Meta Analysis of Ex-Post Evaluation Reports
by Country and Sector

# Country Review Report

## Bangladesh

Final Report

July 2003

This country review report (Bangladesh) was complied and analyzed by Global Group 21 Japan at the request of the Development Assistance Operations Evaluation Office, Project Development Department of the Japan Bank for International Cooperation (JBIC).

Foreword

This report is an analysis of the Ex-post Evaluation Reports (henceforth, evaluation reports) for 21 projects to Bangladesh by the Japan Bank for International Cooperation (JBIC).

In order to improve the quality of aid projects in developing countries, JBIC has conducted an ex-post evaluation of completed projects. Ex-post project evaluation is the assessment of how a project was implemented and administrated in comparison with initial plans, and whether the expected results were realized after completion of the project. The ex-post evaluation reports are conducted with two goals in mind. The first is to compile the lessons learned from the project evaluations, and to use the lessons in the implementation of future projects. The second goal is to improve the transparency of aid projects, and to increase the accountability of people both in Japan and the borrowing countries through disclosure of evaluation results.

The goal of this review is to create an overview of the performance of the completed projects to Bangladesh using evaluation reports, to analyze the data to determine the cumulative effect of the Japanese ODA loan projects to Bangladesh and to derive possible lessons or recommendations for future yen loan projects. In addition, by reviewing and studying the evaluation indices, it is hoped that reference material for future appraisals, administration and evaluations will be provided.

This report consists of four chapters. The first chapter is a synopsis of the social and economic trends in Bangladesh. The second presents a summary of Japanese ODA loans to Bangladesh. The third analyzes the performance of 21 based on the evaluation reports. And the fourth chapter presents the comprehensive results of the analysis, and offers lessons learned and recommendations for future projects to Bangladesh.

In the analysis, remarks in ex-post evaluation reports were uniformly compiled and examined in reference to DAC's 5 main criteria (relevance, efficiency, effectiveness, impact, and sustainability), which were further divided into 23 more detailed sub-criteria. However, the past evaluation reports targeted for analysis were not subject to uniform ex-post evaluations, and there were some that were conducted prior to the introduction of DAC's 5 main criteria. In particular, the level of detailed analysis contained in the evaluation report results differed in the detailed evaluations (detailed

analysis conducted by JBIC staff along with outside experts and desk evaluations (called desk evaluations for expediency, and are detailed evaluations were conducted on a portion of the projects by JBIC staff within Japan). For this reason, the spectrum of evaluation remarks covered in early reports and those of the present day are different, and in such cases, notations such as "not clear in the (past) evaluation report (in regards to a certain evaluation criteria) "have been included.

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# 1. Economic and social trends in Bangladesh[1]

## 1.1 Politics, economy and society

### (1) Politics

The political history of Bangladesh can be divided into three administrative periods according to the characteristics of the ruling party during that time: 1) the Socialist Period (1971-75), 2) the Militaristic Period (1975-91), and 3) the Democratic Period (1991-present). The country was under military rule for years but the military government collapsed with the emergence of an intense democratization movement at the end of 1990. In February of 1991, the Zia Administration of the Bangladesh National Party (BNP) came into power through the first democratic elections ever held in the country. Since then general elections have continued to be held every five years. A change of government to the Hasina Administration of the Awami League occurred in 1996 and in 2001 the BNP's Zia Administration returned to power. Through this, the change of administration through democratic procedures became somewhat established. Due to a history of conflict, however, the two main political parties that are the BNP and the Awami League are in fierce opposition over the authority of the country. The general strikes and other anti-government activities that are brought about because of this opposition have paralyzed economic activities affecting not only the lives of citizens, but also the economy of the nation itself. There are no signs that the opposition between the ruling and opposition parties will end, but it is crucial for economic development that domestic political stability be achieved through discussions involving both parties. Problems also remain with managing parliamental affairs, implementing fair elections, and other areas in the actual operational side of democracy.

### (2) Economy

Although Bangladesh has achieved a certain level of economic growth in recent years, it has not yet reached a level that would realize the main goal of poverty reduction.

Efforts toward economic structural reform during the Zia Administration (formed in March 1991) under the leadership of the World Bank and the IMF resulted in a reduction of the fiscal deficit (from 7.2% of GDP in FY 90/91 to 5.7% in FY95/96), an improvement in international balance of payments, a curbing of inflation, and an

[1] This section based on the Ministry of Foreign Affairs' Country Assistance Plan.

improvement in the macroeconomic situation. However, the GDP growth rate was sluggish and the economy became stagnant.

Under the Hasina administration, the GDP growth rate gradually started to rise and was bolstered by good conditions in manufacturing and construction as well as in the service sector, surpassing 5% in both FY97/98, and FY98/99, and achieving rather good progress of 4.7% real average annual growth throughout the 1990s. In order to achieve poverty reduction, however, even higher rates of growth are necessary (World Bank estimates indicate that continuous economic growth at the 7% annual level is essential for overcoming the issue of poverty), and the key will be carrying out appropriate macro-economic operation and economic-financial reforms such as privatizing state-owned enterprises and disposing of non-performing loans held by the banking sector. In addition, in order to reduce poverty it is imperative to develop promising industries such as agribusiness in order to absorb the surplus work force.

(3) Society

Bangladesh is currently facing a broad array of issues including excessive population, low education levels, a large gender gap, and worsening living environments. These issues are both the causes and effects of poverty and have mired Bangladesh in a vicious cycle.

Bangladesh has the largest population among the least less developed countries (LLDCs) of the world, and although the population growth rate has declined to 1.5% (average during the period 1990-97) the increase in population is still great in absolute numbers. When the country became independent it had a population of approximately 70 million, but has now grown to about 120 million and is estimated to reach 210 million by the year 2020. According to a report by UNICEF, the infant mortality rate of children below five years of age remains at about 10% (1997) and there is a large gender gap with a literacy rate of 50% for men and only 27% for women. This is a reflection of the concept of roles for men and women rooted in religious and customary values, with restricted access for women not only to education but also to healthcare, employment, and a variety of services and opportunities as compared to men.

Poverty in the rural areas of Bangladesh, where opportunities for employment outside agriculture are limited, is spurring a rapid migration to cities and the population is now becoming more and more concentrated in Dhaka, Chittagong, and other major cities. Consequently, the metropolitan areas of Bangladesh are starting to

experience serious problems in the areas of sanitation, public safety, and the environment.

Environmental problems include not only natural disasters such as floods and cyclones, but also problems such as air pollution and widespread arsenic contamination of groundwater, issues that impact the basic needs of the population.

## 1.2 National development plan

### (1) Medium-term development plan

Bangladesh has formulated and adopted successive Five-Year Development Plans from the first Five-Year Development Plan carried out during the Socialist Period by the Awami League in 1971 up to the current fifth plan. During that time, there has been a complete reversal from the initial planned economy of the Socialist Period to a market economy during the Militaristic Period, and then even further progress in the market economy and structural reforms made during the Democratic Period. The areas of focus and the top priorities of each Five-Year Plan have changed very little, with top priority given to the elimination of poverty and to basic objectives that support that goal.

The following is an overview of the current fifth Five-Year Development Plan (FY97/98-FY2001/02)[2]:

#### (a) Development goals

Aims are to the achievement of average annual economic growth at the 7% level with the major development objective of poverty reduction. Specific priority areas for development are:

1) Poverty reduction, 2) job development, 3) increased production of grain, 4) development of human resources, 5) improvement of infrastructure, 6) containment of population growth rates, 7) advancement of science and technology, and 8) more widespread education for women and children.

#### (b) Total investment

The total amount of investment necessary to achieve economic growth of 7% annually is 1.96 trillion Bangladesh Taka (approx. $40 billion), achieved by 44% public investment and 56% private investment. The goal is for the percentage of the government's planned development budget that is represented by foreign capital to be

[2] Information on the Sixth Five-Year Development Plan is unavailable at this time.

reduced from 51% in the first year of the plan to about 30% in the final year (average 39% in the 5-year period).

(c) Basic outline of the development strategy

With encouragement of private investment as the key, efforts will be concentrated on investment in the agricultural and rural development sector, the manufacturing sector, and the transportation and traffic sectors, and it is expected that the manufacturing and energy sectors will become a driving force behind the economy. In manufacturing, emphasis will be placed on export manufacturing such as textiles and leather goods. In this way, this policy will continue to further private-sector driven economic growth while at the same time, from the perspective of social development, emphasizing education, healthcare, the water supply, and family planning.

(2) Issues in development

(a) Poverty reduction, containment of population growth

In the 1980s, besides the fact that the annual GDP growth rate hovered around 4%, the income gap between rural and metropolitan areas widened the economic growth that occurred, and did not necessarily reduce the percentage of people living in poverty. While the percentage of poor decreased somewhat in the 1990s, more than half of the country's citizens are still living in poverty. In light of this history, it is clear that in order to reduce the problem of poverty not only must GDP growth rates be increased, but there must also be some control on the widening of the gap in income levels. It is also necessary to take comprehensive steps to further restrict growth of the population, a factor that stands in the way of reducing poverty as well as hindering development efforts in education, healthcare, and other areas of the social sector that would improve the lives of the poor.

