establish an international testing lab so that the meat exported does not contain any hazardous elements and germs, and that the meat processing meet international

[204] Interview findings from Bengal Meat.
[205] Interview findings from Livestock Department.
[206] Interview findings from Livestock Department.
[207] The Financial Express, Export of halal food: The compliance factor, September 22, 2018. https://thefinancialexpress.com.bd/editorial/export-of-halal-food-the-compliance-factor-1537632657

[208] The Daily Star, Halal food certification board on cards, October 11, 2010. https://www.thedailystar.net/news-detail-157951

standards. But as the creation of such a lab is very costly, the government could help entrepreneurs in this regard.[209]

- Mutual recognition and strong negotiation are mandatory. As for export in the Middle East, the exporting country requires certification from any other importing countries including Kuwait and Dubai. It is mandatory for an exporting country to obtain such certification from any importing country as they assure that the product exported does not contain any hazardous elements and germs. For example, to export processed meat to any halal market around the world including Malaysia, halal certification by the Department of Islamic Development, Malaysia (JAKIM) is required[210].
- It is also necessary to ensure animal health management, disease control and disease free zone to promote Bangladesh as a meat exporting country.[211]
- The rate of export subsidy or cash incentive currently provided at the rate of 20 percent to the sector needs to be increased.[212]

f. Herbal Products:

- **WHO approved laboratory:** Necessary initiatives should be taken to establish a WHO approved laboratory to promote herbal products export. Again, initiatives should be taken for one stop delivery service so that all tests can be done easily. Strong position of the government is required to establish a WHO accredited lab. The lab can be established centrally along with BCSIR, BSTI and Dhaka University. Government initiatives are needed in this regard.
- **Measures to adequately comply with different standard certificate requirements:** In order to maintain quality with international standards, measures that should be undertaken include:[213]

  i. to make BNF (Bangladesh National Formulary) as per WHO Guidelines/International Standard Guidelines, Good Manufacturing Practice Guidelines;

  ii. to identify the source and ensure the quality of raw materials; and

  iii. to analyse effectively packaging materials sources.

[209] The Daily Star, Halal food certification board on cards, October 11, 2010. https://www.thedailystar.net/news-detail-157951
[210] Interview findings from Bengal Meat.
[211] Bangladesh: Bengal Meat basks in Halal boom, 16th June, 2011. https://halalfocus.net/bangladesh-bengal-meat-basks-in-halal-boom/
[212] Interview findings from Bengal Meat.
[213] Interview findings from the ACME Laboratories Ltd.

To adequately comply with different standard certificate requirements and regulations in different export markets, major policy initiatives are required to be undertaken to follow/maintain region-specific and country-specific guidelines for:[214]

(a) dossier preparation for registration purpose;

(b) Certificate of Pharmaceutical Product (CPP) preparation;

(c) regional/country specific Drug Regulatory Authority GMP for manufacturing facility;

(d) to set up testing parametres as per WHO or, PIC/S guidelines; and

(e) national testing bodies need to test the finished product as per WHO or PIC/S (Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme, PIC/S that provides GMP guidelines) and give certification.

- **GMP Certificate:**

Export certification system including GMP Certificate should be easier.[215]

- **Raw Materials:**

✓ The Government must ensure that herbs are grown in arsenic free land and are free of pesticides, and undertake initiatives to that regard.

✓ Import of finished herbal product should be restricted. Raw materials that are imported should be converted into products after undergoing several processes in home country.

✓ Initiatives should be taken to increase the facilities of raw materials testing and heavy metal test of finished products. Mini Cold Storages should be set up to store raw materials.

- **US FDA**:

The FDA compliance certificate needs to be collected from the USA, the Liberty Management Group Ltd., as there is no third party in Bangladesh to provide this. If the rules and regulations of the USFDA are maintained in the entire production/manufacturing process, the USFDA provides this certificate (which is mandatory for export to the US). Major potentials markets including USA can be captured through approval of FDA. Steps should be taken in order to get FDA (USA) compliance certificate more quickly. [216] In that regard, the following steps may be undertaken:

[214] Interview findings from the ACME Laboratories Ltd.
[215] Interview findings from the Modern Herbal Group, 15th January, 2018.
[216] Interview findings from the Modern Herbal Group, 15th January, 2018.

1. Formulation and Manufacturing Process (GMP certificate)
2. Analytical Method for Development and Validation
3. Stability Studies of the Product- requires data of one to two years
4. Documentation (sequentially)
5. Submit to FDA Authority
6. Transfer of Technology after Approval

The US Company can establish their branch which should be FDA approved. In India, 20 percetn of the labs are FDA approved. Technology transfer from the US will ensure improvement of the currently substandard production mechanism. Currently, joint collaboration between the Pharmacy Department under the Dhaka University and the US Company is in progress.[217] Other suggestions with regard to this include-

- ✓ For FDA approval and herbal products export, a regulatory committee a dedicated herbal committee is required as there is a lack of coordination and resource. A herbal council needs to be developed.
- ✓ The committee should have experts in analytical, formulation, physician and user levels. It should have expertise from different institutes including universities.
- ✓ The committee will have 1 representative from the herbal medicine manufacturers association (he will be an observer), 1 lawyer, 1 social worker, 2 officials from the DGDA, DGDA Secretary, 1 from the Health Services Division, and 1 from the Pharmacy Department of Dhaka University as strong co-ordination is needed[218]. Such committee will meet once a year.

- **Bangladesh Standards and Testing Institution (BSTI):**
  Steps should also be taken to get BSTI compliance certificate more quickly as BSTI inspects/monitors the entire production/manufacturing process then it issues this certificate.

- **Exemption from Tax:**
  The exporters faces about 50-70 percent tariffs in the export destinations.. The Government should look into the matter, and try to reduce the burden on the part of the exporters by negotiating preferential tariff agreement with promising export destinations.[219]

[217] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[218] Interview findings from the Department of Pharmacy, University of Dhaka, 6th February, 2018.
[219] Interview findings from the Square Pharmaceuticals.

- **Halal Certification Body:**
  At present Islamic Foundation provides halal certificates which are not globally recognised. A Halal Certification Body should be formed and recognised globally. Halal Certification body can be established under the DGDA.[220]

- **Collaboration of DGDA with Other Institutes:**
  The DGDA can be reorganised or reconstituted as the Bangladesh Food and Drug Authority. If not possible, for herbal products, Bangladesh Food, Drug and Cosmetics Authority may be constituted , or a plausible and effective collaboration of DGDA with other institutes may be established.[221] Moreover, Bangladesh Herbal Pharmacopia should be formed under the DGDA.

- **Strong Coordination:**
  Strong coordination among the Ministry of Health and Family Welfare, Ministry of Commerce and the DGDA is obligatory for enhancing the capacity of certification and standards in Bangladesh.

[220] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd., 06th March, 2018.
[221] Interview findings from the SQUARE Herbal & Nutraceuticals Ltd., 06th March, 2018.

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Annex- 1

Questionnaire for the Study on
Analysing the Gap in Issuing Certificates of Standards for Export

General Information	
Name of the Respondent:	
Organisation / Company Name:	
Address:	
Contact Number:	

1. Who are the major exporters in Bangladesh?

2. What type of products do you export?

3. What are the major export destinations of your products?

4. What are the requirements exporters need to follow and submit to get the certification on the maintenance of standard?

