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Study and Evaluation of the Non-Technical Factors
Affecting the Indian Glass Producers

UNIDO Contract No. 2000/189

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grow by about 10% per annum and may be around 3500 tones by 2002 and 2003. Production of opal glass/table-ware commenced in the country in 1987 and the product range includes cups & saucers, mugs, plated dishes, bowls etc. In addition to serving the local market these products are also being exported. Production of Lead Crystal Glass with 24% lead has also commenced in India.

3. Flat Glass

The terms "Flat Glass" comprises of Float Glass, Sheet Glass, Figured Glass and Wired Glass. These are further processed into Mirrors, Toughened Glass, Laminated Glass, Double Glazing, Etched Glass, Glass Doors, Automotive Glass etc. Their installed capacity, domestic sale etc in 1995-96 was as under:

| S. No. | Name of product | Installed Capacity | Domestic Sales | Exports |
|--------|---------------------------------------|--|---------------------------|---|
| 1. | Float Glass | 70 million M ² . on 2 mm thickness basis | 40 million M ² | 21 million M ² (worth Rs. 125 crores) |
| 2. | Sheet Glass | 66 MSM on 2 mm thickness basis | 46 MSM | NIL |
| 3. | Figured, wired and Rolled Glass | 37 MSM on 3 mm thickness basis | ~ 22 MSM | 3 MSM |

Combined domestic demand for Flat Glass and Sheet Glass by the year 2002 is expected to be around 125 MSM at a compound annual rate of 10% as against the likely installed capacity of 178 MSM. As regards Figured, Wired and Rolled Glass it is expected that by 2002 the domestic sales will be 40 MSM and exports will be 6 MSM at a growth rate of 10 % per annum whereas the installed capacity is 37 MSM on 3mm thickness basis.

4. Vacuum Flasks & Refills

There are about 10 manufacturing units with a total installed capacity of around 50 million pieces per annum and their production around 45 million pieces. It is expected that the domestic demand may go up from 25 million pieces to 40 million pieces per annum by 2002 at a growth rate of about 10 % per annum and the total demand during 2000-2002 would be around 50-55 million pieces. The quality of Vacuum Flask Refills produced in India has an excellent acceptability even in developed countries. Nearly 30% of the present production of Refills is exported to countries like USA, UK, Germany etc. About 50% of German Flasks contain Indian Refills.

5. Laboratory/Scientific Glassware

The installed capacity for the Laboratory Glassware is around 7000 tones whereas the demand is only around 3500 tones. The growth rate is expected to be around 3% per annum during the period 1997-98 to 2001-2002. The installed capacity of chemical process equipment was 600 tones whereas the demand was 380 tones. The growth rate is expected to be 7.5% during 1997-1998 to 2001-2002. There is demand for Thermometer Tubing, Special Glass and Quartz Tubing used in lighting (e.g. Sodium Vapour Lamps, Mercury Vapour Lamps and Halogen Lamps) as for Laboratory applications.

6. Glass Shells

There are about 15 units manufacturing glass shells/tubes in the organized sector and over 300 units in the small scale sector. The lighting industry was started in 1932-33. Since then it has made a giant leap in capacity and production. During 1996 the production of GLS Lamps both in organized and small scale sector was 682 million and Fluorescent Lamps 109 million HPSB and HPMV. Lamps 2.26 million pieces. Glass shell is an indispensable component of electric lamps. The installed capacity of Glass Shells is expected to be around 1800 million pieces in the year 2000.

7. Fibre Glass

Fiberglass is used to give mechanical strength to the composite material and is used with plastic material to produce Fiberglass Reinforced Plastic (FRP). It is non-corrosive, lighter than Aluminum and stronger than steel.

Fiberglass industry is highly capital and technology intensive. Presently FGP Ltd, U.P. Twiga & Binani Glass Fibers are manufacturing fiberglass in India. As against the installed capacity of 20,000 MT, the present demand is 13,000 MT. The expected growth rate is 20%. By 2000-2001, the demand may go up to 25,000 MT and installed capacity to 50,000 MT.

8. Glass Bangles, Beads And Novelty Items

There are around 310 units manufacturing various innovative items of glass such as Bangles, Beads, Block glass, Lamp Shades, Chandeliers, Vacuum Glass Refills, Perfumery Bottles, Auto light covers, etc. Most of the units are located in and around Firozabad. The annual sales of these items are about Rs.535 crores. Skilled craftsmen of the area are manufacturing these items. Most of the artisans use traditional skills passed over from one generation to the other. About 500 units are engaged in finishing and decoration of various glass items. This segment of the industry employs about 2 lakh persons. In

spite of several handicaps, the glass industry in this city has continued to grow.

List of FDI collaboration casco Giant industry approved by Govt. of India from August 1991 to February 1997 is placed at **Annexure 1**.

NATURE OF FIROZABAD CONCENTRATION

According to available information there are 229 registered small scale and cottage industries in and around Firozabad which produces about 70% of the total glass products in small sector in India.

The concentration of SSI units in Firozabad area is due to availability of skilled labour only, raw materials are brought to Firozabad from distant places.

Earlier most of these units used coal fired furnaces (Direct coal fired glass tank furnace or pot furnaces) with or without regenerative/recuperative systems attached to these furnaces. Some block glass making units were having pot furnaces without chimney for creation of draft. Gradually tank furnaces were provided with recuperative and regenerative system for waste heat recovery whereas the design of pot furnaces remained practically unchanged.

In these small tank furnace units, running on natural gas, the cost of fuel for melting one tone of glass comes to an estimated cost of Rs.1400/- where as these days the acceptable economic cost is Rs.600/- per tone.

Some units still use crude conventional coal gasification plants with poorly controlled admission of air and no steam, sometimes without any arrangement for steam insertion. These furnaces therefore generate gas with low calorific value. The maximum Temperature is less than 1400°C. As a result most of these furnace barely reach a daily molten glass pull rate 20-25 tones producing poor quality soda lime glass with high alkali content, low stabilizing oxide and high coefficient of expansion, low chemical resistance and durability. The process is therefore cost-inefficient and the quality of products is much below International Standards and incompetent. There is a great scope for developing proper furnaces for melting glass with liquid or gaseous fuel.

NON TECHNICAL FACTORS AFFECTING THE COMPETITIVENESS AND SUSTAINABILITY OF INDIAN GLASS INDUSTRY

Glass making is a highly complex process involving fusion of different oxides at a fairly high temperature (ranging between 1400°C to 1500°C) followed by shaping it into various shapes either manually or mechanically, followed by controlled cooling called Annealing. The raw materials, the fuel, the wages, the taxes, the infrastructure, and the allied factors, all directly or indirectly affect not only the cost input but also the quality of the product as well. The range of products is highly diversified, yet an analysis of major product group indicates a cost bifurcation as under:

| | | |
|----|---------------------|-----|
| A- | Raw Materials | 20% |
| B- | Fuel | 30% |
| C- | Manpower | 25% |
| D- | Other miscellaneous | 25% |

It is thus observed that raw materials, fuel and manpower constitute a major chunk of the cost input. It is therefore proposed to study the variation in each of these factors based on geographical location and their effect on competitiveness of the product.

It has further been observed that although the glass units are scattered all over the country yet most of the industries are concentrated in the region of West Bengal & Bihar in the East, Gujarat & Maharashtra in the West, Delhi & Firozabad in the North and Tamilnadu & Karnatka in the south. The present study therefore focuses on the aforesaid geographical regions.

