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**Report No. 16318**

**IMPLEMENTATION COMPLETION NOTE**

**BANGLADESH**

**LIQUEFIED PETROLEUM GAS TRANSPORT AND DISTRIBUTION PROJECT  
(Credit 2263-BD)**

**February 21, 1997**

**Energy and Project Finance Division  
Country Department I, South Asia Region**

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## EQUIVALENTS

Currency Unit	=	Taka (Tk)
Appraisal Year (1991) US\$1	=	Tk.34.90
Intervening Year (19913) US\$1	=	Tk.38.80
Completion Year (1996) US\$1	=	Tk.42.25

## WEIGHTS AND MEASURES

1 cubic meter (cm)	=	35.3 cubic feet (cf)
1 thousand cubic meters (mcm)	=	35.3 mcf
1 million cubic meters (mmcm)	=	35.3 mmcf
1 billion cubic meters (bcm)	=	35.3 bcf
1 trillion cubic meters (tcm)	=	35.3 tcf
1 thousand cubic meters of natural gas	=	9.31 kilocalories
1 ton of oil equivalent (toe)	=	10.2 million kilocalories
1 barrel (bbl) 0.85 SG crude oil	=	0.135 ton
	=	0.159 cu. meter
	=	42 US gallons
1 metric ton of oil (33° API)	=	7.36 barrels (bbl)
1 metric ton heavy oil (17.0° API)	=	6.60 barrels (bbl)
1 normal cubic meter	=	37.32 standard cubic feet (scf)

## FISCAL YEAR OF BORROWER

July 1 to June 30

## MEASUREMENT ABBREVIATIONS

bbl	barrel
bcf	billion cubic feet
bcm	billion cubic meters
mcf	thousand cubic feet
mcm	thousand cubic meters
mm	million
mmcf	million cubic feet
mmcf/d	million cubic feet per day
mtpy	metric ton per year
tcf	trillion cubic feet
toe	tons of oil equivalent

## ABBREVIATIONS AND ACRONYMS

BGDP	Bakhrabad Gas Development Project (Credit 1091-BD)
BPC	Bangladesh Petroleum Corporation
CNG	Compressed Natural Gas
ESAC	Energy Sector Adjustment Credit (Cr. 1999-BD)
GOB	Government of Bangladesh
ICN	Implementation Completion Note
IRR	Internal Rate of Return
LPG	Liquefied Petroleum Gas
LPGL	Liquefied Petroleum Gas Company Limited
NGL	Natural Gas Liquids
Petrobangla	Bangladesh Oil Gas and Mineral Corporation
OC	Operating Company
RPGCL	Rupantarita Prakritik Gas Co. LTD
SGDP	Second Gas Development Project (Cr. 1586-BD)
SGFL	Sylhet Gas Fields Limited
TA	Technical Assistance

Vice President	: Mieko Nishimizu
Acting Director	: Fakhruddin Ahmed
Division Chief	: Per Ijung
Staff Members	: A.S.M. Bashirul Huq

**BANGLADESH****LIQUEFIED PETROLEUM GAS TRANSPORT AND DISTRIBUTION PROJECT**  
**(Cr. 2263-BD)**Table of Contents

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## **IMPLEMENTATION COMPLETION NOTE**

### **LIQUEFIED PETROLEUM GAS TRANSPORT AND DISTRIBUTION PROJECT** **(Cr. 2263-BD)**

#### **Preface**

This is the Implementation Completion Note (ICN) for the Liquefied Petroleum Gas Transport and Distribution Project, for which Credit 2263-BD in the amount of SDR 49.8 million (US\$67.2 million equivalent) was approved on June 11, 1991. The Development Credit Agreement and Project Agreements were signed on June 21, 1991. The credit became effective, after three extensions, on September 30, 1992.

The credit closed on June 30, 1996, without the project being implemented. Till closing, a total of SDR 603,325.530 (US\$838,434.25 equivalent) was disbursed for meeting the cost of consultancy of Rupantarita Prakritik Gas Company Limited. On August 7, 1996, the undisbursed balance of SDR 49,196,674 (US\$70.6 million equivalent) was cancelled. The Canadian International Development Agency had been expected to provide SDR 1.4 million (US\$1.9 million equivalent) for technical assistance components of the project, but an agreement for this cofinancing was never finalized.

The ICN was prepared by Mr. A.S.M. Bashirul Huq of Bangladesh Resident Mission (SAIBG). It was reviewed by Messrs. Per Ljung (Chief, Energy and Project Finance Division) and Fakhruddin Ahmed (Acting Director/Project Advisor), Country Department 1, South Asia Region.

This ICN was prepared on the basis of materials in the project files and discussions with the two agencies responsible for implementing the project (Rupantarita Prakritik Gas Company Limited and Liquefied Petroleum Gas Limited) as well as officials of Petrobangla and Bangladesh Petroleum Corporation.



