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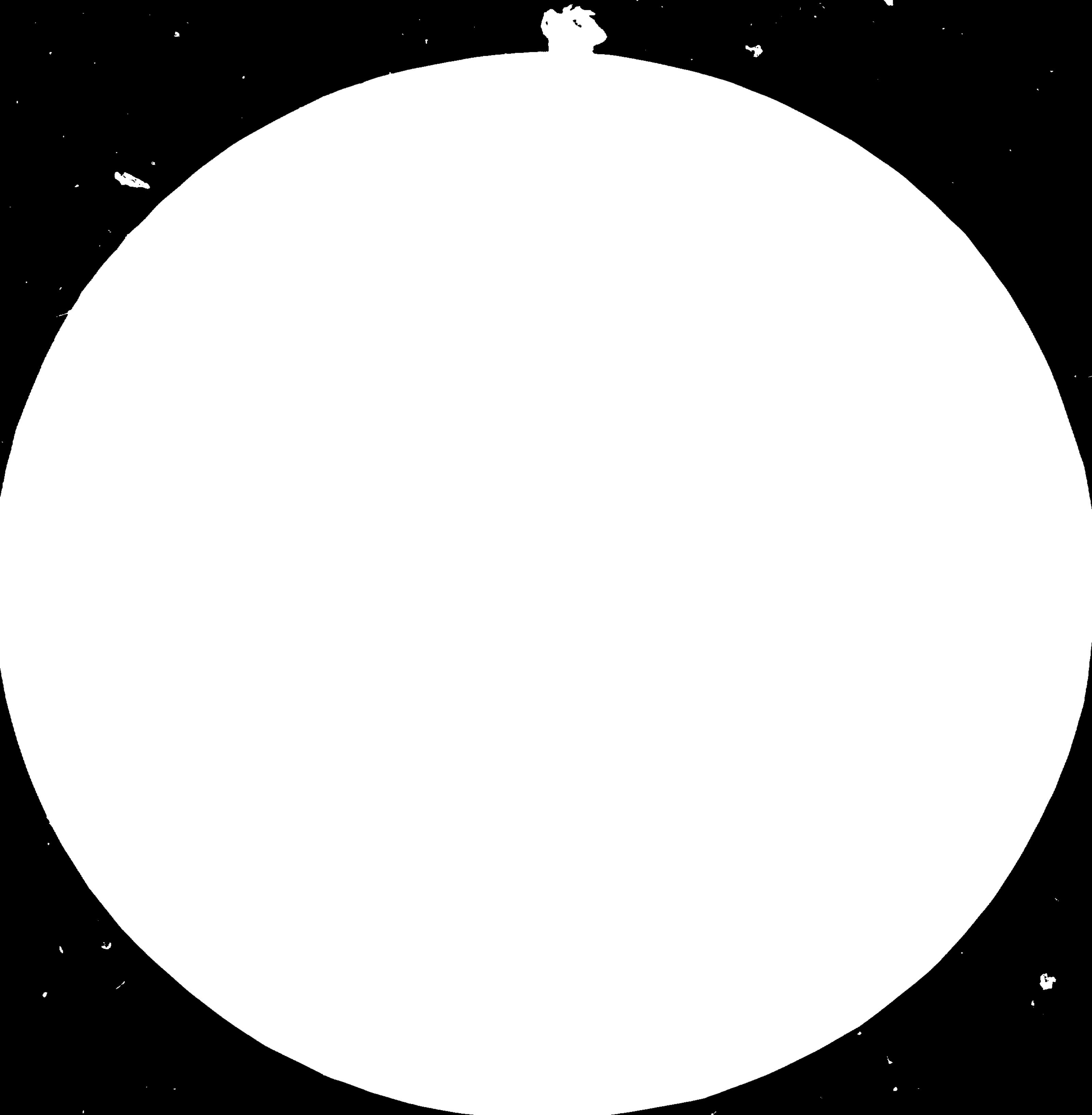

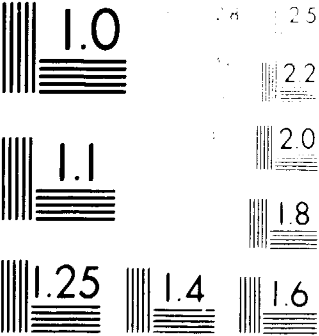
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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Distr.
RESTRICTED

UNIDO/IO/R.62
12 April 1983

English

APPRAISAL BY ISLAMIC DEVELOPMENT BANK ON POSSIBLE PARTICIPATION IN FINANCING OF METHANOL PRODUCTION IN BANGLADESH

TF/BGD/82/001

BANGLADESH

Technical Report : Methanol Production in Bangladesh*

Prepared for the Islamic Development Bank
by the United Nations Industrial Development Organization

Based on the work of B.D. Bohna,
Consulting Engineer

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INTRODUCTION

Under an agreement between the United Nations Development Organization (UNIDO) and the Islamic Development Bank (IDB), UNIDO provided the services of a consultant to join an IDB appraisal mission in reviewing the application of the Government of Bangladesh and the Bangladesh private sector for assistance in financing the construction of a 1250 MTPD export oriented methanol plant.

The UNIDO expert, Mr. B.D. Bohna, from the U.S., joined two staff specialists from the IDB, Mr. Nasimuddin Sidiqui, and Mr. Musa Musaffar Gul in Bangladesh on September 3, 1982. The appraisal team then spent seven days in Bangladesh reviewing the Methanol Project and another proposed project for the production of soda ash. A separate report has been prepared covering the Soda Ash Project. Under the terms of reference and in view of the limited time available priority was given to the Methanol Project.