(b) Agriculture and rural development

The percentage of the GDP represented by the agricultural sector is declining annually, but this sector still accounts for around 60% of employment and approximately 30% of the GDP, maintaining its rank as the most important industry in Bangladesh. As agriculture will continue to be a very important industry in the future it is necessary to not only work on the Five-Year Plan objective of achieving food self sufficiency through conservation of farmland and improvement in agriculture productivity but to also make progress in agricultural and rural

development such as the establishment of new opportunities for income generation in agriculture-related sectors.

(c) Promotion of industrialization

For future economic policy, it will be important to establish rapid industrial growth given the fact that manufacturing, the sector intended to replace agriculture as the new driving force behind the economy, still represents less than 10% of the GDP. In domestic markets, buying power is hampered by poverty, making the development and cultivation of internationally competitive export goods absolutely essential for further industrialization. At present, there is little added value in the ready-to-wear apparel and knit goods that represent the majority of total exports. With the loss of the comparative advantage enjoyed through preferential treatment under the MFA (an agreement on the international trade of textile products) that will expire in 2005, Bangladesh will have to come up with new products for export.

(d) Overcoming natural disasters

Recovery from natural disasters is a major challenge in terms of development. In 1998 nearly 60% of the country was submerged. Large scale floods are recurrent and every year tidal waves, wind and floods caused by cyclones result in a significant amount of damage.

The natural disasters that occur in Bangladesh are on too great a scale for the country to cope with alone, so along with its own efforts, it greatly desires assistance from the international community in this area and must also have collaboration with neighboring countries that share the same river basins to provide countermeasures for flooding.

(e) Improving the environment

Bangladesh suffers from widespread arsenic groundwater contamination and the government estimates that nearly 20 million people are affected and contaminated areas are on the rise. In addition, rapid urbanization has resulted in a deterioration of the living environment of major cities, and in particular the health of city residents is adversely affected by air pollution caused by automobile emissions. These are large-scale environmental problems and must be dealt with immediately through close cooperation between the Bangladesh government and other donor countries and aid agencies.

## 2. The Japanese ODA loan projects to Bangladesh

### 2.1 Loan Conditions for Bangladesh

Table 2-1 shows the cumulative approved Bangladesh yen loan projects by sector as of March 2003. There have been a total of 69 projects (based on loan agreements) totaling 556.3 billion yen, of which commodity loans totaled 20 projects at 262.1 billion yen, and project loans totaled 49 projects at 294.2 billion yen. Sectors targeted by the project loans covered a wide variety of areas including infrastructure, mining and manufacturing, and social services, but a great percentage was devoted to electric power and gas and the manufacturing / mining sectors, with project loans in these two sectors alone representing 60% of the total project loan amount. There were many loans for power plants in the electric power / gas sector, and these represented 21% of the overall project loan total, and in the mining / manufacturing sector there were many large loans that targeted fertilizer manufacturing plants, representing 29% of the total. There were several projects in the transportation sector, at 25% of the loan total, and although it is not a large number, there were some projects in both communications and social services, representing 9% and 7% of loan totals respectively.

### 2.2 Priority areas of economic assistance to Bangladesh

According to the Ministry of Foreign Affairs' Country Assistance Plan, the following are strategic priorities for assistance in order to achieve Bangladesh's most pertinent development issue of poverty reduction: (1) agricultural and rural development and increased productivity, (2) improvement in social areas (basic lifestyle, health and medical care), (3) infrastructure needed for stimulating investment and promoting exports, and (4) contingency planning for natural disasters. It was also noted that issues that shared common elements, such as human resource development, institution building, and environmental considerations were taken into consideration when carrying out assistance.

JBIC has focused its priority areas for assistance particularly on numbers (1) and (3) of the Country Assistance Plan mentioned above. According to the JBIC Country Specific Work Implementation Policy, specific priority action items are as follows:

(1) Developing infrastructure that will contribute to promotion of investments and exports

(a) Improvement in transportation

- Roads and bridges

(b) Improvement in public services

- Electric power and gas
- Water supply and sewerage
- Telecommunications

(c) Improvement in development finance

(2) Agricultural and rural development that will contribute to improvements in agricultural productivity

(a) Agriculture development infrastructure

(b) Micro finance

Table 2-1: Cumulative Japanese ODA loans to Bangladesh by sector
(as of March 2003)

| Type of industry | Number of projects | Approved loan amount (billion yen) | Composition ratio (%) | Composition ratio within projects (%) |
|---|---|---|---|---|
| Electric power and gas | 16 | 81.7 | 14.7 | 27.8 |
| Power plants | 10 | 62.8 | 11.3 | 21.3 |
| Transmission lines | 5 | 17.5 | 3.1 | 5.9 |
| Gas | 1 | 1.4 | 0.3 | 0.3 |
| Transportation | 10 | 74.6 | 13.4 | 25.4 |
| Roads | 1 | 6.2 | 1.1 | 2.1 |
| Bridges | 5 | 47.9 | 8.6 | 16.3 |
| Airports | 2 | 11.3 | 2.0 | 3.8 |
| Ports | 1 | 0.2 | 0.0 | 0.1 |
| Marine transportation | 1 | 9.0 | 1.6 | 3.1 |
| Telecommunications | 4 | 26.3 | 4.7 | 8.9 |
| Irrigation, flood control, and reclamation | 1 | 0.3 | 0.1 | 0.1 |
| Mining and manufacturing | 14 | 91.3 | 16.4 | 31.0 |
| Mining | 2 | 7.0 | 1.3 | 2.4 |
| Manufacturing | 12 | 84.2 | 15.1 | 28.6 |
| Social services | 4 | 20.0 | 3.6 | 6.8 |
| Tourism | 1 | 6.4 | 1.2 | 2.2 |
| Urban/rural community infrastructure | 3 | 13.6 | 2.4 | 4.6 |
| Project loan total | 49 | 294.2 | 52.9 | 100.0 |
| Commodity loans, etc. | 20 | 262.1 | 47.1 | |
| Total | 69 | 556.3 | 100.0 | |

Since figures are rounded off, they may not add up to totals.

## 3. Performance Analysis

### 3.1 Outline of projects under review

The projects reviewed in this report are the 21 Bangladesh yen loan projects that have undergone an evaluation report up to and including FY2001. A table listing the project name, sector, and date of loan agreement (L/A) has been attached in an appendix.

The 21 total projects are divided by sector as follows: 9 electric power and gas, 6 mining and manufacturing, and 2 each of transportation, telecommunications, and social service projects. Of the electric power and gas sector projects, 6 were power plants, 2 were transmission lines, and 1 was a gas project. (Table 3-1).

By year, loan agreements in the latter half of the 1980s represented 7 projects, or one-third of the total, followed by the first half of the 1980s with 6 projects, and the latter half of the 1970s with 4 projects, and finally with the first half of the 1990s with 3 projects. (Table 3-2).

Table 3-1: Target project numbers by sector

| Sector | Number of projects | Sector | Number of projects |
|---|---|---|---|
| Electric power and gas | 9 | Mining and manufacturing | 6 |
| Power plants | 6 | Mining | 1 |
| Transmission lines and distribution systems | 2 | Manufacturing | 5 |
| Gas | 1 | Social services | 2 |
| Transportation | 2 | Tourism | 1 |
| Bridge | 1 | Urban/rural community infrastructure | 1 |
| Marine transportation | 1 | | |
| Telecommunications | 2 | **Total** | 21 |

Table 3-2: Number of target projects by date

| Dates | Number of projects |
|---|---|
| 1975-1979 | 4 |
| 1980-1984 | 6 |
| 1985-1989 | 7 |
| 1990-1994 | 3 |
| 1995-1999 | 1 |
| Total | 21 |

Note: Based on date of loan approval (the earliest in cases of multiple loan agreements).

### 3.2 Analysis of the five evaluation criteria

This section presents an analysis of the performance of each project based on the evaluation report. The Five Check Criteria make up the framework of the analysis. The Five Check Criteria make up the framework of the analysis. Analysis is based on the Principles for Evaluation of Development Assistance adopted in 1991 by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD). The five criteria are the relevance, efficiency, effectiveness, impact, and sustainability of the project. In order to undertake a detailed evaluation of the project, the above mentioned five criteria have been again divided as in Table 3-3 into subordinate levels called Evaluation Check Items (23 in total). Following that, verification of each evaluation check item was conducted based on information recorded in the evaluation reports, and a performance analysis was conducted.

