Annex I

Country Study on Bangladesh using Global Value Chain Analysis:

THE PLASTICS INDUSTRY

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1. Introduction

Plastic-based products currently represent a sizeable subsector in the chemical industry in Bangladesh. Starting as a backward linkage industry, manufacturing of plastic and plastic-based products is making significant contributions to the economy and has become an important segment of the manufacturing industry of the country. The plastics sector has approximately 3,000 manufacturing units providing an employment to more than one million people (Islam 2008; Sakib et al. 2004; Yousuf 2003). In the fiscal year 2006-2007, the industry manufactured various types of plastic products: approximately $714 million worth of varied quality products for the domestic market and $234 million worth of high-quality products for the global market (BPGMEA 2009). Despite this fact, per capita consumption of plastics and plastic-based products is still low in Bangladesh, estimated at two kg per person per year. The estimate is rather low compared to the global average consumption of 20.4 kg per capita per annum and the developed country consumption of 80.0 kg per capita per annum. This indicates that the consumption of plastic products in Bangladesh is expected to rise as the economy develops (Shaheen and Maksudur 2001).

Plastic recycling has also developed into a sizeable component of the plastics industry with major recycling centres in and around Dhaka. Availability of river water (used in cleaning) and low transportation costs have made recycling units located around Dhaka economically attractive. Current recycling of plastic wastes saves import costs for the industry and helps improve overall waste management situation. The small units were estimated to recycle nearly 60 per cent of plastic waste, which saved approximately $44 million worth of imports in raw materials in 2005 (BPGMEA 2009). Many other support and ancillary industrial service providers, such as small machine/equipment makers, distributors, printing and packaging firms and additives importers, have also grown significantly.

Although the plastics industry in Bangladesh has made remarkable progress over the years, it still lacks a well-designed approach and a strategic direction for achieving long-term, sustainable growth. Without having such strategic approach and distinctive competitive strengths, Bangladeshi plastic products find it difficult to compete in the global market. The void, if sustained over time, may also lead to difficulties in the domestic market as internationally competitive suppliers will likely bid for the fast growing Bangladesh market demand. Thus, to achieve global competitiveness, the plastics sector needs to have a national strategic action plan for ensuring growth and sustainability through distinctive competencies. But unlike the apparel and textile sector, the plastic sector in Bangladesh is yet to see any long-term policy guideline specifically designed for the development of this burgeoning industry. The sector is presently governed by the general industrial and trade policies applicable to all industries. A decade ago, the Government agreed to develop a special industrial park for the plastics sector and successive governments 'continue to work on that'.

1.1. OBJECTIVES OF THE STUDY

The broad objective of the study on plastics industry in Bangladesh is to analyze the competitive context in which enterprises (especially SMEs) operate and explore the growth potential of the sector within global value chains. Based on the findings, a national strategic action plan is prepared for enhancing value added in the plastics industry in Bangladesh.

The objectives of the study are presented below.

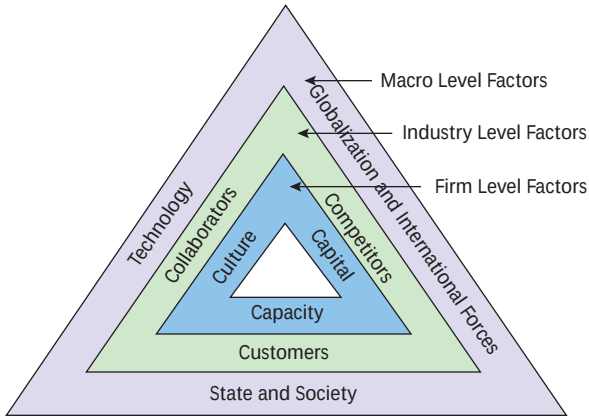
- Analysing the plastics industry in Bangladesh, taking into consideration:
  - business prospects and economic impact, including export potential;
  - current supply chain networks;
  - supply-side capacity, including human resources, product development, standards and certificates and producers' associations;
  - policy and regulatory framework;
  - infrastructure and logistics systems (e.g., transportation); and
  - marketing, including brand development, distribution channels and quality requirements.
- Developing a national action plan.

1.2. METHODOLOGY

In order to analyse the competitiveness potential of the plastics industry in Bangladesh, the authors have chosen the global value chain approach. After the value chain analysis and the assessment of growth potentials and competitiveness, SWOT and triple triangle framework (TTF) techniques were used to synthesize the findings and to devise a strategic plan of action. While SWOT analysis is a widely used tool, TTF is a new tool developed and used in the analysis of market development interventions and policies.

TTF uses three triangles, each summarizing the factors that affect business competitiveness at different levels. The inner triangle – with each of the three sides symbolizing either capacity, or capital or culture – explains the internal, largely controllable dynamics of firms. The middle triangle – with each of its three sides symbolizing either a customer, or a competitor or a collaborator – describes the immediate, industry-level context in which firms work. The outer triangle – with each of the three sides symbolizing either technology, or state or society and global forces – presents the macro environment, a largely non-controllable setting in which firms have to operate. Figure 1 below illustrates the TTF.

Figure 1: Triple triangle framework



Source: Jahan (2008a).

1.3. DATA COLLECTION AND DATA SOURCES

Data were drawn both from primary and secondary sources. Primary data were collected through extensive field visits, interviews with key informants and focused group dialogue. The research team visited SME plastic manufacturing cluster in Dhaka. Interviews and discussions were held with major industry players, including RFL Plastics, Partex Plastics and Luna Plastics, involved in different stages of the plastics industry value chain. Representatives of plastics sector associations, such as Bangladesh Plastic Goods Manufacturers and Exporters Association (BPGMEA) and Bangladesh Plastic Importers Association (BPIA) were consulted and interviewed.

The Government of Bangladesh, Dhaka Chamber of Commerce and Industries (DCCI) and the Ministry of Industries have organized a national workshop deliberating on the draft study report and obtaining additional information from the stakeholders. There were over 60 participants from the government agencies, businesses, universities, mass media and the plastics industry sector. The draft study was further enriched with additional perspectives provided by plastic goods manufacturers, wholesalers, retailers, importers of raw materials and machineries and plastic recycling businesses.

An extensive review of available studies provided the details on the history and evolution of the industry, global trade, industry practices, government policies and regulations governing the sector. Extensive literature survey was undertaken using the Internet and the archives of BPGMEA, Dhaka Chamber of Commerce and Industries (DCCI) and newspapers. Reports and publications were provided by Bangladesh Bureau of Statistics (BBS) for trade and related data and some additional information by Export Promotion Bureau (EPB). Trade database of the United Nations, UNIDO and UNCTAD were also explored.

1.4. LIMITATIONS

Although the draft study provided an extensive research using qualitative research instruments, no enterprise-specific survey could be done due to time and resource constraints. Access to certain trade databases, such as the World Trade Analyzer (WTA),[12] was not possible. However, despite severe time and resource constraints, the use of multiple primary research instruments (e.g., field visits, depth interviews with key informants and focused group discussions) helped gain very effective and meaningful industry assessments.

2. An Overview of the Plastics Industry

The plastics industry can be viewed from the three perspectives, including: (a) end-user/market; (b) production technology; and (c) support industry. The end-users and markets of the plastics industry can be classified into five categories: automotive; construction; packaging; medical supplies; and (v) consumer products. Based on the technology platform being used in plastics production, plastic products can be classified as: thermoformers; injection moulders; pipe, profile and tubing extruders; rotational moulders; film and sheet manufacturers; and blow moulders. Notable support industry players are: raw material suppliers; machinery importers; mould makers; additive/chemical suppliers; and plastic products recyclers.

2.1. GLOBAL PLASTICS INDUSTRY

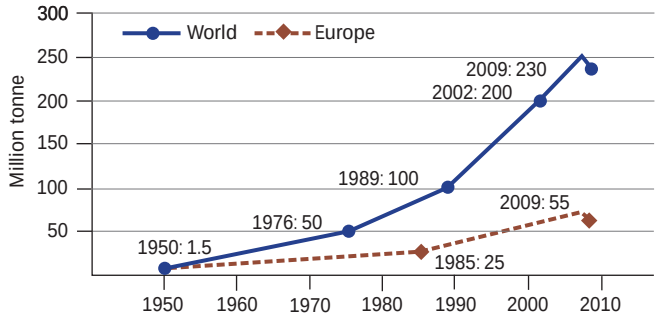
In the modern world life without plastic products would be difficult, if not impossible. Ranging between kitchenware and medical supplies, construction materials and automotive supplies, safety and security devices and packaging materials and, finally, home decorations – plastic products are widely used in almost every facet of modern life.

Consumers choose plastic products for their versatility, durability, lightness and excellent insulating properties. Manufacturers like to produce plastic goods because of low production costs and energy-efficient production processes. Driven by these forces, the global production and consumption of plastic goods have significantly increased from a mere 1.5 million tonnes in 1950 to 230 million tonnes in 2009 (Plastic Europe 2009). Figure 2 depicts this exponential growth trend in global plastic production over the last 60 years.

Global production of plastic products is dominated by developed nations, with the European Union producing about 24 per cent and North America producing about 23 per cent of total global plastic production in 2009. The plastics industry is ranked as the third largest manufacturing industry in the United States of America. In comparison, China as the largest manufacturer of plastic goods among developing

[12] The World Trade Analyzer (WTA) is a trade database that contains trade data on United Nations member countries. Statistics Canada created it from the data reported by member countries to the United Nations Statistical Office. See some more details at http://www.statcan.gc.ca/dli-ild/data-donnees/ftp/worldtrade-commerce_mondial-eng.htm.

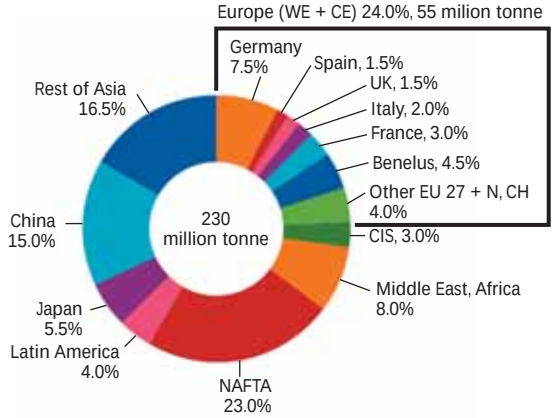
Figure 2: Global production of plastic products



Source: Plastic Europe (2010).

countries, contributed about 15 per cent to the world's total plastic production in 2009. Other large plastic manufacturing countries in Asia are India and Thailand. Recently, developed nations have opened their markets for plastic products from developing nations, such as Bangladesh. One of the reasons for this shift is the low cost of production in developing countries due to cheap labour and low transportation costs. As developing countries are increasingly moving towards accelerated industrialization, the plastics sector becomes an important backward linkage industry in manufacturing. For example, over the past two decades, the apparel sector in Bangladesh has increasingly relied on the local sources not only for cost advantages but also for 'flexibility' and 'lead time' factors. As a result, the country's reliance on imported packaging materials and other plastic-based accessories have decreased. Figure 3 shows the global market share (2009) of plastic production for different countries.

Figure 3: Market share of global plastic production in 2009



Source: Plastic Europe (2010).

Table 1 presents the past, current and estimated future plastic consumption in some major economic regions of the world. As one can notice, developed countries far outweigh the developing and the least developed countries in plastic per capita consumption and use.

Table 1: Per capita consumption (kg/year) of plastic products in different regions of the world

Regions/Countries	1980	2005	2015 (estimated)
North America	46	105	139
Western Europe	40	99	136
Central Europe + CIS	9	24	48
Latin America	7	21	32
Middle East/Africa	3	10	16
Japan	50	89	108
Asia (excl. Japan)	2	20	36
World	11	30	45

Source: Plastic Europe (2009).

2.2. THE PLASTICS INDUSTRY IN BANGLADESH

Plastic products were introduced in Bangladesh in the later half of the 1940s. However, significant commercial growth in plastic production took place much later, in the early 1980s. The industry experienced gradual growth as large numbers of injection grade and film grade plastic companies were set up during the 1980s (Hasan 2008). Initially, processing technologies and equipments came from India and later from Thailand, the Republic of Korea, Japan, China, Singapore and some of the European countries.

Table 2: Overview of the plastics industry in Bangladesh (2006/2007)

Domestic plastic use	Approximately $714 million worth of plastic goods.
Per capita plastic consumption	Two kg per year
Export earnings	$234 million, of which 41.6 per cent came from direct exports and 58.4 per cent came from deemed exports.
Number of manufacturing units	Approximately 3,000 small, medium and large plastic manufacturing units operate across the country.
Growth	The industry expanded its output by over 20 per cent per annum during the 1990s.
Employment	About half a million workers are directly employed in the sector.
Plastic waste recycling sector	There are 300 small units in and around Dhaka city, which recycle about 138 tonnes/day of plastic waste.

Sources: BPGMEA (2009); Hasan (2008).

Currently, the industry adopted relatively modern manufacturing processes, such as using several types of extrusion materials, injection and blow moulding, rotational moulding and thermosetting conversions. The country also produces a wide range of products, such as PVC pipes, shopping bags, woven bags, PET/PE bottles, laminated packages, rigid sheets, garment accessories, household products and medicine packs (BPGMEA 2009). Table 2 gives an overview of the plastics industry in Bangladesh in 2006-2007.

2.3. IMPORT TRENDS

Value creation in plastic products starts with the import of polymers. Since the country does not have polyolefin production, nearly 100 per cent of its required polymers are imported (BPGMEA 2009). According to BPGMEA, in the fiscal year 2001-2002 approximately $138 million worth of plastic raw materials were imported, which increased at a compound average growth rate of 27.1 per cent and reached $458 million in the fiscal year 2006-2007. Over the same period, the volume compound average growth rate was around 8.0 per cent, with imports rising from 196,000 metric tonnes in the fiscal year 2001-2002 to 288,000 metric tonnes in the fiscal year 2006-2007. Table 3 illustrates the growth trend in raw materials import in both volume and value terms.

Table 3: Raw materials imported for plastic production in Bangladesh

Volume (in million tonnes)	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	CAGR* (in per cent)
Bonded Category	74 637	60 606	57 477	85 365	80 628	103 853	6.8
Non-Bonded Category	121 532	126 571	157 053	295 168	193 246	184 611	8.7
Grand Total	196 169	187 177	214 530	380 532	273 874	288 464	8.0
Value (in million US$)	**2001-2002**	**2002-2003**	**2003-2004**	**2004-2005**	**2005-2006**	**2006-2007**	**CAGR (in per cent)**
Bonded Category	43	40	43	92	96	153	28.6
Non-Bonded Category	95	143	143	175	287	305	26.4
Grand Total	138	182	187	267	382	458	27.1

Source: BPGMEA (2009).