5. What type of certificates are needed to export? What are the country-wise specific requirements to export?

6. From where do they get the certificates? Who are the certificate providing agencies in home and foreign countries?

    a. If local institutes- do they have enough capacities?

    b. Do the foreign buyers/ countries recognise these certification on the maintenance of standard?

    c. If no, what are the major reasons behind the exporters are not able to comply with the certification on the maintenance of international standard and hygiene?

Why local institutes cannot provide the certificates?

d. In that case from where do the exporters get the certification of standard for this product?

7. Do you have mutual collaboration with foreign standard and testing institutes in order to provide the certificate of standard to the exporters?

8. On what basis do these foreign institutes provide standard certificate to exporters?

9. What are the major difficulties especially in respect of certain certification requirements you face to export?

10. What measures do you consider important to maintain quality with international standards?

11. In your view, what may the major policy initiatives required to be undertaken to adequately comply with the different standard certificate requirements and regulations in the different export markets?

Date:
Interviewee's Signature:
……..……

Annex- 2

List of stakeholders

Sl.	Sector	Interviewee
1.	**Leather, Leather Goods and Footwear**	Apex Tannery
2.		Bay Tannery unit 2 (export)
3.		Bay Footwear Limited
4.		Apex Footwear Limited
5.	**Plastic**	Bengal Plastic
6.		Bangladesh Plastic Goods Manufacturer and Exporters Association (BPGMEA)
7.		Erebus & Horizon Plastic
8.		PRAN RFL Group
9.	**Jute and Jute Goods**	Bangladesh Jute Mill Corporation (BJMC),
10.		Bangladesh Jute Goods Exporters' Association (BJGEA)
11.		Green Leaf
12.	**Fresh Vegetables**	Bangladesh Fruits, Vegetables & Allied Products Exporters Association (BFVAPEA)
13.		Department of Agricultural Extension (DAE)
14.		Fruit and vegetables Association
15.		Polygon Resource Potato exporter (Mainly Malaysia)
16.		MK Enterprise, (Lemon and Mango exporter)
17.	**Herbal Products**	Square Pharmaceuticals
18.		AP House (Honey Exporter)
19.		Directorate General of Drug Administration (DGDA)
20.		Modern Herbal Group.
21.		Department of Pharmacy, Faculty of Pharmacy, University of Dhaka
22.		Department of Pharmaceutical Technology, Faculty of Pharmacy, University of Dhaka
23.		National Control Laboratory, DGDA
24.		The ACME Laboratories Ltd.
25.	**Frozen Food**	Bangladesh Frozen Foods Exporters Association (BFFEA)
26.	**Shrimp**	Fish Inspection and Quality Control (FIQC)
27.	**Halal Meat**	Bengal Meat
28.		Department of Livestock Services
29.		SGS
30.		C&F Agent
31.		Bangladesh Standards and Testing Institute (BSTI)
32.		Bangladesh Food safety Authority (BFSA)
33.		BCSIR
34.		Plant quartine wing, Shahjalal International Airport

Annex- 3

Chemical Test Parametres & Physical Test Parametres (Footwear)

Chemical Test Parametres			
SL No.	**Test Parametre**	**Following Method**	**Require Limit**
1	2-Mercaptobenzothiazole (2-MBT)	Extraction with Aceton (1h / 70 °C), Quantification by using HPLC/DAD	< 10 mg / kg
2	Aromatic Amine	Textile / PES: EN 14362-1, EN 14362-2:2003, EN 14362-3 pAAB Leather: draft EN ISO 17234-1, EN ISO 17234-2 pAAB	< 10 mg / kg
3	Biocide - Dimethylfumarate (DMFU)	CEN ISO / TS 16186, DIN SPEC 53280	< 0.1 mg/kg
4	Cadmium / Cadmium-Compounds / Arsenic	plastics and metal: Wet decomposition method according to EN 1122, textile: draft DIN 54233-1:2010, leather: EN ISO 17072-2:2011	< 30 mg/kg
5	Cadmium/Arsenic	ISO 17072	<50 mg/kg (Cd); <30 mg/kg (As)
6	Chlorinated benzenes and toluenes	CADS Test Method	<Sum 10 mg / kg*
7	Chromium Total	EN ISO 17072-2	< 80 mg/kg
8	Chromium VI	BVL B 82.-02-11, current version EN ISO 17075:2007 Aging conditions A for material with and without skin contact: Time: 24 h, Temperature: 80 ± 3° C, Humidity: max. 5 % Aging conditions B for material with skin contact: Time: 24 h UV light aging: according EN ISO 105-B02:2013 Part B02: Colour fastness to artificial light: Xenon arc fading lamp test, Exposure Cycle A1	< 3 mg / kg
9	Disperse Dyes - allergenic	DIN 54234:2005; EN ISO 16373-2:2012 According to conventions a dye is considered „detected“, if the extract was analyzed to contain more than 1 mg/l (each Dyestuff).	< 1 mg / l
10	Dyes - Carcinogenic	DIN 54231 According to conventions a dye is considered „detected“, if the extract was analyzed to contain more than 1 mg / l (each Dyestuff).	< 1 mg / l
11	Dyestuffs - Others	CADS Test Method	1 mg / l*

12	Flame - retarding Finishing - MCCP	Leather: draft EN ISO 18219 All other materials: CADS method	< 500 mg/kg
13	Flame - retarding Finishing - Others	In-house-method - Determination of miscellaneous flame retardants (brominated biphenyls and biphenyl ether, organophosphates, TRIS-(aziridinyl)-phosphate (TEPA) after extraction with organic solvent, quantification by GC/MS and LC/MS.	< 5 mg / kg for Each
14	Flame - retarding Finishing - SCCP	Leather: draft EN ISO 18219 All other materials: CADS method	< 100 mg / kg
15	Flame - retarding Finishing - TRIS	ISO 17881/part 2	< 10 mg / kg
16	Fluorosurfactant	CEN ISO / TS 15968, DIN SPEC 1038	1,0 µg / m2
17	Formaldehyde	EN ISO 14184-1:2011; Textile, Synthetic , EN ISO 17226-1:2008; Leather, EN 717-3:1996; Wood	< 75 mg / kg
18	Global Migration	EN 1186 ff. 2002; Extration with water	< 10 mg / dm²
19	Lead (Pb) - Non-Surface Coating Materials	Children products: ASTM E 1645 (decomposition), ASTM E 1613 (analytics ICP-OES) According to the U.S. Consumer Product Safety Improvement Act 2008 (H.R. 4040) Title I, Section 101 Adult products: Plastics: EN 1122, Textiles: Draft DIN 54233-1, Leather: EN ISO 17072-2	< 100 mg / kg
20	Lead (Pb) Content In Paints And Coating	Children Products: ASTM E 1645 (decomposition), ASTM E 1613 (analytics ICP-OES) According to the U.S. Consumer Product Safety Improvement Act 2008 (H.R. 4040) Title I, Section 101 Adult products: Plastics: EN 1122, Textiles: Draft DIN 54233-1, Leather: EN ISO 17072-2	< 90 mg / kg
21	Monomers	BVL L 00.00-4 (EG):1982	Not Detected
22	N-Alkylarylamines	Recommendations XXI 2.5.2.2.3 Plastics Committee	1 mg / l (O:V = 6 dm² / 1l)
23	Nickel release	CR 12471, paragraph 5.3.4 Rubbing-test before and after abrasion of any polymer coating: EN 1811	less than 0,28 µg/cm2/weak
24	Nitrosamine	According to DIN EN 12868:1999 (migration time: 24 h at 40 °C, without boiling)	1,0 µg / dm²
25	Organotin Compounds	CEN ISO / TS 16179, DIN SPEC 91178	< 0.025 mg/kg(TBT) ; <0.5 mg/kg(TPhT); <1 mg/kg