Table 3-3: The Five Primary Evaluation Criteria and Evaluation Check Items

| | |
|---|---|
| Project Relevance | Does the goal and the approach to the project match the priorities and policies of the target group, counterpart country and the donor? |
| A1. Consistency with Development Policy and Priority Issues | Do the project goals and overall goals of this project match the development policies (including the national policy and master plan) and priority issues of the country or region in question? |
| A2. Relevance of Project Scope | Was the project plan (scope and approach) at the time of appraisal judged appropriate to achieve the overall and project goals? |
| A3. Relevance of Project Scope Alteration | In cases where project scope was altered after the project was implemented, were the alterations relevant? |
| A4. Relevance of Project Goals at the Time of Evaluation | In cases where terms and conditions were altered after the planning stage, are the project goals still valid at the present? |
| Efficiency of Implementation | Was the input appropriate and achieved as planned in terms of quality, quantity and timing? Was the method used the most efficient in regard to output? |
| B1. Completeness of Output | Was the output (project results) completed as planned? |
| B2. Implementation Schedule Efficiency | Were there any problems in the project that caused the implementation schedule to exceed original plans? |
| B3. Project Cost Efficiency | Were there any problems in the project that caused the project costs to exceed original plans? |
| B4. Project Implementation System | Was the system appropriate for decision-making, monitoring and troubleshooting during the project? |
| Effectiveness | Achievement of Project Purpose. To what extent did the project output achieve its purpose? |
| C1. Output Utilization | Is the output (project results) being used adequately? (Determined primarily using the operation indicators. In cases where there is no planned value, sufficiency will be determined using absolute values.) |
| C2. Project Goal Realization | Was the direct effectiveness of the project sufficiently realized, and was the project goal sufficiently achieved? (Determined primarily using the effect indicators. When there is no planned value, sufficiency will be determined using absolute values) |
| C3. Achievement of IRR | Is the Internal Rate of Return sufficient when compared with initial project values? |
| C4.Effect of Technical Assistance | Were the training and technological instruction component effects sufficiently realized? |
| Impact | Was the intended overall goal of the project achieved? Direct, indirect and subordinate results in terms of technical, economical, socio-cultural, institutional and environmental aspects. |
| D1. Contribution to Overall Goal Achievement | To what level were the original overall goals of the plan achieved, and to what extent did the project contribute to their |

| | |
|---|---|
| | realization. |
| D2. Impact on Policy and Institutional System | What impact did the project have upon development policy of the country in question and the institutional system of the sector in question? Was the impact positive or negative? |
| D3. Socio-Economic Impact | What kind of impact was there on the regional society and economy? Was the impact positive or negative? |
| D4. Impact on Technology | What contribution did the project make to technological innovation and improvement in the country in question? |
| D5. Impact on Natural Environment | What impact was there on the regional environment? Was the impact positive or negative? |
| D6. Resident Resettlement and Land Acquisition | What impact was there on regional society in terms of resident resettlement and land acquisition? |
| Sustainability | After completion of aid, to what extent will the agencies and organizations of the counterpart country be able to sustain the output and effects of the project? |
| E1. Output Condition | Is the output (project results) being maintained and operated appropriately? Is facility in good condition? |
| E2. Operation and Maintenance System | Are the systems, human resources (quality and quantity), work procedures (manuals) technology, maintenance facilities and equipment, and stock and procurement of spare parts for operation and maintenance sufficient? |
| E3. Financial Resources for Operation and Maintenance | Are sufficient financial resources available for appropriate operation and maintenance? Are those resources expected to remain available in the future? |
| E4. Continuation of Needs | Is it expected that need for the project will continue in the future? |
| E5. External Factors | What external factors will have a major effect on project effects and sustainability (environment, politics, policy, institutional systems, market, other related projects, etc.)? Is it expected that positive factors can be maintained in the future? |

### 3.2.1 Project Relevance

In the text, the words “plan” and “objective” each refer to the initial plan and the objectives of the initial plan (in principal, at the time of appraisal); however, in cases where project alterations were approved during the implementation of the project, they refer to the revised plan and objectives. This definition will be used throughout the remainder of this document.

(1) Consistency with Development Policy and Priority Issues

Nearly all of the 21 projects conformed to government development policies or priority development issues. Even in the cases of the projects that have not been evaluated due to a lack of notation regarding overall development policies or priority issues, it is surmised that most are also exceedingly relevant to those policies and issues as each of the project goals have been determined to be relevant to the priority development issues of the Five-Year Plans. With those included, 80% of all projects have been determined to be in conformity. As for the remaining 20%, there was insufficient information with which to make a determination regarding relevance.

According to the standard for determining conformity, projects mainly break down into:

- Projects carried out in line with the priority development items indicated in the successive Five-Year Development Plans that have been drawn up since 1973, shortly after Bangladesh won its War of Independence in 1971. This applies to many projects in the electric power and gas, mining and manufacturing, transportation, and telecommunications sectors.
- Projects that deal directly with poverty reduction, Bangladesh’s highest priority task. This applies to many projects in the social services sector.

(2) Relevance of project scope

Depending on the project, it was possible in most cases to evaluate the relevance of the scale and approach of the project plans based on remarks in the ex-post evaluation reports and the relevance of the project plans to the overall goals from the development policies and priority issues at the time. The initial plans of two-thirds of the projects were determined appropriately to ensure overall goals and project goals, and 10% were deemed largely relevant.

Although not many, there were some instances of problems with relevance of project plan. These include: a case in which the method chosen did not utilize the full specifications of the equipment, as had been expected at the time of appraisal Barge-

mounted Power Plant Project[3], an instance in which it was noted that "Due to the fact that the administration and maintenance would require especially sophisticated technology and facilities and would come only at a great cost, and based on previous experience of not having had appropriate maintenance it was recommended that project goals be met through the utilization of conventional power generation with which the Bangladesh Power Development Board already has a familiarity." Barge-mounted Power Plant Rehabilitation Project, and a case in which problems with profitability were seen because despite the second oil shock and skyrocketing prices that occurred after planning but just prior to carrying out the project the project was largely unchanged and carried out as originally planned Rehabilitation and Extension of the Karnaphuli Rayon Project.

(3) Relevance of Project Scope Alteration

While there were some type of alterations made to the plans of approximately 60% of the 21 total projects, most alterations were relevant. The main reasons for alterations were: (1) that geographical and technical conditions of the location and the needs of the beneficiary were not clear at the detailed design stage (8 projects) and (2) to correspond to policy changes, socioeconomic factors, or natural disasters that were unpredictable at the time of planning (2 projects). Typical examples of (2) include the need for additional civil engineering work that arose due to flood damage in 1988 and the case of the Sylhet Combined Cycle Power Plant Construction Project in which plans were altered to include additional water cooling towers so that groundwater could be used when it became clear that water intake from the Kushiyara River would be difficult during the dry season.

In the previously mentioned case of Rehabilitation and Extension of the Karnaphuli Rayon Project, it is true that the initial plan was not revised, but the ex-post evaluation report noted lessons such as "We must pay careful attention to time factors (the period when plans are created) and changes in conditions due to economic fluctuations after the initial plan."

(4) Relevance of Project Goals at the Time of Evaluation

Of the 21 total projects, it was possible to determine the relevance of project goals at the time of evaluation for over 70%[4], and 90% of those were deemed to have been

[3] In this project, a barge-mounted generator was chosen because it was available for quick delivery and would also be moveable at a future date. Other factors taken into consideration were that it was made in Japan and would be towed directly to the site after operational tests were completed, making it of reliable quality. However, in actuality, considering that the ease of mobility of the barge-mounted generator was lost because it was used in a method in which it was attached to shore, and the fact that there was a great deal of trouble with it after it started operation, the advantages of the barge-mounted generator were not fully realized.

[4] For the remaining 5 projects (24%) there were either no notes regarding relevance or it was not

relevant. However, as has already been mentioned, for the Rehabilitation and Extension of the Karnaphuli Rayon Project, some reservations with regard to the relevance of project goals were raised at the time of evaluation[5].

possible to determine because of insufficient information.

[5] As was mentioned in the section on relevance of project scope, the second oil shock occurred just prior to the decision to carry out this particular project (Feb/Mar 1979) and caused prices to continue rising at a frenzied pace, but because the plan was not given a major overhaul and was instead carried out largely unchanged, each product was sold at a price that was below its high cost, making the project a completely unprofitable one. In addition, the establishment of a sales route for the core product, rayon staple fiber, fell behind schedule causing a backlog in inventory and resulting in an unavoidable nearly year long halt in production, causing the project to deviate greatly from the plan. For this reason, the evaluation report notes the lesson learned that "We must pay careful attention to time factors (the period when plans are created) and changes in conditions due to economic fluctuations after the initial plan," and reservations still remain about the relevance of project goals.