Notes: 1) Bonded import implies the type of import where a bank provides a guarantee for the payment of raw materials in case the importer fails to make the payment for the shipment. In the case of non-bonded import no such guarantee is required; 2) CAGR is a compound average growth rate.

According to the United Nations Commodity Trade Database, the total value of raw materials imported for plastic production[13] in Bangladesh amounted to $574.6 million in 2007. It has grown at a steady growth rate of 26.0 per cent from 2003 to 2007. Commodity-wise, polymers of polyethylene, propylene and polyacetal are the three

[13] Fifteen broad categories of materials in primary form (HS Code -3901 to 3915) were considered as raw materials for plastic production.

largest imported resins. The polyacetal resin had the highest import growth rate of 37.4 per cent from 2003 to 2007. Overall, all imported items demonstrate a steady positive growth rate. Table 4 summarizes the top 10 raw materials for plastic production (in terms of import value) imported in Bangladesh.

Table 4: Top 10 raw materials imported for plastic production in Bangladesh (in millions of dollars)

HS Code	Commodity	2003	2004	2005	2006	2007	Per-centage Share (2007)
3901	Polymers of ethylene	59.6	67.8	79.9	105.1	147.8	25.7
3902	Polymers of propylene or of other olefins	56.2	53.7	64.8	122.0	144.7	25.2
3907	Polyacetal, and other polyether and epoxide resins	30.1	46.2	67.5	78.9	107.2	18.7
3904	Polymers of vinyl chloride or of other halogenated olefins	31.1	42.0	55.4	55.0	62.9	11.0
3903	Polymers of styrene	14.2	10.8	14.1	25.4	31.5	5.5
3909	Amino-resins, phenolic resins and polyurethanes	9.0	11.1	14.4	21.8	28.7	5.0
3906	Acrylic polymers	7.8	9.9	12.8	17.2	18.2	3.2
3905	Polymers of vinyl acetate or of other vinyl esters	5.9	6.2	7.6	7.8	9.6	1.7
3912	Cellulose and its chemical derivatives	3.7	5.1	5.8	6.9	7.5	1.3
3908	Polyamides	4.6	7.8	8.7	5.6	6.3	1.1
3901-3915	**Total Raw Materials Imported**	**227.6**	**267.1**	**337.9**	**455.3**	**574.6**	**100.0**

Source: BPGMEA (2009); BBS (2007).

2.4. EXPORT TRENDS

The plastic sector is gradually emerging as an important source of export earnings in Bangladesh. During the fiscal year 2006-2007, total export earnings from the industry stood at $234 million, of which 41.6 per cent came from direct exports and 58.4 per cent came from deemed exports.[14] Major export items constitute poly bags, polyethylene sheets, plastic hangers, toys, toothbrushes and ballpoint pens. Direct export earnings from the plastic sector demonstrate a remarkable increase of over 300 per cent in its total GDP share – rising from 0.25 per cent of GDP in the fiscal year 2002-2003 to 1.07 per cent in the fiscal year 2006-2007 (BPGMEA 2009).

Currently, Bangladesh exports plastic products to 23 countries in North America, Europe, Asia and the Pacific and the Middle East. Major export countries are China, India, Germany and Poland (Table 5). In South Asia, Bangladesh is exporting plastic products to India, Sri Lanka and Nepal (BPGMEA 2009). Seven eastern states in India represent

Table 5: Major export markets for plastic products of Bangladesh in 2007 (in millions of dollars)

Country	2006-2007	2005-2006	Per cent Growth	Per cent Share
China	8 550	8 101	5.5	29.5
India	4 116	4 391	-6.3	14.2
Germany	2 615	2 142	22.1	9.0
Poland	2 280	2 165	5.3	7.9
Belgium	1 426	1 792	-20.4	4.9
United Kingdom	1 340	1 653	-18.9	4.6
Ukraine	1 196	1 401	-14.6	4.1
United Arab Emirates	908	19	4 690.4	3.1
Greece	898	543	65.3	3.1
Netherlands	887	332	167.4	3.1
France	800	957	-16.5	2.8
Tunisia	633	138	357.7	2.2
Others	427	33	1 177.1	1.8
Viet Nam	421	40	959.8	1.5
Spain	345	340	1.5	1.2
United States of America	306	205	49.6	1.1

Source: BPGMEA (2009).

[14] Direct exports mean exports of finished plastic products. Examples are – plastic kitchenware and utensils including crockery, plastic furniture, toys, garbage bags, oven sacs, industrial films, PVC pipes, polyethylene sheets, belts, tableware, toothbrushes, ball pens, artificial flowers, electric switches, computer accessories and so on. Deemed exports mean plastic products as embedded parts of other exports. Examples are – buttons, hangers Used in ready-made garment industry, packaging materials and plastic accessories used virtually in all industries (BPGMEA 2009).

a major market for Bangladeshi plastic goods. Bangladesh has a cost advantage in exporting plastic products to these areas as Indian manufacturers from central and western parts of India have higher transportation costs delivering their products in these areas.

Table 6 below summarizes top 10 plastic items exported from Bangladesh over the period of 2003-2007. The largest export earner, plastic articles for packaging goods, constitutes about 48.8 per cent of the total export volume in 2007. This deemed export is mainly driven by the strong ready-made garment industry (RMG) demand in international markets.

Table 6: Top 10 plastic export items of Bangladesh in 2003-2007 (in thousands of dollars)

HS Code	Article Description	2007	2006	2005	2004	2003
3923	Articles for the conveyance or packaging of goods, of plastics	23 993	20 665	19 052	13 615	6 448
3915	Waste, parings and scrap, of plastics	10 391	6 585	8 249	6 418	600
3926	Other articles of plastics and articles of other materials	8 467	11 099	9 717	4 564	1 508
3917	Tubes, pipes and hoses and fittings	1 977	170	210	176	56
3920	Other plates, sheets, film, foil and strip, of plastics	1 713	458	478	88	39
3906	Acrylic polymers in primary forms	900	1 121	1 059	626	12
3904	Polymers of vinyl chloride	614	71	8	40	0
3924	Tableware, kitchenware, other household articles and toilet articles	195	159	473	491	564
3916	Monofilament of which any cross-sectional dimension exceeds 1 mm	162	116	521	452	402
3902	Polymers of propylene or of other olefins, in primary forms	139	562	182	94	41
	Total exports	49 145	41 719	49 382	28 141	10 127

Source: UNCOMTRADE (2009).

3. Value Chain Dynamics in the Plastics Industry

This section provides value chain analysis of the plastics industry in Bangladesh. The analysis helps identify major opportunities and obstacles for the development of the plastics industry. Various measures for improving competitiveness in the international markets are suggested on the basis of value chain analysis and an action plan is formulated.

3.1. AN OUTLINE OF THE PLASTICS INDUSTRY VALUE CHAIN

Raw Materials: The value chain for plastic industry begins with raw materials selection. Two major types of raw materials used for plastic products are granules (commonly known as resin and locally as '*dana*') and additives. There are two sources of granules: virgin and recycled. Virgin granules are mainly imported from the Middle East, while the recycled raw materials are both imported and locally produced.

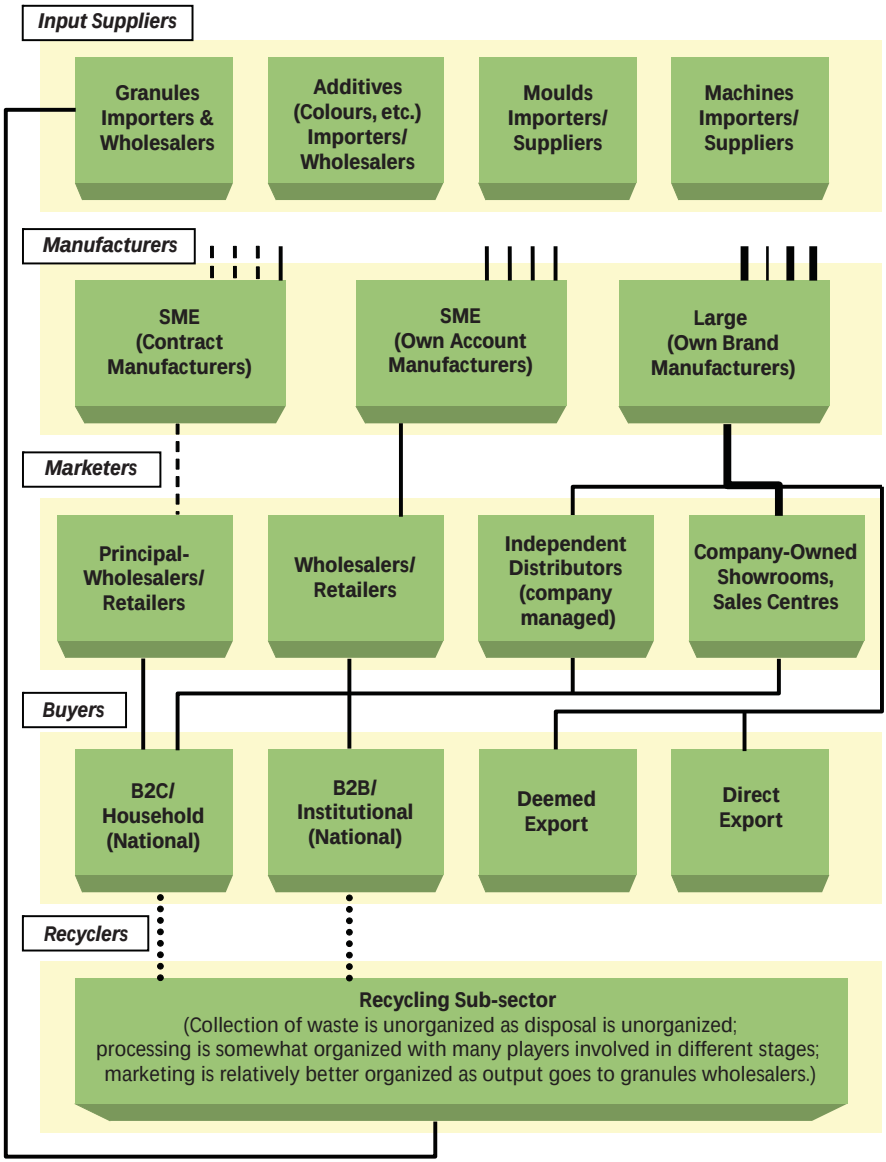
Production: Factories vary according to the types of machines they use, i.e., injection, extrusion or blow machines. Injection moulding machines produce solid plastic goods, such as buttons and furniture. Blow machines produce such goods as bottles and polythene. Moulds used in these machines are usually imported, though there are some exceptions. It takes approximately seven days to produce a new mould locally and more than two weeks to import it. A mould with plastic granules is placed inside the injection (or blow) moulding machine to produce a finished product, which takes a maximum of three minutes per item. However, a machine takes half an hour to warm up to its full production capacity. One machine would engage two to four workers, depending on their skills and the type of the machine. After the production is complete, some finishing work (e.g., polishing the surface of the product) is required before the product is ready for the market.

Marketing: The Mitford Market (in Old Dhaka) and the New Market (close to Old Dhaka) are considered the two largest wholesale markets for plastic products in the country. These markets are used by 'sub-wholesalers'/retailers, who then resell these products locally to final consumers. Although most of retail sales occur through retail outlets, a certain portion is sold or exchanged for used utensils by door-to-door vendors, especially in rural areas. Business-to-business (B2B) sales and distribution rely on corresponding contracts. Major B2B transaction parties include: RMG; pharmaceutical companies; real estate companies; and construction firms. Most of RMG transactions are treated as deemed export. While large manufacturers and intermediaries are involved in direct exports only, SMEs are usually not.

Recycling: In case of recycled materials value chains work in a different way. After customers dispose of used plastic products, street garbage collectors gather those wastes and sell them to larger collectors. These waste collectors also get plastic wastes from another group of waste collectors called hawkers, who collect the disposables from houses. The larger collecting groups wash and prepare used plastic products to be used as raw materials for recycling. After recycling, recycled granules are produced and sent to the wholesale market to be sold to SMEs as raw materials for plastic products. Such raw materials are used mostly to produce cheap plastic products (e.g., toys, waste bags and household items).

Figure.4 below shows a comprehensive value chain for the plastics industry in Bangladesh.

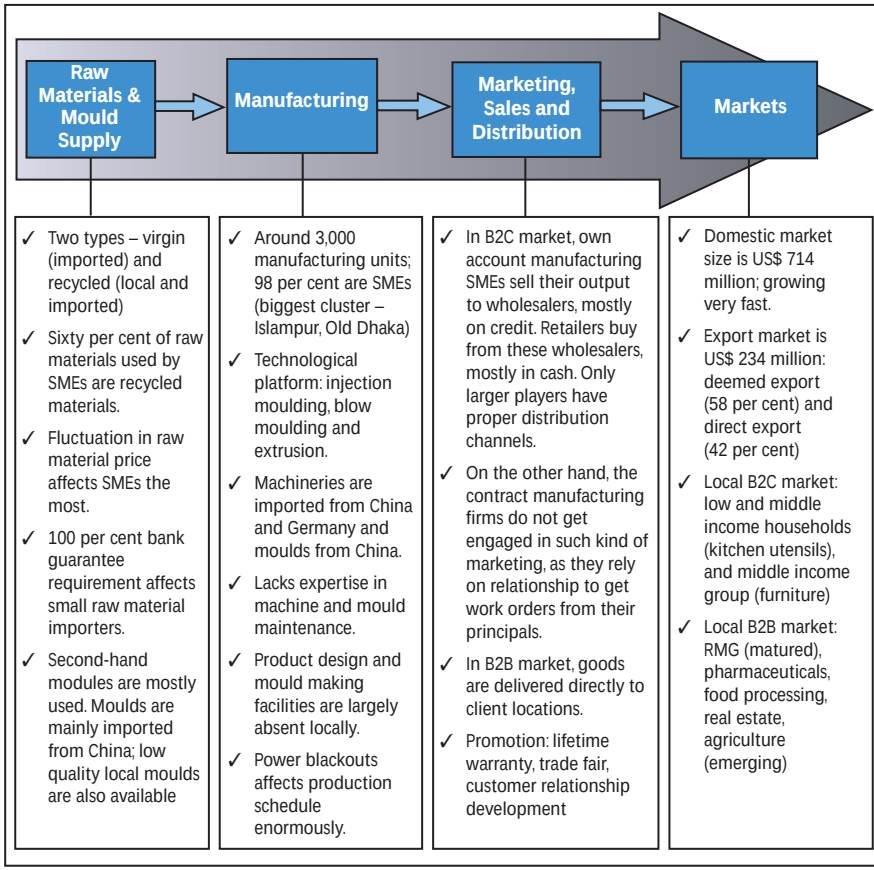
Figure 4: Value chain of the plastics industry in Bangladesh



3.2. CURRENT STATE OF THE PLASTICS INDUSTRY VALUE CHAIN

The current state of the plastics industry value chain in Bangladesh is briefly summarized in figure 5.