RAW MATERIALS

The major raw materials used in Glass industry are Quartz Powder or Sand, Calcite or Limestone, and Soda Ash. While Sand / Quartz and Lime Stone/ Calcite are naturally occurring minerals, the Soda ash is prepared Chemically. The price of a raw material naturally depends on several factors such as purity, beneficiation, grading, transportation and handling etc. Unfortunately, in India no uniform standards have been adopted for their use in Glass Industry. It is more of a balancing exercise between the price a finished product can fetch in the market and the quality of raw material that is permitted within that cost structure. Yet there is not much dissimilarity in the standards adopted between major users like container glass or sheet glass. The table below gives an idea of landed cost of major raw materials to plants located in different geographical regions:

| Raw Material | Cost of Material in Rupees per ton | | | | |
|--------------|------------------------------------|---------|----------|----------|-------------|
| | Eastern | Western | Northern | Southern | % Variation |
| Quartz Sand | 1000 | N.A. | 1000 | 985 | 01.5 |
| Silica Sand | N.A. | 878 | 700 | 920 | 23.9 |
| Calcite | 1215 | N.A. | 1125 | 1570 | 28.3 |
| Limestone | N.A. | 1350 | N.A. | 1097 | 26.1 |
| Soda Ash | 9885 | 10183 | 11200 | 8771 | 21.7 |

It is observed from the table above that while the price of Quartz does not vary much from one region to another, the remaining raw material vary as much as 28%. This is a very significant difference and can affect the production cost to the extent of 5%. However, it is noticed that the variation is non-linear, meaning thereby that all the raw materials are not on the higher side in one region. If Calcite is costliest in South, Soda Ash is the cheapest. The net result of this variation on the production cost may therefore be reduced to 3 % between one region to another.

FUELS

The fuels used for glass making are classified as under:

- Solid fuel - Coal
- Liquid fuel - Residual Fuel Oil (RFO), LSHS, LDO
- Gaseous fuel - Natural gas, Liquefied Petroleum Gas (LPG) Propane

Until 1994, mostly solid and liquid fuels were used by the glass industry. In some regions Natural gas, wherever available, was preferred for its lower cost, neatness and thermal efficiency. The difference in cost of the different fuels was bearable in view of marketability of the products. After that the trend of price hike in different fuels gradually led to significant difference in cost of these fuels.

Heating values (technically called the Calorific Values) of different fuels and its cost vary quite widely. Cost wise efficiency of utilisation of the three types of fuel differ very widely especially in view of its basic cost and corresponding percentage excess air required for complete combustion. Other factors like ease of handling, transportation, control and continuity of supply affect the utilisation efficiency further. An approximate quantitative comparison of different fuels based on their calorific values is tabulated below.

| S. No. | Fuel | Calorific Value | Unit Price | Cost per 1000 K Cal | Cost compared to Natural gas |
|--------|-------------|----------------------------|-----------------------|---------------------|------------------------------|
| 1 | Coal | 5500 Kcal/Kg | 3.2 / kg | 0.58 | 0.95 |
| 2 | Furnace Oil | 9400 Kcal / Litre | 12.5 / Litre | 1.33 | 2.18 |
| 3 | Diesel Oil | 9200 Kcal / Litre | 18.0 / Litre | 1.96 | 3.20 |
| 4 | Natural Gas | 9000 Kcal/ NM ³ | 5.5 / NM ³ | 0.61 | 1.00 |
| 5 | LPG | 11200 Kcal/Kg | 25.3/ kg | 2.26 | 3.70 |
| 6 | Propane | 11400 Kcal/Kg | 22.6/ kg | 1.98 | 3.24 |

A summary of qualitative comparison of the properties of different fuels has been tabulated on the following page.

| S. No. | Particulars | Performance | | | |
|--------|------------------------|-------------|-------------|-------------|--------------|
| | | Solid Fuel | Liquid Fuel | Natural Gas | LPG/ Propane |
| 1 | Storage Area | Very Large | Medium | None | Very Large |
| 2 | Transportation Cost | Very Large | Medium | None | Very Large |
| 3 | Handling Cost | High | Medium | None | None |
| 4 | Fuel waste heat loss | High | None | None | None |
| 5 | Excess Air requirement | Very high | Moderate | Very Low | Very Low |
| 6 | Combustion efficiency | Poor | Very good | Excellent | Excellent |
| 7 | Temperature stability | Poor | Very good | Excellent | Excellent |
| 8 | Combustion control | Poor | Very good | Excellent | Excellent |
| 9 | Working environment | Very dirty | Dirty | Clean | Clean |
| 10 | Consistency of quality | Poor | Very good | Excellent | Excellent |
| 11 | Continuity of supply | Good | Very good | Excellent | Very good |
| 12 | Pollution Level | High | Moderate | None | None |
| 13 | Effective cost | Moderate | High | very Low | Very high |

It is obvious from the above tables that the availability of Natural Gas has completely changed the fuel scenario for the Glass industry. The recent hike in the price of petroleum products has worsened the situation so much so that it is now uneconomical to run the plant on any fuel other than Natural Gas. LPG, Propane and Diesel Oil cost almost three times to Natural Gas, while Furnace Oil cost almost two times. The result is that many units across the country having no access to Natural gas have either become inoperative or rendered uncompetitive. Besides this large variation in price of one fuel to other in the geographical location too affects the price as evident from the table below:

Percentage variation in fuel cost in different geographical regions

| Fuel | Eastern | Western | Northern | Southern | % Variation |
|----------------|---------|---------|----------|----------|-------------|
| Coal | N.A. | N.A. | 3200 | N.A. | N.A. |
| Furnace Oil | 11806 | 12600 | 12500 | 10420 | 17.3 |
| Diesel Oil | 15174 | N.A. | 18000 | N.A. | 15.7 |
| Natural Gas | N.A. | 8380 | 5500 | N.A. | 34.4 |
| LPG | N.A. | 24340 | 25300 | N.A. | 3.8 |
| Propane | N.A. | N.A. | 24500* | N.A. | N.A. |
| Electric Power | N.A. | 6160 | N.A. | 4050 | 34.25 |

While the price difference in case of furnace oil is to the extent of 17%, it is 34% in case of Natural gas. In fact the difference for Natural gas is much too enhanced if compared to the proximity of pipeline. The difference in cost of most fuels is explained by transportation cost and levy of local taxes. The price structure of Natural is based on several factors as explained in following narration.

Natural gas in India is mainly produced (almost to the extent of about 90%) by the Oil and Natural Gas Corporation Ltd. (ONGCL) and the remaining 10% is produced by Oil India Ltd. (OIL) and some other private companies. But the transportation, supply and distribution of Natural Gas has been entrusted to the Gas Authority of India Ltd. (GAIL) another Public Sector Enterprise to the extent of about 95% and the balance 5% is with OIL. GAIL supplies about 62 MMSCMD (Million Standard Cubic Meters per Day) of gas to different consumers in India, and OIL supplies about 4 MMSCMD. The major sectors, which consume Natural Gas, are fertilizers (about 28 MMSCMD), Power (about 25 MMSCMD), Sponge iron and other (about 4 MMSCMD).

The use of natural gas by the Glass Industries in India is very small. GAIL supplies about 0.4 MMSCMD of gas to about 64 glass and ceramic industries in Firozabad (U.P.), where 70% of the small scale glass industries in India are located. There are more than 200 industries in Agra-Firozabad region which are waiting for gas connection and it is learnt that 100 industries will be supplied gas to the extent of about 0.4 MMSCMD in the near future. In addition to this, there are a few industries in Gujarat, which is also supplied natural gas by GAIL.

The transportation, supply and distribution system of natural gas by GAIL mainly consist of the Trunk and loop lines of Hazira (Gujarat), Vijaipur (M.P.) and Jagdishpur (U.P.). This is the national backbone of natural gas supply in India covering 2300 KM HBJ Pipeline owned by GAIL is about 4100 KM and the volume of gas supplied per annum by Gail is about 20 BCM (Billion Cubic Meters) which is equivalent to 60 MMSCMD.

In order to avoid imbalance in sectoral distribution or region-wise distribution of gas prices, Government of India has decided to regulate the prices of natural gas in 1987. However, after liberalization, on the recommendations of a Committee, it has been decided to allow the gas prices to be on the basis of international price of fuel oil, and the linkage has been set at 55% to 75% as general price and 30% and 45% as concessional price for the North – Eastern States for 1st October, 1997 to 31st March, 2000 respectively. In view of the above, following were the prices for general consumers vis-a-vis NE consumers:

| Quarter | | General Consumers Price | Rs/1000 SCM N.E. Consumer's Price |
|-------------|------|-------------------------|--------------------------------------|
| Oct-Dec | 1997 | 2150 | 1200 |
| Jan-March | 1998 | 2411 | 1315 |
| April-June | 1998 | 2271 | 1250 |
| July-Sept. | 1998 | 2246 | 1307 |
| Oct-Dec | 1998 | 2222 | 1200 |
| Jan-March | 1999 | 2215 | 1274 |
| April-June | 1999 | 2167 | 1224 |
| July-Sept. | 1999 | 2499 | 1499 |
| Oct-Dec | 1999 | 2850 | 1700 |
| Jan-March | 2000 | 2850 | 1700 |
| April-Sept. | 2000 | 2850 | 1700 |

*Monthly basis for last six months.