### 3.2.2 Efficiency of implementation

(1) Completeness of output

With the exception of one project whose output did not lend itself to evaluation in terms of degree of completion (a development finance loan for micro finance that was a rural development credit project), the output of all projects was complete at the time of evaluation. Even in the case of this rural development credit project, if the output of the project is considered to be the execution of the full amount of this development finance loan itself along with the execution of the sub-loan targeted by the plan, it can be said that the output of this project had also been completed by the time of evaluation.

However, although completed, there were 2 projects with problems. One was the Barge-mounted Power Plant Project, noting "Although the project was completed as planned some trouble did arise and operation was discontinued due to problems at the production stage, it is thought that there may also be some problem with the quality of the facilities." Another case was the Sylhet Combined Cycle Power Plant Construction Project, noting "During the dry season poor quality of the groundwater used in the water cooling apparatus (high concentrations of iron that prevented equipment from functioning properly) resulted in suspension of operation of the steam turbines for approximately 5 months out every year during the dry season from 1995-2000".

(2) Implementation schedule efficiency

Sixty percent of the 21 projects were completed with less than one year delays, while 7 projects, or just over 30%, experienced delays of between one and three years, and 2 projects (a tenth of the total) fell more than 3 years behind schedule. There were a few delays in the electric power and gas sector. However, there were delays in most of the mining and manufacturing sector projects. The main reason for delays in projects with overruns of one year was the need for extra time to adjust project costs and/or procure funding as well as to carry out contract procedures due to alterations to project scope[6]. Other cases included one in which the scope of work for construction contractors was changed because of poor coordination on the part of co-financing institutions that resulted in a situation in which it took two and a half years to decide whether or not to pay lump sum or cost plus fee[7]. In another case,

[6] Bakharabad Natural Gas Development Project (II), Chittagong Caustic Sida Plant Rehabilitation Project

[7] Chittagong Urea Fertilizer Project (I)(II)(III)

restorations following an accident during the factory modification project caused the project to go over schedule[8].

(3) Project cost efficiency

Of all the projects, more than 70% had project costs (total project costs denominated in foreign currency) that fell within the projected costs or had overruns of 10% or less, and around 20% had overruns between 10% and 50%. Six projects, just fewer than 30% of the total number of projects, had cost overruns that exceeded 10% of the total project costs and 5 of them concentrate in the manufacturing sector.

Many of the project cost overruns were due to overruns in the domestic portions, mainly due to (1) inflation that occurred during construction delays, (2) inaccurate estimates on taxes and/or interest during construction period, and (3) increase in funding due to partial design or plan alterations[9].

(4) Project implementation system

The implementation system was deemed appropriate ("overall good") for about 70% of the 21 projects and fewer than 10% (1 project) had some areas of concern, while 10% of projects were indicated as having had problems. For the remaining approximately 20% of projects, no notation about evaluation of the system was made, making determination impossible.

The sole problem indicated with reference to project implementation system was the management abilities of the agencies implementing the projects. In the two projects that were pointed out as particularly having had problems, both were cases in which the agencies implementing the projects carried out the procurement and construction in segments rather than under a general contract, and as a result ended up being spread too thin. In one of those cases, the Goalpara-Bzarisal Transmission Line Project, Bangladesh Power Development Board (BPDB) was criticized for having problems overall in terms of organizational abilities, from selecting a local vendor to managing contracts. In another case, the Bakhrabad Natural Gas Development Project, lack of experience in procurement and insufficient coordination

[8] Ghorasal Urea Fertilizer Factory Renovation Project

[9] All 3 instances with domestic funding increases due to partial design alterations were in the power plant sector. In one case, cost overruns of approximately 10% occurred as a result of changes to plans for the direct transmission line to the existing neighboring power plant from above ground to under ground and therefore no particular notation about relevance or problems was made in the follow-up evaluation report (barge-mounted generator project). The second case was one in which changes in project site and expansion of the staff dormitory resulted in an approximate 18% increase over that at planning, totaling 342 million Bangladesh Taka (in yen, a 42% decrease), and again, no particular notation was made regarding the relevance or problems Gas Turbine Power Plant Construction Project. The third case was one in which damage caused by the 1988 flood created a need for additional civil engineering work and when it became clear that major cost overruns were unavoidable another yen loan (second) was provided Sylhet Combined Cycle Power Plant Construction Project (I)(II).

with related parties when scope changes were made by a newly established implementing agency are thought to have led to cost increases.

In the projects that were evaluated as having had some areas of concern, as in the case of the Rehabilitation and Extension of the Karnaphuli Rayon Project, the evaluation report noted that personnel from the initial project team at the start of the project changed as a result of the coup (and the assassination of the President), and there was a period of widespread change and confusion that later became stable with the new personnel system in December of 1982.

### 3.2.3 Effectiveness

(1) Output utilization

Based on operational indicators, more than 40% of the total 21 projects (9 projects) were deemed to have been utilized to a satisfactory degree, while for 6 projects output was somewhat utilized, but perhaps not to a satisfactory degree. In the ex-post evaluation reports it was noted that there was 1 project for which determination was difficult because of unavailability of relevant data[10]. There were 5 projects, or just fewer than 20% of the total, for which the degree of output utilization fell far below planned, 4 in the power plant sector and 1 in manufacturing. The reasons for low utilization were: (1) in the power plant sector projects, accidents or malfunctions due to inappropriate operation of equipment or insufficient administration and maintenance resulted in suspension of operation[11], and (2) in the case of the manufacturing sector project, delays in establishing sales routes resulted in excess inventory and an almost one year suspension of operation[12]. The problem in the power plant sector was fundamentally, as will be discussed later, a problem that resulted from the level of technical ability on the part of the Bangladesh Power Development Board (BPDB) and from problems in their administration and maintenance systems. These are important issues to study along with the problem of structurally improving the electric power sector.

(2) Project goal realization

The degree of project goal realization was ascertained by the performance of the outcome indicators of each project as well as from the qualitative remarks in the evaluation reports. While nearly 80% of all projects realized output goals, the remainder of the projects encountered problems of some kind and did not fully realize their goals.

The 4 projects with particularly low degree of goal realization were 3 power plant sector projects and 1 manufacturing sector project, and in every case output utilization was extremely low making it difficult for the project to realize its goals.

Meanwhile, many of the projects with high goal realization were in the fertilizer portion of the manufacturing sector, in transportation, telecommunications, and in the social services sector. The three fertilizer projects[13] in the manufacturing sector were carried out against a backdrop of two policy priorities. One was the goal of

[10] Goalpara-Bzarisal Transmission Line Project
[11] Gas Turbine Power Plant Construction Project, Sylhet Combined Cycle Power Plant Construction Project
[12] Rehabilitation and Extension of the Karnaphuli Rayon Project
[13] Chittagong Urea Fertilizer Project (I)(II)(III), Jamuna Fertilizer Project (I)(II)(III) and Ghorasal Urea Fertilizer Factory Renovation Project

increasing fertilizer supply to sufficiently fill the need for more fertilizer use to increase food production and the other was to promote industrial development through the use of the abundant natural gas resource of the country. Overall, production and sales are progressing smoothly. In transportation and bridges, the Jamuna Multipurpose Bridge Project greatly reduced the time required to cross the river and completely resolved the previous situation in which crossing the Jamuna River caused a bottleneck in traffic between the eastern and western regions. In the social services sector, the agriculture development credit bank (Grameen Bank) utilized yen loan amounts as sub-loans to give financing to landless poor with no collateral and achieved project goals by providing assistance for lifestyle and production activities to peasants without land of their own in rural areas.

(3) Achievement of IRR

An IRR (economic internal return rate (EIRR) or financial internal return rate (FIRR)) has been calculated for over 70% of the total 21 projects. Of those, 60% of the projects had an achieved value (recalculated value) that was 70% or more[14] of the planned value, and most quantitative impact goals were realized. Values for the remaining 40% of projects were lower.

There were 3 projects in which the IRR realized less than 30% of the planned value (one each in the power plant sector, the marine transportation sector, and the manufacturing sector).

In the Barge-mounted Power Plant Rehabilitation Project, cash flow was negative due to lack of power generation as a result of problems such as a fire in the generator and problems with vibration. In the Shipping Reinforcement Project, reduced transport volumes and freight rate resulting from insufficient marine transport along with a rise in the cost of fuel resulted in lower profitability. In the Rehabilitation and Extension of the Karnaphuli Rayon Project, high costs arising from the second oil shock resulted in a completely unprofitable project as all products were sold below their high cost, and cash flow was negative even when calculating the EIRR and FIRR values.

Problems with output utilization existed with respect to the gas turbine power generation plant. However, when calculated, the FIRR value was 17.9%, higher than the planned 14.5% value. This is due to the fact that the revenue from electric power sales was more than double what was expected at the time of appraisal because electric utility rates were raised significantly, canceling out the negative effects of the problems with output utilization conditions. In the same way, with respect to the combined cycle power generation plant construction project, similar problems with

[14] For instance, if the planned EIRR value was 20.0%, the achieved value was 14.0% or greater.

output utilization existed, but the FIRR achieved only a low 7.8% as compared with the planned value of 9.7%. Although the reason is not noted in the evaluation report, this project was also carried out around the same time frame as the above-mentioned gas turbine power generation plant project, so a similar reason can be surmised.

