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THE DEVELOPMENT OF THE PLASTICS INDUSTRY IN PAKISTAN1/

by

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INTRODUCTION

The manufacture of plastics consumer items in Pakistan started in late 1950's. But the Pakistan industry entered the plastics raw material manufacturing era in 1967, with the establishment of 5,000 tpa low density polyethylene and 3,000 tpa urea formaldehyde plant near Karachi. It was followed by a 5,000 ton polyvinyl chloride plant in 1969. Presently plastics are widely used in the country for the manufacture of pipes, tubewell streiners, conduits, packing materials, sheets, artificial leather for shoes, clothing and covering material, domestic goods and for coating electrical cables. The use of plastics in Pakistan has increased tremendously in the last decade but there are still many fields and Government development schemes where plastics can successfully substitute the traditional raw materials and contribute to the growth of national economy. Pakistan has acute shortage of metals, wood and packing material and will therefore find it quite advantageous to develop its plastics industry. Thousands of tubewells and extensive water distribution networks are planned to develop the country's agricultural productivity. Plastic pipes and tubewell strainers will go a long way in meeting the country's requirements for these products in agriculture and irrigation. Plastics besides having a definite advantage over metal pipes are also more suitable for the soil conditions in Pakistan because of their good chemical resistance against soil salts. Similarly, co-polymerised medium density polyethylene pipes can be used for distribution of natural gas throughout the country. The ever growing demands of the country's building industry can be met by using plastic window frames, sanitary fittings, electrical

conduits and expansion joints. The country's canals could, in fact, be lined with PVC or polyethylene film to stop seepage. and water reservoirs in hot areas could be covered with these plastic films to cut down losses by evaporation. Plastics can also contribute in achieving the self-sufficiency of automobile industry by supplying certain car parts. There are, in fact, incredible number of ways plastics can be used to fulfil the country's demand for both consumer and industrial items. Pakistan by developing its plastics industry will not only utilize to a large extent its own raw materials but will also cut down significantly import of metal goods, packing material and a great number of other goods made from plastics. Plastics would also relieve considerable amount of local raw material and goods that could easily be exported and contribute to the foreign exchange earning of the country.

DEMAND FORECAST

The principal plastics used in Pakistan are Polyethylene (low and high density), polyvinyl chloride, polypropylene polystyrene, cellulose acetate, phenol formaldehyde, urea formaldehyde, melamine formaldehyde, acrylics and nylon. The value of imports of all type of plastic resins for 1972-73 was Rs 103 million and that of finished plastic goods was Rs 38.5 million, which was on average 205% more than the value of imports in 1971-72. The total present consumption of plastics in Pakistan is estimated to be about 25,000 tons per year, however the potential is envisaged to be twice as much. The social acceptance and consumer preference for plastics are already established trends. Therefore, demand will grow rapidly provided favourable supply situation is established and processing facilities are developed to convert the potential

requirements into concrete demands. The projected demand for main plastics are as follows:

Polyvinyl Chloride:

The present annual demand for PVC is estimated to be about 5,000 tons and will increase to 18,000 tons by 1980. Distribution of PVC according to its consumption will be as follows:

PVC Pipes:

PVC pipes are widely in use throughout Pakistan. Some of the important applications where the use of PVC pipes are expected to grow rapidly in future are domestic and bulk water supply, tubewells, waste water lines, conduits and distribution lines for chemicals in industry. The present annual demand is estimated to be around 3000 tons and will rise to about 10,000 tons by 1980.

PVC Cable Compound:

The demand for cable compound is estimated to be about 2,000 tons in 1974 and will increase to 4,000 tons in 1980.

PVC Shoe Compound:

The demand for shoe compound is expected to grow rapidly and is estimated to be 5,000 tpa as compared to present demand of 2,000 tpa.

Sheets, Film & Artificial Leathercloth:

PVC requirements will be around 2,000 tons by 1980.

Low Density Polyethylene:

Because it is easier to process and its use as packing material, the demand of Polyethylene (low density) is likely to grow with expansion of fertilizer, textile and other industries. At present, the annual production of low density polyethylene is about 3,000 tons. According to various estimates the present

demand is around 20,000 tpa and will be about 30,000 tpa by 1980. This gives a per capita consumption of 0.5 kg, which is far below present average per capita consumption by developed countries.

Polypropylene:

It is used in the manufacture of heavy duty containers, television and radio cabinets, hospital equipment, furniture, luggage bags and automobile panels. As filaments it is used as a substitute for jute in making ropes, carpet backing and heavy duty carrier bags. Polypropylene pipes are used in transportation of chemicals. According to the rough estimates the demand of Polypropylene will be around 8 to 10 thousand tons by 1980, whereas present demand is estimated to be around 4,000 tons.

