CLUSTER PROFILE

CERAMICS SANITARY WARE

GUJRANWALA

Turn Potential into Profit

Small & Medium Enterprise Development Authority
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1 Introduction – Gujranwala

Gujranwala District is situated on the main railway line connecting Lahore and Peshawar. The Grand Trunk Road runs parallel to the railway line and passes through the centre of the city. The Chenab River forms the northern boundary of the district. Gujranwala district is spread over an area of 3,622 Square Kilometres comprising of following four tehsils:

I. Gujranwala
II. Kamoke
III. Nowshera Virkan
IV. Wazirabad

Gujranwala district is one of the major industrially developed districts of the country. Keeping in view the availability of raw-material and skilled labor, Gujranwala district supports a variety of industries. It is centre of electrical and engineering goods manufacturing industries, plastic products industry and ceramic products industries.

2 Description of the Cluster

2.1 History & background of cluster

Gujranwala is quite known for its quality ceramics products. This industry not only caters the local market demand, but also contributes in exports to international markets. For years the manufacturers of this area have built their un-matched skills in design, aesthetics and quality. Their products speak for themselves and set higher standards of quality and excellence.

The know-how about this industry is a result of technology and skill transfer from Gujrat, where people have been associated with this sector prior to the partition. The first major pottery factory (M/S Premier Ceramics Limited) which was established in early 60's in Gujrat and subsequently the establishment of Institute of Ceramics, Gujrat in 1965 have contributed to the development of the trend/style, expertise about manufacturing of different products and in technology transfer. Over the years this industry has expanded and resulted in a long chain of ceramics factories in this area and still they are growing.

2.2 Description of Products

Ceramics are defined as products made from inorganic materials having non-metallic properties usually processed at a high temperature at some time during their manufacture. The word "ceramics" comes from the Greek word "Keramos" meaning "Pottery," "Potter's Clay," or "a Potter" - primarily used to mean "burnt stuff."

The technical definition of ceramics encompasses a much greater variety of products than is normally realized. To most people, the word ceramics means dinnerware, figurines, vases, and other objects of ceramic art. The majority of ceramic products is not generally recognized, as such is much more recent in development and in general is utilitarian rather than aesthetic. Examples are bathtubs, washbowls, sinks, electrical insulating devices, water and sewerage pipes, bricks, hollow tile, glazed

building tile, floor and wall tile, earthenware, porcelain enamel and glass. Variety of products is directly proportional to variety in clays being used in their manufacturing.

2.2.1 Ceramics Sanitary Ware:

In Gujranwala sanitary fitting was always a famous industry which continuous the demands for Ceramics Sanitary ware. Presently there are more or less 100 units, which are producing ceramics products in the following areas:

i. Sanitary ware
ii. Pottery
iii. Tiles
iv. Refractories / Firebricks

Amongst these product lines, sanitary ware is the major player. All these segments have approximately same raw material needs and in fact their suppliers are same too. Ceramics sanitary ware has great potential in local as well as in export market, therefore a large number of pottery units have shifted to towards this industry. Currently the Ceramic sanitary ware industry, Gujranwala is manufacturing the following products in various designs, sizes and specifications:

- Bathtub incl. legs
- Shower tray
- Washbasin
- Wash stand
- Toilet combination
- Wall toilet
- Bidet
- Urinal
- One piece toilet

The above mentioned products are documented in the following product groups:

- Ceramic sanitary of porcelain or china (HS 691010)
- Ceramic sanitary (HS 691090)

2.3 Core Cluster Actors

Total market size of Gujranwala Ceramics Sanitary ware Products:

S. No.	Description	Figures
1	Status	Organized + unorganized
2	No. of Units	65
3	Total Employment	5000
6	Capacity Utilization	90%
7	Technology Level	Labor Intensive
8	Automation Level	Low Automation

2.3.1 Sanitary Ware Manufacturers:

There are around 20 major players/dealers in this sector. They have developed contacts with the dealers in all over the Pakistan and market their products through these outlets. They are also exporting their products in Middle East, Africa and Central Asia. Some of the major exporters are 3 Star Ceramics, Rizwan Ceramics, Ihsan Ceramics, Asia Ceramics, Dar Ceramics, Minhas Ceramics, and Asif Ceramics.