26	PAH	CEN ISO/TS 16190; DIN SPEC 52412	< 0.2 mg/kg
27	Pesticides		1,0 mg / kg
28	pH Value	CADS Test Method	Leather 3,0 - 7,0 Other Material 4,5 - 7,5
29	Phenols - Chlorinated	Leather: Solvent extraction, GC-MS, draft EN ISO 17070 ; Textile: Solvent extraction wtih KOH, GC-MS, draft EN ISO 17070	< 0,05 mg / kg
30	Phenols - Others	Extraction with solvent, GC-MS : Leather: draft EN ISO 18218 part 1 and 2 : A new work item is opened by: Textile: CEN/TC 248 WG 26	it not detectable
31	Phenols-Ethoxylates	Extraction with solvent, GC-MS : Leather: draft EN ISO 18218 part 1 and 2 : A new work item is opened by: Textile: CEN/TC 248 WG 26	it not detectable
32	Phthalates	Textiles: EN ISO 14389:2014 Other materials: Technical rule CEN ISO/TS 16181 / DIN SPEC 91181-2011-10	< 100 mg / kg
33	Polycyclic Aromatic Hydrocarbons (PAH)	CEN ISO / TS 16190 and DIN SPEC 52412	< 0,2 mg / kg
34	Preserving Agents	Leather: EN ISO 13365 ;Textile: Solvent extraction with KOH, GC-MS, draft EN ISO 17070	< 50 mg / kg
35	Primary Aromatic Amines	BVL L 00.00-6 (EC):2002 Annex V of Directive 2002/72/EC L91/33 31.03.2007	10 µg / l
36	Soluble Heavy Metals	Leather: according DIN EN ISO 17072-1, Extraction with Distillied water for 1 hr at 37°C :Textile: DIN 54233-3 (draft 02/2010)	<5mg/kg(Sb); <0.2mg/kg(As); <0.1mg/kg(Cd); <0.8mg/kg(Pb); <0.02mg/kg(Hg), <4.0 mg/kg(Co), <50 mg/kg(Cu), <4.0 mg/kg(Ni)
37	Soluble Mineral Tanning Agents	according EN ISO 17072-1, Extraction with distilled water for 1 hr at 37°C	< 50 mg / kg

38	VOC - 1- Methyl-2-pyrrolidone (NMP)	Headspace-GC-MS; sample weigth: 1g - uncut, Temperature: 120°C, for 45 minutes : Maximum 2 materials mixed in a composite test	< 100 mg/kg
39	VOC - 2- Phenyl-2-Propanol	Headspace-GC-MS; sample weigth: 1g - uncut, Temperature: 120°C, for 45 minutes : Limit of detection (LOD) 1 mg / kg	Not Detected
40	VOC - Acetophenone	Headspace-GC-MS; sample weigth: 1g - uncut, Temperature: 120°C, for 45 minutes : Limit of detection (LOD) 1 mg / kg	Not Detected
41	VOC - Bis(2-methoxyethyl)ether	Headspace-GC-MS; sample weigth: 1g - uncut, Temperature: 120°C, for 45 minutes : Maximum 2 materials mixed in a composite test	< 500 mg/kg
42	VOC - Dimethylformamide (DMFA)	CEN ISO / TS 16189, DIN SPEC 52411	< 5 mg/kg
43	VOC - Formamide	Headspace-GC-MS; sample weigth: 1g - uncut, Temperature: 120°C, for 45 minutes	Not Detected
44	Corrosion	SATRA TM 310:1992 METHOD:2	No damage

Physical test parametres			
SL	**Test Property**	**Method**	**Require Limit**
1	Attachment Strength	BS 5131 5.11	25 kgf (min)
2	Bally Flexing	ASTM D6182	No damage after 50K
3	Blooming	In-house method(NaCl method)	No blooming
4	Color Fastness to Crocking	AATCC 8	Leather-D/W-2.5/1.5,Non Leather-D/W-3.5/3
5	Color Fastness to Persoiration	AATCC 15	Min: 3
6	Elongation at Break	ASTM D2211	Min: 30%
7	Lace Abrasion	SATRA TM154	No Damage/1000 cycle
8	Lateral Strength	SATRA TM51:1993	35 kgf (min)
9	Non Marking Test	In House Method	Grade- 4 (min)
10	Shank Stifness	SATRA TM58	400 kn.mm2
11	Shoe Lace Strength	BS 5131 3.7	D/W-25/20 Kgf min
12	Slider Lock	ASTM D2061	5 kgf (min)
13	Slider Strength	SATRA TM52:2002	25 kgf min
14	Slip Resistance for Whole Shoe	ASTM F609 (Modified)	S/K-D-.5,S/K-W-.3

15	Sole Abrasion	ASTM D1630	Min: 50%
16	Sole Bond Strength	FIA 1206	11.3 Kgf (min)
17	Specific Gravity	ASTM D792	.9-1.1
18	Tensile Strength-Out sole	ASTM D412	30 kgf/cm2 (min)
19	Tensile Strength-Upper	ASTM D2209	120 kgf/cm2 (min)
20	Tongue Strength	BS 5131	20 Kgf min
21	Whole Shoe Flexing	SATRA PM 92	No damage after 50K
22	Workmanship	Visual	No visual defects
23	Zipper Slider & Stop	SATRA TM53:1992	13.5 kgf (min)
24	Sock Absorbency	SATRA TM 142	30% MIN

Test Report No.: **0154059961a 001**

Client:	**DURABLE PLASTIC LTD** Pran-Rfl Center, Ga-105, Middle Badda. Dhaka-1212, Bangladesh.
Buyer's name:	Carrefour
Manufacturer's name:	n.a.
Test item(s):	Boost water bottle Mum water bottle
Identification / Model No(s):	TBC / 95192 (RFL), 95078 (RFL)
Sample Receiving date:	2014-08-01 & 2014-08-22
Testing Period:	2014-08-07 to 2014-08-18 & 2014-08-22 to 2014-08-29

Test specification:

Performed parameter(s) for the compliance with the following regulations concerning materials in contact with foodstuff:

- French Decree N0 2007-766, dated 10 May 2007

Test conclusion:

PASS

Other Information:
Not available

For detailed sample picture please refer to last page

For and on behalf of TÜV Rheinland (Shanghai) Co., Ltd.

2014-09-03	Amy Zhao / Assistant Project Manager
Date	*Name / Position*

Test result is drawn according to the kind and extent of tests performed.
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Indication: **Food contact**

Product: Commodity, contact with foodstuff

Description of test specimen

Item	
1	Boost water bottle
2	Mum water bottle

1 Material List:

Sample No.	Material	Color	Location	Refer to
1	Plastic+silicone	Multi	Boost water bottle	
1A	Plastic, HDPE	White	Bottle body	
1B	Silicone	Translucent	Silicone gasket	
1C	Plastic, PP	Pink	Bottle lid	
1D	Plastic, PP	White	Lid cover	
2	Plastic+silicone	Multi	Boost water bottle	
2A	Plastic, PP	Transparent	Bottle body	
2B	Silicone	Translucent	Silicone gasket	1B
2C	Plastic, PP	Blue	Bottle lid	
2D	Plastic, PP	White	Lid cover	1D

Remark:

According to client's information silicone and PP parts in same color are produced of same material respectively. Tests were performed on randomly selected samples.