Figure 5: Value chain dynamics of the plastics industry in Bangladesh



3.3. RAW MATERIALS AND MOULDS

Oil-based resins are mainly manufactured in oil-producing countries, particularly in the Middle East. Resins are produced in two forms: (i) virgin resins (come directly from petroleum processing), and (ii) recycled resins (come from recycling of used plastic products). Though specific types of resins should be used for different quality and functional requirements, SME manufacturers in Bangladesh use only resins such as

polyvinyl chloride (PVC), polypropylene (PP) and polystyrene (PS) for all the products they manufacture.[15] Few large manufacturers are exceptions to this practice.

Virgin resins: Virgin resins are imported mostly from the Middle East. These resins are of better quality and food grade plastic products are made only from such virgin resins. Since virgin raw materials are expensive, recycled raw materials are often used for products serving the low-end market. However, SME manufacturers in Bangladesh sometimes mix virgin resins with recycled ones to make quality and cost adjustments. Large manufacturers use recycled raw materials too; but those recycled resins are produced from the residual plastic waste generated by their own manufacturing process. Such recycled resins are as good as virgin resins since they do not get contaminated or mixed with any other materials.

The price of resins in the local market was around $1,200 per tonne in 2007. But during the past few years prices started to fluctuate between $700 and $3,000 per tonne. This happened because the price of resin is directly correlated with the price of crude oil and as the price of crude oil varies depending on the stage of business cycle, so does the price of resins. For example, at the end of 2008, the global recession made the oil price drop from $150 to $50 per barrel, causing a simultaneous drop in the price of virgin resins to about $700 per tonne.

Recycled resins: Recycled raw materials are imported as well as produced locally. The import chain of recycled resins does not vary much from that of virgin resins. In the case of locally recycled resins, most of producers and suppliers are located in and around Dhaka. The demand for recycled resin is increasing because of the attractive price[16] and availability, and so is the number of recyclers. Currently, recycled raw materials account for almost 60 per cent of the total raw materials used by SMEs in Bangladesh, and this trend is upward.

Value added potential: In the case of virgin raw materials, there is hardly any value added potential since the plastics industry in Bangladesh has always been using

[15] Major types of resins are: i) polyethylene (PE) with a wide range of uses and a low cost advantage; ii) polypropylene (PP) used for food containers and kitchen appliances; iii) polystyrene (PS) used for packaging foam, food containers, disposable cups, plates and cutlery; iv) polyethylene terephthalate (PETE) used in producing beverage containers; v) polyamide (PA) (nylon) widely used in producing fibers, toothbrush bristles and fishing line; vi) polyester, popular in producing garment accessories like fibers and textiles; vii) polyvinyl chloride (PVC) widely used in plumbing pipes, flooring and clothing; viii) polycarbonate (PC) used for compact discs, eyeglasses, etc.; ix) acrylonitrile butadiene styrene (ABS) used widely in producing electronic equipment cases (e.g. housing for computer monitors, printers and keyboards); and x) polyvinylidene chloride (PVDC) (saran) for food packaging. Some special purpose plastics are: i) polytetrafluoroethylene (PTFE) (teflon) for heat resistant and low-friction coatings, used in frying pans and water slides; ii) bakelite used in insulating parts in electrical fixtures, a thermosetting plastic, a.k.a. phenol formaldehyde or phenolic resin that can be moulded by heat and pressure when mixed with a filler-like wood flour or can be cast in its unfilled liquid form; and iii) polylactic acid: biodegradable, thermoplastic, aliphatic polyester derived from lactic acid which in turn can be made by fermentation of various agricultural products such as corn starch.

[16] The price of recycled raw materials, including the imported materials, is only half the price of virgin raw materials.

the best possible virgin raw materials. However, recycled raw materials remain a major possible value upgrading area as nearly 60 per cent of raw materials used by SMEs in the plastics industry come from low-quality recycled material. It is worth mentioning that the substitution of virgin resins by recycled ones could reach 100 per cent in certain cases, provided that the recycled resins are of very good quality.

Raw material suppliers: Usually SMEs producing for independent contractors get raw materials directly from them. In Bangladesh, SMEs marketing their own products buy the raw materials directly from the local market, i.e., from importers and wholesalers. Most large firms import directly from abroad. Some of the major problems related to the import of raw materials are as follows:

- *Delays at ports.* The most common problem is unnecessary delays and hassles at the ports. Because of operational inefficiency and political unrest, containers tend to be stuck at the port warehouses, causing rental costs and delayed delivery. Consequently, the price of virgin plastic granules increases. However, recently the Government has initiated various measures to solve these problems.
- *Pre-shipment inspection (PSI) procedure.* The PSI procedure, involves a government appointed agent inspecting imported raw materials. Importers made several complaints against the agency regarding it being inadequately staffed and not being client-oriented, resulting in long lead time in import and distribution procedures.

To address this and related issues virgin plastic granule importers have organized Bangladesh Plastic Importers Association, which is mandated to negotiate with the Government on policy matters.

3.4. ADDITIVES

Additives are used with plastic granules to alter and improve mechanical, physical or chemical properties of the final product and protect it from the degrading effects of light, heat or bacteria as well as improve product value through enhanced durability, smoother surface and overall better look. However, the smart use of such additives is still restricted only to large manufacturers.

For colouring of plastic products, powdered colours were used until the 1980s. However, master batches (colour granules) made their way into the market ever since. Different types of master batches and chemicals are imported from abroad, mainly from Germany and China. Of course, China is the leading exporter in the Bangladesh market due to its low price offer.

3.5. MOULD MAKING

Since the introduction of handmade local moulds, technological change of any significance has yet to come to mould manufacturing in Bangladesh. Large manufacturers mainly import moulds directly from China and Thailand, whereas SMEs rely on local sources. However, the locally manufactured moulds are quite substandard

and produce products of poor quality. The nascent light engineering sector of the country has come up with some solutions but the initiatives are very far from what the burgeoning plastics sector requires in terms of quality. Neither the light engineering sector SMEs nor the plastics sector firms are capable, both financially and technically, of making any significant progress in this venture. However, knowing the fact that each of the large manufacturers requires almost 50 moulds a year, made a couple of large players contemplate on it.[17] But again, confidence is running low due to uncertainties regarding government policy directions, inadequate infrastructural development (particularly gas and electricity supply), and perceived market risks in the absence of proper market intelligence. However, the availability of Chinese and Thai moulds makes the plastics sector players somewhat complacent and prevents the sector from achieving long-term competitiveness. The absence of such a vital manufacturing linkage could preclude research and development in product design and other innovative solutions.

In the absence of sound mould making facilities, the capital constrained SMEs are forced to use locally made, low-quality moulds and end up producing low quality plastic products with poor finishing, serving the low-end segment of the market. Such products, lacking the desirable precision and fine finishing result in poor profits for SMEs. Low quality product excludes local SMEs from joining the export market. Thus, the vicious circle of industrial backwardness continues.

However, the situation might offer an opportunity for technology upgrading by developing local mould making facilities. Seizing this opportunity could help the plastics sector not only serve the domestic market better (particularly by fighting off imports), but also enter the export markets, which is crucial for long term industry competitiveness.

3.6. MANUFACTURING

The plastics industry sector in Bangladesh displays a significant diversity of enterprises ranging from large 'integrated' players to very small 'specialized' manufacturing units. According to BPGMEA, of the 3,000 plastic manufacturing firms 66 per cent fall into 'small' enterprise category, 1.7 per cent into 'large' enterprise category and the rest belong to medium enterprises as defined by the Bangladesh Bureau of Statistics. Large firms are mostly located in major cities of the country. Some of the large players are RFL Plastics, Bengal Plastics, Navana Plastics, Gazi Tanks, Boss Plastic Industries, Leos Plastic, Bismillah Plastics and N. Mohd. Plastics. Small and medium manufacturing firms consist of highly fragmented clusters scattered around the country with the largest cluster being the Lalbagh-Islambagh cluster in Dhaka. Table 7 provides information on plastic manufacturing firms.

[17] One such plant is expected to be in place by 2011.

Table 7: Plastic manufacturing firms by category and location

Category	Small	Medium	Large
Definition[18]	Less than 10 workers.	More than 10 workers and less than 50 workers.	More than 50 workers
Numbers	1,965 (65.6 per cent)	980 (32.7 per cent)	52 (1.7 per cent)
Location	Dhaka City (Old Dhaka), Keranigonj, Narayangonj, Khulna, Chittagong	Dhaka City, Tongi, Gazipur, Savar, Munshiganj, Narayangonj, Chittagong, Khulna	Dhaka City, Tongi, Gazipur, Savar, Chittagong

Sources: BPGMEA (2009); BBS (2007).

The common characteristics in each category of the plastics producers are summarized in Table 8.

Table 8: Profiles of small, medium and large manufacturers

	Small Manufacturers	Medium Manufacturers	Large Manufacturers
Business model	Subcontracting and low quality own account manufacturing	Both subcontracting and own account manufacturing	Own account manufacturing
Control over raw material	In subcontract manufacturing raw materials are supplied by the principal.	Raw materials are bought from importers.	Manufacturers themselves import raw material.
Types of raw materials used	Sometimes low quality recycled raw materials are used.	Imported raw materials are preferred.	Recycled raw materials are never used.
Types of machines used	Semi-automated injection and blow machines	Semi-automated injection and blow machines	Automated injection and blow machines
Types of labour	Unskilled and semi-skilled	Unskilled and semi- killed	Trained (in-house training)
Types of moulds used	Local moulds of low quality	Local moulds used in most cases. Some imported moulds	Imported moulds
Channels and distribution	Sold to a wholesaler.	Have own wholesale shops.	Use own channels and distribution.
Export	Do not export	Hardly ever export	Majority of exports are from this segment of manufacturing units

[18] The definitions of SMEs and large enterprises in the plastics sector in Bangladesh are different from those in existing literature (cf. section A, chapter 1). However, the co-existence of different SME definitions in a developing county is not unusual in Asia and the Pacific (AMMO 2007; ESCAP 2009b).

Table 8: *(continued)*

	Small Manufacturers	Medium Manufacturers	Large Manufacturers
Location	Mainly located in Old Dhaka (Lalbagh-Islambagh cluster)	Mainly located in Old Dhaka (Lalbagh-Islambagh cluster) and Mirpur area.	Different, depending on corporate considerations

Source: Primary (interviews, discussions, etc.).

Most firms in the micro- and small manufacturer categories are run by a sole proprietor, which is an indication of the dominance of such single owner-managed units in SME category. According to industry sources, the amount of start-up equity capital varies, on average, from $14,000 for micro firms to $578,000 for large firms. SMEs entrepreneurs have to rely on equity financing and other forms of non-institutional loans. However, there is little information on term structure of non-institutional loan arrangements that SMEs entrepreneurs may use. The larger tier firms use bank loans to meet their financing needs.

In general, manufacturing units in the plastics sector follow either *Own Account Manufacturing* (OAM) or *Contract Manufacturing* (CM) business models. Own account manufacturers produce their own products, market them and have the full authority over the process. In the local plastics industry most manufacturers operate their own accounts. Own account manufacturers are actively involved in every stage of a product life-cycle, i.e., conceiving business idea, making business plan, setting up production unit, buying raw materials, accessing finance, planning batch production, determining costs and marketing the final product. Larger manufacturers predominantly rely on the OAM business model and market goods under their own brand names.

Contract manufacturing is another business model in which small manufacturers essentially work as third party subcontractors without taking the risk of finding buyers and facing much of uncertainties arising from sales and distribution processes. Under this business model, a CM firm requires a machine and a small place to house that machine, while the principal (i.e., a contractor, who markets the final product) provides moulds and granules. Recently, the industry has experienced a significant rise in this type of business practice as more and more SMEs are accepting this business model as it requires small start-up capital and represents low risk exposure. However, businesses using CM model usually do not enjoy the economies of scale and have little control over the industry value chain. Until CM model firms become big enough to switch to OAM model firms or form alliances establishing common platforms of shared business goals, it is very unlikely that they would enjoy any greater control over the plastics industry value chain.

Although most CM firms produce low-end products using recycled granules supplied by the principals, some CM firms are switching to higher-end product categories. However, as most CM units use relatively low-quality machines, it is difficult to get into the high-end product segment unless they upgrade the equipment.

Bangladesh is experiencing substantial infrastructure and logistics challenges, particularly in Dhaka, where there is the biggest concentration of CM firms. Power outage is rampant and, because of narrow streets, transportation is a major problem. The Government is currently contemplating on setting up an industrial park for the plastics sector SMEs that will include the required infrastructure, utility services and logistic support as well as some other fiscal and financial incentives. It is expected that SMEs of Old Dhaka area will eventually move their facilities to the park. If that happens, positive externalities, including business and technical knowledge spillover, will be enormous. Also, it will be easier for the Government to support SMEs with, among other things, preferential utility supply, the lack of which is a major obstacle for improving productivity and competitiveness of SMEs.

Box 1: RFL plastics – a success story

RFL Plastics Limited is one of the leading manufacturers of moulded household and furniture products in Bangladesh. The company started the operation in 2003, focusing on manufacturing and marketing plastic household products and furniture at an affordable price. It produces more than 300 items of reasonably high quality and superior design. In the manufacturing process the company uses fully automated injection moulding machines, operated by skilled and experienced local and foreign technicians. Due to superior quality, innovative design and product variety, RFL has been established as one of the most preferred brands in the plastics sector in Bangladesh. Recently, RFL has also started exporting its plastic products.

The manufacturing plant is located at Ghorashal, Narshingdhi, in the outskirts of Dhaka, and is equipped with more than 70 injection mould machines operated by 3,000 workers under the supervision of more than 100 technical experts. The company has its own R and D facilities, creating new product design and making simpler moulds. Driven by its success, RFL is currently planning an expansion but is unsure of additional utilities (gas and electricity) supply – 'the most significant obstacle' faced by the industry in general.