2.3.2 Machinery Suppliers:

Spray booth, Glaze Containers, drums and kilns are the machinery used for ceramics sanitary ware factory. Kilns are designed by ceramics engineers and manufactured by the kiln makers. There are about 12 kiln makers which are experts and fulfilling the need of industry. Glaze containers, spray both and drums are prepared by the engineering sector of the Gujranwala.

2.3.3 Raw Material Suppliers:

Supply chain is crucial to this field and without proper raw material supply these units cannot keep up with the production. There are about 4 to 5 companies supplying raw material to ceramics industry in Gujranwala. The prominent names as ceramics raw material suppliers are M/S Star Ceramics Material, M/S JR Corporation (Importer & Wholesaler), Kareem Corporation (Local material supplier) and Chief Pottery. These suppliers procure clay from mine owners[1] and import barium carbonate and china clay from china and zirconium from England, USA, Italy, and Malaysia for fulfilling the raw material requirement of Ceramics Sanitary ware industry. However raw material supply is irregular and manufacturers have to face late delivery of raw material or shortage of raw material.

2.4 Geographical Location

Ceramics products are manufactured in many areas of Gujranwala. However the major cluster of sanitary ware products is on G.T. road towards Lahore, from Kamonke to Kangniwala. The biggest cluster of ceramics is in Atawa. It is approachable by metalled road. Other major concentrations of ceramics sanitary wares are in Muridke, Gakhar and Nawab Chowk.

2.5 Current Cluster Scenario

Growth trend of Ceramics sanitary ware idnustry has been increasing every year. The industry has not only fulfilling the domestic needs but also exporting small quantities of ceramics sanitary ware goods over the last few years. Though the exports trend in the past two decades has been insignificant volume wise and erratic, the capability of the sector for export exists keeping in mind the technology & know-how available with the manufacturers. The main reason for not achieving the

[1] Mine owners of Mianwali clay (Pocha) are only Mianwali residential pathans.

significant break through in exports by this industy is the uncompetitive cost structure of domestic products due to ever increasing utilities prices coupled with the high tariffs on imported materials.

3 Analysis of Business Operations

3.1 Production Operations

3.1.1 Raw Material:

Raw materials for body include Quarts, Feldspar, China clays and Ball clay, Mianwali clay, K.D. 7 Stone and K.D. 10 Stone. Raw materials for glaze include Quartz, Feldspar, Limestone, Zinc oxide, Barium oxide, Zirconium and ceramic colors. Plaster of the Paris is the material that is used for modeling and moulding of the Ceramics sanitary ware.

3.1.2 Slip Preparation and Glaze Making:

For the slip preparation the raw materials are mixed with water as per the requirement. Proper composition along with the sufficient amount of water then gets loaded to the ball mills for grinding.

Glaze is a glasslike, multi-ingredient, silicate thin layer, which adheres to the surface of ceramic body. It is usually sprayed upon dry body by manual or automatic spraying method, which after firing produces smooth, glossy, and surface with beautiful color and luster. So properties of glaze have large influence on quality of products. Generally ball milling is used to prepare glaze.

3.1.3 Casting and Drying:

Slip is cast into plaster moulds. Due to the absorption and water character of porous moulds, an even thin layer gets formed on the surface which becomes thicker with time. When a desired thickness is arrived, surplus slip is poured out. Finally the layer continues to retract by de-watering resulting in the gross body. Before next process, all products need to be dried to a low water content to increase the strength of body, which is called drying.

3.1.4 Glazing:

There are many glazing methods such as spraying glaze, dipping glaze, pouring glaze, brushing glaze etc. Sanitary wares are mostly adopted spraying glaze method because large volume complicated shape, low strength of body. Spraying glaze may be manual glazing or automatic glazing. Manual glazing is done in a booth with sufficient de-dust installation, and automatic glaze spraying is done on the conveying belt.

3.1.5 Firing:

These sprayed clay wares are then taken to the kiln for firing. As a result the bodies will take place a series of physical and chemical reactions, and will take a fixed shape.

The bodies are put in the entrance of tunnel and the products are pushed out from the exit. Fuel is burnt in the resisting firewall on both sides of tunnel. The tunnel kiln is consisting of three zones.

