



Glass Industry

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Draft Report

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Introduction

Glass making process involves mixing of large amounts of silica sand with comparatively smaller amounts of lime and soda ash, and other materials to give the glass special qualities by heating the mixture in a furnace until it turns into a syrupy mass. However, it is a laborious process that requires specific skills during manufacturing process.

‘Soda-lime-glass’ is the kind of glass mostly used all over the world including Pakistan. It is widely used as plate and window glass, light bulbs etc. It contains about 72% silica, 15% sodium oxide, 9% calcium oxide (lime) and 4% of other ingredients. The silica comes from sand, dug out of sandstone queries. Sodium oxide usually comes from soda ash made from salt (as is the case with the local production) though some also comes from sodium nitrate and sodium sulphate. Calcium oxide is usually obtained from limestone or dolomite (Pakistan has very large deposits of both). The soda-lime glass has always been popular as it is not only inexpensive to manufacture but also easy to melt, shape, but reasonably strong. The bulk of the local glass production comprise soda-lime glass for the production of ‘potash-lead glass’, ‘borosilicate glass’ and ‘colored glass’.

Potash Lead Glass

It is commonly called ‘lead crystal glass’, made from sand, red lead, potassium carbonate and may also include some soda. It is widely used to manufacture the finest tableware and in certain cases, electrical products.

Borosilicate Glass

Borosilicate glass contains about 81 per cent silica, only 4 per cent lime or soda, 2 per cent alumina and 13 per cent boric oxide and is heat and shock resistant. It is used to make baking ware, glass pipelines and telescopic mirrors.

Colored Glass

Colored glass contains metals or certain metal compounds to give the glass a certain color. For instance, one part of nickel oxide in 500 produces a tint that may range from yellow to purple depending on the base glass; one part of cobalt oxide in 1000 gives an intense blue. The red color is usually caused by small amounts of copper or gold, or compounds of selenium or cadmium. Similarly, many other colors can be produced in glass by adding certain other chemicals.

The manufacturing units of glass industry in Pakistan are four decades old and they have limited themselves to the production of basic types of glass (annealed glass, laminated glass, toughened glass, coated, mirrored glass etc.) while the bulk of demand for the quality products in the industrial, commercial, construction, and residential sectors is filled by the imported counterparts. There is limited demand for expensive quality glass in country which has restricted glass sector to set up high cost glass units. The industry has therefore preferred to manufacture the inexpensive basic glass products which could be consumed locally¹.

Objectives

Pakistan had been conducting its trade with India on a positive list approach before 26th of March, 2012. Recently, steps have been taken to liberalize trade from positive to negative list. In the wake of this liberalization, there would be challenges and opportunities for different sectors of the economy to compete with India. In the light of above, this study has been carried out with the following objectives:

1. Identification of segments of the glass industry which are not competitive vis a vis Indian glass industry.
2. Identification of Pakistan's glass industry export potential, for India.
3. Identify the comparative tariffs of Pakistan and India for Pakistani glass products range.
4. Identify the threats and opportunities of glass sector by using Revealed Comparative Advantage (RCA) Index.

Scope and Methodology

The scope of this report is limited to analyzing Pakistan and India glass sector as new challenges and opportunities would arise by liberalizing trade with India. The analysis has been done up to the year 2010 as trade figures of the post liberalization period are not available. This report is based primarily on desk research. Due to time, resource and budgetary constraints interaction with stakeholders was not possible.

¹ Report on "Lack of Diversification and Growth Prospects: Glass Industry of Pakistan" by Syed M. Aslam

The methodology adopted in this report is based on descriptive statistics obtained from secondary sources. In addition comparative analysis has also been done on the glass sectors of Pakistan and India. The structure of the report is as follows:

Section I deals with the trade analysis. A detailed analysis of bilateral trade of glass products between Pakistan and India is conducted. Furthermore, the status of the products falling under glass sector in the pre-liberalization phase (positive list approach era), post-liberalization phase (negative list regime) and under SAFTA trading arrangement has been determined. In addition, the MFN and preferential tariff has also been shown. Moreover, products have also been identified wherein both countries have comparative advantage over the other. This analysis is done at the HS 6 digit level using Revealed Comparative Advantage (RCA) Index. The results are mapped according to Pakistan's glass sector opportunities and threats.