## **BANGLADESH**

### **LIQUEFIED PETROLEUM GAS TRANSPORT AND DISTRIBUTION PROJECT**

#### **Credit - 2263-BD**

#### **I. Project Identity**

Project Name : Liquefied Petroleum Gas Transport and Distribution Project  
Credit No. : 2263-BD  
RVP Unit : South Asia Region  
Country Department : Country Department 1  
Division : Energy and Project Finance  
Country : Bangladesh  
Sector : Energy

#### **II. Background**

1. This is an Implementation Completion Note (ICN) for the Liquefied Petroleum Gas (LPG) Transport and Distribution Project for which the Board approved a credit of SDR 49.8 million (US\$62.7 million equivalent) on June 11, 1991. The Credit and Project Agreements were signed on June 21, 1991. Credit effectiveness was extended three times to enable the Government to meet the conditions of effectiveness. It was declared effective on September 30, 1992 after a year's delay, and with a waiver to a condition of effectiveness.

#### **III. Project Objective**

2. The main project objective was to assist Bangladesh in carrying out an economic and least-cost household and commercial energy supply strategy through the substitution of LPG for kerosene and commercial fuelwood. The project was designed to assist in (a) reducing the foreign exchange drain from oil imports; (b) alleviating bio-mass energy shortages and promoting social equity between the country's eastern region and the less developed western zone; (c) establishing LPG prices in accord with economic efficiency and financial viability principles; (d) developing a suitable institutional framework for efficient LPG development and operations; (e) promoting an environmentally and operationally safe petroleum industry; and (f) facilitating private sector involvement in LPG transport and distribution.

#### **IV. Project Description**

3. The LPG Transport and Distribution Project was intrinsically linked to the implementation of a project approved in 1985, i.e., Second Gas Development Project (SGDP, Cr. 1586-BD) which provided, inter alia for construction of the north-south pipeline, and drilling of nine gas wells. The SGDP project also included financing for the *upstream* facilities for (a) gas dehydration and hence recovery of LPG and condensate by-products; and (b) pipeline transport and fractionation of these liquids at the Ashuganj central products terminal, as well as on-site at Kailashtilla on a small scale. The LPG Transport and Distribution Project (Cr. 2263-BD) was designed to support the *downstream* transport, and distribution of LPG in cylinders (bottled gas) that was to be produced from the northern gas fields of Bangladesh starting from FY94. Two implementing agencies were designated for the following project components:

Rupantarita Prakritik Gas Company Limited (RPGCL) for LPG transport:

- (a) construction of storage facilities for LPG and condensates, and acquisition of related equipment and spare parts, at the Ashuganj NGL fractionation plant;
- (b) construction of an LPG-dedicated pipeline from Ashuganj to Elenga (about 165 km);
- (c) directional drilling works for about four river crossings for the LPG pipeline;

Liquefied Petroleum Gas Limited (LPGL) for LPG bottling:

- (d) construction of LPG bottling plants and storage facilities at Elenga and Kailashtilla;
- (e) acquisition of cylinders, valves and regulators for the Elenga and Kailashtilla bottling plants;
- (f) rehabilitation of the LPG bottling plant at Chittagong; and
- (c) acquisition of related equipment with spare parts for (d) and (f) above.

4. The project's technical assistance (TA) component included construction implementation supervision for both RPGCL and LPGL, as well as project support, capacity building and policy development. Project support and capacity building TA was intended to include (a) intensive management and operations assistance and training for RPGCL and LPGL; (b) for RPGCL the following studies: (i) feasibility study for incremental natural gas liquids (NGL) processing and distribution; (ii) a technical, economic and financial assessment of compressed natural gas development options and preparation of a commercialization strategy; and (c) for LPGL, the following activities: (i) preparation of detailed LPG market development plan; and (ii) establishment of a program to enhance the role of Bangladeshi women in the retail distribution of LPG cylinders and stoves, and to train marketing/sales agents in the development and promotion of energy efficient cooking stoves; and (iii) a technical assessment of cracking surplus naphtha to produce LPG. For the policy development TA, RPGCL and LPGL were to prepare a full assessment of petroleum sector environmental and operational safety standards and practices, with a view to identifying urgently required equipment as well as regulatory and institutional reform.

**V. Evaluation of Project Objectives**

5. The objectives of the project were clear but somewhat ambitious. Project design took advantage of lessons and experience gained from the two earlier lending operations in the gas sector (viz., Bakhrabad Gas Development Project, Credit 1091-BD and SGDP, Credit 1586-BD). Under the Energy Sector Adjustment Credit (ESAC, Credit 1999-BD), it was agreed that new capital investments would be focused on the priority projects under an agreed Priority Investment Program (PIP). The project was a part of the PIP and long-term development plan agreed and monitored annually with Government of Bangladesh (GOB), Petrobangla and Bangladesh Petroleum Corporation (BPC). The project's TA component included the provision of a management and operations assistance team beyond the normal training provided by the equipment contract and monitored by the supplier. No equipment was to be cofinanced, and ESAC sectoral reforms were to be reinforced in the project. The Staff Appraisal Report estimated a financial internal rate of return of 35.3% for RPGCL and 18.9% for LPGL, while the economic rate of return for the project was estimated at 20%. However, the high expectation of

production of 100,000 mtpy of LPG and a higher quantity of NGL may have been too optimistic. At present, the feasibility of a new investment in the gas sector is being studied, and initial findings indicate that the gas volume from which LPG would be extracted would have to be increased substantially to make a project viable. Further study on this subject is underway.