The current consumers price of natural gas for general consumers is Rs. 2850 for 1000 SCM and Rs. 1700/- per 1000 SCM for NE consumers linked with 10000 K Cal Net/SCM. The NE consumers enjoy concessional rates on account of Government policy. In addition to this, the consumers have to pay transmission charges, besides statutory levies. Transportation charges for industries located along BHJ line are Rs. 1160 per 1000 SCM (Linked with 8500 K Cal. Net/SCM). However if the consumers are located away from BHJ pipeline, additional transportation charges are levied on the basis of investment made by GAIL on laying requisite additional pipelines and other facilities. There is also a variation in the transportation charges due to depreciated cost of the pipeline, depending upon the age of the pipeline. Therefore, different prices are paid by different industrial users in fertilizer, power, sponge-iron, glass and ceramic sector depending on the distance of their locations from the trunk lines.

Some industrial consumers who pay higher prices resent inter-state price disparity. But as explained earlier the differential price is due to location distance. The industrial units near the trunk lines pay less price than their counterparts in Firozabad; this difference is not important as there are a number of industries in Gujarat which are located away from trunk line and pay even higher than general transportation charges of Rs. 1150 per 1000 SCM.

The uniform rate of gas supplied fixed at Rs. 2850 after August 2000 is subject to certain variations. Consumer price of gas is linked to caloric value

of 10,000 K Cal per SCM. The existing linkage between price and calorific value will be retained till gas prices can be denominated in terms of calories.

In glass and ceramic industries, quality of the product is critically dependent on the quality of fuel. Natural gas is a clean and environment friendly fuel. Therefore, it is preferred to other fuel. Even by paying a little higher price, the glass manufacturers enjoy considerable cost advantage over liquid fuel/coal users. Price of LPG is fixed on monthly basis on tariff adjusted on import parity price and other administrative price mechanism. Therefore, there is a wide variation in the country in the prices of LPG in different months.

LABOUR

The glass production units can be classified into three categories viz. Fully Automatic, Semi automatic and manually operated. Apparently the deployment of labor in these categories is in reverse sequence. Manually operated units being highly labour intensive, while Semi-automatic and Automatic units have lesser manpower engaged for per ton of glass produced. Not only the number is important for the industry, it is the skill, which is equally or rather more important. Glass forming is a combination of high temperature multistage consecutive operations. Faulty and or delayed operation at any stage results in poor quality and productivity. To avoid human error several operations have been mechanized yet a large number of units especially in small scale employ highly skilled labour. For quality production at high performance rate in manual working system, all the workers must be of the desired level of skill. Lower level and in-synchronism of skill affects both the quality of production and the productivity, which may lower the performance of industry to large extent. Manual glass production process can be made efficient with a highly proficient team.

The availability of skilled labour has always remained a problem for glass industry. There is no training centre/ institute offering regular training in glass production or forming techniques. Some effort has only recently been initiated by CDGI. Further, skill development is a long drawn process. The normal practice has therefore been to engage a young unskilled worker and attach him to a senior skilled worker. In about three to five years time this young worker acquires adequate skills to work independently. This precisely explains the development of a cluster like Firozabad where skilled labour grew on the pattern explained above and industry kept growing on the strength of the availability of skilled labour. Even in cases where small industries are located elsewhere, their demand of skilled labour is mostly met by Firozabad. Like wise the larger units meet their demand of skilled labour through in-house training. The introduction of various training programmes by CDGI is certainly a welcome step in the right direction.

The cost of labour is related to skill. While the labor laws regulate the minimum wages for different category of workers, there is no upper limit to payment of wages, which is governed by the level of skill, the market forces and allied. It is also a fact that smaller the size of unit, the larger is the share of labour in the total input cost. This variation is, therefore, quite significant, varying between 10 % for larger units to as much as 25% for smaller units. Geographically there is not much variation either, yet units located in the Western and Southern parts of the country pay slightly higher to their counterparts in Northern and Eastern parts. The total variation in labour cost is not envisaged beyond 2.5%.

The small industry sector in general is regulated under labour laws, environment laws, tax laws and land use policy of the local state Governments. The labour laws consists of P.F. Act Employees State Insurance Act, Factories Act etc. The implementation of these Acts through various State agencies cast enormous burden of paper work on small scale entrepreneurs and make them often susceptible to harassment by the agencies. This takes away a lot of their valuable business time and their mental peace. Although labour laws are meant to protect the interest of work force from the extortion and harassment of the employers, the implementation of labour laws by field level agencies cause many unintended problems. The implementation of labour laws is done by agencies. This causes disruption of work and also creates an adversarial relationship between employee and employer. Often mind set is created among the labour unions to think of their rights only without considering the long – term interests of the enterprise, which only is the source of their well being. It however has to be asserted that many employers sometimes become extortionate and take away all the profit without giving commensurate benefits to the workers. That kind of approach is also detrimental to the long-term interest of the entrepreneurs. It is necessary to maintain a delicate balance between these two tendencies for an enterprise to survive and grow.

The same situation prevails in glass industry also. Since large number glass industry units are small and tiny and operate at almost subsistence level with marginal profit, the difference between employer and employee in economic terms is negligible. This leads to harmonious co-existence of employees and employers, and they work mostly without conflict. But when Govt. agencies come to enforce labour laws, this harmony is upset because no enterprise is in a position of perfect compliance of State laws; and the law enforcing agencies can create problems on account of some violation of law or other. Some of the in-disciplined elements in the work force foment trouble with the indirect help of some of these agencies.

It is necessary that while enforcing labour laws, total perspective in the employer-employees relations in small glass industry should be taken into account, and the harmony that prevails should be preserved in the interest of these micro-enterprises. Only when there is any serious violation of laws affecting workers, they should first consider the overall impact of their interventions and only then intervene with tact and care.

This cannot be done by a multiplicity of agencies often working in a negative manner but by one agency at a sufficiently senior level who should take a holistic view and protect the genuine interest of the industry while enforcing State laws.

It is being widely felt since liberalization that right to ownership and freedom to start a business should be accompanied by the implicit right to manage and to retain and develop hard working and disciplined employees and remove the inefficient and in-disciplined employees. It is also being felt that since in globalized business environment, technology up-gradation is a crucial necessity to achieve international competitiveness; the employers must enjoy this right. But a more fruitful approach will be to take care of the clusters by posting one agency or functionary who should be careful in administering labour laws tenderly and tactfully taking into account the technical aspects also and also the overall employer-employees relationship. Mere mechanical enforcement of laws without caring for the consequences would be counter-productive.

TAXES

Taxes constitute essential part of input cost. Custom duty, Excise, Sales Tax, Entry tax are levied on the raw material & fuel while Excise duty and Sales tax are imposed on finished goods. Thus there is a multiplicity of taxes, which are reflected in the end product to the extent of 25% of the product cost. The taxes are of course essential, but when the same tax is levied on raw materials as well as on finished product the effect is multiplied. Excise and Custom duty being levied by Central Government have in-built uniformity. However a recent decision by the state governments to maintain uniform rate of sales tax has led to equality of this tax too. Thus it is observed that geographically too there is uniformity in taxes. Some states/ local bodies are considering the levy of entry tax, which is not well defined at this stage, and if imposed may introduce regional inequalities.

CREDIT

The problem of bank credit to Small Industries in Glass & Ceramic sector are the same as confronted by the SMEs in general. The figure of credit from Govt. of India to this sector specially is not even separately available. At the end of March 1999, the total outstanding bank credit (Public Sector, Private and Foreign Banks) was Rs. 51,585 crores which was 17% of the net bank credit. During 1998-1999 the outstanding credit to small scale industry has increased by Rs. 5,544 crores. The problem regarding the credit to small sector pertains not so much to adequacy of loan amount to timeliness.