Section II of the report deals with demand and supply side of the sector, key players, manufacturing units in Pakistan and major issues of this industry. Similarly, section III deals with Indian glass industry; high cost of raw material, manufacturing units in India and future investments by Indian companies. The information for this part is obtained from secondary sources.

Section I: Trade Analysis

Pakistan is the major exporter of Float glass, bottles, drinking glasses and glasswares used in kitchens and table wares to the world. Table 1 shows Pakistan's major exports of glass products to the world from 2007-2010. Top three export destinations are Afghanistan, Bangladesh and Tanzania with an export value US \$7 million, US \$2 million and US \$1.06 million respectively during year 2010. Pakistan also exports glassware products to the United Arab Emirates, Iran, South Africa, Philippines, Oman, Bangladesh, Belgium and other countries. Pakistan exported glass products of worth US \$ 15 million in 2010 to the world. During the same year, making it fifth largest export destination, Pakistan has exported US \$1.03 million worth of glass products to India.

Table 1: Pakistan's Major Exports to World (US \$ '000')

HS Codes	Description	2007	2008	2009	2010
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	10337	9411	8326	6232
'700529	Float glass etc in sheets, non-wired nes	2410	1527	5609	4136
'701310	Glassware of a kind used for table kitchen, etc of glass-ceramics	396	598	1161	1778
'700490	Drawn glass in sheets nes	4398	6392	3134	1268
'701399	Glassware nes (other than that of 70.10 or 70.18)	423	673	148	389
'700510	Float glass etc in sheets, non-wired havg an absorbent or reflectg layer	91	1680	755	366
'701337	Drinking glasses (excl. glasses of glass ceramics or of lead crystal a	0	8	28	273
'701391	Glassware nes of lead crystal (other than that of 70.10 or 70.18)	84	17	251	158
'701010	Ampoules of glass conveyance or packing	0	11	170	156
'701110	Glass envelopes (including bulbs/tubes) for electric lighting	31	77	9	128
'701341	Glassware of lead crystal, of a kind used for table or kitchen purpose	0	157	123	112
'700991	Glass mirrors, unframed	0	3	17	100
Total		18170	20554	19731	15096

Source: Trade Map (Trade Statistics for International Business Development)

Pakistan exports to India in the year 2010 mentioned in table 2 only includes three products and these are Carboys, bottles, flasks, jars, pots and other containers (HS 701090), Float glass in sheets (HS 700529) and Drawn glass in sheets (HS 700490).

Table 2: Pakistan's Exports to India (US \$ '000')

HS Codes	Description	2007	2008	2009	2010
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	264	158	144	578
'700529	Float glass etc in sheets, non-wired nes	1476	1052	2010	371
'700991	Glass mirrors, unframed	0	0	0	82
Total		1740	1210	2154	1031

Source: Trade Map (Trade Statistics for International Business Development)

Similarly, Pakistan is importing following products from all over the world:

Table 3: Major Imports of Pakistan from World (US \$ '000')

HS Codes	Description	2007	2008	2009	2010
'701399	Glassware nes (other than that of 70.10 or 70.18)	3421	4813	3950	7450
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	4716	5320	5126	5508
'701810	Glass beads, imitation pearls, imitation precious/semi-precious stones etc	3437	3024	4250	4926
'700711	Safety glass toughend (tempered) f vehicles, aircraft, spacecraft/vessel	8020	5167	2920	4145
'700239	Tubes of glass nes	3427	3539	2974	3944
'701349	Glassware for table or kitchen purposes (excl. glass having a linear c	0	285	1437	3898
'701939	Webs, mattresses, boards and similar nonwoven products of glass fibres	2017	2734	2430	3572
'701931	Mats of glass fibres	2417	2938	2811	3508
'700991	Glass mirrors, unframed	3118	3754	2725	3480
'700529	Float glass etc in sheets, non-wired nes	2747	3882	2693	3435
'700510	Float glass etc in sheets, non-wired havg an absorbent or reflectg layer	2786	2962	2607	2940
'701932	Thin sheets (voiles) of glass fibres	1100	1691	2001	2607
'701990	Glass fibres (including glass wool) and articles thereof nes	1435	2259	1846	2177
'700721	Safety glass laminated for vehicles, aircraft, spacecraft or vessels	3165	1693	605	2040
'700521	Float glass etc in sheets, non-wired coloured throughout the mass etc	4394	2576	2057	1935
'700320	Cast glass sheets wired	814	1403	952	1482
'700729	Safety glass laminated nes	237	312	811	1200
Total		47251	48352	42195	58247