No notation is made regarding IRR for almost 30% of all projects, which is a considerable percentage.

(4) Effect of technical assistance

In 70% of all projects, project scope did not include training and technical assistance or did not make any notation about the effects of such. For the projects about which it was possible to make a determination, half, or 3 projects, were deemed to have had a technical transfer impact. Specifically, in a transmission line project, 3 months of training at the site for 20 people and 4 months of training overseas for 4 people was conducted, and it has been acknowledged that this contributed to improvement in the administration and maintenance capability of the implementing agency[15], and in a power plant project notes indicated a technical assistance impact[16] through the dispatch of technical advisors during the supplier's warranty period. In a natural gas development project, the technology of a method for surveying gas production conditions that was transferred as part of the additional project scope can be used in the future survey and analysis of other gas fields, and has thus been evaluated as having achieved consistent gas field production and having enabled improvements in the monitoring capabilities of implementing agencies[17].

At the same time, there were problems such as cases in which staff that had been trained were subsequently placed in a different department where the skills they had obtained were insufficiently utilized. These points were pointed out, for example, in the ex-post evaluation reports of both the Gas Turbine Power Plant Construction Project and the Sylhet Combined Cycle Power Plant Construction Project serving as a word of caution that technology transfer should be firmly in place when placing or relocating staff.

[15] Bheramara-Faridupur-Barisal Transmission Line Construction Project
[16] Barge-mounted Power Plant Project
[17] Bakhrabad Natural Gas Development Project

3.2.4 Impact

Most ex-post evaluation reports did not make note of this item nor the following check items related to impact. The reason for not having a notation could be because there was no impact, but it can also be assumed that at the time of evaluation there were no clear concerns regarding impact, and therefore none were noted in the report. Therefore, in this review, those cases have been interpreted as “unclear”.

(1) Contribution to overall goal achievement

Contribution was evaluated from two perspectives: the degree to which overall goals were achieved, and how the projects contributed to their achievement. However, in nearly half of the projects, the overall goals were not clearly noted, or the degree of contribution or relevance of the project results to the overall goals was difficult to ascertain. Determination on those projects has not been included in this review. For 80% of the projects for which evaluation was possible, a high degree of contribution to overall goals was observed. By sector, bridges, telecommunications, mining, and manufacturing projects had high degrees of contribution.

(2) Impact on Policy and Institutional System

Out of the 21 total projects, the only project for which mention of a policy or organization system impact was made was the Shipping Reinforcement Project, though its relation is not necessarily clear. Operation of the vessels procured for this project started when the Bangladesh Flag Vessels (Protection) Ordinance was adopted a year later in 1982 and the Evaluation Report indicates that there was a positive impact in improvements of the utilization rate.

(3) Socio-economic Impact

A socio-economic impact was noted in the Evaluation Reports of less than 40% of all projects (resident relocation and land acquisition related impacts are noted in another chapter and are not included here). In addition, even when an impact was noted, the cause and effect relationship between project implementation and impact was not fully explained in many projects.

For the projects for which there was some impact, all reported a positive impact. There were relatively plentiful examples of impact in the electric power sector, and the bridges, telecommunications, manufacturing, and urban/rural community infrastructure sectors had examples of impacts as well. Specific examples are as follows[18]:

[18] However, except the Rural Development Credit Program (Grameen Bank), examples of impacts are not empirical ones based on surveys, etc.

①Regional development

A regional development impact was reported for 4 of the projects. Noteworthy impacts were observed in the bridges and telecommunications sectors. For instance, in the Jamuna Multipurpose Bridge Project expectations such as the following are noted in the ex-post evaluation reports: “It is expected that economic revitalization will result from smoother distribution as this project along with road construction in the northern regions and the construction of railways connecting the eastern and western regions proceed. As basic infrastructure such as gas, electric power, and telecommunications utilize this project for creating a network between east and west, the gap between east and west will continue to be corrected.” Also, in the Greater Dhaka Telecommunications Network Improvement Project, notation is made that the construction of additional power transmission lines by the Bangladesh Telegraph and Telephone Board （BTTB） improved the convenience of telecommunication and brought about a positive impact on the socio-economic activity of the region targeted by the project. In the Chittagong Urea Fertilizer Project (I)(II)(III), among other impacts, it was noted that the project brought about further revitalization in the Chittagong region.

②Quality of life improvement

Through the implementation of urban/rural community infrastructure and telecommunications projects, residents’ lives became safer and more convenient with improvements to social infrastructure, which in turn improved their quality of life.

An example of this is the agricultural credit bank (Grameen Bank). Although it covers only 3 villages, a baseline survey, together with an analysis of the ex-post evaluation report, found the following improvements on the part of the beneficiary: (1) economic improvements, (2) increased savings, (3) women’s empowerment, and (4) ability to respond to emergencies. Also, it was reported that in the Greater Dhaka Telecommunications Network Improvement Project, increased availability of phone service in the areas targeted by the project had the positive impact of improving the quality of life of the residents.

③Job creation, savings/acquisition of foreign exchange

Many of the manufacturing sector projects, in particular the fertilizer projects, are reported to have had an impact of job creation and of savings/acquisition of foreign exchange. A savings of foreign exchange impact has also been acknowledged in the hydroelectric power generation projects.

④Increased rice production

In a transmission line project[19], the following impact was noted: “While the details of increased rice production are not clear, utilization of the electric power operated irrigation pump improved because of increased capacity and stability of the electric power supply, resulting in increased irrigation acreage and facilitating an increase in rice production”.

(4) Impact on Technology

One would expect technical transfer to occur especially when it is part of the project goals, and even when it is not, there should be some sort of technical or know-how transfer through the implementation of a project. However, such an impact is noted in few Evaluation Reports, in fact, in less than 20% of the total.

The agency that implemented the Chittagong Caustic Soda Plant Rehabilitation Project, the BCIC (Bangladesh Chemical Industries Corporation), is planning conversions from the mercury electrolysis method to the ion-exchange membrane cell method at other plants based on the experience of this project. Through the implementation of the project there was a technology transfer impact in that technical skills and experience with this new technology were gained within BCIC. Also, as was already mentioned, in the natural gas development project, the method of surveying gas production conditions that was carried out as additional project scope brought with it a transfer of technology and has been evaluated as being available for use in the future in the survey and analysis of other gas fields[20].

(5) Impact on natural environmental

Just fewer than 40% of the total number of projects noted an environmental impact, and most noted that there was no particular negative impact on the environment. There was only one notation about a case in which there was a positive impact on the environment. That positive example was in the Chittagong Caustic Soda Plant Rehabilitation Project where the introduction of new technology (the ion exchange membrane method) eliminated chlorine gas leaks and prevented the generation of mercury inside the plant and in surrounding areas thereby contributing greatly to improving the environment.

(6) Resident relocation and site acquisition

[19] Bheramara-Faridupur-Barisal Transmission Line Construction Project
[20] Bakharabad Natural Gas Development Project (II)

There were only 3 projects that noted resident relocation or land acquisition, with 2 of them reporting that there were no problems. The remaining 1 project was the Jamuna Multipurpose Bridge Project. In this project a land acquisition of 2,680 hectares (ha) resulted in a direct or indirect impact on 15,000 households. With thorough plans made in advance by the government however, the effected residents are receiving compensation for their relocation and lifestyle improvement activities are being carried out. According to an Impact Assessment Report (March 2001) regarding resident relocation entrusted to a third party jointly by JBIC and the World Bank, compensation and lifestyle improvement activities have been carried out with the support of local NGOs and progressed effectively. The way in which residents affected by this project were handled will be useful in future projects, as “good practice” along with the lessons discussed in the Impact Assessment Report.

### 3.2.5 Sustainability

#### (1) Output Condition

Of the 21 total projects, just under half had satisfactory current state of output (physical situation), while approximately 20% had some sort of problem but the state of output was acceptable, and the other projects had problems or were unable to be determined because of insufficient information. The 2 projects in which problems were noted were the Gas Turbine Power Plant Construction Project and the Barge-mounted Power Plant Rehabilitation Project. Both projects are power plant projects, but in the case of the former, the cause was operational mistakes, insufficient maintenance systems, and surrounding atmosphere that contained corrosive substances. As a result, the three generators broke down one after another and operation was suspended, with only one left operational at the time of evaluation. In the case of the latter, reports at the time of evaluation noted that a fire on the number one generator on one of the barge-mounted generators occurred after it had been refurbished and operation was suspended, and the number two generator suffered from problems such as vibration that reduced its maximum generating capacity to less than 70% of specification.