It has been observed that working capital needs of SSI Sector, particularly that of small and tiny industry, are not adequately met by the banks for the reason that the banks arbitrarily reduce the credit limits. Even sanction of working capital loan takes inordinately long time and the entrepreneurs do not get the funds in time. Most of the glass industry units being very small are unable to cope up with transaction demands on their ability and patience.

At present banks are giving working capital loans whereas term credit is being provided by financial institutions like SFC (State Financial Corporation). This necessitates a lot of coordination work which most of tiny entrepreneurs are unable to cope with. It is this managerial problem which afflicting the credit situation in this small sector. The branch managers often do not appreciate the problem of these entrepreneurs and if they do, they do not often have discretion of offering quickly, ad-hock assistance which is of crucial nature to these tiny entrepreneurs.

It was therefore felt that

- I) There should be specialized SSI bank Branches.
- II) There should be enough power to branch and regional level banks to sanction credit limits.
- III) Bank should conduct sample survey of performing SSI accounts to find out the adequacy and timeliness for the credit.
- IV) As far as possible, composite loans should be sanctioned to SSI units and regular meetings by banks at zonal and regional level should be held with SSI units. Simplification of the procedural facilities by banks should take place so that the tiny entrepreneurs are able to handle them easily.

The more successful small industries in the glass industry sector are not facing problems on account of bank credit. The development panel which was setup for glass industry in 1997 under the chairmanship of Mr. C.K. Somany had only suggested that "it is imperative that rate of credit should be lowered to 8%". Although they wanted some physical concessions for the glass industry they did not voice any great concern about inadequacy of bank credit to the industry.

Today in India there is a multi-agency credit structure, which caters to the financial needs of SSI sector. Small Industries Development Bank of India (SIDBI), Commercial Banks, Regional Banks, Cooperative Banks, State Financial Corporations, State Industrial Development Corporations, State Small Industries Development Corporation, National Bank of Agriculture and Rural Development (NABARD), Specialised Statuary Bodies like KVIC, Choir Board, Handloom and Handicraft Boards and National Small Industries Corporation are serving the small scale industries sector. Therefore there is no dearth of institutional arrangements for credit dispensation.

The total credit flowing into the SSI sector is also very impressive. SIDBI has itself sanctioned and disbursed a "cumulative assistance of the order of Rs.362.64 billion and Rs. 267.02 billion respectively by March 1998". Although Nayak Committee had estimated in 1991 the term loan requirements of SSI sector during 8th plan period at Rs.137 billion of which Rs. 99.50 billion was expected to come from SIDBI, the actual term credit to SSI sector during that period was Rs. 120 billion. The total additional long-term credit requirement during the 9th five-year plan would close between Rs. 345-365 billion. Therefore in terms of volume of credit flowing into the Small sector, there is prima facie no problem.

What afflicts the sector is, therefore, the lack of timely credit and lack of adequate credit to individual units although the aggregate picture gives a satisfactory picture. Once a unit does well and establishes its position in the market, the promoter of that unit gradually enjoys financial credibility and also clout to take loans from the banks or financial institution. But the struggling units often go unsupported by the system and fail to garner requisite resources in time of critical business needs. Consequently many become sick and are not able to recover.

It is the crux of the Credit problem of the Small sector in general as well as the Glass Industry sector. To solve this problem only institutional arrangements will not do.

It is necessary to create special institutional mechanism and also delegated enough financial powers to the functionaries who man the institutions. But

more importantly, these functionaries should be selected with such care that their attitude, character and professional competence enable them to understand the problems of the struggling units with empathy and use their delegated powers to offer timely financial assistance. Without an empathetic personality all empowerment is futile. Since we cannot create personalities of this caliber everywhere it will be necessary to do the following:

1. Identify the concentrations of SSIs in the country.
2. Place functionaries specifically selected for this purpose at a sufficiently higher level in these specific areas.
3. Empower them adequately to sanction financial assistance to a unit immediately in times of need without delay. Make the procedure simple for an average entrepreneur.
4. Monitor their performance regularly and rigorously. Associations of Glass Industry, which should be strengthened by Govt. supports, should do this.

Firozabad cluster in Glass Industry is an obvious concentration where this can be arranged immediately. This should be replicated in all clusters in India with appropriate modification.

In India Govt. is thinking of diluting its equity in Nationalized Banks; in that situation, directed loans to the target sectors may suffer. But with conscious monitoring by the Associations of Industry and also government agencies, the lending system of the Banks may be cleaner and more effective in catering to growing SSI units without having to finance sick units under target obligations.

EXTERNAL TRADE POLICY AND GLASS INDUSTRY

The impact of trade policy on glass industry is to be assessed under the following two heads:

I EXIM POLICY AND GLASS INDUSTRY

A. Impact of **Import Policy** regime on the industry.

B. Implications of **Export Policy** of the Government on the industry.

II. MULTILATERAL TRADE POLICY INSTRUMENTS AND GLASS INDUSTRIES.

I Export & Import Policy is one of the important instruments influencing the prospects of the glass industry. It has two facets: Import controls and exports promotion.

I(A) Import control regime of the government, which is liberalized to a great extent today, has a significant bearing upon the growth and performance of the indigenous glass industry. Almost all items in the glass and glassware sector are now de-licensed and freed from import control.

The whole gamut of glass and glassware products, ranging from glass balls, tubes, cast and rolled window glasses, float glass etc to value added glassware used in kitchen, table, office and for indoor decoration are now freely importable. These items are no longer restricted nor do they require any license for their importation. Even glass bottles, flasks, jars etc. and similar basic glass products are now in the "free" import list. The high value kitchenware and tableware which are in the nature of pure consumerist goods and which were earlier restricted for import and were importable only against a license, are now freely importable. This free import regime for glass and glassware products is on account of the removal of Quantitative Restrictions (QRs) affected by the Govt. of India in discharge of its obligation and commitment to WTO.

The free trade policy of the government is likely to result in the inflow into domestic market of high quality glass products, especially the fashionable and fanciful glassware materials such as decorative crystals, tableware and kitchenware, which will basically cater to the consumerist preferences of the people. Large Scale import of glass materials on account of de-licensing is likely to jeopardize the domestic industry and the indigenous capacities which are largely in the small scale sector and therefore, can not compete with the import in view of their lower level of capital and technology. Being unable to withstand competition, the domestic industry will lose the market and will be in the danger of being wiped out.

The glass industry in India is not favoured by its sale of operation also, what makes its position still worse is the fact that it is not an organised sector. Therefore, the possibility of pooling their resources and mustering their collective financial muscle for technological up-gradation and quality improvement is quit remote. In such a scenario in which the industry is

fundamentally and innately weak, the liberalized import regime can pose a potential threat to the very survival of the indigenous glass industry.

I(B). Export Policy

However, the export-import Policy provides silver lining for glass industry as it does for other small scale industry. Such industries can grow well in export sector if a new thrust is given to them. Glass industry, at this juncture, needs to be externally oriented. Export today requires efforts basically at two levels: Competitiveness and certain assured quality of the product. International Competitiveness is achievable under various export promotion schemes administered by the Government of India, the notable among which are:

1. **Duty exemption scheme** which provides access to duty free import of raw materials and inputs, required for the export product, whereby, the export can be competitive both price-wise and quality-wise.
2. **Duty drawback scheme** under which the Customs duties paid on the imported inputs used in the export product are reimbursable to the exporters after export ; and
3. **Scheme of Duty Entitlement Pass Book (DEPB)** which is available in respect of specific products and which is freely tradable in the market for a premium in cash, after the export has been completed.

Other notable export incentive schemes in force which provide competitiveness to the exports from various sectors are:

1. Income tax exemption under Section 80 HHC on the proceeds of exports.
2. 100% Export Oriented Unit Scheme/EPZ scheme.
3. Export House/Training House/Star Trading House Scheme.

The glass and glassware industries also can avail these Schemes.