6. The Staff Appraisal Report identified the main project risk to be implementation delays, particularly related to procurement. Because of the linkage of the SGDP Project (para 3) in building the Ashuganj plant for use by the follow-on LPG Project, the award of the contract for the Ashuganj plant under SGDP was made a condition of credit effectiveness for the LPG Project. As discussed in para 12 below, GOB requested a waiver of this condition to permit implementation to begin on other project components. Because GOB was pursuing a self-financed procurement plan for the Ashuganj plant in all earnest and had initiated negotiations with the lowest bidder, the credit was declared effective in September 1992, and it was IDA's expectation that award would be made within a reasonable time. However, due to protracted procurement procedures which occurred afterwards, the contract was never awarded.

## **VI. Beneficiaries of the Project**

7. The two project beneficiaries were the RPGCL and LPGL, which are wholly owned subsidiaries of Petrobangla and BPC respectively. Under the project, RPGCL was the beneficiary for the Ashuganj storage facilities and the pipeline from Ashuganj to Elenga. LPGL was the beneficiary for the storage facilities and LPG bottling plants at Kailashtilla and Elenga, cylinders and retail filling units. The two entities were also the beneficiaries for the project's implementation supervision and other TA components, as applicable.

8. For upstream functions, Sylhet Gas Fields Limited would own and operate NGL recovery facilities as part of its responsibilities to produce pipeline quality gas. Petrobangla decided that one Petrobangla operating company (OC) should assume the responsibility for transporting and fractionating NGL, which otherwise would be divided between three different OCs, i. e., Sylhet Gas Fields Limited, Titas Gas Transmission and Distribution Company Limited and the Bangladesh Gas Fields Company Limited. A single OC responsible for NGLs was essential because it was estimated that Petrobangla could be producing up to about 100,000 mtpy of LPG and a higher quantity of condensate as more gas was produced. Centralized accountability, quality control and monitoring of operational and environmental safety would be facilitated. Further, only one transfer price within Petrobangla would be required, compared to three internal transfer prices if NGL operations were spread over the existing OCs. This approach would support the ESAC institutional reform objective of organizing the operations of the various Petrobangla OCs along functional lines.

## **VII. Implementation Experience and Results**

9. The project had a promising start in 1992 when RPGCL initiated the appointment of consultants for the feasibility study of the Ashuganj-Elenga LPG pipeline. The consultants commenced their work in earnest and completed the design of the pipeline and also the bid documents. LPGL also acquired and developed land, and constructed office buildings at Elenga and Kailashtilla for the bottling plants.

10. The LPG Project depended on the completion of RPGCL's NGL fractionation facility at Ashuganj for which financing was provided under SGDP (para 6). The Ashuganj plant was intended to separate LPG (propane and butane) from NGL coming from the Kailashtilla gas fields. However, the contract was never awarded, and the SGDP project closed in December 1993 without construction of the

Ashuganj plant. Thus no LPG was available for transportation and distribution under the LPG Project, and it closed without being implemented.

11. Credit effectiveness for the LPG Project was extended three times to enable GOB to award the contract for the Ashuganj plant under SGDP. At the time of Board presentation of the LPG Project in June 1991, the award of the contract for the Ashuganj plant seemed imminent as bid evaluation was completed. However, when Petrobangla/PIU submitted the bid evaluation report and the draft contract for the Ashuganj plant for the final clearance, GOB rejected the draft agreement on the grounds that a NGL fractionation plant was not within the scope of the government's project documents and that there was not enough competition since only two bidders responded to the tender. At IDA's request, GOB agreed to reconsider its decision, but while GOB was reconsidering its action, the period of bid validity expired. Subsequently the contractor proposed for the contract award increased its prices, and this action was not acceptable to IDA. GOB then considered the option of awarding the contract to the second lowest bidder, but given the large price difference, it was decided to re-tender the plant using its own funds.

12. After GOB had initiated its self-funded procurement, it requested IDA in September 1992 to declare the credit effective to enable GOB to initiate implementation of selected items which were considered to be unaffected by the Ashuganj plant delays (para 6). These components accounted for about 55% of the credit and included (a) urgent repair and rehabilitation work of the existing LPG bottling and storage facilities at Chittagong; (b) phased replacement and supply expansion of LPG cylinders, valves and regulators; and (c) NGL gas storage facilities at Ashuganj to enable the testing of the Kailashtilla turbo-expander and Rashidpur dehydration plants constructed under SGDP. IDA agreed to declare the credit effective, but disbursements for the Ashuganj-Elenga LPG pipeline and the LPG bottling plants at Kailashtilla and Elenga were made conditional to the award of contract for the Ashuganj plant.