3.7. TECHNOLOGY AND EFFICIENCY

At an earlier stage of the plastics industry development in Bangladesh, hand moulding was the standard practice. However, recently machine moulding has largely replaced hand moulding, as it is cheaper and makes superior product. In most cases, mould machines are imported from China, Germany and Taiwan Province of China. Reconditioned machines are also in demand because of a low cost and a quick payback period.

In terms of design, small players usually copy the patterns from larger manufactures' plastic products. SMEs order local mould manufacturers to make moulds replicating the products of large manufacturers. Even large manufacturers often copy design patterns from other manufacturers or imported products. Manufacturers give sample products to mould makers located outside the country (usually in China) and order the necessary number of moulds required.

Presently, capacity utilization of the plastics industry, particularly of SMEs, is suboptimal. A number of factors are contributing to the inefficient operation. The most prominent of the factors are: frequent power failures (locally known as "load shedding"); semi- or unskilled labour; frequent breakdowns of machines; and a severe shortage of technical personnel for maintenance.

The situation is particularly bad in the Dhaka area, where the largest clusters of the plastics sector SMEs are located. Frequently, particularly in summer, the firms experience five to six hours of 'load shedding.' Productivity is badly affected by sharp fluctuations in power supply and frequent energy shortages. However, large firms rely on generators (primarily gas-based) to ensure uninterrupted power supply and hence enjoy higher productivity. Since early 2009, even large firms have experienced difficulties with their planned expansion projects as the Government stopped providing new gas supply connections.

In most SMEs, workers are hired untrained and placed under the supervision of an experienced worker for about a year before they can start working independently. The productivity of such labourers is rather low as they are not adequately trained and frequently rely on trial and error in their work. Unfortunately, unskilled workers constitute a significant portion of the total workforce of SMEs. As soon as the workmen acquire the skills, they leave for higher salaries in larger enterprises. As a result, SMEs continue to suffer due to a lack of skilled workers. The situation contributes to constant low productivity and low capacity utilization in most of the smaller production units.

Since SMEs in the local plastics sector usually use reconditioned machines (typically five to 10 years old), the technological production level is pretty low. As a result, frequent breakdown of machines is a common phenomenon. But unfortunately, the sector suffers from a severe shortage of technical personnel for repair and maintenance. Sometimes it takes days and even weeks to get a broken machine repaired, which keeps the machine idle and leads to low capacity utilization.

3.8. POTENTIAL FOR UPGRADING AND CHALLENGES

The plastics sector in Bangladesh has an enormous potential for upgrading machinery and making quality improvements in mould manufacturing. Only a handful of manufacturers use new machines mostly imported from China. Machines from Germany are considered expensive and require long payback periods. All long-term investment decisions are considered risky and full of uncertainties. Entrepreneurs are reluctant to invest in costly technology because of the low confidence in the Government policies and regulations. For example, in the early 2000s the Government abruptly banned thin plastic shopping bags. While the rationale for the Government decision could be explained, its hasty implementation was highly detrimental for the sector as many SMEs suddenly went bankrupt, losing their source of revenue. Such rushed Government decisions make entrepreneurs feel uneasy when they contemplate substantial investment by purchasing brand new machines required for producing high-end products to compete in premium market segment. Other major negative impacts are the shortages in electricity and gas supply, the unavailability of skilled labour and a lack of access to capital.

3.9. QUALITY PARAMETERS

Maintaining quality of plastic products requires a presence of certain factors that are elaborated upon below.

- *Raw materials:* Low quality raw materials make products fragile. Products made from low quality recycled raw materials become inferior quality products and break down easily. Another problem with recycled raw materials is the loss of elasticity during recycling. As a result, products made of recycled raw materials often fail the load test, a major quality parameter for such products as plastic furniture.[19] For this reason, producers of high-end goods do not use recycled raw materials.
- *Additives:* Poor quality chemicals and additives reduce the smoothness attribute of a product. Chemicals imported from Germany are of superior quality though rather expensive. Chinese additives are cheaper but they do not provide as much smoothness as the German additives do.
- *Design:* Customers look for products with superior design, wide variety and high quality finishing. However, local SMEs fail not only to produce innovative designs but also to come up with nice finishing. Nevertheless, though plastic products of larger firms are a better quality, large firms' production capacity at present is insufficient to cover the market demand.
- *Machinery:* Use of reconditioned machines affects product quality. To protect the premium segment of domestic market from foreign competition and to capture the export market, manufacturers need to use new, state-of-the-art machines.
- *Workforce:* Machine-operating skills are important for producing smooth and well-finished products. Workers with such skills are not readily available in Bangladesh and, therefore, SMEs are particularly affected by the situation because, unlike large manufacturers, they cannot provide in-house training or employ formally trained technicians.[20] Consequently, SMEs have to rely on whatever labour force is available in the job market and train them through informal apprenticeship. An untrained workforce costs SMEs dearly in terms of consistency in product quality.

3.10. MARKETS AND MARKETING

The plastics market in Bangladesh can broadly be divided into two segments: domestic market and export market. Both the domestic and the export market can further be subdivided into two segments: business to households/customers (B2C) market and business-to-business (B2B) market. B2C market carries no specifics: household customers irrespective of their age and sex use plastic products. However, the desired product quality varies according to customer income and social status. All

[19] Usually extra amounts of raw materials are added to offset the lack of elasticity.

[20] Large manufacturers occasionally hire technical experts from abroad, mainly from India to train local staff.

B2C transactions are made at the retail level. In contrast, B2B customers buy directly from producers: they buy wholesale and receive a discount that reduces the cost. Many of them call for competitive bids, known as 'tenders', asking the interested parties to quote prices against a given specification. The manufacturers submit price quotes. The B2B buyers then select the party that meets both the technical and the financial criteria. Such competitive bidding is popular among B2B clients from sectors such as edible oil, RMG and fast moving consumer goods. However, once a trustworthy relationship is established with a B2B client, the client relies on the same producer and place repeat orders. Popular B2B products include office furniture, pharmaceutical accessories, RMG accessories, containers, PET bottles, packaging materials, construction pipes and wristwatch bodies. However, the RMG sector has been the largest B2B market segment that essentially drives up the deemed export of plastic.

The domestic market for plastic products in Bangladesh is likely to grow for several reasons. First, given a large number of population and, therefore, a big domestic market[21] for mass consumer goods, the plastics sector in Bangladesh could enjoy high growth potential. Second, Bangladesh so far has very low per capita consumption of plastic products. Third, further economic growth and development in Bangladesh as well as in the region are expected to continue in the coming years, which would result in an increased demand for plastic products. Fourth, new types of plastic products should be introduced in the market and consumers are most likely to purchase these new products for their usefullness, cost, durability, functionality and design Many domestic entrepreneurs are considering expansion to take advantage of the unfolding opportunities in the plastics industry development.

Domestic business consumers/markets for plastic products can be classified into subsectors such as packaging, construction, pharmaceutical, consumer products, agriculture, transportation and other industries. The packaging industry has been under strict regulation after the ban on the use of thin polythene shopping bags in 2001. Both the local and export markets for packaging materials are growing steadily. The RMG sector continues to be the largest consumer of packaging materials while the growth in packaged food market has led to a surge in the demand for food grade packaging. In the pharmaceutical industry, there is also a huge demand for high quality food grade packaging materials. So far, only a few manufacturers have managed to enter the pharmaceuticals market and than only in packaging products for insecticides and pesticides. The agricultural sector is also becoming a major consumer of plastic products as plastic pipes are used extensively for irrigation purposes. Also, farmers are now using plastic film for shedding crops. Plastic containers, boxes and cartons are gaining popularity for bulk packaging and transportation of agricultural products. In the construction sector PVC pipes, plastic fittings, plastic doors and other products are the major items consumed. In the consumer goods category major items constitute domestic utensils, kitchen and tableware, toys and plastic furniture.

The current scenario of the plastics sector in Bangladesh could be seen as both a mine of opportunities and threats. On one hand, impressive growth is highly likely

[21] Export market was discussed in detail in section B of this chapter.

even if the sector is driven only by the domestic market. Of course, the emerging export trend indicates numerous market opportunities abroad as well thanks to the Bangladeshi advantage of low-cost labour. On the other hand, the plastics sector could face fierce competition from other Asia-Pacific countries both at home and abroad, as international trade barriers are eroding fast. Domestic market for the plastics industry in Bangladesh is quite large and, according to industry players, demand far outweighs supply.[22] As a consequence of persistent supply shortages, a great volume of plastic products (particularly for B2C market) is imported, mainly from China. Although the market for plastic products have grown quite rapidly, Bangladeshi entrepreneurs are yet to avail themselves of these opportunities as customers find the imported items to be of better quality and lower priced.

3.11. MARKET ACCESS

SME manufacturers are facing significant difficulties in accessing the market while large manufacturers are in a better position in overcoming such difficulties and getting an access into the plastic markets. The difference between large companies and SMEs lies in the former financial strengths, entrepreneurial capabilities and vision, marketing wisdom and fair business model. SME manufacturers, typically non-brand manufacturers, often have to sell their products at a 100 per cent credit to wholesalers because they have no other distribution channel for their non-brand products. Large companies sell their products for a 100 per cent advance cash payment. They have created brand names for their products over the years through promotional campaigns, dedicated sales force and consistently good quality product. Unfortunately, this is not the case for most SMEs, which constitute more than 98 per cent of all manufacturing units in Bangladesh. As these manufacturing SMEs fail to control a value chain, they are unable to create value for themselves and all the benefits go to other players along the industry value chain. Thus, sadly for SME manufacturers, the vicious circle continues.

As for the export market, SMEs are not present there because of the obvious constraints already discussed. Large manufacturers are also facing problems in accessing export markets. Their problem is rooted in market intelligence, trade negotiation capability and quality perception associated with the label 'made in Bangladesh.' Large firms in Bangladesh have neither sound international business network nor an access to a well-researched market information bank. There are no professionally trained negotiators to conduct business talks. Bangladesh missions abroad and the related ministries cannot support export promotion and bilateral trade negotiations. Bangladesh Standard and Testing Institution (BSTI), the only quality certifying authority in the country, is not adequately equipped with either laboratory facilities or skilled personnel. As a result, their quality testing process tends to be lengthy and lacks the required credibility.

[22] Although no verified data on import of final plastic goods is found, industry insiders unanimously confirmed the fact of a huge demand-supply gap.

3.12. DISTRIBUTION CHANNELS

There are several types of independent market intermediaries, such as importer, wholesaler, retailer and hawker.[23] These intermediaries usually deal with imported products and the products of SMEs (having either OAM or CM arrangements). Large manufacturers have their own distribution channels – of varying nature and depth – to cover the whole national market. The usual channel is a distributor-dealer-retailer network, which is nurtured by a manufacturer in-house sales and distribution teams. These intermediaries are independent business entities working closely with manufacturing companies acting as real partners in the business. Some of the large companies run their own showrooms in important locations all over the country. Also, in case of B2B, products are delivered directly to the client firms.

Small manufacturers search for the wholesalers to sell their products. Medium manufacturers typically use the same marketing channel as small manufacturers (i.e., wholesalers); however, some of them sell goods in their own names and have their own shops in major wholesale markets. Large players employ distributors for marketing their products. For example, RFL Plastics, the biggest consumer plastic products maker in Bangladesh, has (approximately) 1,500 dealers around the country. These dealers deliver the products to retailers.

3.13. PROMOTIONAL ACTIVITIES

Trade fairs have so far been a major collective promotional tool for Bangladeshi plastic manufacturers. This initiative is helpful in gaining an access to the export market. Although deemed export constitutes a major portion in the export of plastic products from Bangladesh, some large manufacturers have embarked upon identifying the ways of accessing the global market through direct export of plastic products. Recently, a number of plastic manufacturers from Bangladesh participated in international trade fairs abroad, particularly in developed countries, and received orders from new customers. Participation in foreign trade fairs and exhibitions is an effective tool in exploring the new markets and strengthening trade relationships in the old markets. Similar and related activities, serving the same purposes include trade missions, buyer-seller meetings and new product launching events.

Trade fairs have also been arranged in Bangladesh. Some of these fairs are general trade fairs, open to all industries, and some are industry-specific fairs. One of the largest trade fairs is Dhaka International Trade Fair (DITF), which is held every winter and it lasts a full month (usually January). The plastics sector industry in Bangladesh organizes industry fairs regularly and plans to have them more frequently. Such trade fairs provide the local plastics industry with an opportunity of presenting their products to both the local and global markets.

Mass media, such as television and print media have helped large manufacturers to promote their plastic products to domestic market audience. But advertising is something SMEs cannot afford.

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[23] A small, door-to-door, retailer.

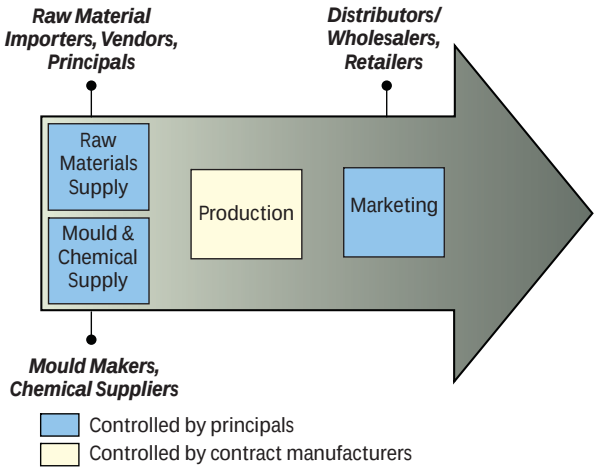
Some companies offer warranties for their products. For instance, Tanin and RFL Plastics (two very popular names in the plastic furniture market) offer 'life time warranty' for their products. This mechanism allows customers to pay only half of the original price of the damaged product and obtain a replacement. Such promotional offers are increasing as the industry matures.

Relationship marketing has been another vital element particularly used for B2B markets. Entrepreneurs hire skilled marketing professionals to find potential corporate buyers and develop long-term relationships with these corporate clients. Sometimes entrepreneurs develop personal contacts with corporate buyers to procure large or strategically significant orders. Good and long-term business relationships with corporate buyers help manufacturers secure an uninterrupted order flow for many years.