There were some projects for which output was generally good, despite some concerns, and those were 2 in the electric power sector and 1 each in the marine transportation and manufacturing sectors. In the 2 electric power sector projects, notation about one said that although administration and maintenance conditions of the reviewed projects were good, in terms of the overall condition of the power plant, “power fluctuations: load hunting” has occurred and investigation of the cause is still being conducted[21].” In another, the majority of the trouble that had occurred since the start of operation had already been resolved at the time of evaluation, and the remaining trouble expected to be remedied by actions in the near future[22]. In the 1 marine transportation sector project the vessel is being used as a regular liner on the major shipping routes of Europe and North America. However, one cause for concern in terms of the success of the project is that transport volumes were not performing well due to a slump in marine freight at the time of evaluation. Additionally, in the 1 manufacturing project, excess inventory of the core product that is rayon staple fiber forced an almost one-year shutdown in production, and the situation at the time of evaluation was that continuation of needs, the premise for project success, would be

[21] Kaptai Hydro-Electric Power Plant Project
[22] Barge-mounted Power Plant Project

dependent on subsequent improvements in cost of goods and the establishment of a sales system[23].

(2) Operation and maintenance system

Of the total projects, just under half were judged as having good administrative and maintenance systems, over 20% of projects had areas of concern, nearly 20% had problems, and 10% of projects did not provide sufficient information from which to make a determination. While the administrative and maintenance systems of projects in the bridge sector, marine transportation sector, telecommunications sector, mining and manufacturing sector, and urban/rural community infrastructure sector were relatively good, most problems were concentrated in the administrative and maintenance systems of the power plant sector[24]. As can be seen by the fact that several of the generators in the target projects have already experienced repeated shutdowns, it can be said that the administrative and maintenance system of the agency carrying out the operation, the Bangladesh Power Development Board (BPDB), is not sufficiently developed. In order to improve this situation, there are many challenges in terms of institutional reform such as improvements to the level of technology on the part of the personnel involved in the technical aspects of administration and maintenance, appropriate placement and securing (of staff), improvements in morale, and technology transfer.

Meanwhile, the following have been noted as examples of good administration and maintenance:

① In the Jamuna Multipurpose Bridge Project, the Jamuna Multipurpose Bridge Construction Authority oversaw the major construction work and the company that obtained the contract for administration and maintenance through international competitive bidding is responsible for toll collection, traffic management, peripheral security, and the daily maintenance of the bridge, the approach roads, and the embankments, and there are no particular problems with the administrative and maintenance systems.

② In the Greater Dhaka Telecommunications Network Improvement Project, the technical personnel of each agency conduct day-to-day and periodic maintenance, and the Bangladesh Telegraph and Telephone Board（BTTB） conducts training with the aim of refreshing technical knowledge and skills on the part of the staff at the Telecom Staff College (TSC) and the Telecom Training Centers (TTCs). In addition, procedures for the prompt and

[23] Rehabilitation and Extension of the Karnaphuli Rayon Project

[24] Of the 9 projects that were evaluated as having concerns or problems, 7 were in the power plant sector.

systematic procurement of spare parts from Japanese manufacturers with the cooperation of customs authorities have been established.

③ In the Jamuna Fertilizer Project (I) (II) (III), there is no system in place for periodic inspections, but daily Technical Meetings are conducted based on entries in the routine inspection records, and one of the operational policies of the Bangladesh Chemical Industries Corporation （BCIC） is to suspend operation at the plant for approximately 30 days once every 18 months and conduct an overhaul.

(3) Financial resources for operation and maintenance

Fewer than 20% of the total projects were deemed to have established a sufficient budget for future administration and maintenance. Just over 10% of the projects had some cause for concern with respect to financial resources, just fewer than 40% clearly had problems, and for the remaining 30% of projects there was either no notation made in the ex-post evaluation reports or there was insufficient information with which to make a determination.

The breakdown of the 8 projects that were criticized for having had problems is: 4 electric power projects, 3 manufacturing projects, and 1 marine transportation project.

At the time of evaluation, the financial affairs of the Bangladesh Power Development Board were inefficient with high system loss (over 25%) and delays in collections of electric utility bills (over 6 months). In addition, a heavy interest burden, huge carryovers of losses (more than 7 times the operating profit at the end of FY1990), and a very vulnerable financial situation due in part to foreign exchange losses is pointed out as having contributed to insufficient financial resources for administration and maintenance[25]. Problems with chronic deficits on the part of the agency implementing the operation were also noted, particularly in the manufacturing sector, in almost the same way as with the urea fertilizer factory construction projects in Chittagong and elsewhere. This was due to increased depreciation and interest burdens due to decline of the Bangladesh Taka and a shift to lower sales prices for urea fertilizer, and is a cause for concern in terms of realizing an ongoing impact of the project.

[25] There was no explicit notation in the evaluation reports of electric power projects with regard to problems with establishing electric utility rates. However, in relation to this, in the follow-up evaluation report of the Gas Turbine Power Plant Construction Project it is noted that “In order for donors, starting with the World Bank, to improve the conditions in the electric power sector that is burdened by structural issues, various assistance efforts are continuously being taken, and under the direction of the World Bank, electric utility rates are constantly undergoing revisions” and “It is extremely important and indeed essential that assistance also be provided to the institutional side of the electric power sector for structural improvements”.

(4) Continuation of needs

Fewer than half of the projects have been judged to be needed on an on-going basis. There were over 30% of the projects for which it was deemed that there was some concern about their on-going need. The remaining projects either did not note anything in the ex-post evaluation reports or provided insufficient information with which to make a determination.

There were 2 projects for which it was determined that there was a problem with on-going need. Among them, in the Rehabilitation and Extension of the Karnaphuli Rayon Project, the continuity of needs was, as was previously mentioned, depends upon subsequent improvements in the cost of goods and the establishment of a sales structure. In the other project, the Barge-mounted Power Plant Rehabilitation Project, although needs may continue while there is a strain between supply and demand of electric power, questions raised regarding this refurbishment project based on problems that had occurred up to the time of evaluation are linked to doubts about the ability of this facility to continue to meet on-going needs.

(5) External factors

Of the 21 projects under review, more than 40% commented about important external factors that had an impact on the project or its sustainability, and half of those noted that conditions were favorable for project outcome.

The outcome and sustainability of both the Bheramara-Faridupur-Barisal Transmission Line Construction Project and the Jamuna Multipurpose Bridge Project are said to be favorable as a result of progress or completion of related projects[26].

At the same time, there were some negative external factors or ones or that did not facilitate easy realization of good conditions. In the Bakharabad Natural Gas Development Project (II), the existence of natural conditions was a major factor for the gas production that was centered on repairing a well. In the Chittagong and other urea fertilizer factory construction projects, negative factors or factors that made it difficult to achieve favorable conditions included the raising of domestic sales prices that was expected to be a measure for resolving the chronic deficit nature of the companies operating the factories, and it was noted that it would be difficult to foresee the realization of government assistance measures such as for the government to provide a subsidy and to revise sublease conditions and the exchange risk burden from the government to operating companies.

[26] Evaluation reports note in the Bheramara-Faridupur-Barisal Transmission Line Construction Project, the “Completion of a loop transmission network in the southwest” and in the Jamuna Multipurpose Bridge Project “Improvements to the network of roads in the north along with progress on related projects such as a railway line connecting the east and west have resulted in higher utility value of the Jamuna Bridge in the future.”

Aside from the evaluations of individual projects, according to the Overall Evaluation Report of the fertilizer sector (September 1995), reforms of public corporations began in the early 1990s and in the mid-90s, plans had been made for privatization programs of companies under the Ministry of Industries, the Ministry of Textiles, and the Ministry of Jute. The BCIC (Bangladesh Chemical Industries Corporation) that oversaw the fertilizer sector was ranked at a relatively good level, and companies under it, particularly those in the fertilizer sector, were not a target of the major privatization plans that were occurring as part of the reform movement at that time because they had contributed to some degree to an increase in profitability. Through cooperation from the World Bank and the ADB, reforms of the electric power sector in Bangladesh did progress, albeit slowly, and the separation of the different areas of Bangladesh's Electric Power Agency's roles such as generation, transmission, and distribution into different companies, along with privatization, and reform of electric utility rates, while also establishing necessary legal systems is also under consideration[27].

[27] Sylhet Combined Cycle Power Plant Construction Project, Barge-mounted Power Plant Rehabilitation Project

## 3.3 Issues unique to Bangladesh

In reviewing the yen loan projects that have been carried out in Bangladesh to present, while the mining and manufacturing sectors represent the largest share of sub-sectors, the majority of the projects have been assistance in the construction and refurbishment of fertilizer factories[28]. In light of the relative importance of fertilizer factory projects, an examination of the fertilizer sector was conducted in 1994[29] and an overall evaluation of fertilizer factories was conducted in 1995. Although this was some time ago, a review of assistance through yen loans to the fertilizer sector[30] referring to this examination and evaluation was conducted, and a study was done on performance and impact in the fertilizer sector along with the significance and methodology of assistance through yen loans.