DEVELOPMENT OF PLASTICS INDUSTRY IN PAKISTAN

It is estimated that the country's demand for all plastics by 1980 will be around 80,000 tons per annum. The present resin manufacturing and processing facilities are totally inadequate to meet this demand. The plastics industry is on the threshold of raw material manufacturing era. With backward integration through chemical intermediates to indigenous petroleum and natural gas the potential exists for national self-sufficiency in plastics raw materials. However, at this tage, it is essential that the country's plastics industry be technically reorganised so that it can provide a base for future development.

Plastics industry as such can be divided into two sections, plastics raw material manufacturing and plastics processing. Processing industry is the end user of plastic resins, it is therefore necessary that preference should be given to the development of this section of plastics industry. At the initial stage processing industry could be developed on imported raw materials. Once sufficient technical know-how and experience in processing is achieved, this industry can be switched over to locally made plastic resins.

Plastics Processing Industry:

The present total capacity of plastics processing industry is estimated to be about 20,000 tpa. The techniques used are blow-moulding, injection moulding, calendering, coating and extrusion. It is essential that a plastics technology centre should be established in the near future to reorganize and develop the existing plastics processing industry in the country. The functions of the plastics centre will be:

i) to supplement and enhance the technical skills of the existing processing industry.
ii) training of personnel in plastics processing and fabrication technology.
iii) materials testing and end use evaluation.
iv) application development, engineering and design.
v) mould design and technical assistance in mould fabrication.
vi) to maintain statistical information and library service on plastics.

Plastic Resins Manufacture:

Future plans for setting up synthetic resin industry in Pakistan must take into consideration the new technological developments that are taking place in this field. Technical developments are resulting in reduction of cost through new process. These developments in turn are creating additional demand. The other important factor is the selection of economic plant capacity. Initial excess production from new plants could be exported until such time it is required for domestic consumption. By doing this we will not only reduce the unit cost of production but will also earn foreign exchange.

AVAILARILITY OF RAW MATERIALS IN PAKISTAN

The following raw material sources are available or would be available in Pakistan for the manufacture of synthetic resins:

1. Natural Gas:

   Adequate quantities of natural gas are available in the country. About 6-8 millions cu.ft. of natural gas resources are available at Sui which would suffice for next 40 years.

2. Naphtha:

   By 1978, the total availability of Naphtha within the country would be around 70,000 tons per year. If the plan to set up a Naphtha Cracker to produce 100000 tons/ year of ethylene goes into effect, enough gas will be available to put up economic size plants of Polyvinyl Chloride, Polyethylene, Polypropylene, Polystyrene etc. Raw material for the manufacture of polyesters will also be available in sufficient quantities.

3. Associated Gas:

   Gas associated with oil at the Dhulian, Meyol and Tout oilfields consists of 80% methane and 15% ethane and higher hydrocarbons. This gas could be a possible source for the manufacture of synthetic resins. The daily production of gas from these oilfields is about 35 MMCFD. It is estimated that the deposits of gas would be sufficient for the next 30 years.

4. Calcium Carbide:

At present PIGL supplies 11,000 tons of Calcium Carbide annually. Another Calcium Carbide Plant at Kotri has a potential production of 7,000 tons/year. The total quantity of carbide available is only sufficient to produce about 9,000 tons of PVC resin per year.

5. Chlorine/Hydrochloric Acid:

Sufficient quantity of chlorine/hydrochloric acid is available in the country to set up medium size PVC Plant. At present Ittehad Chemicals Limited have a problem of chlorine disposal and are in fact wasting about 70% of their hydrochloric acid by neutralising with calcium hydroxide. Expansion of Pakistan PVC Limited will provide abother 30 ton/day of 30% hydrochloric acid by the end of 1975 and another 30,000 tons per year Caustic Soda/Chlorine Plant is planned and is expected to go into production by 1978-79. There would thus be no difficulty as far as the availability of chlorine and hydrochloric acid is concerned.

