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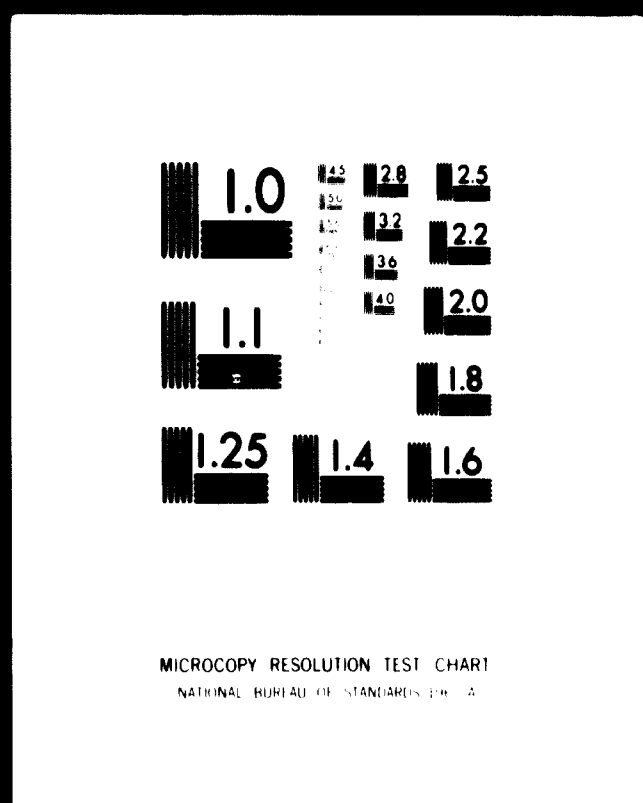
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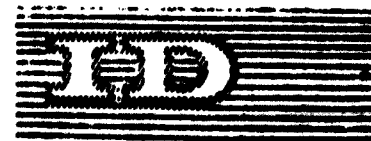
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Third Asian Meeting to Promote
Industrial Projects

Kuala Lumpur, Malaysia, 14-21 November 1973

Project Information Sheet

PETROCHEMICAL COMPLEX

COUNTRY

Bangladesh

PROJECT

Manufacture of Chemical Products
primarily PVC, PACN Fibres, Urea Fertiliser

Annual Capacities: PVC: 50,000 tons
PACN fibres: 12,000 tons
UREA: 320,000 tons

Estimated Capital Investment:
US\$280,000,000

FOREIGN CONTRIBUTION REQUIRED

Loan Financing
Know-how
Management

Sponsored by: The Economic Commission for Asia and the Far East (ECAFE) and
the United Nations Industrial Development Organisation (UNIDO).

IMPORTANT NOTICE

The basic purpose of this meeting is to provide an Exchange or Market Place for the initiation of contacts on specific industrial projects between their proponents from the Asian countries and potential suppliers of capital, finance, equipment or know-how, as the case may be, from the industrialized countries.

This Project Information Sheet has been prepared as a basis for such contacts. Its purpose is not to present detailed information about the project but to provide the recipient with an outline sufficient to determine tentative interest in principle. Any further available information on the project will be furnished on request to interested parties at the Meeting.

Experience has shown that industrialists frequently prefer to carry out their own further investigations in detail into projects in which they are interested, but assistance from UNIDO in these matters can be rendered to the Asian country concerned on request.

This Information Sheet contains only the information supplied to UNIDO by the proponent of the Project. UNIDO can therefore take no responsibility for its accuracy.

PETROCHEMICAL COMPLEX

I. THE PROJECT

The Bangladesh Fertilizer Chemical and Pharmaceutical Corporation (BFPC), a semi-public organization, wishes to establish a diversified but fully integrated petrochemical complex based upon natural gas, for the domestic market.

The project, to be located along the river Meghna near Ashuganj in the North Eastern part of Bangladesh, encompasses the production of ten different chemical end products of which the most important are: PVC resins, PACN staple fibres, caustic soda and urea fertilizer.

Plant and equipment with their respective installed annual capacities, on a continuous 24 hour basis, could be broken down as follows:

1st Section:	Electrolysis and caustic soda plant	36,000 tons
2nd Section:	Acetylene plant	50,000 tons
	Hydrocyanic acid plant	15,000 tons
3rd Section:	(Poly) Vinylchloride plant	50,000 tons
	(Poly) Methylmethacrylate plant	8,000 tons
4th Section:	Ammonia plant	200,000 tons
	Methanol plant	40,000 tons
	Urea plant	320,000 tons
5th Section:	PACN fibres plant	20,000 tons

In addition a number of auxiliary plants and installations will need to be erected to feed the complex with the necessary power, steam, water, raw materials and supplies, as follows:

Power station	65,000 KW
Steam plant	170 tons/hr at 3/5 atm.
Water supply	25,000 m ³ /hr
Waste water treatment plant	3,950 m ³ /hr
Fuel supply plant	600 K cal/hr
Instrument air plant	9,500 Nm ³ /hr
Central refrigeration plant	

The data contained in this project information sheet have been derived from a comprehensive technical and economic feasibility study conducted by a highly reputable consulting engineering firm specializing in the petrochemical industry. Inasmuch as this study was submitted in 1969 the capital cost estimates as also the revenue and production cost figures have been increased by 30% to provide for likely escalation until completion of the project.