Source: Trade Map (Trade Statistics for International Business Development)

Pakistan import glass products from worldwide sources which has witnessed increase from US \$ 63 million to US \$ 69 million during the year 2007 to 2010. The top three import destinations of Pakistan includes China, UAE and Thailand with import values US \$ 39 million, US \$ 4 million and US \$ 4 million respectively.

Table 4: Major Imports of Pakistan from India (US \$ '000')

HS Codes	Description	2007	2008	2009	2010
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	371	478	354	306
'700711	Safety glass toughend (tempered) f vehicles, aircraft, spacecraft/vessel	79	116	52	93
'701010	Ampoules of glass conveyance or packing	0	0	2	31
Total		450	594	408	430

Source: Trade Map (Trade Statistics for International Business Development)

Pakistan's imports from India in this sector includes carboys, bottles, flasks (HS 701090), Safety glass toughened for vehicles (HS 700711) and Ampoules of glass conveyance or packing (HS 701010). The safety glass used for vehicles is in the negative list which means that this product

is sensitive and its domestic industry is protected while the other two products are not in the negative list.

Table 5: Potential Products in Indian Market

HS Codes	Product label	Pakistan's Exports to World	Pakistan's Exports to India	India Imports from World
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	6232	578	24671
'700529	Float glass etc in sheets, non-wired nes	4136	371	3755
'700991	Glass mirrors, unframed	100	82	5249

Source: Trade Map

Table 5 indicates the potential products in Indian markets for the year 2010 and figures are in US \$'000'. It has been analyzed that Pakistan has potential in only three products and these are Carboys, bottles, flasks, jars etc, Float glass and Glass mirrors.

1.1 Glass Sector--Threats and Opportunities

In this part, RCA² has been calculated for India and Pakistan and then Pakistan's threats and opportunities are identified in this sector. Table 4 indicates product lines in which Pakistan is competitive and India is not competitive. There are four product lines in which Pakistan is competitive and these are Balls, glass microspheres (HS 700210), Float Glass (HS 700529), Glassware of a kind used in kitchen ware (HS 701310) and Glassware of lead crystal (HS 701340). It means that these products are opportunity for Pakistan. These products were not allowed from India and their tariffs have been also been reduced to 5 percent from 25 percent in Trade Liberalization Programme under SAFTA. Now out of these four products only one (Float

² $RCA_{pg} = [X_{pg} / X_p] / [X_{wg} / X_w]$ Where: X_{pg} = Exports of Good g by Pakistan, X_p = Total exports of Pakistan, X_{wg} = World exports of good g, X_w = Total World Exports

If $RCA > 1$: Country has comparative advantage in that product

If $RCA < 1$: Country has comparative disadvantage in that product

glass) has been included in the negative list which means that this product line is sensitive while the other three products are opportunity for Pakistan as Pakistan is enjoying comparative advantage in these tariff lines/ product lines.

Table 6: Product lines in which Pakistan is competitive and India is not

Product code	Product label	RCA-Pak	RCA-India	MFN Tariffs	SAFTA Tariffs	Appendix G	Negative List
700210	Balls, glass exc microspheres of No 70.18	1	0	20	5	0	0
700529	Float glass etc in sheets, non-wired nes	1	0	25		0	7005.29
701310	Glassware of a kind used for table kitchen, etc of glass-ceramics	3	0	25	5	0	0
701341	Glassware of lead crystal, of a kind used for table or kitchen purpose	1	0	25	5	0	0

Source: Author's own calculations

Products in which both India and Pakistan have been competitive are mentioned in table 7. There are three products lines in this category; Drawn glass (HS 700420), Ampoules of glass conveyance (HS 701010) and Carboys, bottles, flasks, jars, pots etc (HS 701090). Initially, import of these products was banned from India and now only two of them have been placed in the negative list and import of one product (Ampoules of glass conveyance) is allowed from India in which both countries are competitive. The import of those products in which both Pakistan and India are competitive poses threat to Pakistan's glass industry.