This report prepared by the expert is intended to provide data for inclusion in the formal Appraisal Report being prepared by IDB for presentation to its Board of Directors.

CURRENT STATUS OF PROJECT

The private sector sponsor of the project, Bangladesh Export Import Corporation Ltd (BEXIMCO), has, with the approval of the Bangladesh Government approached the Islamic Development Bank for assistance in financing the proposed Methanol Project.

BEXIMCO has had the assistance of a major UK contracting firm, specialized in the design and construction of large scale methanol plants in preparing preliminary studies on plant capital costs, operating costs and economic viability. This firm,Davy-McKee (Oil and Chemicals) Limited has prepared and made available to the Government of Bangladesh a technical analysis in the form of a contractor's preliminary proposal and a detailed financial analysis, all based upon a firm commitment to the ICI low pressure process, procurement from UK sources, and a negotiated turnkey contract with Davy-McKee for plant engineering, procurement, and erection.

Based upon the work done by BEXIMCO and Davy-McKee the Government of Bangladesh has on entered into an exclusive contract with these two firms giving them the right to buy natural gas from the Government at a fixed formula price over the life of the plant, and to proceed with the promotion, financing, construction, and operation of a 1250 metric ton per day methanol plant. To assist in ensuring the success of the project, the Government also guaranteed certain benefits to the new industry in the way of tax holiday for an initial period, deferred payments for gas in the case of cash flow problems, certain tax benefits, protection of foreign investors, duty drawbacks, etc.

The Government has also agreed to take an equity position in the project, contributing 10% of the total required financing of $250 million.

The private sponsors of the project, BEXIMCO, Davy-McKee and others who may participate will arrange the balance of 90% of the total required financing. In particular Davy-McKee in consideration of receiving a negotiated turnkey contract for the plant will take a 7.5% equity position. The balance of the equity, excluding that taken by the Government, will be taken by BEXIMCO and others including possibly the financial institutions.

A copy of the contract between the Bangladesh Government and BEXIMCO and Davy-McKee together with a clarifyin- letter dated 2-11-81 is attached as Exhibit A hereto.

It can be noted that the whole agreement becomes effective only upon the fulfillment of the following conditions:

(i) Evidence that the full feasibility of the project has been established to the satisfaction of the Government.

(ii) The total financing has been arranged by BEXIMCO and Davy-McKee to the satisfaction of the Government.

(iii) Specifically that any loans arranged for the project are consistent with maintaining the economic viability of the project and will impose no requirement that the Government provide any foreign exchange for the construction or operation of the project.

(iv) Finalization of a guaranteed export marketing contract.

This agreement remains valid up to December 31, 1982 on the condition that progress on its implementation will be reviewed in July, 1982 and the Government has the right to terminate the agreement in the event no substantial progress has been achieved.

REFERENCE MATERIALS PROVIDED

The appraisal team was provided with copies of the following preliminary studies:

(1) "Feasibility Report - Bangladesh Methanol Plant, Vol.1 - Financial Analysis." (Davy-McKee-1981)

(2) "Feasibility Report - Bangladesh Methanol Plant, Vol.2 - Technical Analysis" (Davy-McKee-1981)

(3) "Technical and Economic Viability of Methanol Production in Bangladesh" (UNIDO-Manderstam 1982)

A reference copy of the Summary section of "Bangladesh Energy Study"(Asian Development Bank for UNDP) was made available from the library of the IDB.

Copies of various pertinent correspondence were available from the IDB files.

ASSISTANCE TO THE APPRAISAL TEAM

The IDB appraisal team was greatly assisted while in Bangladesh by arrangements made by the External Resources Division of the Ministry of Finance of the Government of Bangladesh. The following Government officials were especially helpful:

Dr. Muhuiddin Alangir - Joint Secretary (Also Executive Director - IDB)

Dr. Aminul Huq

Mr. M.A. Malek - Senior Section Officer

Useful information was also provided by staff of the Government owned Chittagong Urea Fertilizer Ltd., which is starting work on a large urea plant in the same general area as the proposed methanol plant. The IDB is participating in the financing of this project under a leasing arrangement for the onsite power plant.

Mr. Ejaz R. Chaudhury - Project Director (Dacca)

Mr. F.H. Chaudhury - Chief Engineer (Dacca)

Mr. M.D. Kamal Uddin - Assistant Civil Engineer (Chittagong)

Mr. A.S.M. Shah Alam - Assistant Civil Engineer (Chittagong)

The basic presentation by the local private sector sponsor of the project, BEXIMCO, was made by:

Mr. M. Saifud Dahar Shakid - Senior Vice President (Mechanical Engineer)

Mr. M.D. Aminul Hoque - Executive

FIELD INSPECTIONS

The IDB appraisal team visited the proposed site (B-1) for the methanol plant on the West Bank of the Karnafuli River adjacent to the Chittagong Export Processing Zone, Patenga , as well as alternative sites considered upon both the West and East Banks.

They also visited the site of the new urea plant being built by the Chittagong Urea Fertilizer Plant and talked with engineers in charge of the dredging and site filling work which was just starting.

Other construction sites visited for the purpose of obtaining information on current construction practices and costs included:

(a) 230 KV aerial crossing of Jamuna (Brahmaputra) River, termed the East-West Interconnector, being constructed by the Korea Development Corporation.