### (1) Fertilizer manufacturing in Bangladesh and assistance through yen loans

Bangladesh is a country that is classified as a least less developed country (LLDC). The agricultural sector remains a major sector in terms of both GDP and in terms of absorption of the workforce. Also, increasing food production and food self-sufficiency through agriculture is one of the highest priority issues in providing food for a population that continues to grow rapidly in a small country. As there is almost no room whatsoever for extensive expansion of the cultivated land in Bangladesh, it is necessary to increase dry-season crop acreage through the introduction of irrigation facilities and to increase yields by improving productivity through a Green Revolution in which high yield crop varieties are introduced and their acreage and the amount of fertilizer used on them are both increased. The Bangladesh fertilizer industry is under the charge of the BCIC (Bangladesh Chemical Industries Corporation) and rapidly developed from the late 1980s to the early 1990s with the leverage of international agencies and bilateral assistance, against the background of two policies. One is the provision of agriculture input necessary for increasing food production, and the other is the development of manufacturing through the utilization of the abundant natural gas resource in the country (Table 3-3).

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[28] Specifically, the 8 yen loan projects totaling 73 billion yen to build the Jamuna Fertilizer Project and refurbish the Ghorasal Fertilizer Factory represent 25% of the total amount of 294 billion yen that was provided in yen loan projects to Bangladesh. Please refer to the Bangladesh: List of projects under review at the end of this document for information regarding yen loans to these 3 plants.

[29] Jamuna Fertilizer Project (I)(II)(III)See attached ex-post evaluation report (June 1994)..

[30] In the above-mentioned Overall Evaluation Report, the term “fertilizer sector” is used when showing the structure of the 3 sectors related to fertilizer that are the fertilizer manufacturing sector that produces fertilizer, the fertilizer distribution service sector that distributes fertilizer, and the agriculture sector that uses fertilizer, and is also used here.

**Table 3-3: Trends in fertilizer production amounts**

**(Unit: 1000 tons)**

| Fiscal year | Urea fertilizer | Other | Total | Loan project operation start date |
|---|---|---|---|---|
| 1984-85 | 742 | 65 | 807 | |
| 85-86 | 842 | 111 | 953 | |
| 86-87 | 846 | 147 | 993 | |
| 87-88 | 1,286 | 251 | 1,537 | |
| 88-89 | 1,447 | 284 | 1,731 | Chittagong (88.7) |
| 89-90 | 1,472 | 291 | 1,763 | |
| 90-91 | 1,423 | 194 | 1,617 | |
| 91-92 | 1,646 | 251 | 1,897 | |
| 92-93 | 2,009 | 271 | 2,280 | Jamuna (92.7) |
| 93-94 | 2,182 | 262 | 2,444 | Ghorasal repair (94.1) |

（Source：JBIC）

At the time of overall evaluation of the fertilizer factories, there were 7 state-operated fertilizer factories (6 urea fertilizer factories, 1 phosphate fertilizer factory), and JBIC provided most of its assistance to the construction and repair projects of 3 urea plants through a total of 8 yen loans from the 1980s to the first half of the 1990s.

(2) Performance of the fertilizer sector and its impacts

a. Fertilizer production, supply and demand situation

Bangladesh produces only the following five types of fertilizer: urea/ammonium sulfate nitrogen fertilizers (N), TSP/SSP phosphate fertilizers (P), and gypsum that is generated as a byproduct (sulfur=supply of S), but urea overwhelmingly represents the largest share in terms of volume (FY93-94 data indicates that urea was approximately 2.2 million tons of the total produced volume of 2.4 million tons.) The 3 urea factories to which JBIC has provided assistance have produced approximately 1.5 million tons of urea fertilizer, or 70% of the total production amount, having a considerable impact. The domestic demand for urea has already been satisfied, and Bangladesh has now become an export country for this product. Meanwhile, the country is completely dependent on imports of other types of fertilizer such as potash (K) and compound fertilizers.

b. Increase in fertilizer consumption

Discussions of cutting back on or halting assistance for fertilizer started to come to the fore in the 1970s, and a look at the long span shows that from around that time the average price of fertilizer increased at rates that exceeded the inflation rate. It is thought that the reason fertilizer consumption increased a great deal despite this

(based on sales volume, it increased from approximately 0.88 million tons in FY80-81 to approximately 2.2 million tons in FY93-94) and that the incentive for using fertilizer was not lost was high marginal productivity that led to a very low price elasticity of demand for fertilizer.

c. Impact of fertilizer use in agricultural production

Production volumes of food grain increased a great deal through increased crops of high-yield varieties of rice, with production increasing from approximately 14.6 million tons in FY81-82 to approximately 19.4 million tons in FY92-93 (Table 3-4). The annual food production growth rate during the same time was about 3%, exceeding the approximate annual population growth rate of 2%. It is in this way that increased fertilizer consumption and increased food production both played a role in the framework of the Green Revolution. As a result, the country came close to achieving self-sufficiency in rice production from FY90-91, and imports since that time have been very little. In addition, the real price of rice has declined through increased distribution volumes resulting from this increased rice production, which is thought to have had an impact of increasing the real income of the lower income bracket of the population. In addition to this type of macro impact, if we also look at it from the micro perspective of the farmer, one of the impacts has been high marginal yields of 3-4 units for every 1 unit of fertilizer used in high-yield varieties of rice. When looking at the overall situation of farming income and expenditures not just in terms of fertilizer, it can be observed that high yield varieties of rice requiring a lot of fertilizer are the ones with high profitability. More agriculture-related jobs have also come about because of higher yields, and a redistribution of income to tenant farmers has also been noted as an impact.

**Table 3-4: Balance of supply and demand of food crops**

**(Unit: 1000 tons)**

| | Population (millions) | Production amount gross | ①Production amount net | ②Demand amount | ③Difference between supply and demand②－① | ④Net disbursement of stock | Total supply amount①＋④ |
|---|---|---|---|---|---|---|---|
| 1981-82 | 92 | 14,597 | 13,137 | 14,724 | 1,587 | 1,766 | 14,903 |
| 82-83 | 94 | 15,220 | 13,698 | 15,029 | 1,331 | 1,740 | 15,438 |
| 83-84 | 95 | 15,717 | 14,145 | 15,238 | 1,092 | 1,784 | 15,929 |
| 84-85 | 98 | 16,084 | 14,476 | 15,655 | 1,179 | 2,213 | 16,689 |
| 85-86 | 100 | 16,079 | 14,471 | 15,976 | 1,504 | 1,192 | 15,663 |
| 86-87 | 102 | 16,587 | 14,928 | 16,805 | 1,876 | 1,933 | 16,861 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 87-88 | 103 | 16,396 | 14,756 | 17,119 | 2,363 | 2,128 | 16,884 |
| 88-89 | 106 | 16,566 | 14,909 | 17,467 | 2,557 | 2,525 | 17,434 |
| 89-90 | 108 | 18,746 | 16,871 | 17,798 | 927 | 1,204 | 18,075 |
| 90-91 | 110 | 18,856 | 16,970 | 18,146 | 1,175 | 1,589 | 18,599 |
| 91-92 | 112 | 19,317 | 17,385 | 18,477 | 1,092 | 1,329 | 18,714 |
| 92-93 | 114 | 19,431 | 17,488 | 18,808 | 1,320 | 842 | 18,330 |

(Source : JBIC)

(Note) ① Figure has been calculated with a hypothesized 10% deduction for use as seed and loss after harvest.
④ Net disbursement amount of food stock by public sector (disbursed amount – purchased amount).

(3) Significance of assistance to fertilizer factories and future assistance

There are two aspects of assistance to fertilizer factories, assistance to the manufacturing sector and indirect assistance to the agricultural sector with the ultimate goal of increasing food production. In the case of Bangladesh, as discussed above, there has been a major impact of indirect assistance to the agricultural sector of supporting increased food production through the increased use of fertilizer. This has been part of the process of achieving a remarkable Green Revolution for a growing population. Although no quantitative analysis is available, considering that 70% of the country's fertilizer production is urea, it can be reasoned that assistance to fertilizer factories in the form of yen loans has been very significant.

From the perspective of sustainability, the previously mentioned Overall Evaluation Reports note the fact that in the fertilizer sales pricing system the factory's selling price is the government's control price and the fact that the reform of public enterprises that started in the 1990s created a situation in which BCIC and the management of the fertilizer factories under its charge could not avoid being impacted in some way, and that at the time these were recognized as uncertain factors. The areas that were actually identified as problems a short time after the provision of yen loans to the fertilizer sector were made were issues that did not involve the yen loans.