Table 7: Product lines in which Pakistan and India both are Competitive

Product code	Product label	RCA-Pak	RCA-India	MFN Tariffs	SAFTA Tariffs	Appendix G	Negative List
700420	Drawn glass sheets, coloured, opacified, etc.	1	3	25	5	0	7004.2
701010	Ampoules of glass conveyance or packing	1	2	25		0	0
701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	1	1	25	5	0	7010.9

Source: Author's own calculations

Section II: Glass Industry of Pakistan

2.1 Demand Side of the Sector

Glass manufacturing is well known energy intensive industry comprising of manufacturers in the sub-segment, producing 90% for local market. Demand for glassware has shown a rising trend due to the increase in population and income levels. Pakistan exported glass products of worth

US \$15 million to the world in the year 2010. Pakistan also imports glass raw material which is used in production of high quality table wares for export. Pakistan has imported glass products of worth US \$ 69 million during the same year.

2.2 Supply Side of the Sector

In this year alone, glass industry has undertaken production of different glass products worth \$ 81 million, contributing 1.9% to the total manufacturing sector's value. There are more than 35 glassworks in Pakistan producing sheet glass, glass containers, electric glass tubes and bulbs, neutral glass tubing and glassware.

The production capacity of the units ranges between 15 tons and 250 tons per day³. Most of the units are located near the sources of raw materials. Gas is the primary fuel used in production of glass. Over 80% of manufacturers rely on natural gas. The industry suffers from decreased production in winters on the back of fuel shortages of natural gas and electricity. More than 50% of glass industry has suspended its activities while the remaining units are on the verge of closure due to gas and power load shedding⁴.

Pakistan's production of glass could go higher if impediments such as the high cost of inputs, non-existence of strict anti-dumping laws, existence of special concessions in Customs duty on imports of some glass products and other matters are resolved in favor of the sector. However, the dumping of glass containers imported from Japan, Germany, China, Malaysia and the Middle East is a major impediment to the growth of this sub-sector of the glass industry⁵.

2.3 Key Players of the Sector

Glass industry is dominated by Master Group and Tariq Glass Industries. Reason being their large production capacity and well-developed distribution network as compared to small and

³ ibid

⁴ ibid

⁵ *Daily Times*. "LTFF to boost potential of glassware export-oriented unit". January Friday, 2011. http://www.dailytimes.com.pk/default.asp?page=2011%5C01%5C21%5Cstory_21-1-2011_pg5_14.

medium units. Pakistan Glass Manufacture Association looks after the affairs of glass industry of Pakistan.

2.4 Manufacturing Units in Pakistan⁶

Total production of glass industry is mentioned in Table 8. This table also identified the number of reporting industries in the sub sectors as well. The total investment in the sector is estimated to be about Rs 15 billion. During 2010, the sector produced glass products worth Rs 6.90 billion, contributing 1.9% to the total manufacturing sector's value. Out of the total, around 73% are situated in Punjab, 19% in KPK, 5% in Sindh and 3% in Baluchistan.

Table 8: Total Production of the Glass Industry

Glass Industry	No of reporting establishments	Total production (Rs “000”)
Glass and glass products	34	12300670
Flat glass	5	1029860
Shaping and processing of flat glass	6	1519061
Hollow glass and glass fibre	10	8962912
Other glass, processed	7	269934
Other glassware including bangles	6	518903

Source: Pakistan Bureau of Statistics

(http://www.pbs.gov.pk/sites/default/files/industry_mining_and_energy/publications/cmi2005-06/Tables/7.0.pdf)

2.4.1 Pharmaceutical sector glass units

There are more than 20 units manufacturing pharmaceutical ampoules and vials from neutral glass tubing.