3.14. VALUE CHAIN GOVERNANCE

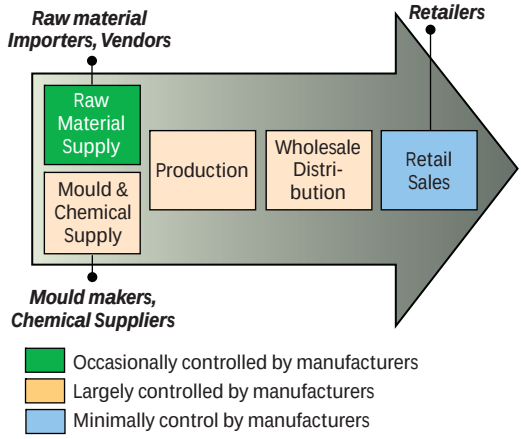
Governance of a value chain (i.e., a degree of control by an agency over an entire value chain, supply chain or production network) in the plastics sector in Bangladesh varies, depending on the size of a manufacturer and the business model (CM and/or OAM) used. With small contractual (CM) production, the contract principal (a wholesaler or a corporate buyer) supplies raw materials and necessary mould/s to SME manufacturer. The manufacturer's role is limited to final product manufacturing as required by the principal. In most cases the principal would even make transport arrangements for delivering raw materials and moulds and picking up the finished goods as it guarantees full adherence to the schedule. In this case, the value chain is fully governed by the principal who only pays the CM unit for labour and production facilities and utilities costs plus the margin. Such principals control the entire value chain. However, there are uncertainties still faced by value chain players, such as the international market price fluctuation, lead-times and so on. The value chain governance is further illustrated in figure 6.

Figure 6: Value chain governance for small contractual manufacturers



Large manufacturers usually import raw materials themselves. They also import moulds and produce plastic goods on their own account. They mainly use their own brand name and market their products in Bangladesh through either their own distribution channels or through designated agents or some kind of hybrid arrangement. Large manufacturers are mostly vertically integrated companies and therefore govern the majority of their value chains. However, manufacturers who do not import raw materials directly are dependent, to some extent, on raw materials importers. The balance of governance in the latter case depends, among other things, on the fluctuation of raw materials prices in the international market, purchase volume and timing. The value chain governance for large firms is illustrated in Figure 7.

Figure 7: Large manufacturers' control of value chains



4. Competitiveness of the Plastics Industry in Bangladesh

The competitiveness of any industry depends on several key factors, including the availability of support industries/services, access to finance, human resources, quality standards and certifications, policy and regulatory framework and infrastructures. If any of these factors are missing, the industry may loose its competitiveness. Several key factors, determining the competitiveness of the plastics industry in Bangladesh, are presented below.

4.1. SUPPORT INDUSTRIES/SERVICES

Support industries play an important role in the plastics sector in Bangladesh. That is particularly true of equipment suppliers and recyclers, two important support players, as the quality and, in turn, the competitiveness of plastic products largely depends on them.

Mould making industry

Besides the presence of the skilled workforce and plastic granules and additives fine attributes, the quality of final plastic products depends on the quality of moulds. However, the mould making industry in Bangladesh is still at its nascent stage and high quality moulds are largely imported from foreign countries. Many local mould makers in Bangladesh work using traditional methods. Only a few of them have modern mould making equipment such as EDM, pantographs and CNC milling machines.

There are mainly two types of customers using moulds in the plastic goods manufacturing industry in Bangladesh; (i) small and medium plastic goods manufacturers; and (ii) large plastic goods manufacturers.

Small and medium plastic goods manufacturers depend on moulds supplied by local mould makers – directly in the OAM model and indirectly (i.e., through principals) in the CM model. Made of low quality steel,[24] using traditional trial and error production method, these moulds cannot provide precision and quality required for certain types of plastic products.

However, as large manufacturers aim to produce export-quality product made with high precision, they depend mainly on imported moulds, which are more reliable and longer lasting than the local ones. Before a large plastic goods manufacturer introduces a newly designed product in the market, the firm sends a sample product design to a foreign mould maker, who produces the mould in accordance with the sample. Most new moulds are imported from China and India. It is a known fact that Chinese moulds have advantages over the Indian ones both in quality and cost.

The sizes and shapes of imported moulds vary from small (used for production of household items) to large (used for production of furniture). Prices for moulds also vary from $2,890 (small size mould) to $72,254 (large size mould). However, imported moulds include problems such as longer lead times, higher costs and the absence of after sales services. Local manufacturers cannot change product designs rapidly using imported moulds.

SME manufacturers repair moulds (and machines) hiring technicians who are not readily available locally. Large manufacturers normally have in-house engineers and technicians for repair and maintenance work. Large manufacturers' expert technicians usually receive their technical training (in most cases facilitated and funded by their employers) in China. Some of technicians come from other machine exporting countries to Bangladesh.

Machine importers generally offer three years of replacement warranty for both electronic and hydraulic brand new mould machineries imported from China. They also offer one-year free service that is provided by Chinese producers and can be extended to up to five years at their expense, creating goodwill in the market.

[24] Scrap metal from old vessels.

Recycling

Recycling is a crucial support industry for the plastics industry all over the world and it is one of the most important factors for the long-term growth and survival of the plastics industry. As large numbers of manufacturers, especially in the SME segment, are using recycled raw materials, recycling carries a lot of economic (besides environmental) importance. By using recycled granules manufacturers can cut the cost of raw materials by almost half. Although there are ample examples of good practices in plastic recycling around the world, Bangladesh is yet to learn from such cases. Recycling in Bangladesh is hindered by poor waste disposal and management culture and the use of primitive processing technologies.

There are three technical/operational aspects involving recycling that determine the quality of recycled granules. These aspects are the following:

- Proper washing of contaminated plastics;
- Manual or mechanized sorting; and
- Quality of processing equipment.

In addition, there are some significant compliance issues, including:

- Health and safety of plastic collectors, sorters and recycling factory workers;
- Environmental consequences of recycling process; and
- Rules and regulations involving use of recycled granules.

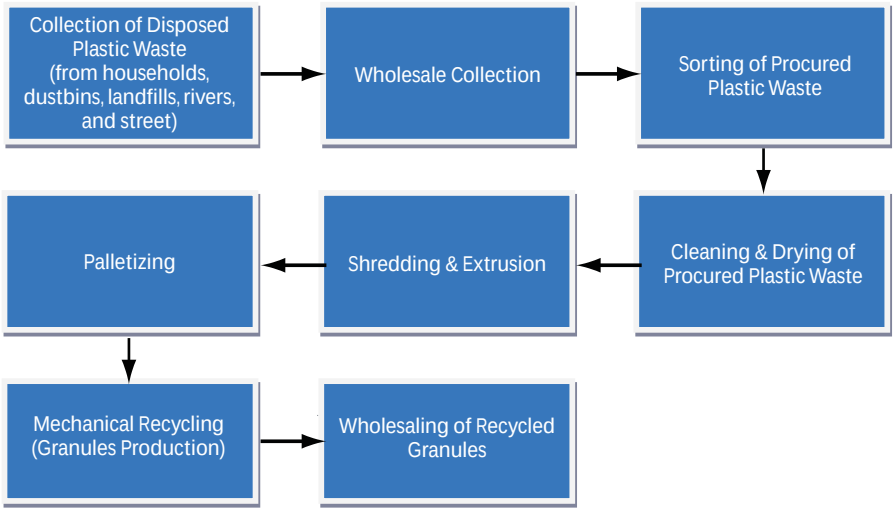
Unfortunately, the recycling subsector in Bangladesh demonstrates poor compliance on most of these issues. Although, on the environmental issue the recycling subsector, to some extent, is keeping the plastics industry afloat by reducing the likely environmental damage and this is in spite of the fact that plastic waste disposal and recycling system are yet to be standardized and modernized, which pose a tremendous threat to the economy. The recycling subsector deserves an immediate attention from all parties concerned, particularly from the Government of Bangladesh.

The recycling practice in Bangladesh is still highly dependent on manual processing. The process can be broken down to a number of steps. Figure 8 presents the flow diagram of a typical recycling process of plastic waste in Bangladesh.

In developed countries wastes are disposed of and collected in accordance with different categories. This means different types of waste are disposed of separately. In Bangladesh, all types of waste – starting from kitchen waste to paper waste to plastic waste to metal waste – are disposed of and collected together. Plastic wastes are generally collected from households by hawkers and from waste disposal bins by street collectors.

After plastic waste is collected, it is sorted out manually according to categories, which is very time consuming and inefficient. Plastic wastes are sorted out by the degree of cleanliness (dirty or clean), by plastics type (thermoplastic or thermoses), by category (PP, PE, PS, PVC), by colour and by product type (bottles, bags, films and sheets).

Figure 8: Plastic recycling process in Bangladesh



In Bangladesh, labourers who sort the plastic wastes do not often have adequate knowledge on the plastic type and category. They sort out wastes by product type (e.g., plastic bottles and plastic packs). They can not differentiate among materials of which similar types of products are made. For example, different plastic bottles are made of different types of plastics. As a result of this type of sorting, different types of plastic materials stay together, which affects the quality of recycled granules.

After sorting according to types, plastic waste is sent to a mechanical recycler for cleaning and drying. Plastic waste is washed with the water coming from the nearby water sources, such as rivers, canals and ponds. Drying is done naturally by exposing the washed plastic waste to the sunlight. However, substances like dust, germs and other contaminated materials remain on plastic waste after poor and inadequate washing.

After the drying, plastic waste goes through shredding and extrusion and is prepared for palletizing. Shredding can be done by scissors, shears, saws and so on. Shredding is done for the following reasons:

- To reduce larger plastic waste to smaller fraction sizes that could be managed by smaller machines;
- To make storage and transportation easier; and
- To prepare plastic waste for further processing.

After shredding the plastic waste goes through palletizing, the final step in recycle process. Here the shredded materials are melted in a palletizing machine and transferred into recycled plastic granules.

However, the recycling process, as discussed above, does not produce high-quality recycled granules. The reason for that is the absence of automated sorting and cleaning. The existing practice of plastic waste processing yields granules of inferior quality (compared to imported recycled granules). Inferior quality recycled granules also mean inferior quality finished products. That is why locally recycled granules are used mainly by SMEs producing non-branded, low quality products.

Nearly all the equipment used by recycling sector SMEs in Bangladesh is made locally. Since the recycling equipment is not technologically complex and the recycling subindustry is at its nascent stage, locally made machineries have so far proved to be good enough to support the recycling SMEs. However, as the plastics industry matures and waste management culture improves the demand for better recycling machineries is expected to grow. And, this is another area of potential technology upgrading.

4.2. ACCESS TO FINANCING

Like any other SMEs, the plastics sector SMEs are facing severe constraints when it comes to access to financing. Bank loans that could have been the main source of financing are extremely hard to obtain. There are a number of reasons for this, including:

(i) Banks' reluctancy to provide loans to SMEs;

a. Loan sizes are too small to deal with. Given the fixed interest rates, the profit received from such a small loan is not attractive enough. On the other hand, banks cannot charge a higher interest rate both for market and non-market reasons. The market reason — a higher price would result in low demand — and the non-market reason – numerous requirements and formalities would have to be complied with.

b. The perceived risk is quite high. SMEs hardly possess the collaterals required by the banks as security.

c. Accounting practice is poor. Proper financial documentation and accounting are not part of the SMEs business culture. Most of SMEs follow the traditional way of bookkeeping, writing down all the entries in a notebook and performing some simple computations at the end of a certain period.

(ii) SMEs' reluctancy to ask banks for loans.

a. Banking environment is too complex for SME entrepreneurs. SMEs perceive banks as inaccessible and banking officials as unapproachable.

b. The low educational level of SME entrepreneurs is a major obstacle. Lack of education prevents them from becoming accustomed to official requirements and formalities of the bank.

Although there are state-owned commercial banks mandated to finance SMEs, their performance is rather poor. However, there are some positive developments. For example, BRAC Bank, a local commercial bank, is aggressively marketing SME loan schemes. For the past four decades the bank has successfully managed one of the

world's largest micro-finance institutions. Seeing BRAC Bank's apparent success with SME loan schemes, more commercial banks are moving in this direction. This shift is also triggered by policy interventions and incentive schemes recently declared by the Government. For example, the central bank of the country provides commercial banks with low rate funds to be offered to SMEs as loans at an interest rate of 10 per cent (as opposed to the regular rate between 14 per cent and 16 per cent). However, there is a ceiling on SME loan amount – it cannot exceed $15,000, which is considered insufficient to make a serious investment. Furthermore, small enterprises are finding even such loan programmes difficult to access for the reasons mentioned earlier. Consequently, the government policy interventions and incentives have remained ineffective.

4.3. HUMAN RESOURCES

Like the SMEs in any other sectors, the plastics sector SMEs are constrained by the shortage of skilled workforce in many important areas, including technical, entrepreneurial and business management. Although the country has an old-fashioned vocational/technical education system, the number of graduates is small and the quality of education is poor compared to the real market demand for skilled manpower both at home and abroad.[25] Of course, some SME sectors enjoy good specialized training institutions. These sectors are: glass and ceramic industry; leather industry; textile industry; and garment industry.

The plastics sector does not have any formal training institution and has to deal with unskilled (and, in the case of SMEs, uneducated) workforce. Only a few large enterprises can afford to invite expatriate trainers (primarily from India) to offer in-house technical training. SMEs have to place their unskilled employee under a supervision of an experienced worker for on-the-job training hoping that the new employee, once trained, will continue to work for them. Sometimes SMEs are lucky, but most of the time they are not. Many SME workers, after acquiring the necessary skills, tend to leave the firm and join larger companies at higher salaries that SMEs cannot afford to pay. As a result, SMEs have hardly any return on their investment in human development struggle with the low productivity of unskilled workers.

[25] Two major factors contributing to this dismal scenario are capacity constraints and systemic failures. With regards to capacity, the country has a significantly smaller amount of technical/ vocational institutes than it requires. Moreover, most of the technical/ vocational institutes are constrained by either its physical infrastructure or human resources or both. With regards to systemic failure, there are at least two issues that need immediate attention. First, the system has largely failed to attract potential students to the vocational/technical training stream. Second, the macro level failure in the reduction of the widespread poverty has resulted in low educational attainment becoming a bottleneck to demand-driven education and training. The search of means for survival forces most of the students of these vocational/technical institutes look for any kind of job – be it a low paid job or an easy, less costly certificate or degree. Ironically, the good news for SMEs is that these young people can be hired for a low wage but the bad news that comes together is that these new recruits are not skilled/educated or, at best, 'inappropriately educated' (in areas that has no relevance to the work where s/he is put in).