(b) Pipe hauling and stringing operations for Bakhrabad-Chittagong natural gas pipeline being constructed by

COMMENTS

1. Export of Gas as Methanol Within the Context of the Overall Energy Plan For the Country.

A pre-feasibility study on the potential for export of methanol or liquified gas was presented in the Bangladesh Energy Study (1976).

This study placed the export value of natural gas f.o.b. Chittagong at $4.03/1000 SCF with Persian Gulf crude oil at $24.00 per barrel. Oil at the time of the study was $12.00 per barrel predicted to rise by the year 2000 to $24.00 per barrel.

The opportunity cost for gas within the overall context of the energy plan for the country was calculated. This estimate, based upon a gas supply adequacy of 40 years, as relevant to the projects recommended in the energy study, and a discount rate of 10% and a value of crude oil of $12.00 in 1990, set the value of gas in the ground at 8 Taka or $0.36/1000 SCFM based on todays exchange rate of $1.00/22.0 Taka.

The Energy Study clearly established the favorable economics of methanol over liquified natural gas for the purpose of exploitation of gas reserves for domestic or export use as a fuel.

Although this Energy Study is now out of date it is possible to deduce in a quantitative sense that the change in parameters, i.e. (a) higher crude oil prices (b) continued high interest (discount) rates, and (c) expanding prospects for discovery of additional gas reserves, all favor the early exploitation of natural gas providing it is commercially profitable to do so.

2. Gas Reserves

All sources indicate sufficient gas reserves to serve the plant for an estimated life of 15 years or longer.

3. Selection of Process

This subject is covered adequately in the Manderstam Report (1982). As noted there are two low pressure processes available on the market, ICI and Lurgi. Although the ICI process, which is proposed for the present plant, seems to be favored in general in terms of large plants already built or under construction the Lurgi process has certain known advantages i.e. smaller cooling water and feedwater requirements and reduced usage of catalysts and chemicals. A disadvantage of the Lurgi process is a 47% increase in the use of electric power. Page 33 of the Manderstam report sets out the rationale for competitive bidding as a means of selection of the most economic process. Competitive bidding on both process and costs is normally recommended on process type plants and can often affect final plant costs by 5-10%.

4. Capital Cost

Two separate preliminary estimates of capital cost are available:

a) Davy-McKee provides a contractor's negotiated turnkey price proposal of $205.0 million exclusive of a separate contingency allowance of $21.3 million. Included is a figure of $5.6 million for land and site preparation.

b) Manderstam using more generalized engineering estimating procedures arrives at a 1982 price of $212 million. It is not clear whether this estimate includes the cost of land and site preparation but normally it would not. The estimating procedure used while commonly accepted for preliminary feasibility purposes may easily vary from actual cost by ± 25%.

c) Placing the two estimates on a common base the capital cost for the purpose of analysis of financial viability of the project, the cost of the project would be:

Davy-McKee	\$205.0 mm	
	21.3	
		\$226.3 mm
Manderstam	\$212.0 mm	
Land and Site	5.6	
preparation	53.0	
Possible Error(25%)		\$270.6 mm

d) Thus the sensitivity testing of the Davy-McKee price in the economic viability analysis should include the possibility of a cost over-run on plant cost on the order of:

$$\frac{(270.6 - 226.3)}{226.3} \quad 20\%$$

The sensitivity analysis provided includes that for an over-run in plant cost of 20%.

e) Therefore it seems realistic to accept the Davy-McKee estimate of plant cost of \$226.3 million for the purpose of economic viability analysis.

5. f.o.b. Price of Methanol

The Manderstam report projects a 1986 f.o.b. price of $255/MT, with a 3% per annum rise in price between 1986-1990. This places the 1990 projected price at $287. However with a predicted oversupply in the Asian Pacific Region the prospects for an improvement in the trend before 1990 are slight. The prospects for an oversupply resulting in a 20% fall in prices could bring the price as low as $190/MT in 1986.

Davy-McKee assumes a 1981 f.o.b. price of $160/MT with an escalation rate of 6% per annum. This places the projected 1986 price at $214/MT and the 1990 price at 270.

The Davy-McKee sensitivity analysis covers the full range of f.o.b. prices including a "worst case" scenario of a 20% increase in Fixed Investment Cost and a 20% decrease in the assumed Methanol sales price.

The lower Davy-McKee sales price estimates in the early years appear to be more realistic and acceptable for analytical use at this stage in the project, especially since negotiations are yet to be initiated on guaranteed contract sales.

6. Operating Costs

It is premature with the process not finally selected, and site location, infrastructure, and utility costs indeterminite to attempt any comment on operating costs.

The figures projected by Davy-McKee may be accepted for use in studying financial viability until more accurate data is available.

7. Plant Location

For an export oriented methanol plant all indications are that the plant should be located in the Chittagong port area. It would appear premature however to conclude at this time that the BEXIMCO - Davy-McKee selected B-1 site on the West Bank is more suitable than a site on the East Bank.

The principal factors influencing the Project sponsors to favor Site B-1 rather than an East Bank site adjacent to the developing chemical complex are stated as a lack of suitable position for a product loading jetty and lack of infrastructure in the area as presently developed.