Foreign Contribution Required

Total capital requirements, including auxiliary facilities and working capital, are estimated at US\$230,000,000 of which US\$148,000,000 (53%) is expected to be contributed by foreign collaborators either in the form of long-term loan capital or suppliers credit. Repayment of the loans will be guaranteed by the Government of Bangladesh.

Moreover, advice on basic planning, commissioning and start-up will be required while process know-how together with general and technical management is considered essential and is particularly sought from any prospective collaborator.

II. ECONOMIC ASPECTS

The project has been given the highest priority in the Bangladesh Annual Plan 1972/1973 and is the largest single industrial project planned for the coming 5-year period. Implementation of the project is expected to bring about a great number of overall internal and external economies of scale to the country but more specifically the following:

(a) the country's vast reserves of natural gas would be opened up for exploitation and utilized for producing some basic industrial raw materials and semi-fabricates;

(b) the country would save an annual amount equivalent to US\$110,000,000 in foreign exchange, being the cost of end products manufactured valued at world market prices less the cost of imported raw materials and supplies at full capacity;

(c) the project is expected to earn substantial profits which, if ploughed back into the industry may generate sufficient internal funds to build up a full-fledged chemical industry;

(d) the establishment of the project will provide employment to a minimum of 1600 persons with a total estimated annual wage bill of about US\$3,600,000. It will also provide ample training opportunities to local technicians and management staff in a field almost non-existent in Bangladesh at present;

(e) the proposed urea plant will produce cheap fertilizers which if properly distributed and supervised may have a marked impact on the use of fertilizers by local farmers resulting in increased agricultural productivity and boosting the incomes of rural population, and

(f) the plastic pipe, and pipe accessory manufacturing industry which to date has been highly uneconomical due to high raw material costs (PVC) will be produced and marketed under more favorable conditions, particularly as the demand for pipes is rising sharply following the implementation or planned implementation of a great number of flood control, drainage and irrigation schemes.

III. COMMERCIAL ASPECTS

During the last ten years a number of feasibility studies have been conducted on the utilization of Bangladesh natural gas deposits and companies from several countries (USA, Japan) as well as UNIDO have been invited to prepare detailed project/investment proposals.

The Market

Market surveys have been carried out on three major end products to be processed in the complex, fertilizer, PVC resins and PACN fibres.

Fertilizers

Total consumption of fertilizers in Bangladesh amounted to 275,000 tons of nitrogen and 16,000 tons of ammonia sulphate in 1969/1970. Though jute is still by far the most important crop grown in the country, most fertilizers (220,000 tons) are applied to rice cultivation (about 3.5 million acres). Fertilizer consumption for the country as a whole is still very low, averaging about 25 lbs per acre of land under rice cultivation.

Fertilizer distribution statistics show that sales have been more than doubled in the last 5 years from 130,000 tons in 1965/66 to 275,000 tons in 1969/70 indicating an average annual growth rate of 16%.

According to World Bank sources this increase has particularly been brought about by the introduction of a new agricultural credit system which, combined with a liberal fertilizer subsidy policy, made it possible for farmers to buy fertilizers at less than half the actual price.

Furthermore, the fertilizer distribution system has been completely reorganised and now comprises some storage space of 300,000 tons at district and divisional levels while some 20,000 wholesalers supply fertilizers to retailers at ward and village levels. Presently the only fertilizer factory in operation is at Fenchuganj with an installed capacity of approximately 100,000 tons of urea annually.

In view of the past market trend and owing to the good organisation of distribution channels it is anticipated that the entire output of the plant could be marketed locally without difficulty.

PVC Resins

Total consumption of PVC resins amounted to about 15,000 tons in 1970. Annual consumption of PVC per capita was 0.2 kilos compared to an average of 15 kilos of PVC in the industrialized countries. Implementation of flood, water and irrigation schemes, presently under consideration by the World Bank, is expected to result in a sharp increase of local demand for plastic pipes, valves, fittings, etc. requiring an increased supply of plastic raw material of which PVC is one of the most important. Market studies for PVC made by UNIDO anticipate that demand for PVC may be doubled to 30,000 tons annually by 1975.