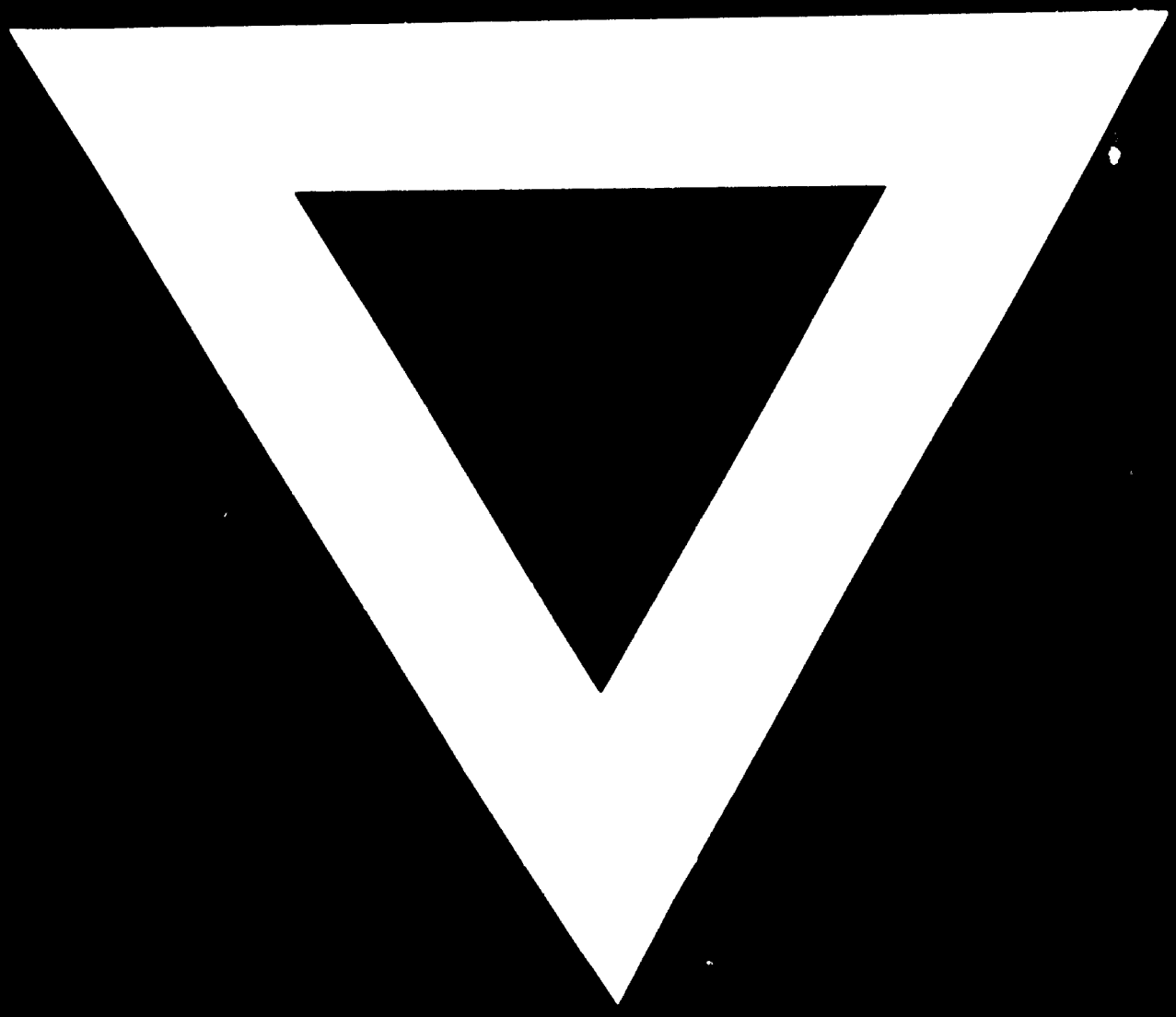
UNIDO ASSISTANCE FOR FUTURE DEVELOPMENT

For the growth of plastics industry in Pakistan it is of vital importance that processing facilities and skill in this field are developed extensively. A sound technical base for existing facilities as well as future projects must be established. Standardisation and quality control must be given high priority. The immediate need therefore is to reorganize the existing processing facilities on a sound

technical basis. Secondly a Plastics Centre should be established to ensure a constant flow of technical information and guidance in plastics processing and fabrication. Pakistan, like other developing countries does not have much experience in plastics technology. UNIDO assistance, is therefore required in establishing a Plastics Technology Centre and also to provide technical experts for establishing basic structure for the reorganization of existing plastics processing industries.

New plastics resin manufacturing and processing plants are being planned in Pakistan. It has been proposed that these plants be established as a joint venture with reputed foreign companies to benefit from their technical and managerial experience. In this way the technical know-how and skill of the local industry would develop. This would go a long way in the development of plastics industry in Pakistan. Here UNIDO help in providing contact with such foreign companies will be of great assistance.

UNIDO's existing training programmes on plastics are very beneficial and are assisting us to meet the country's need for training technical persons in this field.



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