The Government's support to the glass industry in their export is required in so far as the initial exposure to international market is concerned, the government could introduce some of the glass manufacturers and their products to some selected markets through international exhibitions, trade fairs and buyer-seller meets. The participation of these tiny and small scale producers in such trade promotion events must be facilitated and financially by the government as an initial push.

The glass export could be competitive by taking recourse to the duty free import scheme (DES) of the Government under which the requisite inputs for the export products could be imported duty-free. The imported raw materials make the product competitive in terms of quality and the duty exemption on the import of such materials reduces the cost of production and thereby gives price competitiveness.

II. MULTILATERAL TRADE REGIME AND GLASS INDUSTRIES

India is a signatory to the WTO Agreement and is, therefore, obliged to accept and adopt the trade remedial measures in the form of anti-subsidy countervailing duties. Pursuant to WTO Agreement, India has framed its national law on Anti-Dumping which provides an instrument to the Government in the form of anti-dumping duty in order to provide protection to the domestic industry against unfair competition caused by dumped imports. With the removal of QRs, large-scale imports of glass and glassware into India are taking place. There is also a likelihood of such imports taking place at dumped prices, i.e. at prices below the Normal value. The dumping of glass and glassware products has a trade-distortive effect, which can be corrected through anti-dumping measures. Import of some of the raw materials essential for glass industry is, of-late, subject to the anti-dumping duty, which has been recommended on the basis of complaint filed by the domestic producers of such materials. The most significant material in this regard is Soda Ash, which has been subjected to anti-dumping duty, which has brought an additional burden on the domestic user industries in glass sector.

However, anti-dumping duty on Soda Ash in no way bans or prohibits its import. Anti-dumping duty simply has the effect of discouraging the import of Soda Ash at dumped prices, i.e. at prices below the Normal Value, which introduce an element of unfair competition in the Indian market, thereby, causing injury to the domestic producers. Dumping of a product causes injury to the domestic industry in so far as it does not allow domestic industry to realise its fair selling price.

It is recognized, that the imposition of anti dumping duties might affect the price levels of the products manufactured using the subject raw materials and consequently might have some influence on relative competitiveness of these products. However, fair competition in the Indian Market will not be reduced by the anti dumping measures, particularly if the levy of the anti dumping duty is restricted to an amount necessary to redress the injury to the domestic industry. On the contrary, imposition of anti dumping measures would remove the unfair advantages gained by dumping practices, prevent the decline of the domestic industry and help maintain availability of wider choice to the consumers. Imposition of anti dumping measures would not restrict import from the subject countries in any way, and therefore, would not affect the availability of the product to the consumers.

The anti dumping duty levied on Soda Ash is a variable duty with reference price of about US\$ 195/M.T. The landed value of Soda Ash is currently US\$ 150/M.T. Thus the anti dumping duty levied on Soda Ash would be US\$ 45/MT which would mean that Soda Ash import price would go up by about Rs. 2/Kg. Thus, the glass industries will lose the advantage of lower import price of Soda Ash, which is a critical input for them.

Effect of Anti Dumping on Glass Industry

- (a) Cost of production of Glass Industry will increase.
- (b) Loss of export competitiveness.
- (c) The Glass Industry being a SSI, the increase in cost of production will compel many industries to close down thereby affecting employment.
- (d) Will lead to financial losses and sickness.

However, it is pertinent to note that the imports under duty exemption scheme, which only the exporters can avail, are not subject to anti-dumping duty. Hence the above effect of anti-dumping duty will not be experienced by the exporters of glass and glassware products, whose import of raw materials is exempted under duty free scheme from anti-dumping duty.

ACCESS TO TECHNOLOGY

Any deterioration in the properties of glass, such as clarity, homogeneity, durability etc. lowers the cost of product, which ultimately affects the economy of the industry. In case of many industrial products, effects of minor lapses in manufacturing process may go unnoticed. However in case of glass, effects of minor lapses in manufacturing process do not go unnoticed but result in second grade product sellable at lower price or turned into scrap which then sells at the cost of raw material.

However with proper technological input the glass production can be made

highly consistent in case of large-scale production and quite consistent even in case of small-scale production. But achievement of such condition is subject to availability as well as adoption of technology. However this aspect has been grossly ignored despite much technological advancement made by the country after independence. Even to this date there is not one comprehensive technology development centre catering to the needs of all sector of glass industries. The recently established Centre for the Development of Glass Industries at Firozabad has started serving the needs of smallscale sector to a certain extent, but much remains to be done in terms of the demand of industry and the need to bridge the technology gap. Beside CDGI, Central Glass & Ceramic Research Institute at Calcutta is the other Institute offering some technological inputs to Glass Industry. However, its activities are confined to the development of new technologies, mostly in terms of newer materials or processes. It is not assisting the industries in their overall technological up gradation. Thus in the absence of an institutional support for Technology, a large number of Glass units has sought the assistance of Private consultants (Glass Technology experts) available in the different parts of the country and they make the technology available to the interested units. The large-scale units prefer to employ glass technologists for implementation of technological inputs provided by the experts and to look after the routine activities of the industry.

Only availability of technology cannot serve the purpose. More important is its adoption, which has been observed difficult even in case of medium scale units and very difficult in case of small-scale units for various reasons listed below:

- Employment of illiterate or low educated skilled workers
- Non-employment of technical personnel
- Lack of technical awareness
- Conventional inertia to any deviation/change
- Protected market
- High input cost of modernization

Skilled persons engaged in glass units are either illiterate or less educated and have, in general, acquired their skill form their Masters. These workers start accompanying their predecessors from early ages and in course of time acquire the skill step wise by working with them. Such workers are highly conservative and inert to any change.

Hardly any medium scale unit and no small-scale unit employ technical staff. Although the losses occurring due to non-employment of technical staff is far more than the expense to be made on them, yet the situation has remained unchanged for years.

Technical awareness is presently lacking in small and even medium scale glass industries. Skilled workers are not capable of understanding aspects of technology and so also adamant to accept any technological input. The

proprietors having no technical background are solely dependent on these workers.

Any traditional stronghold is likely to be conservative to any change. This applies more for cluster of glass industries at Firozabad. The workers fear that with technological up gradation manpower employment will be reduced and a considerable section may be rendered unemployed.

Until few years ago, the vast Indian market was protected so whatever was produced could be sold without much difficulty. The customer had no option but to have what was offered. Apparently technology upgradation or improvement in quality of product had little respect in such an environment. With increasing liberalization and globalization of market, the situation has changed. Now customers have access to quality products imported from developed countries at fairly low price and thus forcing local units to shift their stand.

Currently the small and medium scale glass industries in India are working with age-old technology and without any up gradation for several decades. Profit of such organizations is only marginal. No technical development for such a long period has created a wide gap in economy of the Indian glass industries and that of glass industries of the developed countries. At this stage though technical up gradation of the industry has become vital to make them capable to sustain in global market, but such development in medium scale unit needs a huge investment along with the effort to make the worker capable of adapting such change. In case of small-scale units the technical up gradation may need large change in the set up as well as in the existing work practice. This makes the situation quite difficult in the absence of a thorough demonstration at the expense of some agency because implementation of any technological up gradation in present system will need some trials, which the industry cannot afford. Demonstration of technology will build confidence in the industry and help in motivating them for its adoption.

INFRASTRUCTURE

Infrastructure provides a backbone for the smooth running of any industry, but that in case of glass industry it is still more vital. The melting of Glass is a continuous operation, therefore any delay or impediment of any nature adversely affects the process and thereby the profitability. Most important of all the factors is Electricity, which must be available round the clock to every glass industry. But there is hardly any region in India, which has the continuity of supply. As such every glass production unit has to have generating sets but properties of glass being temperature dependent and susceptible to minute temperature variation, each interruption in supply affects the quality and productivity. Furthermore, the effect of interruption in electric power supply is more severe in case of small-scale units operating pot furnaces because frequent interruptions cause failure of pot itself, which discontinues the production. Also frequent pot failure reduces furnace life drastically.

Therefore, continuous electric supply is one of the basic requirements for efficient and smooth running of glass industry.