13. Even though the credit was declared effective in September 1992, implementation progress of the components described above did not proceed as envisaged, except for the rehabilitation of the LPG bottling plant at Chittagong for which selection of consultants was initiated. As a result of the unusual implementation delays and LPGL's hesitance to proceed with procurement in light of uncertainty of progress on the Ashuganj plant, the phased replacement of LPG cylinders, valves and regulators was delayed initially. Also, enough cylinders had been purchased by LPGL under the Refinery Modification Project (Credit 1749-BD) to meet immediate requirements. Because of the policy changes making LPG and LPG cylinders importable by the private sector, a question arose as to the rationale of IDA support for LPG bottling/marketing by a public sector company. The construction of storage facilities for NGL could not proceed because of the uncertainty with regard to the funding of the Ashuganj plant.

14. In early 1993, GOB abandoned its efforts to procure the plant with its own funds when the selected firm did not appear too keen to complete contract negotiations, and kept introducing unreasonable conditions. One of the reasons for its hesitance was the risks of doing business with GOB in the absence of support from an international financier. In May 1993, GOB approached IDA for support, but IDA advised GOB to seek financing from Japan's Overseas Economic Cooperation Fund (OECF) or other sources. However, other financing did not materialize. From a practical point of view, it was considered unwise to build the LPG pipeline from Ashuganj to Elenga and the bottling plants without the Ashuganj fractionation plant.

15. In January 1996, GOB requested IDA for a one-year extension of the credit. No further initiative was taken by the beneficiary companies for implementing the other components of the project until late in May 1996, when LPGL sent in a tender document to IDA for approval to invite proposals for appointment of consultants for rehabilitation of the bottling plant at Chittagong. However, based on the long delays and non-performance during the four years the project was active, IDA declined both requests and the project closed on June 30, 1996.

#### VIII. **Performance of the IDA**

16. IDA's extensive experience in the gas sector of other countries as well as in the previous two gas projects in Bangladesh helped the Borrower identify and prepare the project. Had it been implemented, the project would have provided a least-cost household fuel derived from the country's LPG-rich natural gas to replace commercial bio-mass fuel and imported kerosene oil, and thereby reducing deforestation and improving environmental pollution. It would also have contributed to a valued addition to the LPG content of the natural gas. However, the fate of the LPG Project was sealed when IDA waived the condition of effectiveness for the award of the contract for the Ashuganj plant under SGDP. The reasons given by GOB for requesting the waiver were valid (para 12), but given the history of protracted procurement actions in Bangladesh, IDA should have been more pessimistic in its expectation that the award of the contract would be awarded without further delays. In retrospect, IDA should not have waived this crucial condition of effectiveness. Standing firm on the requirement for award of the contract under SGDP might have encouraged GOB/Petrobangla to act more diligently in dealing with the procurement matters which seriously impacted both the SGDP and LPG Projects.

17. Following effectiveness, several IDA missions had useful discussions with officials of GOB and the implementing agencies. However, realizing that without the construction of the Ashuganj plant, the LPG Project would not achieve its objectives, the missions discussed the merits of restructuring the project to include the Ashuganj plant for production of LPG from the NGL obtained from the Kailashtilla facilities. However, these attempts did not come to fruition and the project was allowed to close on schedule--without being implemented, and without restructuring. In retrospect, once it was clear that the contract would not be awarded, and that restructuring was considered not plausible, IDA might have moved more quickly to close the project rather than let it languish in problem project status until closure.

#### IX. **Performance of the Borrower**

18. Managerial and technical weaknesses of the Borrower emerged as the main reason for the non-implementation of the project. GOB's procurement procedures being overly complex also proved to be the major impediment in the implementation of the project. Petrobangla/GOB were unable to complete the procurement for the Ashuganj plant under SGDP (Cr. 1586-BD), which was to be the source of LPG for transport and distribution envisaged under the project. However, both RPGCL and LPGL showed seriousness in implementation of the project. RPGCL had appointed consultants for the feasibility study and design of the Ashuganj-Elenga LPG pipeline. The consultants completed the study and prepared the design and the bid document for the pipeline. LPGL acquired and developed land and constructed office buildings at both Elenga and Kailashtilla. At Kailashtilla, RPGCL is now setting up a small-scale NGL fractionation plant for producing 5,000 mtpy of LPG using a part of the NGL from the Kailashtilla molecular sieve turbo-expander plant, and LPGL is constructing storage facilities and a bottling plant at a nearby location for bottling the LPG and marketing it in the Sylhet area. Compliance with major covenants during the project life was satisfactory.