It would appear that with the start of construction on the Chittagong Urea Fertilizer Plant the situation could change rapidly. Furthermore it is understood that the KAFCO project, a proposed export oriented urea plant, is not yet financed and its construction is therefore not assured. Likewise the soda ash project proposed by Basic Chemicals Limited, which the IDB is also currently reviewing is still in the very early stages of development. The site currently favored by the sponsors of the soda ash project is at Kelurquat, outside of the Chittagong area. Hence it appears that by the time financing has been arranged for the Methanol Project, one of the other two more desireable West Bank sites might be found to be available. It is understood that all of the land on the West Bank area is owned or controlled by the Government. Hence some optimization of the siting of new chemical industries in which the Government has an equity position could normally be expected.

Ultimately the final selection of the site should be made with full consideration of its effect on capital cost but also on the operating costs and the f.o.b. cost of the finished product.

8. Plant Utilities and Infrastructure

The several new chemical plants proposed for the Chittagong port area have certain requirements in common.

(a) All are large users of natural gas to be obtained from the Bakhrabad-Chittagong Pipeline now under construction.

(b) All are users of electrical power, i.e.:

Chittagong Urea Fertilizer Limited		MW
Proposed BEXIMCO Methanol Plant	9	MW
Proposed Basic Chemicals Limited - Soda Ash Plant	13	MW

(c) All have large plant cooling water requirements, i.e. :

Chittagong Urea Fertilizer Limited	1200 TPH
Proposed BEXIMCO Methanol Plant	10,800 TPH
Proposed Basic Chemicals Limited Soda Ash Plant	5,000 TPH

(d) All have a certain amount of waste product which will discharge into the river.

(e) All have a need for ready access to water, rail, and road transportation.

(f) All have a need for housing and facilities for employees.

It seems obvious that the above requirements in the Chittagong port area should be analyzed by Government planning authorities and integrated into an overall plan which would provide for further development of industry in the area. This plan would address such items as zoning, pollution control, traffic patterns, and provision of basic services.

In fact, there may now be such plans but the IDB team was not made aware of them. The impression is that each new industry is proceeding on its own to develop whatever new facilities it needs for its own purposes. As a result already major problems are developing and they will rapidly become unmanageable without overall planning.

There could also be the probability of major savings in capital and/or operating costs should it be possible to combine steam and electric power requirements into larger installations common to more than one plant.

To illustrate this point some examples can be cited:

(a) Electric Power - The Bangladesh Energy Study projects the investment required in power generation through the year 2000. In the period between 1980-1986 there are a number of new generating facilities planned. These are generally in the 63-120 MW size. Would it not be more economic and perhaps provide more reliability in service to industry to install one new 50-75 MW steam power plant in the Chittagong Port Area using high pressure steam for power and low pressure exhaust for process heat rather than forcing private industry to install its own more costly small plants in the 10-20 MW range? Private industry now generally relys on the national power grid for backup to more reliable on-site power generation but it may be questionable whether the grid can accomodate loads of the magnitude indicated should the need arise.

(b) Plant Cooling Water - In this country of abundant water the chemical industry is already struggling with its cooling water requirements. By as early as 1978 the Triple Phosphate Complex in Chittagong had developed a serious problem with the deterioration of water from its tube well system. Over a period of time the quantity from each well had decreased and the salinity increased. Plant operation was intermittent with the management making do in a makeshift manner with water from three sources - well water, water direct from the river, and fresh water piped from the Chittagong city water supply. Because of the continuing water problem the IDB appraisal team found the BEXIMCO Methanol Plant planning upon using sea water in a once through system distilling sea water for boiler makeup and general purposes - normally a very expensive alternative. The Chittagong Urea Fertilizer Plant apparently plans on building a 25 kilometer water pipeline from Kalurghat. The Basic Chemicals Limited Soda Ash Plant has been moved out of the Chittagong area to Kalurghat to the source of adequate water supply sacrificing perhaps an opportunity to purchase needed ammonia from a larger plant rather than manufacture its own in a small high cost plant. There are undoubtedly Government plans for water supply to the Chittagong Export Processing Zone, Patenga, but the development of water supply for larger plants seems to be developing in a piece - fashion.

(c) Waste Water Pollution Control - While it is recognized that developing countries cannot perhaps afford to burden themselves with the cost of protecting the environment to the extent that it is done in the industrialized world it appears that at least some general guidelines should be promulgated. At the moment the impression is that there are no environmental controls. In areas such as the Chittagong Port where a concentration of plants may develop it is important to at least be aware of the consequences of uncontrolled dumping of waste.

9. Economic Viability

The basic economic viability of the proposed plant is confirmed by both the Manderstam and Davy-McKee studies.

Manderstam states that the cost of production in a developed country to give a reasonable rate of return or equity (about 15% after tax) would currently be on the order of $230-240 per ton.

The detailed financial analysis provided by Davy-McKee based upon their assumed conditions of plant siting and utility cost, the characteristics of the ICI low pressure process and financing formula shows costs well below this figure. A full range of sensitivity testing is provided.

Subject to further detailed checking by the IDB financial section it would appear unnecessary to question the economic viability of the project at this stage.

Plant economics may be substantially effected by marketing arrangements however and it would appear that final detailed analysis must await the finalization of market contracts.

CONCLUSIONS

1. Preliminary analysis shows that for the conditions assumed in the Davy-McKee Financial Analysis the project is economically viable.

2. The whole question of BEXIMCO - Davy-McKee's ability to proceed with the project depends upon their success in arranging firm market contracts within a reasonable period. Given reasonable effort and progress in this area the Government will probably extend their present "Memorandum of Understanding" beyond its expiration date of December 31, 1982.