PACN Fibres

Bangladesh is importing almost all its textile fibres (cotton, wool or synthetics) for the country's textile and clothing industry. According to a report prepared by UNIDO total textile fibre consumption is estimated at approximately 250,000 tons per annum in 1975 of which man-made fibres would constitute about 75,000 tons or 30% of the total consumption. Among the various man-made fibres polyester was expected to be the most popular with 40% of total consumption followed by acrylic fibres (PACN) which are assumed to account for about 15,000 tons or 20% of total consumption.

In view of the world-wide importance of man-made fibres in the textile industry and particularly in Bangladesh, and taking into consideration its population growth factor, prospects in Bangladesh for PACN fibres appear to be very bright. It seems therefore quite realistic to expect a rapidly growing demand for PACN fibres, conservatively estimated to amount to about 25,000 tons per annum by 1980.

<u>Estimated Profitability</u>	<u>US¢</u>	<u>US\$</u>
Sales Revenue*		140,000,000
Cost of raw material and supplies	12,930,000	
Utility costs	8,000,000	
Maintenance and Repair costs	3,600,000	
Direct and Indirect Labour costs	3,570,000	
Factory and Administrative Overheads	2,300,000	
Transport and Selling costs (incl. packing)	<u>5,000,000</u>	<u>35,400,000</u>
Trading Profit		104,600,000
Financial expenses	16,300,000	
Depreciation (Machinery 12 $\frac{1}{2}$ %) (Buildings 5%)	<u>29,700,000</u>	<u>46,000,000</u>
<u>Profit before tax</u>		<u>58,600,000</u>

IV. PHYSICAL ASPECTS

Location

The complex is planned to be situated near Ashunganj along the East bank of the river Meghna, Comilla District, about 60 miles N.E. of Dacca. The most favourable factors for this location are:

- (a) excellent transportation connections by rail, road and water;
- (b) proximity to port (Chittagong) for import of raw materials and supplies and possible future exports;
- (c) proximity to gas field (7 to 8 miles) supplying the basic raw material to the complex;
- (d) central situation with regard to market areas, mainly located in and around Dacca; and
- (e) relatively short distance from the main market of skilled labour in the country. All technical local staff will have to be recruited in Dacca while unskilled labour is abundantly available in neighbouring villages.

The main disadvantage of the site is that it is in a low lying area usually flooded during the rainy season so that a huge drainage system will have to be carried out to protect the complex against inundation.

*Sales revenues based on present minimum import CIF prices.

Raw Materials

The major raw material to be processed at the complex will be natural gas. Natural gas was first discovered in Bangladesh in 1955 (the Sylhet field). Since then six other gas fields have been located in various parts of the country with an estimated total reserve of about 156 billion cubic meters of natural gas.

The petrochemical complex would require a minimum of 490,000 tons of gas annually which is expected to be entirely supplied from the Titas gas field near Brahmanberia. For this purpose a pipe line of about 8 miles will have to be built from the gas field to the complex.

Technical specifications of gas show that it has a very high methane content (97%) and a low ethane content (1.3%) making it perfectly suitable for the production of acetylene, the basic raw material for PVC resins. Moreover, the exploitation cost of the gas is very low amounting to less than US\$ 0.01 per cubic meter. It is therefore anticipated that most chemicals could easily be produced at lower than world market prices.

Supplies and Utilities

Most supplies and utilities will be produced within the complex. Imports will therefore be confined to chemical catalyst, sterilizers and such other materials as sulphur and acetone totalling about US\$ 7 million annually.

Power will be supplied from the complex's own power plant. Water will be pumped from the nearby river and treated as required.

Labour

Total manpower requirements are estimated at 1610 persons broken down by divisions as follows:

Management	10 persons
Technical Division	1270 persons
Commercial and Financial	130 persons
General Administrative	<u>200 persons</u>
Total:	<u>1610 persons</u>

V. FINANCIAL ASPECTS

<u>Estimated capital cost:</u>	<u>Local Currency US\$</u>	<u>Foreign Currency US\$</u>	<u>Total US\$</u>
Land and Site Development	3,900,000	-	3,900,000
Buildings and Ancillary Facilities (incl. housing estate)	28,305,000	2,230,000	30,535,000
Machinery and Equipment (incl. transport and installation)	66,120,000	116,230,000	182,350,000
Engineering Services	1,300,000	13,130,000	14,430,000
Workshop and Office Equipment	2,835,000	910,000	3,745,000
Pre-investment and Start-up Expenses	8,710,000	3,705,000	12,415,000
Contingencies	10,470,000	11,795,000	22,265,000
Working Capital	<u>10,360,000</u>	<u>-</u>	<u>10,360,000</u>
Total:	<u>132,000,000</u>	<u>148,000,000</u>	<u>280,000,000</u>