2.4.2 Flat glass units

Flat glass units are operating below 100% capacity mainly due to low demand on account of sluggish construction activities in the country. The increase in demand and supply gap over the past five years was largely on account of the non-existence of any facility for production of float glass. Costs of raw material, energy like fuel, electricity and gas and other overheads constitute approximately 35% of the total cost. Soda ash accounts for 80% of the total cost of raw materials

⁶http://www.dailytimes.com.pk/default.asp?page=2011%5C01%5C21%5Cstory_21-1-2011_pg5_14

consumed in the production of flat glass.

2.4.3 Auto glass sector

The average capacity utilization of the auto glass sector from 1996 to date declined from 50% mainly due to an increase in installed capacity of neutral glass tubing from 2,400 tons to 4,300 tons per annum and a decline in production of containers (glass bottles) and the closing down of some glass units.

2.4.4 Glass tableware

At present Pakistan has five units manufacturing tableware with an annual capacity of about 30,500 tons. Demand for glassware has shown a rising trend due to the increase in population and rising income among the buying segment of the population.

2.4.5 Assorted glassmakers

Eight units make automotive glass, art glass products, furniture glass and many other types. They also add value by further processing locally produced and imported glass. A number of units in the informal sector are also producing various glass products like art glass products, glass furniture. Besides more than 100 units in the unorganized sector are engaged in production of various glass products in Karachi, Hyderabad, Multan and Lahore and around 60% of them produce small glass containers, tableware.

2.5 Major Issues Related to Glass Industry

According to Pakistan Glass Manufacturers Association (PGMA), Pakistan can compete with international market, if given a consistent supply of gas, due to which billions of rupees of revenue and employment is lost. Increasing industry growth and expansion is expected, however, there is a great dependency on stable economic and political environment of the country in order to boost this segment to new growth levels. High production cost and limited supply of gas are the major problems faced by the industry. The underlying causes for limited operations are as follows:

- Lack of vision for growth
- Fuel shortages
- Limited perception of business requirements
- Inability to deploy technology based equipment
- Restricted funding sources
- Lack of technology and training
- Inability to identify and explore new ideas

According to PGMA, the industrial, construction, residential, commercial, household and artistic use of glass provides an unlimited potential. The same remains untapped as the bulk of quality glass is being imported into the country to meet the specific demand.

Section III: Indian Glass Industry

The glass industry in India is quite old and well established. The first glass plant in India was set up in 1908⁷. The glass makers employed methods such as moulding, folding, twisting, double-stripping and wire-winding to manufacture glass. It remained largely a cottage industry for a long time. In recent years, the industry has transformed and developed. From rudimentary mouth blown and hand working processes, the industry has evolved to adopt modern processes and automation in a large way. However, mouth blown processes and handcrafted glassware continue to play a role in developing innovative designs in decorative and table glassware products that are exported in large quantities.

Glass industry in India is poised to grow rapidly owing to its extensive use in the numerous sectors. The market is driven by increasing disposable income and willingness to spend on better living standards due to rising aesthetic sense among consumers as well as glass being the preferred medium of packaging. The total glass industry is worth INR 180 billion in 2010⁸.

⁷ Report on “Glass and Ceramics: Market Opportunities” by Indian Brand Equity Foundation

⁸ ibid

Higher cost of input particularly Soda ash, which constitutes about 30 percent of cost of production of glass products, is one of the major factors contributing to the higher cost of glass and glassware.

The Indian Glass industry has been growing across all segments. This growth has been driven primarily by India's growing automotive and construction sectors in which glass is used. The container glass industry benefits from growing awareness on account of rising hygienic packaging demand, growing population, increasing per capita income of average Indians and low per capita glass consumption. Incidentally, the per capita glass consumption in India for container glass is 1.2 kg⁹, which offers tremendous scope for rise and glass consumption growth is expected in construction (9%), automotive (19%), consumer goods (10-12%) and pharmaceuticals (12-15%) sectors¹⁰.

During the quarter ended December 2011, the profitability of the Glass and Glass products sector was dampened due to the pressure on the margins. The margins of many major players were impacted mainly due to the rise in the raw material cost and power and fuel cost. HSIL, one of the major players in the container glass segment as steps to improve their margins have taken price hikes.