X. **Assessment of Outcome**

19. Because the project closed without being implemented, there was no possibility of achieving the desired outcomes. The only part of the project that was implemented was the feasibility study for the 165-km Ashuganj-Elenga LPG pipeline, its design, and preparation of the bid document. If a future project includes this pipeline, the results of the consultancy work will be useful.

XI. **Lessons Learned**

20. The key lessons learned from the project are the following.

- (a) One major lesson learned from the failure of this project to be implemented is the strong inter-dependencies among sequential investments (often financed under different projects) which have the potential of causing unsatisfactory outcomes in a ripple effect if the implementation of an earlier project fails entirely or is significantly delayed. Future investments in the sector must factor in the institutional capabilities of the gas sector entities, and design projects with realistic implementation schedules in accordance with the country's absorptive capacity.
- (b) Protracted procurement actions under the SGDP seriously impacted the implementation of the LPG Project. The Implementation Completion Report for SGDP (January 22, 1997, No. 16257) identified a lesson to be learned regarding procurement, with emphasis on mandating advance procurement decisions. Had this lesson been learned in time, the outcome of the LPG Project might have been more successful.
- (c) Because project investment operations are generally inherited by the OCs, project implementation should be left to them. Also, the financial power of the OCs should be raised adequately so that they have the authority to independently process procurement of goods and services without going for the approval of Petrobangla/GOB.

**Part II - Statistical Tables**

**Table 1: Summary Assessments**

<b>*A. Achievement of Objectives</b>	<b>Substantial</b>	<b>Partial</b>	<b>Negligible</b>	<b>Not Applicable</b>
Macroeconomic Policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sector Policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutional Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poverty Reduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gender Concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Social Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Sector Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private Sector Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>*B. Project Sustainability</b>	<b>Likely</b>		<b>Unlikely</b>	<b>Uncertain</b>
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<b>C. Bank Performance</b>	<b>Highly Satisfactory</b>		<b>Satisfactory</b>	<b>Deficient</b>
Identification	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preparation Assistance	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Appraisal	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supervision	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D. Borrower Performance</b>	<b>Highly Satisfactory</b>		<b>Satisfactory</b>	<b>Deficient</b>
Preparation	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Implementation	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Covenant Compliance	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>E. Assessment of Outcome</b>	<b>Highly Satisfactory</b>	<b>Satisfactory</b>	<b>Unsatisfactory</b>	<b>Highly Unsatisfactory</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
* Project not implemented				

**Table 2: Related Bank Loans/Credits**

Loan/Credit Title	Purpose	Year of Approval	Status
<i>Preceding Operations</i>			
Bakhrabad Gas Development Project Cr. 1091-BD	Gas field development and pipeline construction	1981	Closed 12/31/85
Petroleum Exploration and Promotion Project Cr. 1402-BD	Private participation promotion	1983	Closed 06/30/90
Second Gas Development Project Cr. 1586-BD	Gas field development and transmission line construction	1985	Closed 12/31/93
Refinery Modification and LPG Distribution Cr. 1749-BD	Construction of secondary conversion plant at ERL and LPG recovery	1988	Closed 12/31/94
Energy Sector Adjustment Credit Cr. 1999-BD	Provision of foreign exchange for energy imports and support to the Government's reform for the energy sector	1989	Closed 12/31/91
Liquefied Petroleum Gas (LPG) Transport and Distribution Project (Cr. 2263-BD)	Support for downstream transport and distribution of LPG to be produced from the northern gas fields.	1991	Closed on 06/30/96 Subject of this ICN.

<i>Following Operations</i>			
Gas Infrastructure Development Project Cr. 2720-BD	Gas field development and transmission line construction	1995	On-going

Source : Project files

**Table 3: Project Timetable**

Steps in Project Cycle	Date Planned	Date Actual/Latest Estimate
Identification		
Preparation		
Appraisal	July 1990	April 1991
Negotiations	April 1991	April 1991
Board Presentation	June 11, 1991	June 11, 1991
Signing	June 21, 1991	June 21, 1991
Effectiveness	September 9, 1991	September 30, 1992
Project Completion	December 31, 1995	Project was not implemented
Loan/Credit Closing	June 30, 1996	June 30, 1996

**Table 4: Loan/Credit Disbursements: Cumulative, Estimated and Actual**  
(US\$ million)

	FY92	FY93	FY94	FY95	FY96
Appraisal Estimate (Annual)	5.6	21.1	23.9	10.3	6.3
Appraisal Estimate (Cumulative)	5.6	26.7	50.6	60.9	67.2
Actual (Annual)	-	-	0.84	0.1	-
Actual (Cumulative)			0.84	0.94	0.94*
Actual as % of Estimate					
Date of Final Disbursement					

\* During August 1996, US\$100,000.00 was refunded as unspent amount of the Special Account. Therefore, the effective disbursement under the credit was US\$0.84 million.