2 Overall Results:

Test No.	Tested Item	Conclusion
1	Sensorial examination	PASS
2	Global Migration	PASS
3	Global Migration	PASS
4	Specific Migration of metals, Metal-release from Plastic	PASS
5	Specific Migration of Primary Aromatic Amines	PASS
6	Specific Migration of Phthalates	PASS
7	Total Bisphenol A	PASS
8	Remaining Peroxides	PASS
9	Volatile Organic Substances	PASS
10	Specific Migration of Tin	PASS

3 Results

3.1 Sensorial examination

Test method: It is examined to the extent of food simulant being used, which comes into contact with the product, undergoes detectable changes in taste and smell.

For this purpose, the food simulant was stored in the product under the below mentioned time and temperature. Afterwards, the food simulant was examined by an appropriate number of tasters with regard to any divergence in smell and taste. Another test sample, which was used as a reference, was treated by the same way except that it had no contact with the product to be tested.

Before testing, the product had been cleaned according to the product's instruction manual or in the absence of such manual, by normal household cleaning.

The test is carried out on the basis of DIN 10955:2004 by paired comparison test:

Evaluation scheme:

0 = No discernible deviation

1 = Barely discernible deviation

2 = Weak deviation

3 = Clear deviation

4 = Strong deviation

Limit: 3 (failed)

The following food simulants and conditions were applied:

Food simulant	**Test duration / Temperature**
Water	24 hour(s) / 40 °C

Test No.:	1
Sample No.:	1
Parameter:	**Result**
Transfer of Smell:	0
Transfer of Taste:	2

Test No.:	2
Sample No.:	2
Parameter:	**Result**
Transfer of Smell:	0
Transfer of Taste:	2

Test Report No.: **0154059961a 001**

Test No.:	3
Sample No.:	1B
Parameter:	**Result**
Transfer of Smell:	0
Transfer of Taste:	1

3.2 Global Migration

Test method: The migratory behaviour is examined in accordance with Directive 82/711/EEC and Council Directive 85/572/EEC and its corresponding regulations. Deviating to the regulations the following tests were performed as orientating single tests.

Limit: Commission Regulation (EU) No 10/2011 and amendments

The following food simulants and conditions were applied:

Food simulant	**Test duration / Temperature**
Acetic acid 3 %	2 hour(s) / 70 °C
Ethanol 50 %	2 hour(s) / 70 °C

Test No.:	1		
Sample No.:	1		
Migration ratio:	800 ml / 5.2 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Acetic acid 3 %	mg/dm^2	<2	10
Ethanol 50 %	mg/dm^2	2	10

Test No.:	2		
Sample No.:	2		
Migration ratio:	1200 ml / 6.16 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Acetic acid 3 %	mg/dm^2	2	10
Ethanol 50 %	mg/dm^2	<2	10

Abbreviations:

mg/dm^2 = Milligram per square decimetre

< = Less than

3.3 Global Migration

Test method: The migratory behaviour is examined in accordance with Directive 82/711/EEC and Council Directive 85/572/EEC and its corresponding regulations. Deviating to the regulations the following tests were performed as orientating single tests.

Limit: Arrêté du 25 novembre 1992

The following food simulants and conditions were applied:

Food simulant	**Test duration / Temperature**
Acetic acid 3 %	2 hour(s) / 70 °C
Ethanol 50 %	2 hour(s) / 70 °C

Test No.:	1		
Sample No.:	1B		
Parameter	**Unit**	**Result**	**Limit**
Acetic acid 3 %	mg/dm²	< 2	10
Ethanol 50 %	mg/dm²	< 2	10

Abbreviations:

mg/dm^2 = Milligram per square decimetre

mg/kg = Milligram per kilogram

< = Less than

3.4 Specific Migration of metals, Metal-release from Plastic

Test method: The sample preparation is performed according to EN 13130-1:2004. Test conditions were chosen according to Directive 82/711/EEC, Council Directive 85/572/EEC and its corresponding regulations. The determination of amounts of metals that were released is done via ICP-OES with reference to ISO 11885:2007.

Limit: Commission Regulation (EU) No 10/2011 and amendments

The following food simulant and condition was applied:

Food simulant	**Test duration / Temperature**
Acetic acid 3 %	24 hour(s) / 40 °C

Test No.:	1		
Sample No.:	1		
Migration ratio	800 ml / 5.2 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Barium	mg/kg	< 0.1	1
Cobalt	mg/kg	< 0.01	0.05
Copper	mg/kg	< 0.1	5
Iron	mg/kg	< 1.0	48
Lithium	mg/kg	< 0.1	0.6
Manganese	mg/kg	< 0.1	0.6
Zinc	mg/kg	< 1.0	25

Test No.:	2		
Sample No.:	2		
Migration ratio	1200 ml / 6.16 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Barium	mg/kg	< 0.1	1
Cobalt	mg/kg	< 0.01	0.05
Copper	mg/kg	< 0.1	5
Iron	mg/kg	< 1.0	48
Lithium	mg/kg	< 0.1	0.6
Manganese	mg/kg	< 0.1	0.6
Zinc	mg/kg	< 1.0	25

Abbreviations:

mg/kg = Milligram per kilogram

< = Less than

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3.5 Specific Migration of Primary Aromatic Amines

Test method: The sample preparation is performed according to EN 13130-1:2004. Test conditions are chosen according to Directive 82/711/EEC, Council Directive 85/572/EEC and its corresponding regulations. Presence of primary aromatic amines is carried out with reference to Kunststoffe im Lebensmittelverkehr, Book 2, Teil B II, XXI.

Limit: Commission Regulation (EU) No 10/2011 and amendments

The following food simulant and condition was applied:

Food simulant	**Test duration / Temperature**
Acetic acid 3 %	24 hour(s) / 40 °C

Test No.:	1		
Sample No.:	1		
Migration ratio	800 ml / 5.2 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Primary aromatic amines	mg/kg	< 0.01	n.d. (<0.01)

Test No.:	2		
Sample No.:	2		
Migration ratio	1200 ml / 6.16 dm^2		
Parameter	**Unit**	**Result**	**Limit**
Primary aromatic amines	mg/kg	< 0.01	n.d. (<0.01)

Abbreviations:

mg/kg = milligram per kilogramm

< = Less than

3.6 Specific Migration of Phthalates

Test method: The sample preparation is performed according to EN 13130-1:2004. Test conditions are chosen according to Directive 82/711/EEC, Council Directive 85/572/EEC and its corresponding regulations. Presence of Phthalates is detected with reference to EN ISO 18856:2005.