3.1 High Cost of Raw Material (Soda Ash)

The price of Soda ash is a major cost in the raw material segment. Higher cost of input particularly Soda ash, which constitutes about 30% of cost of production of glass products, is one of the major factors contributing to the higher cost of glass and glassware. Major manufactures of Soda ash in India are Tata Chemicals, GHCL (formerly Gujarat Heavy Chemicals), DCW and NIRMA (since delisted) and Saurashtra Chemicals (not listed). They continue to rule the Indian soda ash market by fixing the prices of soda ash based on the landed cost of imports.

⁹<http://www.rediff.com/money/report/budget-2012-sector-glass-industry-seeks-customs-duty-cut/20120315.htm>

¹⁰ ibid

3.2 Anti dumping Duty

The Akali Manufactures' Association has filed a case with the anti dumping authority for levy of anti dumping duty on imports of soda ash from China PR, EU, Kenya, **Pakistan**, Iran, Ukraine and USA. Production of soda ash from these countries constitutes about 80% of the world production. Prices of Soda Ash have increased by 20% during the last two years. Imposition of anti dumping will result in further increase in the prices of imported soda ash and Akali manufactures will further jack up the prices of indigenous soda ash with a view to increase their profit margin¹¹.

3.3 Growth and Sales of Indian Glass Manufacturing Companies

The aggregate Net Sales of 13 glass and glass product manufacturing companies grew by 9% to Rs 1366 crore during the quarter ended December 2011.

3.3.1 Hindustan National Glass (HNG):

Hindustan National Glass (HNG), the largest producer of glass containers in India reported 27% growth in the Net Sales to Rs 511.36 crore during the quarter ended December 2011¹².

3.3.2 Hindware Sanitaryware and Industries Ltd. (HSIL):

HSIL net sales grew by 22% year on year to Rs 337.41 crore for the quarter ended December 2011 primarily driven by the 25% growth in Container glass business and 18% growth in Building products business¹³.

3.3.3 Piramal Glass:

The Net Sales of Piramal Glass, leading global manufacturer of specialty glass containers, grew by 14% to Rs 227.70 crore during the quarter ended December 2011¹⁴.

¹¹ National Tariff Commission

¹² ibid

¹³ ibid

¹⁴ ibid

3.4 Future Investments by the Indian Companies

Major players in the glass industry have lined up investments worth Rs 7,000 crore for capacity expansion and new technologies over the next 2-3 years¹⁵. According to All India Glass Manufacturers, Hindusthan National Glass & Industries Ltd (HNG) has earmarked Rs 1,500 crore for adding 1,000 tonne per day (tpd) to its existing capacity of 3,000 tpd, over the next 12-18 months. For this, it would set up a new plant at Naidupeta in Andhra Pradesh and expand capacity of its Nasik plant.

City-based AGI Glaspac will also invest Rs 600 crore to double its capacity at its Bhongir plant to 900 tons per day by January 2012¹⁶.

The per capita glass consumption in India is 1.2 kg, compared with 8-9 kg in developed countries and 30-35 kg in the US. The Indian glass industry is pegged at \$2.7 billion. The flat glass market, at present, stands at 4,500 tpd and is growing at 16 per cent year-on-year while the container glass is at 7,000 tpd and contributes 55-60% to the overall glass market. Other glass (lighting, bangles, beads) market is at 1,500 tpd¹⁷.

Around 1.3 pounds waste is generated per person per day in India, whereas it is 4.6 pounds in the US. Glass recycling was very high in developed countries at 70-80%. In Denmark, 98% of bottles are refillable and 98% of those are returned to consumers. However, in India, only 40-45% of the finished products come for recycling and the rest goes for land filing¹⁸.