Proposed capital structure

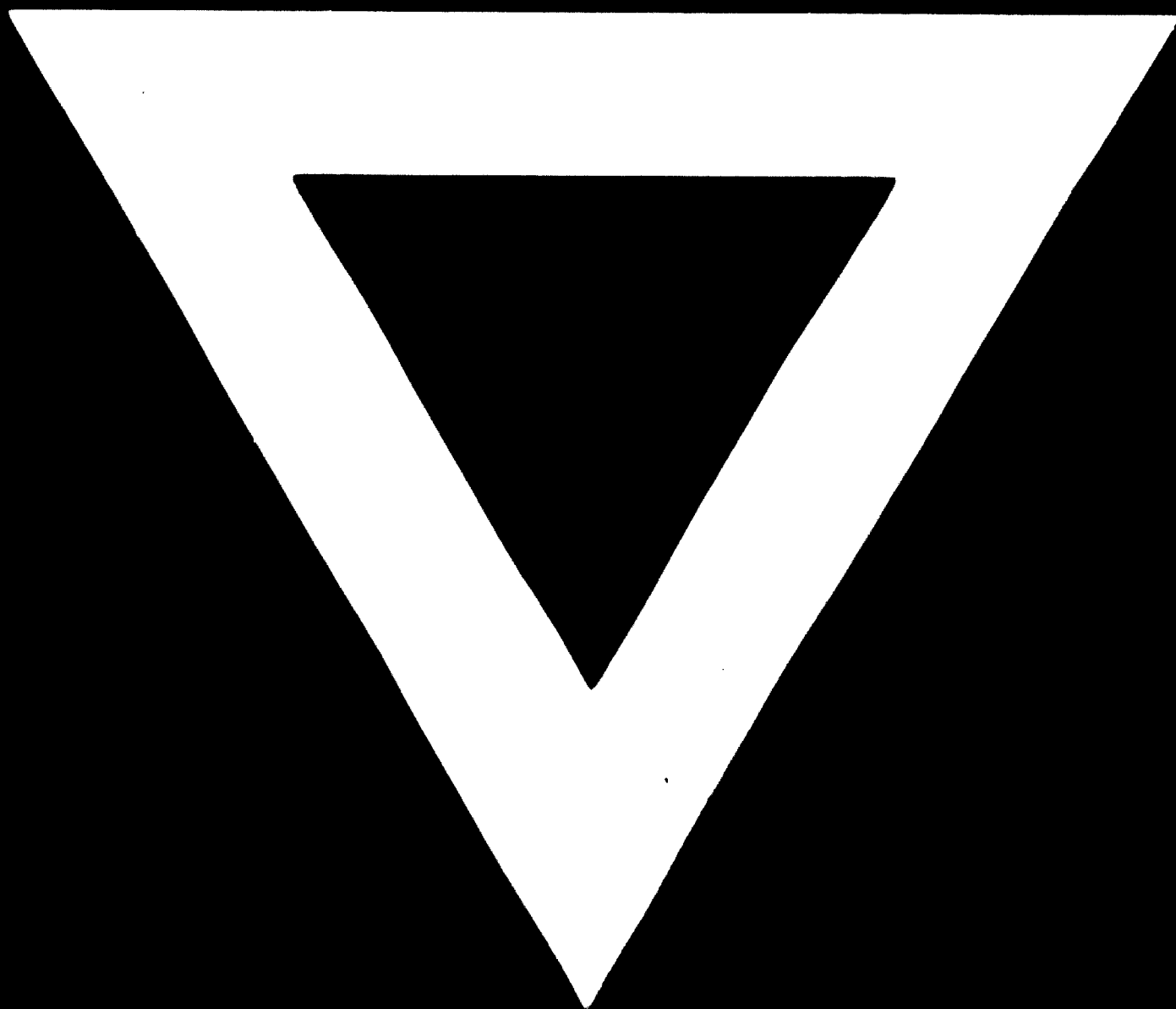
Equity	80,000,000	-	80,000,000
Loan capital	41,640,000	148,000,000	189,640,000
Overdraft (short-term credit)	<u>10,360,000</u>	<u>-</u>	<u>10,360,000</u>
TOTAL:	<u>132,000,000</u>	<u>148,000,000</u>	<u>280,000,000</u>

VI. OTHER RELEVANT INFORMATION

Address of proponent: Bangladesh Fertilizer, Chemical and
Pharmaceutical Corporation, Shilpa Bhaban, Motijheel, DACCA.



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