3. Final marketing arrangements may greatly effect the general and financial structure of the company. If as expected the primary export market is in Japan it seems unlikely that firm contractual arrangements for marketing say 80% of the plant production can be concluded without some change in the contractual commitments to Davy-McKee.

4. In the final analysis, if there are more favorable alternatives available to the Government than the initial conditions set with Davy-McKee, it is expected that the "Memorandum of Understanding" may be renegotiated. One of the most desireable changes would be to agree on some form of competitive bidding which would impose a form of cost control and assure the selection of the most efficient process for the prevailing Bangledesh conditions. In the end this is likely to be dictated by the commercial aspects of arranging firm marketing contracts.

5. If the present contractual arrangements between BEXIMCO, Davy-McKee, and the Government are to prevail it will be necessary for the Government or the outside financial institutions to provide unusually strong independent administrative control on the project to ensure that no conflict of interest should develop during turnkey contract negotiations.

6. The problems of site and services are not likely to be resolved in an optimum way without guidance from the Government on overall planning for industrial development in the Chittagong Port area.

7. The Government of Bangladesh should be asked for written confirmation that they have reviewed the progress on the project as of July 1982 and are satisfied that substantial progress has been achieved and to state until what date the "Memorandum of Understanding" is valid (i.e. has date of December 31, 1982 been extended).

RECOMMENDED FOLLOWUP

1. The present organization and structure of the project does not provide for any independent check by competitive bidding on the project process or cost. At the appropriate time the IDB should start developing an independent data base on the actual current cost of plants of a similar size to permit knowledgeable negotiations with BEXIMCO- Davy-McKee to proceed on an informed basis as the project proceeds.

A new world scale methanol plant has just been commissioned by Ocelot Industries Ltd. with Mitsui as a marketing partner in Kitimat British Columbia. Negotiations on purchase of gas for this plant were carried out with the provincial government. Since this plant is current and competitive in the world market with the proposed Bangladesh methanol project, it would be useful to place on file as much detailed information as can be obtained on this plant including capital cost (including details of items included), plant process and mechanical details, utility costs, gas purchase formula, etc. Such information can then be used to supplement more generalized data available through the World Bank, UNIDO, or other international organizations.

MEMORANDUM OF UNDERSTANDING ON METHANOL PROJECT IN BANGLADESH

AMONG

(i) GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH, Dacca, Bangladesh (hereinafter referred to as GOVERNMENT OF BANGLADESH)

(ii) BANGLADESH EXPORT IMPORT COMPANY LIMITED, a public limited company registered in Bangladesh under the Companies Act, 1913 and having its registered office and principal place of business at 17 Dhanrondi Residential Area, Road No.2, Dacca, Bangladesh (hereinafter referred to as BEXIMCO)

AND

(iii) DAVY McKEE (Oil and Chemicals) LIMITED, a company incorporated under the laws of England and having its principal place of business at Powergas House, 8 Baker Street, London, United Kingdom (hereinafter referred to as DAVY)

ARTICLE 1: BACKGROUND

1.1. GOVERNMENT OF BANGLADESH is desirous of promoting export oriented natural gas based project in Bangladesh and accords high priority to the development of this sector. In pursuance of this policy, GOVERNMENT OF BANGLADESH have agreed to allow setting up of an export oriented methanol plant in collaboration with the private sector.

1.2. BEXIMCO and DAVY have expressed their desire to collaborate with GOVERNMENT OF BANGLADESH in the framing, construction and operation of such a plant to be located in Chittagong, based on gas to be supplied from Bakhrabad Gas Field. DAVY has the required know-how and tecnnology for construction of such a plant and is engaged in the business of design and construction of such plants.

1.3. BEXIMCO and DAVY have agreed to secure 90% of the total finance of the project and the balance 10% will be provided by GOVERNMENT OF BANGLADESH.

ARTICLE II: DETAILS OF THE PROJECT

2.1. The project involves the construction of a 1250 tonnes per day capacity of methanol plant and associated off-sites at Chittagong. The plant will use the feed stock of natural gas from Bakhrabad Gas Field. It is expected that the methanol plant would use up to 40 MMSCF of gas every day to be supplied from the Bakhrabad Gas Field.

2.2. The estimated cost of the project is US$ 250 million with the foreign exchange component of US$ 206 million. It is agreed between the parties that the cost estimated should be thoroughly scrutinized, examined with reference to similar plants elsewhere and revised if necessary, before final acceptance of the cost.

2.3. The entire production of the plant shall be earmarked for export from Bangladesh.

ARTICLE III : FINANCING ARRANGEMENT

3.1. The total estimated project cost of US$ 250 million is proposed to be divided into a debt-equity ratio of 70:30.

3.2. The contribution of GOVERNMENT OF BANGLADESH to the total cost of the project will be limited to 10% of the total cost which roughly comes to around 30% of the equity. This contribution will be made entirely in local currency.

3.3 The private sponsors of the project i.e. BEXIMCO, DAVY and other sponsors to be inducted will provide the balance 90% of the total cost of the project including the total foreign exchange cost.

3.4 DAVY has agreed to take 7.5% equity of the project and the balance 62.5% will be arranged by BEXIMCO and other sponsors including the financial institutions.

3.5 DAVY has obtained commitment in principle from the Export Credits Guarantees Department (ECGD) of the United Kingdom and other Export Credits Authorities for loan financing of the project at the consensus interest rate for export credits of the OECD countries for up to 85% of the Goods and Services from outside Bangladesh.