Limit: Commission Regulation (EU) No 10/2011

The following food simulant and condition was applied:

Food simulant	Test duration / Temperature
Ethanol 50 %	24 hour(s) / 40 °C

Test No.:	1			
Sample No.:	1			
Migration ratio	800 ml / 5.2 dm^2			
Parameter	**Abbreviation**	**Unit**	**Result**	**Limit**
Benzylbutylphthalate	BBP	mg/kg	< 5.0	30
Diethylhexylphthalate	DEHP	mg/kg	< 1.5	1.5
Dibutylphthalate	DBP	mg/kg	< 0.3	0.3
Diisononylphthalate + Diisodecylphthalate	DINP + DIDP	mg/kg	< 5.0	9
Phthalic acid, diallyl ester	DAP	mg/kg	< 0.01	N.D (< 0.01)

Test No.:	2			
Sample No.:	2			
Migration ratio	1200 ml / 6.16 dm^2			
Parameter	**Abbreviation**	**Unit**	**Result**	**Limit**
Benzylbutylphthalate	BBP	mg/kg	< 5.0	30
Diethylhexylphthalate	DEHP	mg/kg	< 1.5	1.5
Dibutylphthalate	DBP	mg/kg	< 0.3	0.3
Diisononylphthalate + Diisodecylphthalate	DINP + DIDP	mg/kg	< 5.0	9
Phthalic acid, diallyl ester	DAP	mg/kg	< 0.01	N.D (< 0.01)

Abbreviations:

mg/kg = Milligram per kilogram

< = Less than

3.7 Total Bisphenol A

Test method: Extraction with Organic solvent, Detection and quantification by means of LC-MS

Limit: Client requirement

Test No.:	1			
Sample No.:	1A			
Parameter	**Unit**	**RL**	**Result**	**Limit**
Bisphenol A	mg/kg	0.1	n.d.	n.d.

Test No.:	2			
Sample No.:	1C			
Parameter	**Unit**	**RL**	**Result**	**Limit**
Bisphenol A	mg/kg	0.1	n.d.	n.d.

Test No.:	3			
Sample No.:	1D			
Parameter	**Unit**	**RL**	**Result**	**Limit**
Bisphenol A	mg/kg	0.1	n.d.	n.d.

Test No.:	4			
Sample No.:	2A			
Parameter	**Unit**	**RL**	**Result**	**Limit**
Bisphenol A	mg/kg	0.1	n.d.	n.d.

Test No.:	5			
Sample No.:	2C			
Parameter	**Unit**	**RL**	**Result**	**Limit**
Bisphenol A	mg/kg	0.1	n.d.	n.d.

Abbreviations:

n.d. = Not detected (<Reporting Limit)

RL = Reporting Limit

mg/kg = Milligram per kilogram

< = Less than

3.8 Remaining Peroxides

Test method: The test was performed with reference to Pharmacopée française, Xème édition.

Limit: Arrêté du 25 novembre 1992

Test No.:	1	
Sample No.:	1B	
Parameter	**Result**	**Limit**
Peroxides	Absent	Absent

Abbreviations:

Absent = Negative reaction to presence of peroxides

Present = Positive reaction to presence of peroxides

3.9 Volatile Organic Substances

Test method: Arrêté du 25 novembre 1992, annex III, clause 2

Limit: Arrêté du 25 novembre 1992

The following conditions were applied:

Test duration / Temperature
4 hour(s) / 200 °C

Test No.:	1		
Sample No.:	1B		
Parameter	**Unit**	**Result**	**Limit**
Volatile organic substances (VOC)	%	0.21	0.5

Abbreviations:

% = Percentage

< = Less than

3.10 Specific Migration of Tin

Test method: The migratory behaviour is examined in accordance with Directive 82/711/EEC and Council Directive 85/572/EEC and its corresponding regulations. The presence of tin or tin containing compounds are analyzed by ICP

Limit: Arrêté du 25 novembre 1992

The following food simulant and condition was applied:

Food simulant	**Test duration / Temperature**
Acetic acid 3 %	24 hour(s) / 40 °C

Test No.:	1		
Sample No.:	1B		
Parameter	**Unit**	**Result**	**Limit**
Organotin Compounds (expressed as Tin)	mg/kg	<0.05	0.1

Abbreviations:

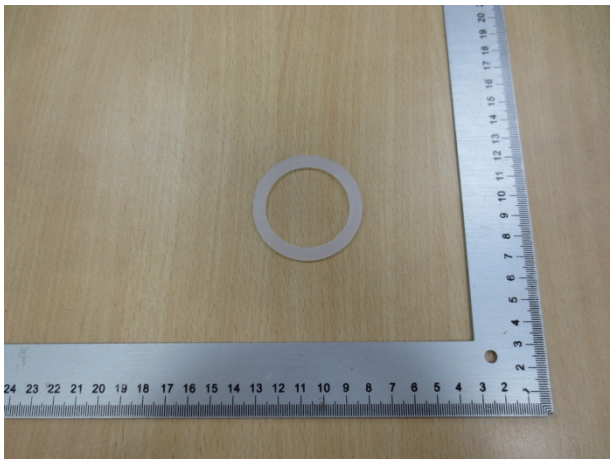
mg/kg = Milligram per kilogram

< = Less than

4 Sample picture(s):

Sample 1

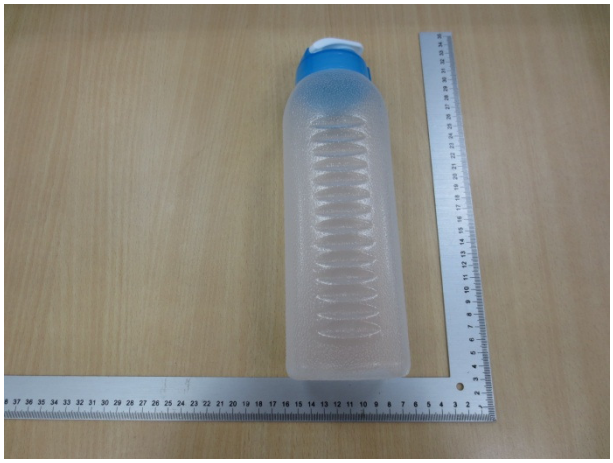
Sample 1A



Sample 1B

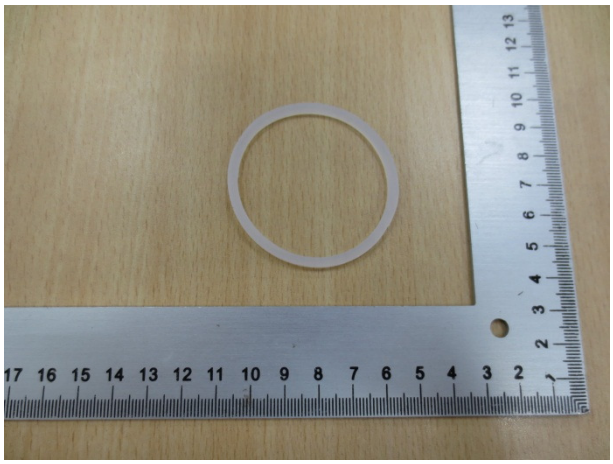
Sample 1C

Sample 1D

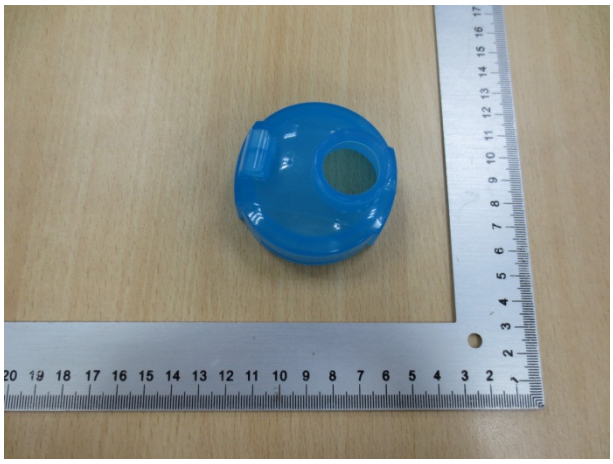


Sample 2

Sample 2A



Sample 2B



Sample 2C

Sample 2D

- END -

General Terms and Conditions of Business of TÜV Rheinland in Greater China

Scope

1.1 These General Terms and Conditions of Business of TUV Rheinland in Greater China is made between the client and one or more member entities of TUV Rheinland in Greater China as applicable as the case may be ("TÜV Rheinland").