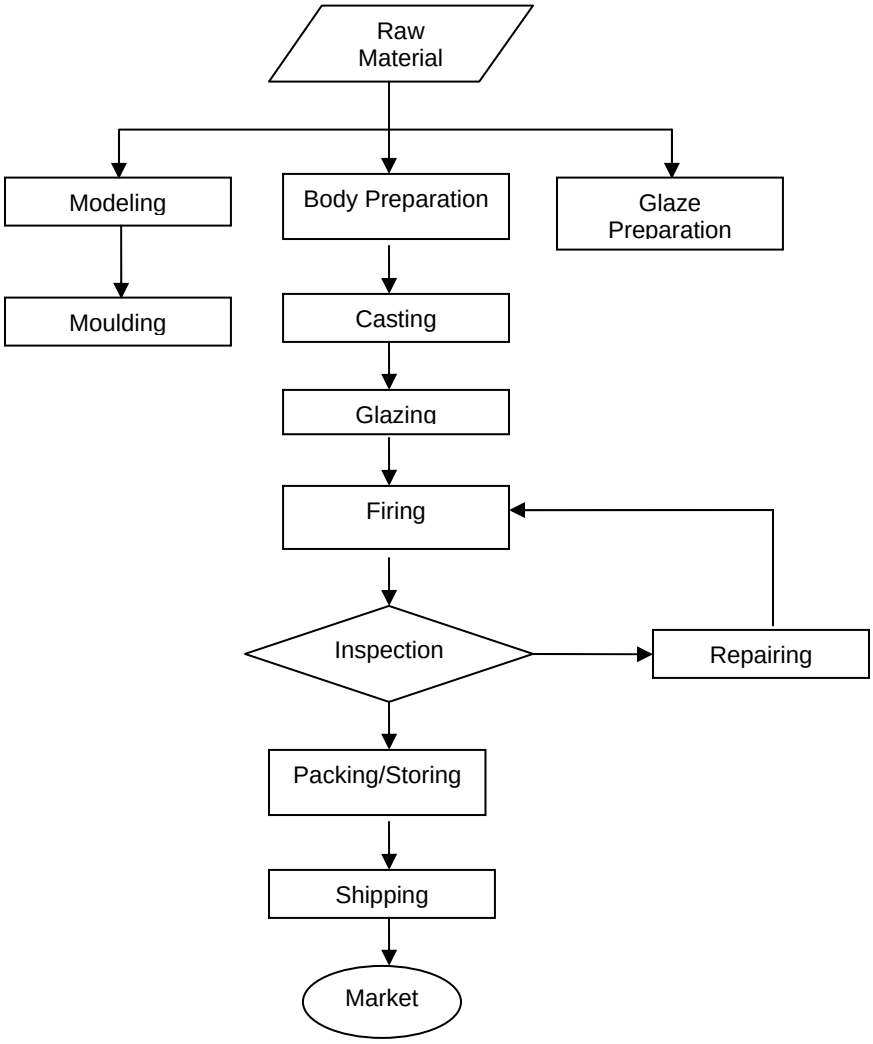
v. Preheating zone
vi. Heating zone
vii. Cooling zone

The heating zone has burners on the both sides, in the third section the product cools down by exhausting. The temperature of every section is strictly controlled by automatic ventilation equipment and the temperature-controlling facilities called thermo couples to ensure to fire every product evenly. Continuous kilns are classified as roller kilns and tunnel kilns, the roller kilns support and convey products by high temperature resistance ceramic rolling stick. In the tunnel Kiln, kiln cars are used that are made from steel frame wheels on which low mass refectories, silicon carbide board etc. are built to support products. These cars are pushed by hydraulic Pusher.

3.1.6 Inspection, Repairing, Re-firing and Packing:

This is the last process of production. Finished products are determined according to stipulated standards to select passed products and un-passed parts by repairing and re-firing. Passed products are carefully packed and then send to customers**.**

3.1.7 Process Flow Chart of Ceramics Sanitary Ware:



3.2 Raw Materials Availability

Raw material used in sanitary ware manufacturing is quite cheap. Raw materials are used in huge volumes and this makes their supply-chain an all important factor. Majority of the raw materials are imported and are supplied by the few raw material suppliers based in the local market.