There is no specialized institution for entrepreneurship development training in the country. Although there has been a burgeoning growth in the number of business schools since the 1990s, their contribution to entrepreneurship development is insignificant, if existing at all, particularly regarding entrepreneurship training for the plastics sector. Though there are graduates in business administration coming from over 50 business schools but the plastics sector SMEs cannot hire them as SME salaries are too low.

Under such circumstances, the plastics sector SMEs is severely constrained in building up its competitive strength. All the constraints hinder market access for SMEs both domestically and internationally.

4.4. STANDARDS AND CERTIFICATION

Standardization and industrial certification are mandatory requirements for SMEs willing to become globally competitive. SMEs in Bangladesh, mainly serving the local markets, however, have yet to become seriously involved in the standardization and certification processes. The Bangladeshi plastics industry needs to adopt adequate standardization system and obtain international industrial certification in line with quality improvement. Currently, no international standard certification (such as ISO) is adopted in the local plastics sector, except for some large enterprises. Also, consumers are unaware of quality certification issues.

National

Appropriate standardization techniques for plastic products are yet to be developed in Bangladesh. Bangladesh Standards and Testing Institution (BSTI) is responsible for certifying product standards in Bangladesh. BSTI is incorporated under the law entitled "The Bangladesh Standards and Testing Institution Ordinance, No. XXXVII of 1985." Tasks of BSTI include preparation of standards for all articles, products, methods and services. To protect consumer rights, BSTI often comes up with a mandatory certification scheme under which certain products need approval from BSTI before they are marketed. Food items, chemicals and jute-related products are mostly certified under this scheme. Unfortunately no standardization benchmark has been set to measure the quality of plastic products in Bangladesh. Only one product, namely "table wear made of melamine plastic" is brought under mandatory certification under BDS (Business Development Services) code 1425:1993.

International

Some trade organizations have come up with standards for plastic products. In 1988, Society of the Plastics Industry (SPI) developed resin identification code (RIC) system, identifying six thermoplastic resins most commonly used in manufacturing bottles and containers, in order to facilitate sorting during recycling process.[26] The resin types, identified in the SPI system, are as follows (PackagingLaw.com):

[26] *Society of the Plastics Industries (SPI):* SPI is a body for monitoring and developing codes and standards for the plastics industry at a global level. SPI is a United States-based trade association,

- Polyethylene terephthalate (PETE)
- High density polyethylene (HDPE)
- Polyvinyl chloride (PVC or vinyl)
- Low density polyethylene (LDPE)
- Polypropylene (PP)
- Polystyrene (PS), etc.

SPI is working with the American Society for Testing and Standards (ASTS) International to adapt the RIC system to international standards for the universal application. ASTS has been developing standards for marking plastic products based upon the RIC system developed by SPI in the 1980s. The proposed new standard WK20632 "Practice for Marking Plastic Products for Identification in Reuse and Recycling" is intended to facilitate the recycling of plastic articles through increasing the number of recyclable materials while expanding the types of covered products to other resin types.

It is clear that developed countries, such as the United States of America and the European Union countries are adopting standards mainly for sorting and recycling purposes. If sorting is not done according to the resin type and the recycling process continues regardless of the type of plastics, the quality of the recycled resins will degrade. Unfortunately, Bangladesh has not yet developed such standards to sort various types of plastic wastes properly. Therefore, locally recycled plastic granules are not on par with international standards and, as a result, most of small and medium manufacturers are losing export competitiveness.

Compliance

Bangladesh lacks resin identification code (RIC) system for efficient recycling and, so far, no steps have been taken to develop this standard. Global standards of recycling practices should be adopted to ensure the long-term sustainability of the sector. Many manufacturers are unaware of the requirements of such standards that would ensure environmental protection.

It should be noted that full compliance with environmental and health regulations is a serious concern for the plastics sector because of the very nature of the plastic products. Poor waste disposal and management system and the harmful impact caused by the inefficient and improper treatment of plastic wastes are two other serious issues. The health effect on both consumers and workers, particularly in the recycling segment, is a major source of concern. Many research studies and advocacy campaigns have been conducted to ensure occupational safety and good working conditions for

with headquarters located in Washington DC. SPI's member companies include the entire plastics industry supply chain: processors, machinery and equipment manufacturers and raw materials suppliers (www.plasticsindustry.org). SPI's activities include alerting its members about code and standard based issues that may impact plastic industries, ensuring that the members express their opinions in code and standard making processes. It also cooperates with the WTO in implementing regulations, codes and policies for plastic industries. Bangladeshi manufacturers are still not very aware of all those provisions of SPI.

the garment industry workers, but little attention has been paid to those working in the plastics sector. Although the country's labour laws are applicable to the plastics sector as well, awareness is depressingly low, and enforcement of the laws is severely weak.

4.5. POLICY AND REGULATORY FRAMEWORK

The plastics industry in Bangladesh, operating under regulatory and institutional framework encouraged by the Government, is promoted through various incentives. Achieving global value chain competitiveness largely depends on how the framework facilitates and promotes the future development of the plastics industry.

Bangladesh Investment Regime

To promote investment, the Government of Bangladesh has liberalized its industrial and investment policies over the past couple of decades by introducing pro-business policies, reducing administrative control and opening up many areas for private sector investment. Major incentives for all kinds of industrial enterprises are as follows:

- Tax exemptions: Generally five to seven years. However, for power generation, exemption is allowed for 15 years.
- Export/Import Duties: No import duty on raw materials (and in some cases machinery) for export-oriented industries. For other industries it is at five per cent ad valorem.
- Tax law: Double taxation can be avoided when foreign investors operate on the basis of bilateral agreements.
- Exemption of income tax: Up to three years for the expatriate employees in industries specified in the relevant schedule of income tax ordinance.
- Remittance: Facilities for the full repatriation of invested capital, profit and dividend.
- Exit: An investor can wind up an investment either through a decision of an annual general meeting (AGM) or an extraordinary general meeting (EGM). Once the foreign investor completes the formalities to exit the country, he can repatriate the sales proceeds after securing a proper authorization from the central bank.
- Ownership: A foreign investor can set up a venture either as a wholly owned operation or as a joint collaboration with local partners.

SME Policy Strategies

Bangladesh aims to create a market-based economy with a level playing field for all enterprises, where SMEs can aspire to grow and create wealth using their own endowments, diligence, innovation and management. Some of the key objectives of the current SME policy include:

- Accept SMEs as indispensable players in growth acceleration and poverty reduction;

- Encourage and induce SME development and promote the growth of FDI, develop code of ethics and establish good governance, ICT-based knowledge management and customer supremacy in the market;
- Identify and establish an appropriate physical and ICT network of infrastructure and institutional delivery mechanism that facilitate the promotion of SMEs;
- Reorient the existing fiscal and regulatory framework and government support institutions towards facilitating the achievement of SMEs policy goals;
- Nurture and partner civil society institution(s) with credible management teams providing the required services, leadership, initiation, counseling, mentoring and tutoring;
- Create innovative and meritocratic arrangements so that small enterprises with the proven entrepreneurial track record and/or promise could be offered financial incentives;
- Help implement dispute settlement procedures that proactively shield small enterprises, especially from the high legal costs and insidious harassment;
- Take measures to create possibility of providing credit without collaterals; and
- Systematically accord precedence to small enterprises over medium enterprises, especially with regards to limited government resources.

While SMEs development policies and strategies in Bangladesh are sound and progressive, the implementation mechanism and institutions, responsible for enacting these policies, require further strengthening in terms of resources, including human resources and financing.

Box 2: Institutional framework for promotion of the plastics industry in Bangladesh

(i) Bangladesh Plastic Goods Manufacturers and Exporters Association (BPGMEA):

BPGMEA is a leading private sector association for all plastic goods manufacturers in Bangladesh responsible for safeguarding the interests of the plastics sector in Bangladesh and developing trade opportunities both nationally and internationally. It deals with matters relating to government regulations, patent rights and import and export regulations. The association also serves as a contact point for overseas companies who want to buy or sell Bangladeshi plastic products.

(ii) Dhaka Chamber of Commerce and Industry (DCCI):

DCCI is the largest and most active Chamber of Commerce and Industry in the country for SMEs. It was established in 1958 and serves as a nonprofit, service-oriented organization. DCCI basic functions include promotion and development of trade, commerce and industry. DCCI provides market-oriented inputs to the Government in the formulation and implementation of policies regarding import, export, industry, investment, banking, insurance, fiscal measures and annual budget. DCCI also liaises with other

international trade related organizations and frameworks, such as WTO, UNCTAD, SAPTA, SAFTA and BIMST-EC. DCCI is an important stakeholder in the plastics industry and other major industries in Bangladesh.

(iii) Small and Medium-sized Enterprises Foundation (SMEF):

SMEF is created as an independent centre for the betterment of SMEs in Bangladesh, under the auspices of the Ministry of Industries (MOI), the Government of Bangladesh. The main objective of the foundation is to promote, support, strengthen and encourage the growth and development of SMEs in all productive sectors of the economy and to plan, programme and finance private sector organizations, including chambers, associations, trade bodies and research and development institutions. It is mandated to facilitate SMEs access to finance by creating and supporting appropriate strategies and institutions. The foundation assists the plastics sector development along with 11 other industrial sectors outlined in SME Policy Strategies 2005 as thrust areas.

(iv) Bangladesh Small and Cottage Industries Corporation (BSCIC):

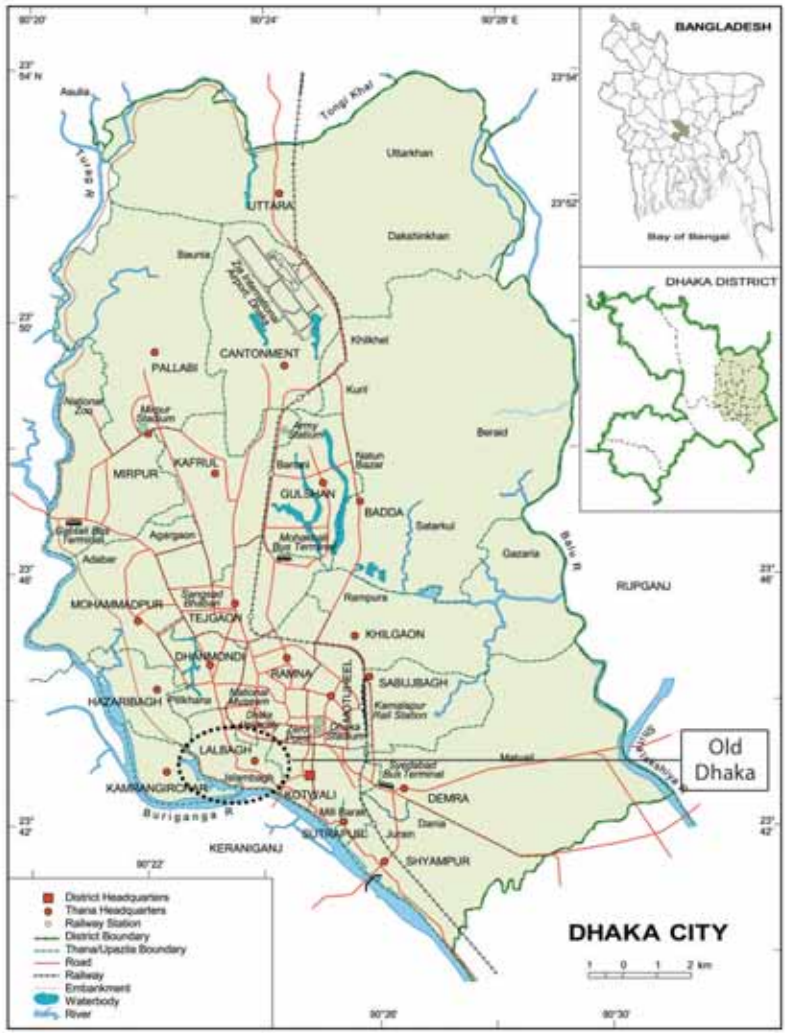
BSCIC is the prime mover organization entrusted with development of small and cottage industries (SCI) in Bangladesh. It is an autonomous corporation that was established in 1957 by an Act of the Parliament, and it operates under the auspices of the Ministry of Industries. It is the successor organization of East Pakistan Small and Cottage Industries Corporation (EPSCIC). BSCIC is mandated to provide: pre-investment counselling, post-investment extension services, technical information, design and prototype of handicrafts, industrial profiles and fact sheets, marketing information, infrastructural facilities, skill development training, entrepreneurship development training, in-plant advisory services and credit facilities to various industrial enterprises, including the SMEs in the plastics sector.

4.6. INFRASTRUCTURES AND UTILITIES

Adequate provision of infrastructural facilities and the supply of basic utilities for the industries are considered a primary requirement for the industrial promotion and growth. As the plastics industry is maturing, becoming one of the key export sectors in Bangladesh, it is most desirable that it be adequately supplied with the required infrastructure for future development. Such key infrastructure, including the transportation and public utilities systems are essential for facilitating effective business activities.

Bangladeshi plastics sector, however, is constrained with constant electric power crisis, as well as insufficient gas and water supply. Currently, electricity is the major hurdle for the accelerated industrial growth in Bangladesh. The plastics industry is highly automated compared to many other industries in Bangladesh, including SMEs sector, and requires stable and constant electricity supply without which the production is impossible. The situation becomes worse in the hot season when electricity demand reaches its peak. Due to the lack of adequate supply of electricity, larger plastic goods manufacturers often run their factories on gas generators. However, due to a heavy load shedding of electricity and an interrupted supply of gas (both of which cause frequent generator shutdowns), plastic producing units have low capacity utilization.

Figure 9: Dhaka City Map



Source: www.banglapedia.org.

Besides electricity problem, SMEs have to deal with irregular water supply and severe congestion of transport infrastructure. As most of the plastic procuring and production units are located in Dhaka area (figure 9) and Dhaka area has dense population, narrow roads, poor traffic management system, outdated and overused water supply system and old building structures, the plastics industry enterprises are experiencing difficulties in developing efficient production and distribution systems. Incidentally, except for the plastics recycling subindustry, water is not a direct element of production process of plastic goods, and therefore the water supply shortage is not such a serious a problem as the crisis of power supply. But if the plastics sector is to thrive at the backdrop of recycling industry, for both economic and environmental

reasons, and at the backdrop of other industries, such as light engineering, it must have access to all necessary infrastructural support required for its core operations as well as for its support industries. This very fact makes a strong the case for a development of an independent special industrial park for the plastics sector (along with its core linkage industries).