1.2 The following terms and conditions apply to agreed services including consultancy services, information, deliveries and similar services as well as ancillary services and other secondary obligations provided within the scope of contract performance.

1.3 Any standard terms and conditions of the client of any nature shall not apply and shall hereby be expressly excluded. No standard contractual terms and conditions of the client shall form part of the contract even if TÜV Rheinland does not explicitly object to them.

2. Quotations

Unless otherwise agreed, all quotations submitted by TÜV Rheinland can be changed by TÜV Rheinland without notice prior to its acceptance and confirmation by the other party.

3. Coming into effect and duration of contracts

3.1 The contract shall come into effect for the agreed terms upon the quotation letter of TÜV Rheinland or a separate contractual document being signed by both contracting parties, or upon the works requested by the client being carried out by TÜV Rheinland. If the client instructs TÜV Rheinland without receiving a quotation from TÜV Rheinland (quotation), TÜV Rheinland is, in its sole discretion, entitled to accept the order by giving written notice of such acceptance (including notice sent via electronic means) or by performing the requested services.

3.2 The contract term starts upon the coming into effect of the contract in accordance with article 3.1 and shall continue for the term agreed in the contract.

3.3 If the contract provides for an extension of the contract term, the contract term will be extended by the term provided for in the contract unless terminated in writing by either party with a six-week notice prior to the end of the contractual term.

4. Scope of services

4.1 The scope of the services shall be decided solely by a unanimous declaration issued by both parties. If no such declaration exists, then the written confirmation of order by TÜV Rheinland shall be decisive.

4.2 The agreed services shall be performed in compliance with the regulations in force at the time the contract is entered into.

4.3 TÜV Rheinland is entitled to determine, in its sole discretion, the method and nature of the assessment unless otherwise agreed in writing or if mandatory provisions require a specific procedure to be followed.

4.4 On execution of the work there shall be no simultaneous assumption of any guarantee of the correctness (proper quality) and working order of either tested or examined parts nor of the installation as a whole and its upstream and/or downstream processes, organisations, use and application in accordance with regulations, nor of the systems on which the installation is based. In particular, TÜV Rheinland shall assume no responsibility for the construction, selection of materials and assembly of installations examined, nor for their use and application in accordance with regulations unless these questions are expressly covered by the contract.

4.5 In the case of inspection work, TÜV Rheinland shall not be responsible for the accuracy or checking of the safety programmes or safety regulations on which the inspections are based, unless otherwise expressly agreed in writing.

5. Performance periods/dates

5.1 The contractually agreed periods/dates of performance are based on estimates of the work involved which are prepared in line with the details provided by the client. They shall only be binding if being confirmed as binding by TÜV Rheinland in writing.

5.2 If binding periods of performance have been agreed, these periods shall not commence until the client has submitted all required documents to TÜV Rheinland.

5.3 Articles 5.1 and 5.2 also apply, even without express approval by the client, to all extensions of agreed periods/dates of performance not caused by TÜV Rheinland.

6. The client's obligation to cooperate

6.1 The client shall guarantee that all cooperation required on its part, its agents or third parties will be provided in good time and at no cost to TÜV Rheinland.

6.2 Design documents, supplies, auxiliary staff, etc. necessary for performance of the services shall be made available free of charge by the client. Moreover, collaborative action of the client must be undertaken in accordance with legal provisions, standards, safety regulations and accident prevention instructions.

6.3 The client shall bear any additional cost incurred on account of work having to be redone or being delayed as a result of late, incorrect or incomplete information provided by or lack of proper cooperation from the client. Even where a fixed or maximum price is agreed, TÜV Rheinland shall be entitled to charge extra fees for such additional expense.

7. Invoicing of work

7.1 If the scope of performance is not laid down in writing when the order is placed, invoicing shall be based on costs actually incurred. If no price is agreed in writing, invoicing shall be made in accordance with the price list of TÜV Rheinland valid at the time of performance.

7.2 Unless otherwise agreed, work shall be invoiced according to the progress of the work.

7.3 If the execution of an order extends over more than one month and the value of the contract or the agreed fixed price exceeds €2,500.00 or equivalent value in local currency, TÜV Rheinland may demand payments on account or in instalments.

8. Payment terms

8.1 All invoice amounts shall be due for payment without deduction on receipt of the invoice. No discounts shall be granted.

8.2 Payments shall be made to the bank account of TÜV Rheinland as indicated on the invoice, stating the invoice and customer numbers.

8.3 In cases of default of payment, TÜV Rheinland shall be entitled to claim default interest at the applicable short term loan interest rate publicly announced by a reputable commercial bank in the country where TÜV Rheinland is located. At the same time, TÜV Rheinland reserves the right to claim further damages.

8.4 Should the client default in payment of the invoice despite being granted a reasonable grace period, TÜV Rheinland shall be entitled to cancel the contract, withdraw the certificate, claim damages for non-performance and refuse to continue performance of the contract.

8.5 The provisions set forth in article 8.4 shall also apply in cases involving returned cheques, cessation of payment, commencement of insolvency proceedings against the client's assets or cases in which the commencement of insolvency proceedings has been dismissed due to lack of assets.

8.6 Objections to the invoices of TÜV Rheinland shall be submitted in writing within two weeks of receipt of the invoice.

8.7 TÜV Rheinland shall be entitled to demand appropriate advance payments.

8.8 TÜV Rheinland shall be entitled to raise its fees at the beginning of a month if overheads and/or purchase costs have increased. In this case, TÜV Rheinland shall notify the client in writing of the rise in fees. This notification shall be issued one month prior to the date on which the rise in fees shall come into effect (period of notice of changes in fees). If the rise in fees remains under 5% per contractual year, the client shall not have the right to terminate the contract. If the rise in fees exceeds 5% per contractual year, the client shall be entitled to terminate the contract by the end of the period of notice of changes in fees. If the contract is not terminated, the changed fees shall be deemed to have been agreed upon by the time of the expiry of the notice period.

8.9 Only legally established and undisputed claims may be offset against claims by TÜV Rheinland.

9. Acceptance

9.1 Any part of the work ordered which is complete in itself may be presented by TÜV Rheinland for acceptance as an instalment. The client shall be obliged to accept it immediately.

9.2 If the client fails to fulfil its acceptance obligation immediately, acceptance shall be deemed to have taken place 4 calendar weeks after completion of the work provided that TÜV Rheinland has specifically made the client aware of the aforementioned deadline upon completion of the work.