- Zirconium is one of the costly raw materials used in glazing of ceramics sanitary ware products and is imported from England, U.S.A., Italy and Malaysia. Zirconium from England and U.S.A is considered of High Quality and also more costly than zirconium from Italy and Malaysia.
- K.D 7 Stone, K.D. 10 Stone and Mianwali clay (Poocha) are available in Mianwali. Only Mianwali residential can lease these mines.
- Mines of Sindhi clay are in Sindh area.
- Berfab clay is available from Swat.
- Distributors/dealers are importing China clay, Zink Oxide and Barium Carbonate from China.

- Quartz, Feldspar, Lime Stone, Kerosene oil and local clay are available in local market.

3.3 Quality Assurance

Supply chain is crucial to this field and without proper raw material supply these units cannot keep up with the production but there is one thing that is more important than any other thing and that is quality of the products and price competitiveness.

Currently the local market is being invaded by the cheap and better quality Chinese ceramics products. This invasion along with strong friction from other international manufacturers, local manufactured products are suffering from huge losses. Their biggest concern is the quality which requires high manufacturing cost and over whelming rejection rates (7 to 8 % scrap rate is common to this industry and sometimes it crosses this threshold too). One of the main causes of this problem is the low and inconsistent quality standards. There is no standards conformance control at the source (mines) from where the clay is excavated and manufacturers don't have any facility where this raw material can be pre-processed before being used in production line. The results are as follows:

i- Finished products show cracks after whole process of casting and baking has been undertaken which cause loss of man hours, machine hours and finance.
ii- Inconsistency of material causes pin holes and cracks which result into an extra fragile product which can rupture during use causing a fatal loss of customer satisfaction and further market penetration.
iii- Few manufacturers are setting up their own pre-processing setups which do not provide required material refinement and add to extra burden of pre-processing cost resulting in higher cost of production.
iv- Manufacturers can import preprocessed material from china and other countries but it would cost them more than double.

3.4 Technology Status

The technology employed by this cluster is traditional and old. In sanitary ware products SUI Gas cost makes up of 40% of the total manufacturing cost, due to the inappropriate design of Kiln and kiln furniture. Following are the common flaws in locally manufactured kiln:

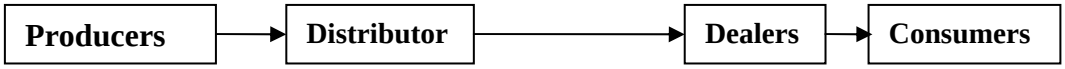
i- Excessive heat leakage from the walls and ceilings
ii- Exhausting flue gases at very high temperature.
iii- Incomplete combustion due to flaws in burner design.
iv- Presence of excess/low level of air than required from optimum combustion of the kiln.

By recycling the heat and kiln modification or use of imported kiln Gas consumption can be reduced.

3.5 Marketing & Sales

Manufacturers have developed contacts with the distributors in all over the country and place their product on the market through these outlets. Major distributors of Ceramics sanitary ware products are in three cities Karachi, Lahore and Rawalpindi. In Balochistan area, dealers are only operating in Quetta.

The distribution channel moves goods from producer to consumer.



There is large export potential for ceramics sanitary ware in Middle East, Africa and Central Asia. But unfortunately only 10 – 12 sanitary ware manufacturers are involved in export. There is not any specialized marketing department even in medium level units.

3.6 Financing

Almost all the registered commercial and industrial development banks of Pakistan have their branches in the cluster and providing the financing at competitive rates. But most of stakeholders depend upon their own financial equity based resources. It is also observed that the entrepreneurs normally prefer obtaining loan from the informal sources. Due to unawareness, ineffective information flow and paper work these entrepreneurs are reluctant to go to the financial institutions.

3.7 Human Resources

Human resource is present in abundance and skills are traditionally inherited. The owner usually deals with management issues and marketing related activities. Most of the labor is semi skilled and are trained on job. There is no specialized marketing or accounts department. They facilitate their sales only on the basis of personal contacts and no proper accounts are maintained therefore certain problems related to tax return, monitoring and evaluation are faced. Only primary or intermediate level employees are handling accounts. Glazing supervisor, Body supervisor, Kiln supervisor, Designing or molding in-charge and accountant are considered middle level management that are ceramics diploma holders or experienced persons and also easily available in the market.