Conclusion

The production capacity of glass products in Pakistan ranges between 100 tonnes to 200 tonnes per day. Out of the total units, around 73 percent are situated in Punjab, 19 percent in North West Frontier Province (NWFP), 5 percent in Sindh and 3 percent in Balochistan. The gas supply in Punjab and NWFP has been severely disturbed in the last five years. It leaves the industry with

¹⁵<http://www.business-standard.com/india/news/glass-industry-linesrs-7000-cr/440931/>

¹⁶<http://www.business-standard.com/india/news/glass-industry-linesrs-7000-cr/440931/>

¹⁷http://www.dailytimes.com.pk/default.asp?page=2011%5C01%5C21%5Cstory_21-1-2011_pg5_14

¹⁸ ibid

no choice but to close down or reduce its production. Demand for glassware has shown a rising trend due to the increase in population and income among the buying segment of the population. The production of tableware stands at 30,000 tons annually while the demand has increased to 35,000 tons. Gap in demand and supply is met through the import of high quality glassware items that are currently not manufactured in the country.

High production costs in Pakistan are a major obstacle preventing glassmakers from being competitive in the international market. If the industry is only given smooth supply of gas then the manufacturers have the ability to compete any country. Government will lose billions of rupees as revenue. People will lose jobs while our consumers will spend foreign exchange to import glass products. Pakistan has potential in only three products in Indian market and these are Carboys, bottles, flasks, jars etc, Float glass and Glass mirrors.

The domestic glass industry of India is facing increasing competition in the global, as well as in domestic markets. State-of-the-art technology in manufacturing is becoming increasingly important in the industry. Modern technology and operations are replacing traditional methodologies in fibre glass composites. Such up gradation is driven by strong demand for fibre glass products, particularly due to growth in petrochemical sector and allied products. Some segments, like drawn glass in sheets, have been adversely affected by stiff competition in the international market. India's exports in this segment declined from US\$ 2 million in 2000 to US\$ 0.2 million in 2010. The container glass industry benefits from growing awareness on account of rising hygienic packaging demand, growing population, increasing per capita income of average Indians and low per capita glass consumption. Incidentally, the per capita glass consumption in India for container glass is 1.2kg .Another major obstacle faced by India is high cost of raw material (soda ash) and India has also imposed antidumping duty on Pakistan and other countries against China PR, EU, Kenya, Iran, Ukraine and USA. Production of soda ash from these countries constitutes about 80% of the world production.

Despite the growing demand for glass and glass products across India and subsequent growth in the sales, some factors are also creating hurdles for this industry in India. The major hurdle is the rise in the raw material cost that continues to hinder the growth in the Glass and Glass products

industry. Soda Ash prices are rising and the industry feels that the prices should be brought to the international level. Therefore, the glass manufactures federation has asked to abolish the customs duty on imports of soda ash. However, the government is unlikely to reduce / remove customs duty of soda ash.

Recommendations

- Glass manufacturing process requires continuous gas supply but due to fuel shortages, Pakistan glass industry is facing problems. Soda ash (raw material) prices have increased mainly due to gas shortage in the country. Therefore, government should take necessary steps for the continuous supply of fuel to the glass industry. Government should not bracket the glass industry with other industrial units because glass industry needs continuous gas supply
- Dumping of glass containers imported from Japan, Germany, China, Malaysia and the Middle East is a major impediment to the growth of this sub-sector of the glass industry. Therefore, strict antidumping duty may be levied on container glass.
- There is huge potential for expansion in the sector that can come through investment and technology up gradation so that high end products could also be manufactured in the country. Therefore, the government may privatize the sector through policy formulation for technology transfer through foreign direct investment and enabling environment for the firms to conduct R&D at firm level.

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Appendix

Revealed Comparative Advantage of India and Pakistan for the year 2010 of Glass Sector