10. Confidentiality

10.1 For the purpose of these terms and conditions, "confidential information" means all information, documents, images, drawings, know-how, data, samples and project documentation which one party (the "disclosing party") hands over, transfers or otherwise discloses to the other party (the "receiving party"). Confidential information also includes paper copies and electronic copies of such information.

10.2 The disclosing party shall mark all confidential information disclosed in written form as confidential before passing it onto the receiving party. The same applies to confidential information transmitted by e-mail. If confidential information is disclosed orally, the receiving party shall be appropriately informed in advance and the disclosing party shall cconfirm in writing the confidentiality nature of the information within five working days of oral disclosure. Where the disclosing party fails to do so within the stipulated period, the receiving party shall not take any confidentiality obligations hereunder towards such information.

10.3 All confidential information which the disclosing party transmits or otherwise discloses to the receiving party during performance of work by TÜV Rheinland:

a) may only be used by the receiving party for the purposes of performing the contract, unless expressly otherwise agreed in writing by the disclosing party;

b) may not be copied, distributed, published or otherwise disclosed by the receiving party, unless this is necessary for fulfilling the purpose of the contract or TÜV Rheinland is required to pass on confidential information, inspection reports or documentation to the government authorities, judicial court, accreditation bodies or third parties that are involved in the performance of the contract;

c) must be treated by the receiving party with the same level of confidentiality as the receiving party uses to protect its own confidential information, but never with a lesser level of confidentiality than that which is reasonably required.

10.4 The receiving party may disclose any confidential information received from the disclosing party only to those of its employees who need this information to perform the services required for the contract. The receiving party undertakes to oblige these employees to observe the same level of secrecy as set forth in this confidentiality clause.

10.5 Information for which the receiving party can furnish proof that:

a) it was generally known at the time of disclosure or has become general knowledge without violation of this confidentiality clause by the receiving party; or

b) it was disclosed to the receiving party by a third party entitled to disclose this information; or

c) the receiving party already possessed this information prior to disclosure by the disclosing party; or

d) the receiving party developed it itself, irrespective of disclosure by the disclosing party, shall not be deemed to constitute "confidential information" as defined in this confidentiality clause.

10.6 All confidential information shall remain the property of the disclosing party. The receiving party hereby agrees to immediately (i) return all confidential information, including all copies, to the disclosing party, and/or (ii) on request by the disclosing party, to destroy all confidential information, including all copies, and confirm the destruction of this confidential information to the disclosing party in writing, at any time if so requested by the disclosing party but at the latest and without special request after termination or expiry of the contract. This does not extend to include reports and certificates prepared for the client solely for the purpose of fulfilling the obligations under the contract, which shall remain with the client. However, TÜV Rheinland is entitled to make file copies of such reports, certificates and confidential information that forms the basis for preparing these reports and certificates in order to evidence the correctness of its results and for general documentation purposes required by laws, regulations and the requirements of working procedures of TÜV Rheinland.

10.7 From the start of the contract and for a period of three years after termination or expiry of the contract, the receiving party shall maintain strict secrecy of all confidential information and shall not disclose this information to any third parties or use it for itself.

11. Copyrights

11.1 TÜV Rheinland shall retain all exclusive copyrights in the expert reports, test results, calculations, presentations etc. prepared by TÜV Rheinland.

11.2 The client may only use such expert reports, test results, calculations, presentations etc. prepared within the scope of the contract for the contractually agreed purpose.

11.3 The client may use test reports, test results, expert reports, etc. only complete and unshortened. Any publication or duplication for advertising purposes needs the prior written approval of TÜV Rheinland.

12. Liability of TÜV Rheinland

12.1. Irrespective of the legal basis, in the event of a breach of contractual obligations or tort, the liability of TÜV Rheinland for all damages, losses and reimbursement of expenses caused by TÜV Rheinland, its legal representatives and/or employees shall be limited to: (i) in the case of a contract with a fixed overall fee, three times the overall fee for the entire contract; (ii) in the case of a contract for annually recurring services, the agreed annual fee; (iii) in the case of a contract expressly charged on a time and material basis, a maximum of 20,000 Euro or equivalent amount in local currency; and (iv) in the case of a framework agreement that provides for the possibility of placing individual orders, three times of the fee for the individual order under which the damages or losses have occurred. Notwithstanding the above, in the event that the total and accumulated liability calculated according to the foregoing provisions exceeds 2.5 Million Euro or equivalent amount in local currency, the total and accumulated liability of TÜV Rheinland shall be only limited to and shall not exceed the said 2.5 Million Euro or equivalent amount in local currency.

12.2 The limitation of liability according to article 12.1 above shall not apply to damages and/or losses caused by malice, intent or gross negligence on the part of TÜV Rheinland or its vicarious agents. Such limitation shall not apply to damages for a person's death, physical injury or illness.

12.3 In cases involving a fundamental breach of contract, TÜV Rheinland will be liable even where minor negligence is involved. For this purpose, a "fundamental breach" is breach of a material contractual obligation, the performance of which permits the due performance of the contract. Any claim for damages for a fundamental breach of contract shall be limited to the amount of damages reasonably foreseen as a possible consequence of such breach of contract at the time of the breach (reasonably foreseeable damages), unless any of the circumstances described in article 12.2 applies.

12.4 TÜV Rheinland shall not be liable for the acts of the personnel made available by the client to support TÜV Rheinland in the performance of its services under the contract, unless such personnel made available is regarded as vicarious agent of TÜV Rheinland. If TÜV Rheinland is not liable for the acts of the personnel made available by the client under the foregoing provision, the client shall indemnify TÜV Rheinland against any claims made by third parties arising from or in connection with such personnel's acts.

12.5 The limitation periods for claims for damages shall be based on statutory provisions.

12.6 None of the provisions of this article 12 changes the burden of proof to the disadvantage of the client.

13. Partial invalidity, written form, place of jurisdiction and dispute resolution

13.1 All amendments and supplements must be in writing in order to be effective. This also applies to amendments and supplements to this clause 13.1.

13.2 Should one or several of the provisions under the contract and/or these terms and conditions be or become ineffective, the contracting parties shall replace the invalid provision with a legally valid provision that comes closest to the content of the invalid provision in legal and commercial terms.

13.3 Unless otherwise stipulated in the contract, the governing law of the contract and these terms and conditions shall be chosen following the rules as below:

a) if TÜV Rheinland in question is legally registered and existing in the People's Republic of China, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of the People's Republic of China.

b) if TÜV Rheinland in question is legally registered and existing in Taiwan, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of Taiwan.

c) if TÜV Rheinland in question is legally registered and existing in Hong Kong, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of Hong Kong.

13.4 Any dispute in connection with the contract and these terms and conditions or the execution thereof shall be settled friendly through negotiations.
Unless otherwise stipulated in the contract, if no settlement or no agreement in respect of the extension of the negotiation period can be reached within two months of the arising of the dispute, the dispute shall be submitted:

a) in the case of TÜV Rheinland in question being legally registered and existing in the People's Republic of China, to China International Economic and Trade Arbitration Commission (CIETAC) to be settled by arbitration under the Arbitration Rules of CIETAC in force when the arbitration is submitted. The arbitration shall take place in Beijing, Shanghai, Shenzhen or Chongqing as appropriately chosen by the claiming party.

b) in the case of TÜV Rheinland in question being legally registered and existing in Taiwan, to Chinese Arbitration Association Taipei Branch to be arbitrated in accordance with its then current Rules of Arbitration. The arbitration shall take place in Taipei.

c) in the case of TÜV Rheinland being legally registered and existing in Hong Kong, to Hong Kong International Arbitration Centre (HKIAC) to be settled by arbitration under the HKIAC Administered Arbitration Rules in force when the Notice of Arbitration is submitted in accordance with these rules. The arbitration shall take place in Hong Kong.
The decision of the relevant arbitration tribunal shall be final and binding on both parties. The arbitration fee shall be borne by the losing party.