4 Institutional Setup

4.1 Government & Semi-government Organizations

SMEDA, PSIC, EPB are three organizations which are providing facilitation to this cluster at the government level. SMEDA has a regional business centre in Gujranwala which provides various services; training services, marketing advice, technical advice, legal services, match-making and other business development services. EPB also has a regional office in Satellite town, Gujranwala and provides

facilitation in areas of participation in international trade fairs, exhibitions and trade delegations.

PSIC has been working for this cluster since 1974-75 in the form of Ceramic Research Institute, Gujrat. However PSIC also has a regional office in Gujranwala which helps in credit facilitation and establishing of new industrial areas.

4.2 Local Bodies/Chambers/Association

Pakistan Ceramics Manufacturers Association (PCMA) facilitates the ceramics stakeholder in SUI Gas, WAPDA and GCCI related issues also providing the sales tax filling services to its Ceramics sanitary ware and pottery stakeholders.

Gujranwala chamber of commerce & industry (GCCI) established in 1978, has more than 5650 members. GCCI provides various services to this cluster; arranging of Made in Gujranwala Industrial Exhibition for the promotion of local brands, trade delegations, research & development and information dissemination.

4.3 Private BDS Providers/Banks/Other Support Institutes

Regional Support institutions are a key factor in the development of strong cluster. There are following three educational institutes which facilitate research and knowledge transfer to companies:

1. Institute of Ceramics, Gujrat.
2. Govt. Poly Technique Institute of Glass & Ceramics, Lahore.
3. Pakistan Council of Scientific & Industrial Research, Lahore physical testing and chemical anylisis

Pakistan council of Scientific & Industrial Research, Lahore is conducting courses relating to phisical testing and chemical anaylsis. Other above institutes are offering three years diploma in ceramics technology. One year certificate in ceramics technology and three and six months short courses on specific fields i.e. costing or kiln technology.

Majority of the registered commercial and industrial development banks of Pakistan have their branches in this cluster. Financing from banks is easily available at very competitive rates.

Sr#	Name of Bank	Web Site of Bank
1	State Bank of Pakistan	www.sbp.org.pk
2	First Women Bank Ltd	www.fwbl.com.pk
3	Habib Bank Limited	www.habibbankltd.com
4	National Bank of Pakistan	www.nbp.com.pk
5	United Bank Limited	www.ubl.com.pk
6	Allied Bank of Pakistan Ltd	www.abl.com.pk
7	Muslim Commercial Bank Ltd	www.mcb.com.pk
8	Agricultural Development Bank of Pakistan	www.adbp.org.pk
10	Industrial Development Bank of Pakistan	www.idbp.com.pk
11	Askari Commercial Bank Ltd	www.askaribank.com.pk
12	Bank Alfalah Limited	www.bankalfalah.com
13	Bank Al-Habib Limited	www.bankalhabib.com
14	Bolan Bank Limited	www.mybankltd.com
15	Faysal Bank Limited	www.faysalbank.com
16	Meezan Bank Limited	www.meezanbank.com
17	Metropolitan Bank Limited	www.metrobank.com.pk
18	PICIC Commercial Bank Ltd	www.picicbank.com.pk
19	Prime Commercial Bank Ltd	www.primebank.com.pk
20	Soneri Bank Limited	www.soneri.com
22	Union Bank Limited	-
23	The Bank of Punjab	www.punjabbank.com
24	SME Bank Limited	www.smebank.org
25	House Building Finance Corporation	www.hbfc.com.pk

5 SWOT Analysis

5.1 Strengths

- Abundance of Low cost Labor
- Local base for machinery manufacturers
- Extensive supplier industry
- Strong linkages with other key regional clusters
- Entrepreneurial culture directed towards exports.

5.2 Weaknesses

- Non-availability of processed raw materials
- Large unorganized existence
- High Utilities Cost of utilities (gas & electricity)
- Lack of Modern Kiln technology leading to high energy losses (30%)
- Use of traditional techniques and technology
- Low R&D for product innovation
- Preference of informal credit
- No proper accounts maintenance and training
- Limited distribution channels and lack of marketing skills

5.3 Opportunities

- Rising domestic demand for tile, sanitary ware and table ware
- Large export potential in sanitary ware in Middle East, Africa and Central Asia.
- Exploit local expertise in related sectors, clusters technologies.
- Facilitate supply chain collaboration.