5. Strategic Analyses

This section of the study presents SWOT and triple triangle framework (TTF) analyses and identifies major impediments to the growth of the plastics sector in Bangladesh. Both types of analyses create a basis for business competitiveness action plan proposed in the next section.

5.1. SWOT ANALYSIS

Strengths

The major strengths of the plastics industry in Bangladesh include, among other things, a large pool of entrepreneurs, simple technology and trusted collaboration among value chain partners.

- One of the main reasons the plastics industry in Bangladesh is developing at both the small and medium levels is the availability of cheap labour. In general, SME entrepreneurs in Bangladesh work with relatively low profit margins and low wages compared to not only developed countries but also to many developing countries in Asia and the Pacific, particularly India and China.
- The number of SME plastic manufacturers in Bangladesh is as high as three thousand. In addition, many other industries SMEs are engaged at various levels of the plastics industry value chain. Altogether, this presents an indication of enormous entrepreneurial interests within the plastics industry in Bangladesh.
- Increasing trust and collaboration among value chain partners and competitors has resulted in smooth operation within the sector. Also, there is a growing dependence on value chain partners, particularly among SMEs.
- Increasing exposure to external markets has allowed large industry players to benefit from international exposure contributing to deeper understanding of global market dynamics and helping to establish a long-term strategy for export marketing.
- Large fast growing domestic market and domestic demand for low-end plastic products has facilitated the development of local plastic industry, particularly the SME sector. It should be noted that low priced items are in huge demand compared to the existing supply capacity. Also the demand for higher end domestic plastic utensils is increasing and most of large players are expanding their existing projects.
- The plastics industry adopts simpler technologies compared to other heavy industries. Adoption of less sophisticated technologies has led to a growth

of plastic products used by other sectors, such as light engineering sector in Bangladesh.

- A large amount of export earnings (deemed export) from the plastic goods sector comes from RMG export. As the RMG industry in Bangladesh is a mature sector and is expected to grow further, the plastics industry should benefit strongly from the trend.

Weaknesses

Major weaknesses of the plastics industry include weak backward linkages (particularly mould-making facilities), lack of skilled manpower and rudimentary recycling practices. These and other difficulties are elaborated on below.

- Absence of equipment and machinery manufacturing facilities, particularly mould-making units, puts Bangladesh at a disadvantage, as reliance on exports from China and India is pretty costly. This weakness remains a serious one as entrepreneurs are reluctant to invest in equipment/ machinery in an uncertain environment of long-term prospects for gas/electricity supply and the Government policy direction.
- There is a serious shortage of skilled labour in the plastics industry. The situation worsens when it comes to equipment repair and maintenance. The problem is particularly serious for small and medium-sized enterprises because (i) they cannot afford in-house professional training for their workers and (ii) trained labourers leave SMEs to join larger firms to get higher salaries and compensation packages.
- Relying on outdated and traditional technologies makes plastic recycling process unclean and inefficient. The problem gets exacerbated with the existing waste disposal and management system that is not environmentally friendly. As a result, the quality of recycled raw materials remains low.
- The industry lacks uniform quality standards and modern quality control practices, particularly as it relates to the use of raw materials and labelling of material codes. As a result, the absence of level playing field affects fair competition.
- Thare is a lack of long-term vision among entrepreneurs. Most of entrepreneurs in the SME segment of the plastics industry are satisfied with the current level of earnings. They do not actively seek new markets or product diversification. They do not think of exporting their products since the domestic market is large enough for survival. When the local market gets competitive, only then they might look for new markets for survival. This attitude is prevalent in small and medium sized units.

Opportunities

The plastics industry in Bangladesh has good potential for development in both domestic market and export markets. If these opportunities could be capitalized on through policy reforms and other support services, the plastics industry in Bangladesh

could achieve significant growth in the future. The opportunities in domestic market and international markets are described below:

- There are still good prospects in the domestic markets where plastic manufacturers can enter profitably. In the household segment, more expensive wood-based products can be replaced by less costly plastic products. For instance, in the recent years the local market has seen an exponential growth in the demand for plastic furniture. There are other areas where manufacturers can explore the needs and expand the market.
- Presently, Bangladesh produces mainly basic plastic products and possesses a nominal share in the global production. Therefore, there is a huge potential to compete in the international market through product diversification and quality improvements. It should be noted that plastic products global demand has been growing steadily at around 20 per cent a year (in the period between 2003 and 2007). Moreover, deemed export (along with RMG, pharmaceuticals and other products) is also growing at a steady rate. In fact, the growth is seen mostly at the deemed export category. The fact that the developed world is moving away from such export category (particularly in the low-value segment) is creating opportunities for countries such as Bangladesh. The cost advantage in transportation to the eastern India is also a big opportunity to expand the export market in that region.
- Deemed export of plastic goods, influenced by the growth of the RMG sector,is becoming very important over time. The fact that the plastics industry is now working as a backward linkage industry for many local industries, especially the RMG and pharmaceuticals, has created a lot of opportunities for value added within the country. If more forward linkage industries such as food processing, agriculture, electrical and electronics develop and mature, the plastics sector will experience a robust growth. Conversely, if the plastics sector becomes competitive, these forward linkage industries will enjoy cost advantage.
- During the period of July 2007 – January 2008, Bangladesh exported plastic wastes amounted to $6 million. Despite huge demand for recycled raw materials inside the country, these products were exported because of a lack of proper technology for waste recycling in Bangladesh. This also forces the industry to raise the quality of recycled raw materials. Introduction of better technology would not only save the environment but also create huge opportunities for recycling these products domestically and would significantly reduce the reliance on plastic raw materials imported from abroad at high prices.

Threats

The plastics sector in Bangladesh faces threats that constrain its growth. The most immediate threats that should to be addressed are presented below.

- The principal constraint for the growth of the plastics sector in Bangladesh is the recurring energy crisis and frequent electricity blackouts. Despite huge market potential and unsatisfied demand, the industry is unable to produce and expand due to its inability to utilize the existing capacity as the supply of energy has been limited and uncertain. Many SME units are actually finding it difficult to survive because of constant power failures that they experience four to six times a day. Though large manufacturers deal with daily power disruptions by installing power generators, SMEs are not in a position to do so.
- Many of the government policies and practices do not provide enough support to domestic plastic producers. For example, while some government institutions (such as Ministry of Defense) offer purchase tenders, importers of finished products usually get an advantage over the local producers due to a requirement to pay 15 per cent VAT in addition to import tariffs on imported raw materials. Enterprises producing packaging materials for the pharmaceutical industry are facing similar problems. Such policies have a negative impact on the growth of domestic enterprises.
- Bangladesh does not have a proper waste disposal for the used plastics products similar to that of developed countries. As a result, plastic wastes get mixed with other wastes making it difficult to use for recycling. Plastic waste, if not collected and recycled properly, could pose a serious threat to environment and health.
- Since plastic granules price is directly correlated with crude oil prices, a hike in crude oil prices affects SMEs greatly and puts them at a disadvantage in import competition compared to large enterprises.
- The industry might face embargo at any time on the grounds of social and environmental incompliance. The threat is significant for SMEs involved in direct or deemed exports.

5.2. TRIPLE TRIANGLE FRAMEWORK ANALYSIS

The SWOT analysis could be further structured using the elements of the triple triangle framework (TTF), which was mentioned earlier in the introduction (Figure 3.1). The framework focuses on the factors affecting business environment at three different levels. The first level deals with firm's internal factors, i.e., micro-level factors that affect some of the firms more than the others. The second tier deals with industry-level factors, which affect all the firms across the industry. The third tier deals with macro-level factors which include, among other things, the required policy and infrastructural framework.

Firm's internal or micro-level factors

The factors that constrain growth and expansion of firms, include: i) lack of trained and experienced human resources, particularly mould makers, machine operators, and skilled technicians for the repair and maintenance of machines; ii) limited access to formal institutional loans and a requirement of bank guarantee for bonded import of raw materials; and iii) limited current operational activities aimed at survival, lack of plans for future expansion and growth.

Industry-level factors

Competition and non-branded products: Currently, except for some large manufacturers, many plastic sector SMEs in Bangladesh are producing non-branded items. As the local demand is very high, most producers are not concerned with creating a brand name and improving the product quality. Although presently plastics sector SMEs do not experience any problems in the domestic market, they cannot compete at the global level due to a lack of brand names as well as low product quality. The growth could have been much faster and robust, including in the global market, had SMEs put more efforts in product quality improvements and creating brand names.

Collaboration and quality certification: Due to a lack of proper standardization and quality certification facilities, plastic products in Bangladesh are unable to attain recognition in international markets. Though there are institutions willing to assist in quality improvements and certification, but due to the absence of formal collaborative long-term arrangements, the possibilities are yet to be explored.

Improved recycling practices: Poor collection of waste materials and improper recycling practices has been responsible for the poor quality of recycled materials and hence poor quality products. This in turn forces the plastics industry SMEs to rely on expensive virgin raw materials raising the cost of production.

Innovation in production and marketing: There is a huge opportunity to create new demand in the domestic market by introducing new plastic products. Also, large B2B customer segments could be captured if plastic items that are currently imported could be produced locally. Likewise, the role of the country's foreign missions, to promote Bangladeshi products through economic diplomacy, need to be strengthened. Of course, some of government agencies (e.g., Export Promotion Bureau) do occasionally arrange trade fairs and exhibitions abroad to attract foreign buyers; yet these efforts are limited compared to what needs to be done to enter foreign markets and capture the untapped export opportunities.

Technological upgrading: Technology transfer and technology upgrading are necessary to maintain and promote competitiveness. There are enormous technological lags in mould making and recycling in Bangladesh.

Macro-level factors

Macro-level factors affecting the company emerge from a complex interrelationship among the factors that are beyond the control of any specific industry or its constituent firms. The outcome of this interplay influences all the firms in the industry. These factors – mainly linked to governance and state support, globalization dynamics and the interaction of international forces – are the major determinants of the macroeconomic environment in which the industry and its constituent firms operate.

State support: Although Bangladesh offers a predictable policy direction involving the role of market vis-à-vis state (Jahan 2008b), the plastics industry needs a comprehensive and consistent policy guideline from the government to keep up and

accelerate the existing rate of growth. The plastics industry needs a proper government arrangement of an uninterrupted power supply,, the single most important obstacle affecting industry growth. Furthermore, the government should introduce favourable tax policy, establish of specialized industrial zones and increase government purchase. These initiatives would certainly give a huge boost to growth in this sector.

Although the plastics sector is in the list of thrust sectors, it is not included in the first list of Highest Prioritized Export Development Sectors declared by Export Promotion Bureau. As a result, the industry fails to receive such benefits as tax concessions, better access to institutional credit and other preferential facilities awarded to the industries included in the first list of Highest Prioritized Export Development Sectors.[27]

To compete globally, local manufacturers must be proficient in understanding foreign market dynamics and the issue of compliance to international mandates and requirements. Lack of skill and knowledge in these areas makes the plastics industry less competitive globally. Most of entrepreneurs are completely unaware of the relevant provisions in international trade treaties of which Bangladesh is a party. They hardly see any relevance of regional agreements and facilities such as SAPTA, BIMSTEC, EU-GSP, etc. Many of entrepreneurs are unaware of many specific requirements and benefits under the provision of multilateral trade system, particularly the World Trade Organization.

6. Business Competitiveness Action Plan

To accelerate the growth of the plastics industry in Bangladesh, the obstacles discussed above should be removed or minimized and the strengths should be further augmented. To reach this aim, the following actions should be initiated.

6.1. ADDRESSING THE FIRM LEVEL FACTORS

Capacity building

- Skills development programme: To meet the immediate need for the skilled workforce, plastics industry specific training and skills development programme should be initiated, particularly focusing on:
  a. Plastics industry machines operation and maintenance;
  b. Plastics engineering;
  c. Heat treatment;
  d. Quality control;
  e. Mould design and making;
  f. Product design;
  g. Work safety issues;
  h. Waste management; and
  i. Standardization and quality control.

[27] The benefits are granted to the sectors that are included in the official list of Highest Prioritized Export Development Sectors as decided by the Government of Bangladesh from time to time.

Although firm-level actions are required in most of these cases, capacity-building efforts should be launched primarily on a basis of public-private partnerships. BPGMEA, BSCIC, DCCI, SMEF and Ministry of Industries could act as collaborating partners. Special SMEs requirements should be assessed and priority programmes should be organized with the Government support in a cost-effective manner.

If experts are needed from the developing economies having advanced plastics sectors such as China, India, Taiwan Province of China and Thailand, such experts should be hired to organize workshops to provide hands-on training to the local employees. In addition, business visits to those economies can help entrepreneurs get an idea of modern plastics industry practices and assess their applicability in Bangladesh thus improving the local industry practices. In the long-term, a separate department/ institute, like the ones already existing in textile engineering, leather engineering or fashion design should be established to facilitate product development, standardization of production, innovation and market research. The project should be undertaken as either a public sector project or as a public private partnership (PPP).

Capital: access to finance

- Access to credit and availability of financing should improve significantly for the plastics industry SMEs. It could prove beneficial to reduce collateral requirements, educational qualifications and technical conditions so that enterprise growth potential could be the only basis for financing SMEs. In this case the Government could guarantee such loans to SMEs perhaps through public loan guarantee scheme.
- Dialogue could be organized to ensure credit at a lower rate for the plastics industry SMEs. Implementation partners for this project could be Ministry of Finance, Ministry of Industries, Ministry of Commerce, Bangladesh Bank, Commercial Banks, EPB, SMEF, BPC, FBCCI and DCCI, as well as trade bodies, professional associations and Chambers.
- In case of raw materials import, bank guarantee requirement for bonded import should be reduced to facilitate working capital to SMEs manufacturers.

6.2. ADDRESSING THE INDUSTRY LEVEL FACTORS

Industry-wide customer oriented fair competition and strategic collaboration with value chain partners and other stakeholders are critical success factors shaping the sector's competitiveness. These factors are discussed below.

Customer and market access

- Capacity of plastics sector SMEs in Bangladesh should include a wide range of products for domestic and international markets. Creation of new product categories has proven to be a key to success. Some of examples include wood furniture substituted with plastic furniture and metal pipes substituted with PVC pipes. These examples demonstrate the willingness of the local market to accept new products that makes good economic sense.