**Table 5: Key Indicators for Project Implementation**

I. Key implementation indicators in SAR//President's Report	Estimated	Actual
1. Ashuganj storage	December 1994	Not implemented
2. LPG Pipeline and Directional drilling	December 1994	Not implemented
3. LPG Bottling and storage at Elenga	December 1994	Not implemented
4. Cylinders, Valves and Regulators	December 1994	Not implemented
II. Modified indicators		
1.		
2.		
3.		
III. Other indicators		
1.		
2.		
3.		

**Table 6: Key Indicators for Project Operation\***

I. Key operating indicators in SAR/President's Report	Estimated	Actual
1.		
2.		
3.		
II. Modified indicators		
1.		
2.		
3.		
III. Other indicators		
1.		
2.		
3.		

\* Not applicable as project was not implemented

**Table 7: Studies Included in Project**

	Study	Purpose as defined at appraisal/redefined	Status	Impact of study
1.	An environmental and safety assessment study of petroleum operations.	To promote environmental and operational safety in the petroleum sector.	Not implemented	
2.	A feasibility study for incremental NGL processing, transportation and distribution.	To increase production of LPG and other liquid fuels from natural gas.	Not implemented	
3.	Establishment of a program to enhance the role of Bangladeshi women in the retail distribution of LPG cylinders and stoves	Measures to involve Bangladeshi women as agents of technology transfer and commercialization.	Not implemented	
4.	A detailed LPG market development plan.	To develop an integrated network of retail distribution channels for LPG.	Not implemented	
5.	Technical, economic and financial assessment of compressed natural gas.	Development of options and preparation of a commercialization strategy.	Not implemented	
6.	A technical assessment of cracking surplus naphtha to produce LPG.	To convert the excess naphtha of the Chittagong refinery to increase LPG production.	Not implemented	

**Table 8A: Project Costs**

Item	Appraisal estimate (US\$ million)			Actual/latest estimate (US\$ million)		
	Local costs	Foreign costs	Total	Local costs	Foreign costs	Total
<b>Part A:</b>						
<b>RP Gas Co. Ltd. (RPGCL)</b>						
1. Storage for LPG and Condensate	1.0	5.9	6.9			
2. Ashuganj-Elenga LPG Pipeline	1.5				0.84	
3. Directional Drilling	0.3	1.9	2.2			
4. Implementation Supervision		2.0	2.0			
5. Mngmt & Opn. Asstce/Trg.		2.0	2.0			
6. Technical Assistance		1.0	1.0			
<b>Sub-Total</b>	<b>2.8</b>	<b>22.2</b>	<b>25.0</b>			
<b>Part B:</b>						
<b>LP Gas Co. Ltd. (LPGL)</b>						
1. LPG Bottling Plants:						
Elenga	1.0	5.8	6.8			
Kailashilla	0.4	2.2	2.6			
Chittagong (Rehab)	0.2	0.4	0.6			
2. Cylinders, Valves, Regulators	10.9	12.0	22.9			
3. Storage	1.2	8.3	9.5			
4. Retail Filling Units	0.1		1.0			
5. Implementation Supervision		1.0	1.0			
6. Mngmt & Opn. Asstce/Trg.		2.0	2.0			
7. Technical Assistance		1.0	1.0			
<b>Sub-Total</b>	<b>13.8</b>	<b>33.6</b>	<b>47.4</b>			
<b>Base Cost Estimate</b>	<b>16.6</b>	<b>55.8</b>	<b>72.4</b>			
<b>Physical Contingencies (10%)</b>	<b>1.7</b>	<b>5.6</b>	<b>7.3</b>			
<b>Price Contingencies</b>	<b>3.1</b>	<b>8.9</b>	<b>12.0</b>			
<b>Total Project Cost</b>	<b>21.4</b>	<b>70.3</b>	<b>91.7</b>			
<b>Interest During Construction</b>	<b>3.8</b>	<b>0.0</b>	<b>3.8</b>			
<b>Total Financing Required</b>	<b>25.2</b>	<b>70.3</b>	<b>95.5</b>			

**Table 8B: Project Financing**

Source	Appraisal estimate (US\$ million)			Actual/latest estimate (US\$ million)		
	Local costs	Foreign costs	Total	Local costs	Foreign costs	Total
IDA Credit	-	62.7	62.7		0.84	
RPGCL	5.6	-	5.6			
LPGL	19.6	-	19.6			
Bilateral Cofinancing	-	7.6	7.6			
Total	25.2	70.3	95.5			

**Table 9: Economic Costs and Benefits**

Assumptions	Costs	Benefits (adjusted net)
For RPGCL	US\$ 64.2 million	US\$136.5 million
For LPGL	US\$ 11.8 million	US\$ 99.9 million

For the Project, ERR was estimated at 20% in the SAR.