Similarly, availability of adequate supply of water is a prime requisite for glass manufacturing process for cooling purpose at several steps. Insufficient supply of water causes severe breakdown in the process of glass melting as well as forming. Likewise, efficient sewerage system is an essential requirement for a glass industry because glass manufacturing is a continuous high temperature operation and use of cooling water is involved at several stages. Choking of sewerage may result in water logging in the working area affecting the working and also enhancing the chance of accidents. It has been observed in general that water and sewerage are quite adequately available to glass industries in general except for units located in remote areas. However, it has been observed that the sewerage system of entire Firozabad is not adequate as a result of which the Glass industries have to face multiplicity of problems.

Yet another important consideration that has to be kept in mind is the Safety of persons and property associated with Plant. With deteriorating law & order situation in many geographical regions of the country, this aspect has warranted much more attentions. In certain areas of Firozabad the case of abduction of proprietors have come to the fore. While there is general preference to locate the plants away from the city, the safety of property and person must be ensured by the local administration.

Well laid out, levelled and wide roads are essential to the smooth running of any industry. However, glass being a brittle material, poor access roads may result in increased breakage of glassware and also enhance transportation cost affecting the economy of the industry. Similarly, any delay in transportation of raw materials on account of poor roads will result in wastage of fuel, as the furnace has to run continuously. Likewise delayed transportation of finished goods reduces the working space within the factors while the inventory pile up. The roads in India represent a mixed picture. Some roads are extremely good, while the others are extremely bad. Congestion on Roads is another factor. With growing population and increased industrial activity, there is more load on the roads in general than they have been designed for.

In the era of Information Technology and at the onset of 21st century, the importance of communication for the smooth running of any industry needs no deliberation. While India has kept pace with global developments in the field of communication and information technology, yet its effectiveness needs to be enhanced.

AUXILIARIES

In the process of melting and Forming of Glass, a number of auxiliary materials are encountered which have an indirect bearing on the quality of glass or the finish products. Some such materials are enumerated below:

1. Refractories
2. Moulds
3. Finishing materials
4. Decorating materials and
5. Packing materials

Molten glass is highly abrasive and corrosive to the refractory materials in its contact. As such the refractory material used in the furnace should be able to withstand the temperature conditions in the furnace as well as the physical and chemical attack of the molten glass. The different zones of a glass- melting furnace are subjected to different conditions and failure of any part of the furnace calls for an interruption in the process. Therefore, the Refractories used in different zones of the furnace must withstand the service conditions identically over the same period. Suitable refractory materials for all types of glass furnaces are available in India by different manufacturers but very few of these are reliable to provide consistent quality.

The moulds play an important role in imparting good surface finish to the glassware. The glass comes in contact to the surface of mould at a fairly high temperature ranging between 1100 to 1200° C. As such the mould material should be such that it can withstand the service conditions as well as impart smooth finish to the glassware. Many larger units follow these norms while medium and smaller units have a tendency to use the cheaper material like cast iron. Another important factor is the fabrication of the moulds. For a good surface finish it is important to have precision machines (CNC) and equipment. On the contrary most of the mould shops have simple turning machines unable to provide requisite surface finish or the intricacies of shape. Much needs to be done in the area of mould development and CDGI has taken initiative in this direction by installing sophisticated machinery in the process of setting up a good mould shop for servicing small and medium industries.

While many a products come out of the mould in ready to use form, many others especially the blown ware require finishing operations such as crack-off for removal of excess portion, grinding and polishing for bevelling of the cut edges. After finishing the ware is decorated for value addition by different processes like cutting and polishing, painting, screen printing and transfers etc. Each of these operations requires raw materials with requisite properties. Grinding and polishing need powders of proper hardness and grade, painting needs paints matching to the composition of glass etc. It has been observed in case of small scale industries that most of these operations are being carried out in very crude form with little regard to prescribed technical specification for the process or material.

One of the more neglected areas in glass industry is packaging. Despite much advancement in packaging materials the world over, the traditional packing is adopted in India. There is an urgent need to address Indian glass industry with the latest developments and the advantages of improved packing. Good packing on one hand may add to the value of the product, while on the other hand reduce packaging costs.

TRAINING

The efficient running of an industrial unit apparently depends on the strength of the trained manpower available to it. India rates fairly well in terms of training facilities available in the country. Given below is a list of institutes/ Colleges offering formal education in Glass Technology/ Ceramic Engineering:

| S.No. | Name of College/ University | Course offered | Duration In Years | Intake of Students |
|-------|---|-------------------------------|-------------------|--------------------|
| 1. | Institute of Technology, BHU, Varanasi. U.P. | Degree in Ceramic Engg | Four | 30 |
| 2. | College of Ceramic Technology Calcutta, W.B. | Degree in Ceramic Technology | Four | 30 |
| 3. | SJG Polytechnic, Khurja, U.P. | Diploma in Ceramic Engg | Three | 25 |
| 4. | Government Polytechnic, Gulzarbagh, Patna. Bihar | Diploma in Ceramic Engg | Three | 15 |
| 5. | Government Polytechnic, Gudur, Distt. Nellore. A.P. | Diploma in Ceramic Engg | Three | 10 |
| 6. | SJR Polytechnic, Bangalore, Karnataka | Diploma in Ceramic Technology | Three | 20 |
| 7. | Institute of Ceramic Technology Vridhachalam TN | Diploma in Ceramic Technology | Four | 25 |
| 8. | Lukhdiraji College of Ceramic Technology, Morvi, Gujrat | Diploma in Ceramic Engg | Three | 15 |

As evident from the above table, the colleges imparting Ceramic education are well spread and have enough capacity to meet the demand of industry. Likewise there is no dearth of institution offering corporate training in the country. In fact India has one of the best management and accounting institutes. However, commercial training is not available from recognised centres. CDGI is the only institute which has taken initiative in this direction by offering courses relating glass decoration. Besides few artists have been offering training on stained glass or glass casing at their studio. There is much scope for the spread of commercial training in Glass in terms of the versatility of the material and the creativity of people.

RECOMMENDATIONS

It has been observed that the industries in the organised sector are able to look after their problems whereas the SMEs are relatively disadvantaged to sort out their problems with various agencies. Even among SMEs, the more prosperous ones are capable of handling their problems more effectively.

Fortunately most of the Glass Industry units in SMEs sector are located in clusters. Govt. intervention necessary to create and upgrade the infrastructure can be organised effectively and in a cost-efficient manner to a cluster of industries. For example distribution and supply of natural gas which is crucial to economical and quality manufacture of glass cannot be given to all scattered units regardless of their location as it would involve huge investment and heavy redundancy. Localisation of industry would economise this investment and increase return on investment. Natural Gas can be supplied in particular area where many units can be clustered. It would maximise their benefits of any investment.

There will be an obvious question of relocation of certain industries. Although entrepreneurs will be initially reluctant to change their place of enterprise, the economic benefits of a special industrial area with all infrastructural facilities will gradually be accepted. In the process some enterprises will also disappear if they are rigidly borrow to this original plan for various reasons. For relocating industries, this kind of casualty has to be accepted as unavoidable. As some of the tiny units operate at almost subsistence level, it would not be difficult to shift them to a more organised industrial estate.

It should also be tried if a number of tiny units can be coalesced with a viable large unit or even a cooperative society. If that happens; the scale operations can be more economical, investment on expansion and augmentation of capacity can be more feasible and the organisational efficiency can be much better. The consequent value-addition will ensure better economic will being of every participant. Although capitalist motivation for production is essentially individualistic there is equally irrefutable evidence that coalescing of tiny entrepreneurs units a large one on cooperative basis can be remarkably successful. What is required is able leadership at that level and meticulous and transparent efforts.

For both the small industries, which are quite successful and also which are still struggling, the cultivation of an uncompromising source of quality assurance is essential in a globally competitive market.

In order to ensure quality, requisite testing facilities should be available in clusters of SSI because the small units are not in a position to provide for such testing facilities individually in their units.

Mere creation of these facilities would not help much. It is necessary to make the units use these testing facilities. For this very effective extension services have to be ensured. The Center for development of glass industry at Firozabad has been set up for helping the entrepreneurs to adopt modern methods of modern technology. But the interaction between the center and individual units has not been as effective as it was desired because large number of small units remain unconcerned with the services and facilities available in the Center. In such situation the Centre has to take a proactive approach in reaching out to small entrepreneurs to help them absorb new technology and also take technical counsel from the center for improvement in the manufacturing process and the quality of products.