- Encouraging local industries and institutions (i.e., B2B clients) to use locally made intermediate and finished plastic goods is a smart way of enlarging the market size.[28] Although this is a pure business proposal, the Government has a big role to play in this plan. For example, the Government could facilitate this plan by ensuring, among other things, a level-playing non-discriminatory tax regime.
- Campaigns to identify new and enter the existing export markets should be undertaken under a strategic framework. Campaigns should be supported by extensive market research and should be conducted with the help of private sector firm(s). BPGMEA, DCCI, EPB and the Chambers should take the lead in this regard.
- Trade-fairs and exhibitions at national and international levels should be arranged reach new markets and expand the existing ones. Industry-specific fairs for plastic products should be arranged more frequently domestically and internationally. DCCI, SMEF, BPGMEA, Ministry of Commerce and Ministry of Industries ought to collaborate in arranging such events.

Competition and branding

- Efforts should be taken to create a level-playing field for fair competition for the plastics industry in Bangladesh, particularly addressing the issues of quality, standards and competitive international prices. Such drive should be led by BPGMEA, the main industry association of the plastics sector.
- Establishment of national brands – individually at a firm level and collectively at a national level ("Made in Bangladesh") – is crucial to promote competition domestically and internationally.

6.3. ADDRESSING MACRO-LEVEL FACTORS

Macro level factors, such as technological level, government policies and access to information have an impact on all industries operating within an economy. This is particularly important for the plastics industry, as the sector is emerging as one of the most promising manufacturing sectors in Bangladesh.

Technological support

- *Mould making technology:* Proper mould preparation and maintenance should be achieved in the mould-making industry. Feasibility study of local high-quality mould making industry should done to minimize costs. Institutions such as Bangladesh University of Engineering and Technology should be asked to participate in the study together with plastics industry representatives.

[28] It should be mentioned that, besides the RMG industry, the pharmaceutical industry has recently started procuring locally made plastic packaging materials. Although scores of challenges still exist, the general picture is quite encouraging.

- *Recycling technology:* Introduction of better technology in the recycling industry has become essential for the long-term sustainability of the plastic industry. Proper workshops and training should be arranged to disseminate the technological know- how of quality recycling procedures.
- *Product design technology:* Training services on the use of CAD/CAM and designing software should be arranged to improve product design and innovation. A central research and development cell in BPGMEA should be established to provide support to SME manufacturers.
- *Quality and standardization:* BSTI should be equipped with modern amenities and trained professionals in order to facilitate standardization and quality improvement measures. In the Export Policy 2009-2012, the Government promised to establish proper laboratory facilities and means for standardization (EPB 2009). This factor has a high priority.

State support: policy, infrastructure and institution

- *Uninterrupted energy supply:* The Government should undertake every effort to ensure uninterrupted power and energy supply for at least eight to twelve hours a day. This is a must in order to minimize labour and raw material waste. The industry should have the facility of getting priority power connection and gas supply. Uninterrupted power supply could be achieved by establishing separate power plants – Common Commercial Power Plants – for industrial clusters.
- *Industrial parks:* Establishment of industrial parks for the plastics industry has become a must for several reasons, including: i) ensuring proper infrastructure; ii) nurturing SME producers; iii) providing special uninterrupted utility services; iv) avoiding environmental hazards; and v) ensuring compliance. The decision regarding the establishment of such cluster park should be implemented without delays.
- T*ax regime:* The government should introduce consistent, coherent and pro-business tax regime. It should follow a procurement system (for its own agencies) that ensures level-playing field for all types of industry players. To make the local plastics industry more competitive, the Government could consider offering certain incentives for the firms that are the plastics sector's B2B clients from other industries and that use locally made plastic intermediate goods. Such incentives could be provided in the form of reduced corporate income tax, and/or in any other way that do not conflict with international trade treaties and obligations.
- *Plastic waste disposal:* The Government, in collaboration with other stakeholders, should support public awareness campaigns in order to change the negative attitude that people have about plastic and to educate people about the proper use and disposal of plastic products. The campaigns should be backed by an introduction of an innovative plastic waste disposal-collection-recycling mechanism.
- *Research-based database:* A nationwide sample survey should be conducted in order to create a database for taking informed policy

decisions and providing priority assistance.

- *Sector-specific policy:* There is hardly any coordinated sector-wide policy available for the plastics industry in Bangladesh. Given the sector's potential, the Government should formulate sector-specific industry policy to ensure all-out support for the growth of this burgeoning sector.
- *Certification process:* Registration and other related requirements and processes should be simplified. Currently SMEs are required to have 30 different registration documents, such as registration certificate, trade license, BSTI certification, VAT registration, fire license, boiler license, environmental clearance certificate, etc. from different governmental bodies. SMEs documentation process should be brought under one umbrella in order to reduce the cost of doing business.

International dimension: compliance and beyond

- *Compliance:* Institutional arrangements for foreign markets compliance and requirements should be provided to make local manufacturers aware of the global market mandates and multilateral trade systems. Such counseling should focus on: i) compliance issues; ii) certification requirements; and iii) global business practices.
- *Trade and commercial diplomacy:* Trade and economic sections of Bangladesh's foreign missions should be staffed with business professionals who could represent and protect the country's business interests in bilateral and multilateral trade negotiations and treaties. The trade missions should be backed by proper research-driven market intelligence and sound strategic framework.

National action plan

Table 3.9 presents a comprehensive business competitiveness action plan for the plastics sector in Bangladesh. It outlines strategic goals, objectives, current scenario, actions recommended and parties involved. The Government in collaboration with development partners (e.g., UNESCAP, UNIDO, ADB, etc.) and industry associations (e.g., BPGMEA) should take actions strengthening the value chain competitiveness in the plastics industry and making it a prominent export-earning source.

To reach this goal, a few critical areas that require immediate attention are identified and presented below.

(a) Help SMEs attain cost competitiveness, particularly by ensuring proper infrastructural support through creating industrial parks and providing uninterrupted electricity supply, as well as by undertaking a business feasibility study on mould making in line with public-private partnership.

(b) Ensure sustainable competitive advantage by designing and launching a sound, strategic campaign promoting 'green plastic' in collaboration with other stakeholders.

(c) Develop human resources engaged in manufacturing activities by providing technical skill development programmes. Special training programmes for SMEs entrepreneurship development, mastering managerial and marketing as well as accounting techniques should also be organized.

Table 9: Business competitiveness action plan for the plastics sector in Bangladesh

To become a global market player in the plastics industry reaching a market size of USD two billion by 2015 and USD four billion by 2020 from the current level of USD one billion through sustainable competitive advantage.

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
Goal #1 *Achieving the plastics industry sustainability*	Developing backward linkage capability in mould making	• Some small SME mould making factories are currently producing low quality moulds. These moulds are primarily being used to produce low-end plastic products from recycled granules. All big players are importing moulds from abroad. This, in turn, causes the price of end products to go up as imported moulds are costly.	• Initiate a feasibility study for developing a mould making facility to cater to the mid- and high-end market (Explore public private partnership or FDI joint venture options for establishing a central mould making facility). • Arrange training programmes to develop capable mould manufacturing workforce	Initiation: GoB, JICA ESCAP, BPGMEA Action: IBA, BSCIC, business associations
Goal #2 *Creating favourable business environment for low-cost competitive advantage*	Guaranteeing smooth supply of electricity/gas	• Power blackout is rampant: it happens four to six times a day lasting one hour or so and hampers SMEs production schedules. • Big players are not getting gas supply for extension projects.	• Take immediate actions to increase power generation and industrial gas supply.	GoB and/or GoB-patronized private sector (through PPP arrangement with the support from organized non-resident Bangladeshis (NRBs) and capital markets
	Ensuring policy consistency and providing a long-term policy direction	• Businesses have no knowledge of the Government's future policy direction and, therefore, prefer short-term investment projects to long-term ones, depriving themselves of the benefits of economies of scale.	• Devise and stick to the long-term policy direction, particularly in the fiscal (tax regime) and industrial policy issues.	Initiation: GoB, BPGMEA Action: Market development experts/policy analysts

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
	Removing anti-production (and pro-import) tariff bias	• Although the official tariff on finished products is higher than on intermediate goods and raw materials, government purchase clause often favours imports over local production, as the latter is subjected to a 15 per cent VAT.	• Government purchase decisions and support to other industries (e.g., pharmaceuticals) should not adversely impact local plastic production. • Rationalization of tariff structure creating a non-discriminatory level playing field for domestic producers and importers.	MoF, Government Agencies, BPGMEA
	Promoting pro-business government machineries	• Government officials have negative attitude to business and demonstrate rent-seeking behaviour.	• Sensitization campaign should be designed and run to improve the situation.	Initiation: BPGMEA & MoI/GoB Action: Professionals/private firms
	Formulating dedicated plastics industry policy	• Although the Government is impacting this sector through numerous policy interventions, there is no comprehensive plastics industry policy.	• Given the sector's enormous potential the Government should declare it as a strategic sector and make it a part of the bigger export-oriented industrialization (EOI) strategy.	Initiation: GoB/EPB/MoI Action: Professionals/private firms
Goal #3 *Promoting 'Green Plastic' for sustainability*	Promoting a sound recycling culture	• People are not aware of proper waste disposal and no sound waste management mechanism exists.	• Specialized plastic waste management system MUST be developed. • Sensitization campaigns should be designed and run.	Initiation: Local government/city corporations/BPGMEA/ MoI/ development partners and other stakeholders (media) Action: Professionals/private firms

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
		• If such practice continues, extraordinary pressure will come from environmental and social groups and the industry's sustainability will be at jeopardy.		
	Developing positive mindset among stakeholders	• People are largely ignorant/ unaware of plastic's contribution to saving natural resources in replacing things like wood and iron.	• Highlight eco-friendly aspects of plastic products. • Partner with anti-deforestation and resource conservation campaigns.	Initiation: BPGMEA and MoI Action: professionals/private firms
	Supporting health and environmentally-friendly production and recycling	• Currently, raw material identification code is not used in many cases. As a result, recycling gets inappropriate. • Also, due to improper disposal system and non-availability of sound recycling technology, recycled raw materials are not of high quality and thereby create health and environmental problems.	• Make "Raw Materials Identification Code" legally binding. • Subsidize business operations that promote sound disposal of plastic goods and health and environmentally-friendly recycling.	Initiation: GoB ministries (MoI, NBR/MoF), city corporations, BPGMEA and other industry associations Action: Professionals/private firms

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
Goal #4 *Supporting SMEs*	Providing easy access to finance	• SMEs do not have access to institutional loans due to collateral requirements and a lack of capacity to prepare a business plan. • A good number of SMEs had to face bankruptcy even for a small loan.	• Provide low-cost SME loan. • Offer government guarantees (in lieu of collateral) for deserving SMEs.'	Initiation: GoB (MoI), SMEF, Bangladesh Bank Action: Commercial banks
	Supplying skilled technical workforce	• The sector has severe shortage of skilled workforce (machine operators). Currently SMEs hire unskilled workers who learn on the job. However, good workers leave for big players paying higher salary. So, SMEs continue to suffer. The big players in general train their workforce inviting international trainers from India/China.	• Provide technical training for machine operators on operation, trouble shooting and maintenance of machineries. • Provide advanced training in mould-making in technical universities (e.g., BUET, CUET, KUET, DUET, etc.). • Industry-University collaboration. • Seek technical assistance (e.g., from ESCAP) in this regard. • Explore a possibility of bringing in experts from developed countries to provide training services.	Initiation: BPGMEA – MoE/Univ. Grants Commission (UGC) Technical & Vocational and Education Board Action: Tech Univ. Departments, polytechnic institutes/training institutes, BSCIC, private firms etc.

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
	Supporting entrepreneurship development	• Most of the entrepreneurs are first-generation businessmen and are entrepreneurs by chance. Nearly all SME entrepreneurs lack proper business background. • Many entrepreneurs are happy with whatever they have and do not plan their businesses' long-term growth.	• Capacity building through business development workshops/training. • Sensitization campaign for developing positive entrepreneurial mindset.	Initiation: MoI, ESCAP, BPGMEA Action: Institute of Business Administration (IBA), University of Dhaka
	Providing essential physical and soft-infrastructure	• Most of SMEs are located in old Dhaka that is not an industrial area and lacks basic infrastructure. • There is no central quality management mechanism.	• Implement proposed SME industrial park (SEZ) for the plastics sector (and light engineering and electronic goods as well). • Establish quality management institute.	Initiation: GoB, in collaboration with ADB, BPGMEA Action: IBA and BUET
	Facilitating international market access and national marketing endeavors	• Currently only PET bottle manufacturers get 10 per cent cash incentive. • SMEs are not aware of international market opportunities; SMEs and large firms face sever information insufficiency.	• Make cash incentives for plastic goods exports. • Identify profitable market segments (through market research/intelligence), particularly international out-sourcing opportunities.	Initiation: GoB (MoF, EPB, Foreign Ministry), BPGMEA Action: Local business development service providers (consulting firms), as applicable

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
		• SMEs lack capacity in meeting international quality standards. • Bangladeshi businesses suffer from inappropriate country brand image.	• Help SMEs build capacity in terms of human resource skill development, technological upgrading, product design market intelligence and marketing. • Assist brand building initiatives (capitalize on RMG's "made in Bangladesh" success). • Arrange national and international trade fairs (ITFs) and assist SME participation in such fairs.	
Goal #5 *Achieving higher share of global production*	Introduce existing products to new markets, at both regional and global levels.	• Although large firms are ready to access international markets using existing quality standards, SMEs are far away from that. • Trade relationships with neighbouring countries are not very smooth, particularly since the advent of NTBs. • There is a lack of awareness among local manufacturers regarding demand and quality requirements in the export market.	• Improve trade diplomacy. • Help SMEs achieve international quality standards. • Promote environmental and social compliant enterprises. • Initiate a study to explore export potential of plastic products from Bangladesh in developed markets.	GoB, BPGMEA, ESCAP (to provide with technical assistance to initiate research)

Table 9: *(continued)*

Strategic Goals	Strategic Objectives	Current Scenario	Strategic Actions	Agencies Involved
	Access new markets with new products by targeting potential B2B segments and unexplored B2C opportunities.	• Currently RMG sector is the prime B2B segment served by Bangladeshi plastics industry. Others are construction and pharmaceuticals. • A premium segment of the B2C segment is also largely untapped.	• Target B2B segments such as pharmaceuticals, food-processing and agriculture. • Target high-end B2C segment and diversify the offering basket by incorporating the products that offer cost-advantage. • Offer fair competition to local firms over imports through policy support and actions.	Initiation: Industry players, GoB, development partners Action: Private firms