3.6 International Finance Corporation, an affiliated body of World Bank, has shown interest in participating in the equity and syndicating loan for the project. Positive response has also been received from the Islamic Development Bank for equity participation at the initiative of BEXIMCO

ARTICLE IV : ASSURANCES BY GOVERNMENT OF BANGLADESH

4.1 GOVERNMENT OF BANGLADESH shall accord fair and equitable treatment to the foreign investors who shall be given full protection and security in Bangladesh.

4.2 GOVERNMENT OF BANGLADESH shall accord a high priority to the project and shall not accord the foreign investors a less favourable treatment than what is accorded to its citizens or legal entities engaged in similar export industry/business in Bangladesh in the application of the relevant laws, rules and regulations.

4.3 GOVERNMENT OF BANGLADESH shall accord the foreign investors the protection and priveleges as available under the Foreign Private Investment (Promotion and Protection) Act, 1980.

4.4 GOVERNMENT OF BANGLADESH shall accord five year tax holiday to the proposed company and 50% rebate on income thereafter for being an export oriented industry.

4.5 GOVERNMENT OF BANGLADESH shall not insist on retained earnings on profits by the proposed company during the tax holiday period and withholding tax on dividends for all foreign share-holders shall be at a rate not exceeding 10%.

4.6 The proposed company shall enjoy duty draw-backs on imports of chemicals/raw materials used in the production and export of methanol.

4.7 The foreign lenders shall be fully exempted from payment of any tax, duty, levy, charges fee etc., on interest and other income in respect of the loans granted for the projects.

4.8 The expatriate personnel needed for execution and operation of the project shall not be subject to any income tax on their salaries during the first three years from the date of their arrival in Bangladesh provided such salaries are not taxed in their own countries.

4.9 GOVERNMENT OF BANGLADESH shall actively assist in the initiative of BEXIMCO and the foreign sponsors to secure loan and equity for the financing of the project.

4.10 GOVERNMENT OF BANGLADESH shall actively assist the proposed company to obtain or acquire land needed for the project site.

GAS PRICE

4.11 There shall be a floor price of gas equivalent to US$ 2 per million BTU from the first year of operation which should be not later than 1985-86. The price of US$ 2.00 shall be inclusive of all taxes and duties.

4.12 Subject to the floor price of US$ 2 per million BTU the gas price shall be tied to an escalation formula linked with the international price of methanol.

Price formula is given in APPENDIX - A

4.13 In the event of any cash flow problem, 50% of the gas price for the first years, from the date of operation may be allowed to be paid on deferred payment basis.

ARTICLE V : CONDITIONS BEFORE INCORPORATION OF THE COMPANY

5.1 The Understanding in this Memorandum will become effective and steps would be taken to form a public limited company with the share capital as specified in Article III for the purpose of construction, erection and operation of the said methanol project upon fulfilment of the following conditions:

(i) Evidence that full feasibility of the project has been established to the satisfaction of GOVERNMENT OF BANGLADESH.

(ii) The total financing of the project has been arranged to the satisfaction of GOVERNMENT OF BANGLADESH.

(iii) The loan for the project has been arranged on such terms and conditions as would make the project economically viable and also that the repayment of the loan including interest thereon, as also recurring foreign exchange requirements for the operation of the plant, should be met out of the export proceeds of the product and that GOVERNMENT OF BANGLADESH shall provide no foreign exchange for this purpose.

(iv) The guaranteed export marketing arrangement has been finalised and evidence to this effect has been produced to the GOVERNMENT OF BANGLADESH.

ARTICLE VI: INCORPORATION OF THE COMPANY

6.1. On fulfilment of the conditions of Article V above, the parties would form a joint venture company to be incorporated under the Companies Act, 1913 in Bangladesh.

6.2. The name of the said joint venture company shall be BANGLADESH METHANOL COMPANY LIMITED (hereinafter referred to as the COMPANY).

6.3. The objective of the COMPANY will be to establish and to operate the plant for the production of methanol in Bangladesh and to market the product abroad and to carry out works and activities which are necessary for the project. The private sponsors also agree that they shall take the responsibility for incorporation of the COMPANY under the laws of Bangladesh and take all measures required in this respect.

6.4. The authorised capital of the COMPANY shall be approximately Tk. 200.00 crores divided into 20,00,000 shares of Tk. 1000.00 each.

6.5. The issued capital of the COMPANY shall be Tk. 150.00 crores approximately.

ARTICLE VII : MEMORANDUM OF ARTICLES OF ASSOCIATION AND MANAGEMENT OF THE COMPANY

7.1 The Memorandum and Article of Association of the COMPANY shall be finalised in consultation with the Export Credits. Guarantees Department of the United Kingdom, the International Finance Corporation, the Commonwealth Development Corporation, Islamic Development Bank and other persons who have shown interest in contributing to the equity of the COMPANY and/or otherwise participating in the financing of the project.

7.2 There shall be a Board of Directors of the COMPANY which will remain responsible for the management of the COMPANY.

7.3 The Board of Directors shall be constituted with minimum nine Directors with GOVERNMENT OF BANGLADESH representation proportionate to its share-holding.

7.4 The Managing Director of the COMPANY shall be the Chief Executive of the COMPANY and shall be appointed by the Board of Directors on the nomination of BEXIMCO on behalf of the private investors.