**Table 10: Status of Legal Covenants**

Agreement	Section	Covenant type	Description of Covenant	Status and comments
Dev. Credit Agreement (DCA)	4.01	1	(a) For all expenditures with respect to which withdrawals from the Credit Account were made on the basis of expenditures, the Borrower shall (i) maintain records of accounts reflecting such expenditures; (ii) ensure that all records evidencing such expenditures are retained at least one year after IDA has received the audit reports for the fiscal year for which the last withdrawal from the Credit Account was made; and (iii) enable IDA's representatives to examine such records.	Complied with.
			(b) The Borrower shall (i) have the records of accounts referred to above at (a) (i) and those for the Special Account for each fiscal year audited; (ii) furnish to IDA audit reports within nine months after the end of each year; and (iii) furnish to IDA such other information concerning the said accounts and audit thereof as IDA shall from time to time request	Complied with.
Project Agreement (PA) RPGCL	3.01	5	RPGCL shall carry out its operations and conduct its affairs in accordance with sound administrative and financial practices under the supervision of qualified and experienced management assisted by competent staff in adequate numbers	Complied with
	3.02	5	RPGCL shall at all times operate and maintain its plant, machinery, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all in accordance with sound engineering, environmental and financial practices.	Complied with.
	3.03	5	RPGCL shall take out and maintain with responsible insurers, or make other provision satisfactory to IDA for, insurance against such risks and in such amounts as shall be consistent with appropriate practices.	
	4.01	1	(a) RPGCL shall maintain records and accounts adequate to reflect its operations and financial condition.	Complied with.
			(b) RPGCL shall (i) have its records, accounts and financial statements for each fiscal year audited by independent auditors acceptable to IDA;	Complied with.
			(ii) furnish to IDA within six months after the end of each year : (A) certified copies of the financial statements for such year as so audited; and (B) the report of such audit by said auditors such scope and in such details as IDA shall request; and  (iii) furnish to IDA such other information concerning such records, accounts and financial statements as IDA shall from time to time reasonably request as soon as available but not later than three months after the end of each year.	Complied with.
4.02	2	(a) Except as otherwise IDA shall agree, RPGCL shall not incur any debt unless the net revenues of RPGCL for the financial year immediately preceding the date of such incurrence or for a later twelve -month period ended prior to the date of incurrence, shall be at least 1.5 times the estimated maximum debt service requirements for RPGCL for any succeeding fiscal year on all debt of RPGCL	Complied with.	
4.03	2	(a) Except as IDA shall otherwise agree, RPGCL shall, commencing July 1, 1994, not incur any debt, if after the incurrence of such debt the ratio of debt to equity shall be greater than 65 to 35.	Not complied with.	
4.04	2	Except as IDA shall otherwise agree, RPGCL shall not declare any dividend with respect to its share capital or make any distribution of profits, unless RPGCL's financial requirements have been met.	Complied with.	
4.05	2	RPGCL shall, by March 31 of each year, commencing March 31, 1992, review in consultation with IDA, its capital expenditures program for the following year, and, thereafter, take all actions necessary to ensure the availability of the funds required for carrying out of such programs.	Complied with.	
4.06	2	RPGCL shall, not later than June 30, 1992, complete the carrying out of a program satisfactory to IDA, for the financial restructuring of its CNG operations.	Complied with.	
Project Agreement (PA) LPGL	3.01	5	LPGL shall carry out its operations and conduct its affairs in accordance with sound administrative and financial practices under the supervision of qualified and experienced management assisted by competent staff in adequate numbers.	Complied with.
	3.02	5	LPGL shall, at all times, operate and maintain its plant, machinery, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all in accordance with sound engineering, environmental and financial practices	Complied with.