5.4 Threats

- Low priced import from china
- Changing consumer preferences
- Large surplus capacities in the international market.
- Increasing regulatory pressures

6 Investment Opportunities

The need for following projects as potential investment opportunities in Ceramics Sanitary Ware Cluster Gujranwala has been identified on the basis of the key strengths of this cluster:

- Processed Imported Raw Material Depot
- Processing Plant for Raw Material
- Trading (Relevant Machinery etc)
- Modern Kiln Designers
- Export marketing Consultancy
- Warehousing
- Local Machinery Manufacturing

A pre-feasibility on Ceramics Sanitary Ware (Manufacturing Unit) is available on SMEDA website and can be consulted for further information. The said document can be downloaded from http://www.smeda.org.pk . In case of any other relevant inquiry kindly visit SMEDA Regional Business Centre, Gujranwala.

7 Industry Overview (Annexure)

7.1 National Ceramic Industry

Ceramic manufacturing sector plays a significant role in the economy of Pakistan. The sector employs over 36000 people and contributes 0.1 % to total GDP of the country and 0.5% to the manufacturing GDP annually. Its contribution to exports of the country is about $ 12.30 million per annum. Ceramic sanitary wares and tiles are essential consumer items in the urbanized areas of the country. With rapid urbanization and new construction the demand for sanitary ware has increased manifold over the years.

7.1.1 Growth Trend of Pakistan Ceramic Industry

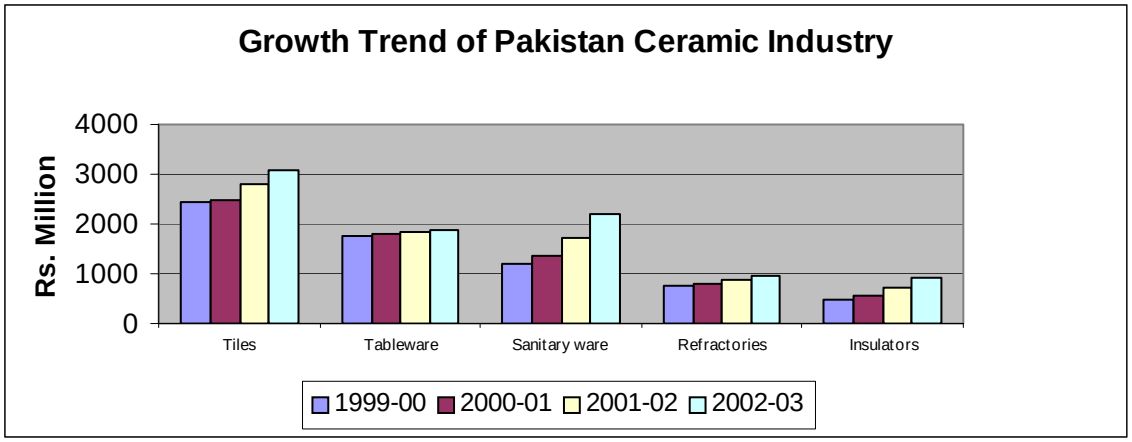
The growth trend of the Ceramics industry in Pakistan is shown in the following table.

Products[2]	**1999-00**	**2000-01**	**2001-02**	**2002-03**
Tiles	2427	2482	2784	3072
Tableware	1775	1792	1826	1896
Sanitary ware	1212	1380	1706	2194
Refractories	754	802	880	972
Insulators	476	570	734	916
Total	6644	7026	7930	9050

Products[3]	**1999-00**	**2000-01**	**2001-02**	**2002-03**
Tiles (million m2)	6.7	6.8	7.0	7.2
Tableware (Tons)	42200	42600	44000	45000
Sanitary ware (million pieces)	3.14	3.58	4.43	5.30
Refractories (Tons)	29000	31000	34000	38000
Insulators (Tons)	2600	3100	4000	5000

[2] Production in Rs. Million

[3] Quantity wise production



7.2 International

The total world export of the Ceramics industry is shown in the following:

Products[4]	1999-00	2000-01	2001-02	2002-03
Tiles	5,406	5,484	5,660	5,692
Tableware	2,204	2,164	2,048	2,072
Sanitary ware	1,620	1,608	1,760	1,806
Refractories	956	928	972	960
Insulators	438	426	482	494
Total	10,624	10,610	10,922	11,024

Source: Expert Advisory Cell

[4] Volume wise world exports ($ Million)