7.5 The Chairman of the COMPANY shall be appointed by the Board of Directors of the COMPANY.

7.6 The management of the plant for operation may be given to a reputed company experienced in methanol production on such terms and conditions as may be agreed by the Board of Directors.

ARTICLE VIII : CONTRACT AND AGREEMENT

8.1. Simultaneously with the formation of the COMPANY or as soon as possible thereafter the parties to the Memorandum of Understanding agree to finalise and sign the following contracts and agreements:

i) A gas supply agreement between COMPANY and Bakhrabad Gas Systems Limited.

ii) A Methanol Sale Agreement between COMPANY and the purchaser of Methanol.

iii) A supply contract for the plant between COMPANY and DAVY.

iv) An agreement for the operation of the plant between COMPANY and the Operating Company.

v) Financial agreements with the Export Credits Guarantees Department of the United Kingdom, and/or the International Finance Corporation and/or the Commonwealth Development Corporation and/or the Islamic Development Bank and/or others to obtain sufficient financing facilities to enable the plant to be built by a mixture of export credits, commercial loans and equity in COMPANY.

ARTICLE IX : SUPPLY OF PLANT AND EQUIPMENTS

9.1. In consideration of DAVY arranging credits from the Export Credits Guarantees Department of the United Kingdom and contributing 7.5% in the equity of the COMPANY, the DAVY shall be awarded contract for supply of plant and machineries to the COMPANY for the said project at the internationally competitive price to be negotiated between the GOVERNMENT OF BANGLADESH and DAVY. Supply of machineries and equipments could be on a turnkey basis with adequate guarantee for operation.

9.2. DAVY may proceed with the preliminary works relating to engineering and design work of the plant on condition that such expenses as may be incurred by them for this purpose would be reimbursed to them and/or capitalised on the formation of the COMPANY after fulfilment of the conditions stated in the Article V of this Understanding.

9.3. The expenses incurred for the porject by BCIC acting on behalf of GOVERNMENT OF BANGLADESH and by BEXIMCO and DAVY shall, after incorporation of the COMPANY, be reimbursed to them and/or capitalised if the Board of Directors approve the same.

ARTICLE X: VALIDITY OF THE MEMORANDUM OF UNDERSTANDING

10.1. This Understanding shall remain valid upto December 31, 1982 on condition that the progress in its implementation shall be reviewed in July, 1982. In the event no substantial progress has been achieved by them, GOVERNMENT OF BANGLADESH ay at its option terminate the Understanding.

10.2. GOVERNMENT OF BANGLADESH shall not enter into any other Understanding or make any commitments for another methanol plant in Bangladesh during the pendency of this Understanding which shall affect the interest of this project, without the consent of the private sponsors.

ARTICLE XI: AMENDMENT

This Understanding may be expanded, modified or amended in writing by unanimous decision of the parties to this Memorandum.

ARTICLE XII: NOTICES

All notices and other communications hereunder shall be made in English, by Telex, Cable or by Mail and any notice and other communication shall be deemed to have been properly served if the same are addressed as follows:

GOVERNMENT OF BANGLADESH:		MINISTRY OF INDUSTRIES SHILPA BHABAN MOTIJHEEL COMMERCIAL AREA DACCA, BANGLADESH.
BEXIMCO	:	17, DHANMONDI RESIDENTIAL AREA ROAD NO.2, DACCA, BANGLADESH.
DAVY	:	POWERGAS HOUSE 8 BAKER STREET LONDON/UK.

Enclosed: Appendix I forms part of this Understanding

IN WITNESS WHEREOF THE PARTIES ABOVE-NAMED HAVE DULY SIGNED THIS MEMORANDUM OF UNDERSTANDING ON THIS TWENTY THIRD DAY OF DECEMBER, 1981.

FOR GOVERNMENT OF THE PEOPLE'S
REPUBLIC OF BANGLADESH

M. Matiul Islam
Secretary
Ministry of Industries.

FOR BANGLADESH EXPORT IMPORT COMPANY LIMITED

A. S. F. Rahman
Chairman

FOR DAVY McKEE (Oil & Chemicals) LIMITED

Derek Markland
Director

APPENDIX A

Gas Price formulae

A. For Gas delivered during the first Contract Year the price shall be equal to:

$$Ao = \frac{Bo - Co}{D} \times r$$

Where:

Ao = price of Gas in US Dollar per MMBTU

Bo = The initial sales price of methanol product in US Dollar per metric ton FOB Chittagong fixed for the first shipment.

Co = The estimated total operational expenses per metric ton of methanol product during the first Contract Year excluding the cost of Gas, but including depreciation, taxes paid or taxation liabilities incurred, and payments of interest and repayments of principal on outstanding debt.

D = The Daily Contract Quantity expressed as MMBTU per metric ton of methanol product.

r = A factor which will ensure 20% return net of taxes on a discounted basis to the share-holders. This factor is to be negotiated.

B. For Gas delivered in the second and subsequent Contract Years the price shall be equal to:

$$A = Ao + \left[\frac{(B-Bo) - (C-CO)}{D} \quad X \quad r \right]$$

Where:

A = Price of Gas in US Dollar per MMBTU for the current year.

Ao = Price of Gas in US Dollar per MMBTU in the first Contract Year as calculated in accordance with A.

B = The weighted average sales price of methanol product in US Dollar per metric ton FOB Chittagong during the preceding Contract Year.