Agreement	Section	Covenant type	Description of Covenant	Status and comments
	4.01	1	(a) LPG shall maintain records and accounts adequate to reflect in accordance with sound accounting practice in operations and financial condition, including separate Project accounts and separate accounts for its Chittagong, Elenga and Kailashthilla operations.  (b) LPG shall : (i) have its records accounts and financial statements (balance sheets, statements of income and expenses and related statements) for each fiscal year audited, in accordance with appropriate auditing principles consistently applied, by independent auditors acceptable to IDA;  (ii) furnish to IDA as soon as possible but in any case not later than six months after the end of each such year: (A) certified copies of its financial statements for such year as so audited; and (B) the report of such audit by said auditors, of such scope and in such detail as IDA shall have reasonably requested; and  (iii) furnish to IDA such other information concerning said records, accounts and financial statements as well as the audit thereof, as IDA shall from time to time reasonably request, as soon as available but not later than three months after the end of each year.	Complied with.  Complied with.  Complied with.  Complied with.
	4.02	2	Except as IDA shall otherwise agree, LPGL shall not incur any debt unless the net revenues of LPGL for the fiscal year immediately preceding the date of such incurrence or for a later twelve-month period ended prior to the date of such incurrence, whichever is greater, shall be at least 1.5 times the estimated maximum debt service requirements of LPGL for any succeeding fiscal year on all debt of LPGL, including the debt to be incurred.	Complied with.
	4.03	2	Except as IDA shall otherwise agree, LPGL shall, commencing July 1, 1994, not incur any debt, if after incurrence of such debt the debt to equity shall not be greater than 65 to 35.	Complied with.
	4.04	2	Except as IDA shall otherwise agree, LPGL shall not declare any dividend with respect to its share capital or make any distribution of profits, unless LPGL's financial responsibilities have been met.	Complied with.
	4.05	2	LPGL shall, by March 31 of each year, commencing March 31, 1992, review, in consultation with IDA, its capital expenditure program for the following year, and, thereafter, take all actions necessary to ensure the availability of funds for the carrying out of such programs.	Complied with.
	4.06	2	LPGL shall carry out a capital restructuring plan, satisfactory to IDA, to reduce the debt/equity ratio of the Chittagong operations to not more than 65/35 by June 30, 1992.	Complied with.
	4.07	2	LPGL shall, by March 31 of each year, commencing March 31, 1992, carry out a review, in consultation with IDA, of its depreciation rates for fixed assets, and, thereafter, ensure that such rates are calculated taking into account internationally accepted depreciation rates for such industries.	Not complied with.

## Covenant types:

- 1 = Accounts/audits  
2 = Financial performance/revenue generation from beneficiaries  
3 = Flow and utilization of project funds  
4 = Counterpart funding  
5 = Management aspects of the project or executing agency  
6 = Environmental covenants  
7 = Involuntary resettlement

- 8 = Indigenous people  
9 = Monitoring, review, and reporting  
10 = Project implementation not covered by categories 1-9  
11 = Sectoral or cross-sectoral budgetary or other resource allocation  
12 = Sectoral or cross-sectoral policy/regulatory/institutional action  
13 = Other

## Present status

- C = covenant complied with  
CD = complied with after delay  
CP = complied with partially  
NC = not complied with

**Table 11: Compliance with Operational Manual Statements**

The project was in compliance with all Bank policies.

**Table 12: Bank Resources: Staff Inputs**

Stage of project cycle	Planned		Revised		Actual	
	Weeks	US\$	Weeks	US\$	Weeks	US\$
Preparation to appraisal	N/A	N/A	N/A	N/A	166.8	N/A
Appraisal	N/A	N/A	N/A	N/A	70.5	N/A
Negotiations through Board approval	N/A	N/A	N/A	N/A	10.9	N/A
Supervision	N/A	N/A	N/A	N/A	78.4	N/A
Completion	N/A	N/A	N/A	N/A		N/A
<b>TOTAL</b>	N/A	N/A	N/A	N/A	326.6	N/A

Table 13: Bank Resources: Missions

Stage of project cycle	Month/ year	Number of persons	Days in field	Specialized staff skills represented	Performance rating		Types of problems
					Implemen- -tation status	Develop- -ment objectives	
Through appraisal	4/88	5	21	See below	-	-	-
	5/88	1	14				
	6/88	4	10				
	10/88	5	14				
	2/89	4	12				
	9/89	6	14				
	12/89	11	21				
	2/90	5	14				
Appraisal through Board approval	7/90	12	14		-	-	-
	11/90	4	14				
Supervision							
1	3/92	1	3				
2	8/93	1	10				
3	2/94	1	7				
4	6/94	3	4				
5	5/96	3	7				
Completion	0	0	0			-	-
Total							

## Key:

EGR	: Power Engineer
FNA	: Financial Analyst
ECN	: Economist
PO	: Program Officer (RMB)
OPN	: Operations Analyst
LC	: Compliance with Legal Covenants
FP	: Financial Performance
PR	: Procurement Progress
PM	: Project Management Performance

**Note:** Terms of Reference in Asia Files show multiple tasks to be undertaken during the timeframe scheduled in the field, of which the LPG project was one task. The missions undertaken after Board approval were not supervision missions in the normal sense, but rather were to review status of effectiveness, and then to begin restructuring of the project.

Bank Task Team:	Speciality	Consultants:	Specialty
F. Manibog	Economist	Russell de Lucia	Economist
H. Morsli	Petroleum Engineer	Ben Mink	Process Engineer
M. Sergio	Financial Analyst	? Gautier	?
J. Thomas	Sr. Geologist	J.P. Jonchere	Engineer
A. Vonck	Petroleum Engineer	Robert Grabham	Sr. Economist
M. Webb	Economist	John Hegarty	?
K. Wijetilleke	Chemical Engineer	? Davis	Financial Analysis
M. Tumaliwan	Operations Asst (Financial)	? Versluis	Computerization
N. Zhao	Operations Specialist	Al Picardi	Environmental
		? Buswell	?

Note: Specialties of staff were not always provided in the terms of reference.



## IMAGING

Report No.:  
Type: PCN

16318