Annex-4

Test Report

No.: T31720201249SN Date: APR 19, 2017

GRUPO EL CORTE INGLÉS
C/HERMOSILLA, 112.
28009 MADRID, SPAIN

The following samples were submitted and identified on behalf of the client as:
FOOD CONTAINER

SGS Order No.	:	3692930
Previous Report No.	:	N/A
Previous Report Result	:	N/A
Sample description	:	FOOD CONTAINER
Sample quantity submitted	:	9 PCS. (3 STYLES)
PO No.	:	N/A
Reference No./Item No.	:	N/A
ECI company	:	N/A
Dept. No.=ECI UNECO code	:	N/A
Vendor	:	DURABLE PLASTIC LIMITED
Country of destination	:	SPAIN
Model	:	N/A
Rating(for electrical product)	:	N/A
labeled age grading (for toys product)	:	N/A
Sample Receiving Date	:	MAR 30, 2017
Test Performing Date	:	MAR 30 TO APR 18, 2017
Testing type	:	N/A
Test Requested	:	Please refer to the result summary.
Test Method & Results	:	Please refer to next page(s).
Result Summary	:	

Test Requested	Conclusion
European Commission Regulation (EU) No 10/2011 and its amendments. (Selected parts as specified by client)	**--**
a) Plastic – Overall migration	PASS

****

Signed for and on behalf of
SGS Hong Kong Ltd.

Au Kam Chi, Gigi
Technical Development Manager

Test Results :

European Commission Regulation (EU) No 10/2011 and its amendments

a) Plastic – Overall migration

Method : With reference to EN 1186-1:2002 for selection of conditions and test methods (1st migration);
EN 1186-3:2002 aqueous food simulants by total immersion method;

Simulant Used	Test Condition	Result (mg/dm^2)	Reporting Limit (mg/dm^2)	Permissible Limit (mg/dm^2)
		1		
3% Acetic Acid (W/V) Aqueous Solution	10 days at 40℃	ND	3.0	10
Comment	--	PASS	--	--

Sample Description :
1. Green Plastic (Lid)

Note : 1. mg/dm^2 = milligram per square decimeter
2. ℃ = degree Celsius
3. ND = Not Detected

Remark :
1. Test condition & simulant were specified by client.

Photo Appendix

Sample as received

*** End of Report ***

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF HEALTH & FAMILY WELFARE
DIRECTORATE GENERAL OF DRUG ADMINISTRATION
OUSHAD BHABAN, MOHAKHALI
DHAKA-1212, BANGLADESH
www.dgda.gov.bd

CERTIFICATE OF GOOD MANUFACTURING PRACTICE (GMP) FOR HERBAL & NUTRACEUTICALS (PRODUCT(S)

This certificate conforms to the format recommended by the World Health Organization (WHO)

Certificate No. DGDA/6-199/2015/ 19563 **Date:** 21/12/2017

It is hereby certified that **M/s. Square Herbal & Nutraceuticals Ltd. (Ayurvedic Division), BSCIC, Pabna** a drug (Ayurvedic Products) manufacturing and marketing organization, has been given License to manufacture and sell its products freely in the People's Republic of Bangladesh as lawfully required and granted in pursuance of **The Drugs Act, 1940(XXIII of 1940) & The Drugs (Control) Ordinance, 1982** & it's amendment.

On the basis of the inspection carried out on 22nd April 2016, we certify that the site indicated on this certificate complies with Good Manufacturing Practices and regulatory norms for the dosage forms, categories and activities listed in Table 1.

The Licence information's are as below:

1. Name & Address of site: **Square Herbal & Nutraceuticals Ltd (Ayurvedic Division), BSCIC, Pabna**
2. Manufacturer's License No. : **AYU - 111,** **Date of Issue: 13.01.1986**
3. Table: 1

Dosage Form (s)	Category (ies)	Activity(ies)
Capsule	Antianemic, Digestive & Carminative, Anti-inflammatory & Analgesic.	• Sourcing & Procurement of RM/PM • Formulation design and development • Dispensing of RM/PM • Production: -Washing -Drying -Crushing -Mixing -Encapsulation • Packaging • Quality Assurance -Temperature & RH Control -In-process control -Bulk Product Analysis. -Finished Product Analysis -QA Release for Marketing - Product Quality Review • Documentation / Record keeping
Syrup / Solution / Suspension	Energizer/Stimulant, Antidyspeptic, Memory Enhancer, Antiasthmatic/Antitussive, Antimenorrhagic, Antiamoebic, Anti-leucorrhea, Vitamin-C Supplement	• Sourcing & Procurement of RM/PM • Formulation design and development • Dispensing of RM/PM • Production: -Washing -Crushing -Extraction -Sedimentation-Decantation -Mixing & Filtration -Filling & Sealing

continued to page-2

Dosage Form (s)	Category (ies)	Activity(ies)
		• Labeling & Packaging • Quality Assurance - Temperature & RH Control -In-process control -Bulk Product Analysis. -Finished Product Analysis -Lot Release for Marketing - Product Quality Review • Documentation / Record keeping

The responsibility for the quality of the individual batches of the ayurvedic products manufactured through this process lies with the manufacturer.

This Certificate remains valid for a period of 2 (two) years from the date of issue. It becomes invalid if the activities &/or categories certified herewith are changed or if the site is no longer considered to be in compliance with GMP.

Name of authorized person : **Major General Md. Mustafizur Rahman**
Address of certifying authority : **Directorate General of Drug Administration**
Mohakhali, Dhaka-1212, Bangladesh
Telephone : +880-(0)2-9880803
Fax No. : +880-(0)2-9880854
E-mail : dgda.gov@gmail.com
Web-site : www.dgda.gov.bd

Stamp and date:

Major General Md. Mustafizur Rahman
Director General
Directorate General of Drug Administration
&
Licensing Authority (Drugs) 20 DEC 2017
Government of the People's Republic of Bangladesh

রপ্তানিকৃত হার্বাল প্রোডাক্ট (July,16- June 17)

ক্রমিক নং	প্রতিষ্ঠান	প্রোডাক্ট (Generic)	রপ্তানিকৃত দেশ
১	Square Harbal & Nutraceuticals Ltd	Silmarin,Ginseng, Probio, St. Johon's Wort, Ginkgo biloba,Basak Extract, PanaxGinseng, Ispaghula husk, Jeerakaddarist.	Kenya,Somalia,Uganda
২	Incepta Harbal & Nutraceuticals Ltd	Ispaghula husk BP. Ginkgo biloba	Afghanistan,Vietnam
৩	Drug InternationalLtd,Herbal Division	EveningPrimrose Oil (500mg/600mg/1000mg) Coenzyme Q10, Fish Oil& Vit-E	Thailand