Small industries do not have any significant international products and state of art technology because they do not get any opportunity to go abroad and participate in international trade fairs and exhibitions. For example, many of the small units in Delhi are not familiar with Moreno glass and the manufacturing process. As most of the entrepreneurs are not much educated, it is difficult for them to go to international trade fairs. We would suggest that some of the leading SSI companies on rotation should be sent to international exhibitions to see glass industry so that technology development in the world is known to them and then they are motivated to adopt new technology and make increased contribution to exports.

Similarly the small entrepreneurs who are not in position to undertake such foreign tours on account of lack of education and also financial resources should be given training here in the country programming form time to time so that they get to acquire knowledge and skill of international standards. Technologists and craftsmen from all over the world should be invited to impart training to the local artisans and transmit skill. Centre for Development of Glass Industry (CDGI) should take leadership in this matter. The quality of entrepreneur would depend on the quality of CDGI's services and sophistication.

In Firozabad craftsmen have acquired a skill through practical learning from elders. Therefore, formal training has not played any role in the transmission of skills. Though this kind of practical learning is crucial for transmission of skill. The lack of formal and theoretical training prevents up-gradation of skills of these artisans to world class and adoption of up-to-date technology. Therefore, theoretical training should be combined with the practical learning in the local language so that at the end of training program, the craftsmen are

capable of constantly improving their skills and also easily adopting newer technology.

When people go for training, there must be provision for stipend, which should be equivalent to their daily wages so that their families do not suffer. Some successful companies in respect of some employee can also sponsor such training but in this area government has to invest sizably. Therefore, we feel that it is desirable to launch a skill up gradation program for the craftsmen by Government of India and UNDP together.

The Government of India is taking steps to liberalise the labour laws of the country. It would not be correct at this stage to suggest any changes in the labour laws in the context of glass and ceramic industry separately. The power to retain the skilled workers and remove undisciplined and unproductive workers by the employers has been the demand of the industry in the country from all sectors in the interest of higher productivity, which is essential for economic growth of the country. This issue has many dimensions, which has to be examined in detail.

The Government of India is evidently aware that unless this power is given to the employers, it will be difficult to ensure industrial growth on a sustained basis; therefore, labour law liberalisation is under way, as requested. Pending the final amendments, we would suggest that a higher level functionary should be posted in glass cluster at Firozabad who should be responsible for maintaining industrial harmony in such a manner that small units function without unnecessary labour unrest.

We find that in Firozabad cluster many units are paying higher wages to highly skilled craftsmen whereas some workers who are unskilled and of low productivity are getting less than minimum wages. The workers have accepted this fact and such arrangements are working satisfactorily in Firozabad. It is, therefore, recommended that such a senior officer should be posted to maintain and preserve this industrial harmony and only peacefully resolve any problem that exists or arises in labour relations.

At present there is only one Center for development of Glass Industry in Firozabad. There is another cluster in Gujarat. It is suggested that Firozabad Center should have branches in Gujarat and West Bengal and in these branches vigorous interaction between small units and Center should take place as suggested above. If there be some institutes or centres working in Gujarat, West Bengal or other places, they should be brought under the leadership of CDGI so that it may be possible to organize integrated and coordinated training programs all over the country with the help of reputed experts, including international experts.

Once clusters are established, natural gas connections are given there will be a tendency amongst the entrepreneurs to use natural gas without any restraint on account of obvious low cost. Natural gas being a critical component for various industries in the country, there is a need to make optimal use of this fuel. Some regulatory measures must be devised to optimise the use of this fuel by up-gradation of factories conditions, installation of heat recovery equipment etc. A time-span can be prescribed beyond which there should be some kind of penal measures to discourage wastage of natural gas by any ill-equipped factories.

FISCAL RECOMMENDATION

To enable the glass industry to constantly upgrade its technology, customs duty on import of capital goods should be reduced. The industry demands that it should be reduced to 10%. The Government of India has to take an overall view on this.

EPCG scheme should be amended to permit duty-free facility against export obligation in respect of capital goods of the value of less than Rs. 20 crores as well. This will help SMEs to use this scheme for modernisation and up-gradation of technology and increased exports. If the units go for technology upgradation, modernisation and quality improvement projects, concessional rate of duty on project imports as admissible to green-field projects and expansion of existing units, should be extended to them.

The entire domestic requirement of Spodumene, which is used for energy consumption and improvement in quality of glass, is met through imports. It is therefore; recommended that import of Spodumene should be allowed at concessional rate of customs duty which is already applicable to the manufactures of TV picture tubes.

Customs duty on import of broken glass (cullet) should be reduced to 10%. As every 10% increase in the use of cullet, there is a saving of 2.0 to 2.5% in fuel consumption.

Although soda ash from domestic source is adequately available the price charged by domestic manufacturers is higher than the international prices. Anti-dumping duty has been imposed on soda ash. The glass industry demands that customs duty on soda ash should be reduced to 10% ad valorem. The demand for reduction in customs duty and import of soda ash, as demanded by the Industry, is antidote to alleged unfair prices obtaining in the domestic market by cartilisation. The Government of India should examine this matter to take appropriate view for rationalization of prices of soda ash.

EXPORT PROMOTION

In order to boost export from glass industry sector, the existing standard input/output norms should be reviewed and be broad based. This can be done in consultation with representatives of glass industry in the context of overall Exim policy. The glass industry people have that manufacture of soda ash and all other inputs should be allowed to sell their products to glass manufacturers at the price at which they are exporting against surrender of advance license. From such sales they should be given the benefits including relief in income tax under section 80 HHC. Government of India should examine this.

SSI SECTOR

The glass industry has demanded that for protection of SSI sector, the upper limit in regard to value of production/turnover for purposes of levy of excise duty at concessional rate as permissible for this sector, should be done away with. After giving due thought to this, we feel that to make the things simpler, Government of India should examine this so that there is a benefit for small industry to graduate to higher turnover and production. To boost export of glass bangles, beads and other novelty items in the small and tiny sector, the State Government should provide appropriate marketing facility.

FUEL

As we have said earlier, Government cannot ensure supply of natural gas everywhere in the country where glass unit would come up. This will be an uneconomic investment and inefficient use of resources. We would, therefore, suggest more emphatically that Government of India should permit establishment of clusters in which small and medium sector industry should be located and requisite infrastructure support like supply and distribution of natural gas be provided. We are not in favour of building into promotional measures any element of subsidy and thereby creating an artificial sense of competitiveness. After natural gas is provided, the industries in the even cluster should economise the cost and achieve international competitiveness by ensuring acceptable international quality. We are, therefore, not making any suggestion for artificially bringing down the prices of natural gas in the country. However, natural gas pipelines should be extended to Shikohabad from Firozabad and to Varansi from Jagdishpur for the benefit of glass manufacturing units and the additional investment made should be appropriately

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Annexure 1.