HS Codes	Description	RCA_Pak(2010)	RCA_IND(2010)
'701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of	1	1
'700529	Float glass etc in sheets, non-wired nes	1	0
'701310	Glassware of a kind used for table kitchen, etc of glass-ceramics	3	0
'700490	Drawn glass in sheets nes	0	0
'701399	Glassware nes (other than that of 70.10 or 70.18)	0	0
'700510	Float glass etc in sheets, non-wird havg an absorbent or reflectg layer	0	1
'701337	Drinking glasses (excl. glasses of glass ceramics or of lead crystal a	0	0
'701391	Glassware nes of lead crystal (other than that of 70.10 or 70.18)	0	0
'701010	Ampoules of glass conveyance or packing	1	2
'701110	Glass envelopes (including bulbs/tubes) for electric lighting	0	0
'701341	Glassware of lead crystal, of a kind used for table or kitchen purpose	1	0
'700991	Glass mirrors, unframed	0	0
'702000	Articles of glass nes	0	1
'700420	Drawn glass sheets, coloured, opacified, etc.	1	3
'701610	Glass cubes&oth glass smallwares backd o not for mosaics o decor purp.	0	2
'701328	Drinking glasses, stemware (excl. of glass ceramics or of lead crystal	0	0
'701890	Articles of glass etc exc jewellery,glass eyes exc prosthetics etc nes	0	0
'700210	Balls, glass exc microspheres of No 70.18	1	0
'700600	Glass of 70.03, 70.04, 70.05 bent, edgeworked etc not framed etc	0	0
'701820	Glass microspheres not exceeding 1 mm in diameter	0	0
'701932	Thin sheets (voiles) of glass fibres	0	0
'701810	Glass beads, imitation pearls, imitatn precious/semi-precious stones etc	0	2
'701190	Glass envelopes (including bulbs/tubes) nes	0	0
'701940	Woven fabrics of glass fibre rovings	0	0
'701590	Clock or watch glasses etc curved/bent not optically worked, etc	0	0
'701333	Drinking glasses of lead crystal (excl. stemware)	0	1
'700910	Rear-view mirrors for vehicles	0	0
'700239	Tubes of glass nes	0	0
'701690	Paving blocks etc for building/const etc, leaded lights, foamglass etc	0	0
'701510	Glasses for corrective spectacles, not optically worked glass	0	0
'701020	Stoppers, lids, other closures, of glass	0	0
'700992	Glass mirrors, framed	0	0
'700232	Tubes of glass linear coef of exp </=5X10-6 per Kelvin within 0C-300C	0	7
'700719	Safety glass toughened (tempered) nes	0	0

'701790	Laboratory, hygienic or pharmaceutical glassware etc nes	0	1
'700319	Cast glass sheets non-wired nes	0	0
'701322	Drinking glasses, stemware, of lead crystal	0	0
'700721	Safety glass laminated for vehicles, aircraft, spacecraft or vessels	0	0
'700100	Cullet and other waste and scrap of glass; glass in the mass	0	0
'701912	Rovings, of glass fibres	0	0
'701931	Mats of glass fibres	0	1
'700530	Float glass etc in sheets, wired	0	0
'700711	Safety glass toughend (tempered) f vehicles,aircraft,spacecraft/vessel	0	0
'700231	Tubes of fused quartz or other fused silica	0	0
'700320	Cast glass sheets wired	0	0
'701342	Glassware for table or kitchen purposes of glass having a linear coeff	0	0
'701349	Glassware for table or kitchen purposes (excl. glass having a linear c	0	0
'701400	Signallg glassware&optical elemnts glass (o/t 7015) nt optically workd	0	0
'701911	Chopped strands o glass fibres, length, 50mm	0	0
'701939	Webs, mattresses, boards and similar nonwoven products of glass fibres	0	0
'701952	Woven glass fibre plain weave, <250g/m2 glass fibre	0	0
'700729	Safety glass laminated nes	0	1
'700800	Multiple-walled insulating units of glass	0	0
'701919	Slivers and yarn of of glass fibres	0	0
'700312	Cast/rolled sheet, non-wired, coloured/opacified etc	0	0
'700330	Cast glass profiles	0	0
'701710	Laboratory,hygienic/pharmaceuticl glassware etc fUSD quartz/silica nes	0	0
'701720	Laboratory glassw etc of oth glass linear expa etc</=5X10-6 Kelvin etc	0	0
'701951	Woven fabrics of glass fires <30cm wide	0	0
'701959	Woven fabrics of glass fibre nes	0	0
'701990	Glass fibres (including glass wool) and articles thereof nes	0	1
'700220	Rods, glass	0	0
'700521	Float glass etc in sheets, non-wired coloured throughout the mass etc	0	0