C = The actual total operational expenses per metric ton of methanol product produced during the preceding Contract Year excluding the Cost of Gas but including depreciation, taxes paid or taxation liabilities incurred, and payments of interest and repayments of principal on outstanding debt.

and Bo, Co, D and r are as defined in A.

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF INDUSTRIES

No.Socy/Ind-276/81 Dated: 2-11-1981.

To: Mssrs Bangladesh Export Import Company Ltd.,
Dacca.
and
Messrs Davy McKee (Oil and Chemicals) Ltd.,
U.K.

Sub: Setting up of Methanol Plant in Private Sector in Bangladesh.

Dear Sir,

With reference to your letter of August 28, 1981 addressed to the undersigned, I am to inform you the following Government decision on the question of gas price and other fiscal incentives for the above project:

a) The gas price should be tied to an escalation formula linked with the international price of Methanol. However, irrespective of the result of the formula, the floor price of gas from the first year of operation, which should be no later than 1985-86, should be $ 2.00 per million BTU inclusive of all taxes and duties. The details of the formula are given in the enclosed sheet.

b) In the event of cash flow problem, 50% of the gas price upto 3 years may be realised on a deferred payment basis;

c) GOB will not insist on retained earnings on profits during the tax holiday period;

d) Withholding tax on dividends shall be limited to 10% for all its share-holders;

e) The Company will be entitled to a tax holiday for a period of 5 years from the date of commercial production on the basis of its projected location and 50% rebate on income thereafter, being a 100% export oriented industry;

f) The Company will enjoy duty-draw back on chemicals imported into Bangladesh and used in the production of Methanol;

g) The foreign lenders shall be fully exempt from payment of any taxes, charges, etc. on interest and other income in respect of the loan granted for the Plant;

h) The expartriate personnel shall not be subject to any income tax on their salaries during the first three years of their arrival in Bangladesh provided that such salaries are not taxed in their home countries;

i) The cost of the project including the fixed cost in foreign exchange should have to be thoroughly checked with comparable projects financed by the World Bank or other Agencies elsewhere before final acceptance of the cost-estimate.

2. You are now requested to organise the required financing of the Project on acceptable terms with assured export market for the product. A promotor's company will be formed with BCIC holding 30% of the equity as soon as these arrangements have reached a final stage.

Yours faithfully,

(M. Matiul Islam)
Secretary.

Recent Developments in Methanol Production in Canada

The principal point of interest is the world scale methanol plant recently put into operation in Kitimat, British Columbia by Ocelot Industries Ltd. This plant is rated at 1250 tons per day and uses the ICI low pressure process. It has contracts for the purchase of natural gas feedstock from B.C. Petroleum Corporation, a provincial government organization, and with the Japanese Companv Mitsui for purchase of 37.5% of plant production. The balance of production is to be sold in the U.S. and/or world spot market. The plant site is on Pacific tidewater with facilities for loading 40,000 ton tankers. The plant cost was originally estimated at $150,000,000. Final reported costructed cost was close to $200,000,000 including infrastructure.

Thus the proposed Bangladesh Plant appears to be directly comparable in size, manufacturing process, and presumably in operating costs. Capital costs will be higher due to escalation in construction costs and an overseas construction cost factor. Because of the similarities, data on the Canadian plant should be valuable in evaluating the proposed Bangladesh project.

This Canadian plant was built and is owned by:

Ocelot Industries Ltd.
900 - 333 Fifth Avenue S.W.
Calgary, Alberta

A diversified independent public Canadian Energy Company.

The plant was designed and built on a turnkey contract by:

Partec Lavalin Inc.
909 Fifth Avenue S.W.
Calgary, Alberta

The plant design utilizes a combination of Davy Powergas modular steam-methanetubular reformer with the new low energy Davy Powergas ICI version of the ICI LP methanol process.

Information for the purpose of this supplemental report was obtained from discussion with J. Richardson, Senior V.P. Partec Lavalin and publication research at the Vancouver Public Library. Primary source documents were newspaper reports between 1980-82 in the Vancouver Sun and Toronto Globe and Mail and annual reports of Ocelot Industries Ltd. and B.C. Petroleum Corporation.

The general conclusions which can be drawn from this additional data are:

(1) Because of the large surplus of natural gas in Canada and the proximity to an expanding North American market, especially in methanol as an additive to motor fuels, current and future developments in the production of methanol from natural gas in Canada can be expected to have a large effect on the world market.

(2) Of the four new world scale plants which have been built in Western Canada in the past four years, the new Ocelot Industries Plant in Kitimat is the most favorably located to serve the competitive Japanese market. The proposed Bangladesh plant must be able to compete directly with this plant.

(3) The initial gas purchase contracts in Canada are in the same range as the negotiated gas purchase contracts in Bangladesh (i.e. $2.00 for 1000 CF). The escalation in feedstock cost in Canada will definitely rise faster in Canada than in Bangladesh because of the North American demand for natural gas as a fuel (i.e. current price for natural gas exported to the U.S. as a fuel is $6.11 per 1000 CF).

(4) Preliminary cost data available on the Kitimat plant indicates a possible capital cost on the Bangladesh plant of up to $266 million (i.e. $190 million escalated 5 years at 7%). Special attention must be paid to the detail of the cost estimates in differentiating between on-site and off-site plant costs and the effect of overseas construction cost factor.

(5) The feasibility of the Bangladesh plant is almost wholly contingent upon the arrangement of firm marketing contracts. The percentage of the plants production capacity which must be guaranteed may not be as high as 80%, but must be carefully studied.