| Sr.No. | Items | Name of Indian Company | Name of collaborator company | Equity Participation by the Collaborator |
|--------|---|--|--|--|
| 1 | Vacuum Flask | Kumar CRB Thermiplas Pvt. Ltd. Subhash Road, Vile Parle East, Bombay- 400057 | Thermiplas N.V. and Mr. Bernard, Belgium | 40% |
| 2 | Decorative Glass Window Panels | Medieval glass Industries Ltd. | Medieval Glass Industries Ltd. # 2-7338 Progress way Tilbury Industrial Parki, Delta BC, V4 G114 Canada | 100% |
| 3 | Glass Cloth Silane | Montex Glass fibre Ind. Pvt. Ltd 2/19-20, Bombay Mutual Annexa, Rustam Sidliw Marg, Bombay- 400001 | Porcher Textile, SA, Bodinieres 38300, Bougoin Jallieu, France | 39.20% |
| 4 | Float Glass (Clear, Tinted and Coated) | Compagnie De saint Gobian C/O Grindwell Norton Ltd. 148, M.G. Road, Bombay-400001 | M/S SAINT GOBIAN, France | 90% |
| 5 | Sophisticated and High Quality Scientific Laboratory, Industrial and Pharmaceutical Glass & Glassware | Bharat Glass Tubes Ltd. "Kalyan" 19 Vishwas Colony Alakpuri Shopping centre, Baroda-390005 | M/S Schott Rohrglas GmbH Theodor- Schmidt Strase 25, D-95477 Bayreuth, Germany. | 51% |
| 6 | Glass Stemware, Pressed Ware, Tumblers, Bowls etc. | Lausitzer Glass (India) Ltd 227 A, JC Bose Road, Anandlok, 1st Floor Calcutta-700020 | Lausitzer Glaswerke WeibswasserG Berliner Starbe 22-32 Weibwasser Germany. | 20.00% |
| 7 | Glass Shells for GLS Lamps | Maxlux Glass Pvt. Ltd 227 A, JC Bose Road, Calcutta-700020. | Mr. Cheung Chi-Hiung Flat "C" 7/F, Mercantile House 186, Nathon Road, Knowloon, Hongkong. | 2.99% |
| 8 | Float Glass | Float glass India Pvt. Ltd. 302, Regent Chamber 3rd Floor, Jamnalal Bajaj Marg, Nariman Point, Baombay-400021 | M/S Asahi Glass Co. ltd. Japan. | 51.00% |

| Sr.No. | Items | Name of Indian Company | Name of collaborator company | Equity Participation by the Collaborator |
|--------|--|--|---|--|
| 9 | Safety Glass | The Indo Asahi Glass Co. Ltd. 3, Hungerford Street Calcutta- 700017 | Asahi Glass Co. Ltd. 12, Marunouchi 2- Chome ChiyodaKu Tokyo, Japan. | 24.00% |
| 10 | Mirrors for Automobiles | Krishna Toyo Ltd. 903, Sector 17 Gurgaon-122001. | M/s Toyo Industry Co. Ltd 3-3, Chome Osaka 561, Japan | 74% |
| 11 | Automotive Safety Glass | Float glass India Ltd. Plot No. 17, MIDC Indl. Area, Talaja Raigarh Maharashtra- 410208. | M/S Asahi Glass Co. ltd. Japan. | 49% |
| 12 | Optical fibre | Fibre Optic Division B-1/D-2 Mohan Coop. Indl. Estate Mathura Road, New Delhi- 110044. | M/S J.F.Electra (Maruritus) Mauritius | 38.44% |
| 13 | Ophthalmic Lenses | Lense Mater International 41-869, Tilak Road Hyderabad - 500001 A.P. | NRI (Mr. Javed Salam) of Ajax Opt. Canada | 24.00% |
| 14 | Sunglasses, Goggles | Tele Brands Mfg. & Inds. J-54, Krishna Marg C- Scheme Jaipur- 302001. | M/S Telebrand Advertising Verginia U.S.A | 100.00% |
| 15 | Glass Tubes, Ampules, Vials for Injectibles | Verotech India Pvt. Ltd. 50 Shri Ram Chambers Alakapuri R.C. Dutta Road Baroda-390005 | M/S Ocmi S.P.A Via Gadamass 123-20151 Milano, Italy. | 14.00% |
| 16 | Intra Ocular Lenses | Pharmacia AS | Pharmacia AS Sweden. | 100.00% |
| 17 | Intra Ocular Lenses | M/S Eagle Optics Ltd. 50 Shriram Chambers Alkapuri R.C.Dutta Road Baroda- 390005 | Occular Lens INC (OCB) 7656 N. Kedvalae Skoie 60076 U.S.A. | 80.00% |

| Sr.No. | Items | Name of Indian Company | Name of collaborator company | Equity Participation by the Collaborator |
|--------|-----------------------------------|---|--|--|
| 18 | Crystal Glassware | JLK Industries Ltd. 16, Gundecha Chamber Nagondas Master Road Fort Mumbai-400023 | Lindshammar Glasbruk AS 57428, Vetlanda Sweden. | 12.00% |
| 19 | Fibre Glass | Gujrat Guardian Ltd. International Business Centre M 38/1, Middle Circle Connaught Place New Delhi-110001 | M/S Guardian Industries Corpn. U.S.A. | 63.83% |
| 20 | Glass vials & bottles | Neutral Glass & Allied Inds OK Oil Storage, Haji Bunder Road Sewree (E) Bombay- 400015 | Wheaton Industries Inc. U.S.A. | 25.00% |
| 21 | Glass Fibre & Articles thereof | Shri Braj Binani Mercantile Chambers 12, J.N. Heredia Marg Ballard Estate Bombay-400038 | Bishop Technology Inc. 1200 Woodruff Road B-7 Merovan Centre Greenville South Car U.S.A. | 4.00% |
| 22 | Glass Containers | Ballarpur Industries Ltd. Thapar House 124, Janpath New Delhi-110001 | Owens Illionis Inc. U.S.A. | 51.00% |
| 23 | Float Glass | M/s Gujrat Guardian Ltd. 4-7 C, DDA Shopping Centre New Friends Colony New delhi-110065 | M/s Guardian International Corp. U.S.A. | 64.66% |
| 24 | Glass Fibre for use in composites | | Owens -Corning's Fibreglass Corpn U.S.A. | 100.00% |
| 25 | Glass Fibre Pressure Vessels | | Essef Corporation Industrial Parkway Chardon Ohio, U.S.A. | 100.00% |

TERMS OF REFERENCE

(TOR/C.2000/189)

**Study and Evaluation of the Non-technical Factors Affecting
the Indian Glass Producers****1. Purpose of the contract**

UNIDO is conducting on behalf of UNDP, an SPPED project aiming at assessing and if possible reducing the atmospheric pollution leading to increase greenhouse effect caused by the Indian Glass Industry. In addition to the technical aspect of this project, UNIDP wishes to compile the administrative and governmental aspects of the study and prepare a policy document containing the administrative and legislative measures that would further improve the terms and conditions of the glass producers.

2. Problem areas

While conducting a survey of energy efficiency of the Indian glass industry as part of the ongoing SPPD project number IND/99/966 (Integrated Energy and Environment Programme for the Glass Industry), a considerable proportion of the producers that have been visited have pointed out to the inequality of several factors cause due to the existing administrative and legislative regulations being followed by the national and state governments.

The Indian glass industry is scattered all around the country. Companies in every State are governed by the local tariffs, rules and regulations. Moreover, these binding factors differ immensely from one State or area to another, causing inequality of opportunities between the producers.

A study looking explicitly into this problem has not been prepared to this date. Therefore, the policy makers are not equipped with sufficient information, which shall show them an adequately clear picture to enable them to eliminate these differences.

3. Expected end of the study and evaluation

The study and evaluation is expected to generate a short report containing the following information

- A full list of the non-technical factors, including national/state level policies that influence the competitiveness of glass producers (e.g. type of fuel, transportation factors, etc)
- List the values of these factors in each state and district in India
- Effect that the variations in each area would have on competitiveness of the producers
- Recommendations on an overall policy planning framework which would bring about equal opportunities and level-playing field throughout India.

4. Target beneficiaries

The results of the report are aimed to help decision makers by providing them with a sound database, covering the non-technical factors affecting the competitiveness of glass producing companies. Subsequently, this is expected to equalize the chances of all producers, thus facilitating them to get more profitable through fair competition and better efficiency.

5. **Composition of the team**

The study shall be carried out by a two member team who shall prepare a combined report.

- ❖ First member of the team shall be a glass technologist with at least 3 years of industrial experience in contact with various types of glass producers—this member is being recruited separately, that means, the Contractor will not provide this expertise.
- ❖ Second member shall be a senior consultant having knowledge of and access to Indian laws and regulations in general, and those pertaining to the glass industry in particular—this member will be provided by the Contractor.

The members of the evaluation team should not have been directly involved in the designing or implementation of the project and should combine substantive evaluation and country knowledge.

6. **Timetable and reporting**

The evaluation should be completed in one month during the period of 1 September to 30 October 2000, including any travel time, as may be considered appropriate and report compilation.

The report must be presented on magnetic medium as well as hard copy.