## 4. Conclusions

### 4.1 Performance analysis overview

The 21 Bangladesh projects evaluated thus far have achieved nearly satisfactory results overall, but depending on the sector and on the evaluation item, results vary to a certain degree. First of all, with respect to “project relevance” and “efficiency of implementation,” most projects were at an overall good level with some delay of schedule in mainly manufacturing sector. Even in projects that did have some issues, those were scattered and found mainly in the manufacturing sector. As regards “effectiveness (project goal achievement)” and “sustainability”, projects with lower output utilization than planned are found mostly in the electric power sector.

Projects in each of the other sectors, transportation, bridges, telecommunications, and urban/rural social infrastructure were evaluated at a high level on the whole, and among which there are projects that have been evaluated as an example of good practice that can be useful in the future.

The performance evaluation results of projects targeted for review are outlined below, using the five primary evaluation check criteria.

#### (1) Relevance

“Project relevance” is the criterion that received the highest evaluation among the five evaluation criteria, and with the exception of projects for which evaluation was impossible, the consistency with overall goals and the development issues was judged to be appropriate for all projects. Many of the Bangladesh projects were in line with the Five-Year Plans and the priority issues.

Approximately 60% of the total number of projects experienced some alterations in scope during the implementation stage, but most of those alterations were deemed to have been appropriate. Conversely, economic fluctuations such as a sharp rise in commodity prices due to the second oil shock were areas in which project goals should have been reviewed and modified, but were not, and implementation of the project as planned resulted in problems in profitability in some instances.

#### (2) Efficiency

Overall, projects in Bangladesh had good “efficiency of implementation”. Degree of “completeness of output” was overall very high and almost all projects were completed as planned. There were projects, however, that were completed with some problems in facility operation. In terms of “implementation schedule efficiency”, almost 60% of projects were completed on time or with construction delays of a year or less, just over 30% experienced delays of between 1 and 3 years, and only 10% of

the total number of projects experienced major delays exceeding 3 years. The reasons for long-term delays were alterations in project scope and resulting changes in project costs/funds procurement and contract procedures, handling of accidents that happened during plant refurbishment projects, and lack of coordination between donor agencies. In the same way, “project cost efficiency” was overall good, with almost 80% of all projects being completed within the planned budget or coming in with overruns of 10% or less. Of the 6 projects that had cost overruns exceeding 10%, 5 projects were in the manufacturing sector. The “project implementation systems” were overall good for 70% of the projects assessed. Although few, there were some instances in which problems with the method for procuring materials and work exceeded the capabilities of the agency implementing the project.

(3) Effectiveness (Project Goal Achievement)

As compared with other evaluation items, the effectiveness (project goal achievement) level of the 21 Bangladesh projects overall was somewhat lower than other criteria, owing mainly to insufficient performance of projects in the power plant sector. “Output” was utilized in nearly 70% of the projects, and “project goals” were realized in nearly 70% of projects. At the same time, slightly over 20% of projects in terms of output utilization and almost 20% of projects in terms of project goal realization were deemed insufficient, and most of those projects were in the electric power sectors.

In terms of degree of “IRR achievement”, more than half of the projects had produced expected economic and fiscal benefits at the time of evaluation.

(4) Impact

Nearly half of the project evaluations do not have clear description or sufficient information about the contribution to overall goal achievement. In projects that were evaluated, a contribution to achievement of overall goals was acknowledged in more than 70%. There was only 1 project for which notation was made about impact on policy and organization. This reflects the fact that there have been almost no Japanese ODA loan projects to Bangladesh evaluated so far and reviewed that included policy and organizational reforms in their scope. Slightly fewer than 40% of projects had notation in the Evaluation Report about a “socioeconomic impact.” In many projects, the cause and effect relationship between project implementation and impact has not necessarily been fully explained. However, in terms of “socioeconomic impact,” concrete examples did exist such as (1) regional development, (2) improvement in quality of life, (3) job creation and savings/acquisition of foreign exchange, and (4) increased rice production.

Fewer than 40% of the total number of projects mentioned the environment, and most noted no particularly negative impact on the environment, or, as was the case with just one project, noted a positive impact on the environment. There was only one project for which the ex-post evaluation report made note of "resident relocation or land acquisition," and it is thought that the Bangladesh government's handling of the issue itself and the follow-up of the impact survey entrusted to a third party by JBIC and the World Bank was appropriate. Problem solving of this kind, such as done by the government or by the development assistance agencies, along with the lessons learned that are reported in the aforementioned impact survey can be used as examples of "good practice" in the future.

(5) Sustainability

The evaluated level of "sustainability" of projects was the next lowest after "effectiveness (project goal achievement)" as compared with other primary evaluation check criteria. Looking at the main check items of output and administrative and maintenance system, only around 70% of projects had overall good conditions. Conversely, although 10-20% of projects with problems is not necessarily a high figure, they are all concentrated in the power plant sector. Outside the electric power sector, each of the other sectors of transportation, telecommunications, mining and manufacturing, and urban/rural social infrastructure were at an overall good level. However, in terms of "financial resources for operation and maintenance," the number of projects that had a sufficient amount or had established resources to a certain extent was only just over 30% of the total, while nearly 40% of projects (most in the electric power and manufacturing sectors) were criticized for having problems such as lack of fund for operation and maintenance or chronic state of deficit, and cause concern about sustainable impact of the project. There were 10% of projects evaluated to have a problem with "continuation of needs," but they are the same projects that were deemed to have problems with relevance of project goals at the time of evaluation.

## 4.2 Lessons Learned/Recommendations

### Continued assistance for further development of high priority sectors in which JBIC has extensive experience and high presence

The electric power sector and the manufacturing sector (especially fertilizer industry) have been the central focus of yen loan projects to Bangladesh up to the present. However, as was mentioned in the previous section, most of the projects that have had issues to be solved with “effectiveness (project goal achievement)” and “sustainability” have been concentrated in the electric power sector. In addition, among the projects that had problems with sustainability, many that had concerns with resources for administration and maintenance had structural problems, particularly in the electric power sector and the manufacturing sector.

Specifically, in the electric power sector, the primary cause of problems with “effectiveness (project goal achievement)” and “sustainability” in the projects under review has been pointed out as insufficiency on the part of the operation and maintenance system of the Bangladesh Power Development Board (BPDB). In order to improve the situation, it is essential that project formulation with due consideration for improvement of the technical level of engineers, appropriate placement and securing of personnel, improvement of staff morale, technology transfer, etc. be done. When doing so, it will be prudent to stay involved, based on JBIC’s experiences up to the present, in overall structural reform of the electric power sector being carried out under the assistance of the World Bank and the ADB, and as part of that framework, to carry out projects in the electric power sector with attention also being paid to the improvement of the capabilities of the organizations implementing the projects in sectors such as the power generation sector as well as to the achievement of sustainability.

Bangladesh: List of projects under review

| Project name | Sector | Conclusion of yen loan agreement (year/month) (Note) |
|---|---|---|
| POWER GENERATING BARGE PROJECT | Electric Power and Gas/Power Plants | Apr-79 |
| KAPTAI HYDRO-ELECTRIC POWER PLANT PROJECT | Electric Power and Gas/Power Plants | Jan-84~ Mar-84 |
| BARGE-MOUNTED POWER PLANT PROJECT | Electric Power and Gas/Power Plants | Nov-84 |
| GAS TURBINE POWER PLANT CONSTRUCTION PROJECT | Electric Power and Gas/Power Plants | Oct-85 |
| SYLHET COMBINED CYCLE POWER PLANT CONSTRUCTION PROJECT | Electric Power and Gas/Power Plants | Aug-87~ Sep-93 |
| BARGE-MOUNTED POWER PLANT REHABILITATION PROJECT | Electric Power and Gas/Power Plants | Sep-93 |
| GOALPARA-BARISAL TRANSMISSION LINE PROJECT | Electric Power and Gas/Transmission Lines and Distribution Systems | Jan-77 |
| BHERAMARA-FARIDPUR-BARISAL TRANSMISSION LINE CONSTRUCTION PROJECT | Electric Power and Gas/Transmission Lines and Distribution Systems | Oct-80 |
| BAKHRABAD NATURAL GAS DEVELOPMENT PROJECT (II) (INCLUDING FENI) | Electric Power and Gas/Gas | Jun-94 |
| JAMUNA MULTIPURPOSE BRIDGE PROJECT | Transportation/Bridges | Jun-94 |
| SHIPPING REINFORCEMENT PROJECT | Transportation/Marine Transportation | Apr-79 |
| TELECOMMUNICATION NETWORK EXPANSION PROJECT | Telecommunications/ Telecommunications | Oct-85 |
| GREATER DHAKA TELECOMMUNICATIONS NETWORK IMPROVEMENT PROJECT | Telecommunications/ Telecommunications | Jul-86 |
| BAKHRABAD NATURAL GAS DEVELOPMENT PROJECT | Mining and Manufacturing/Mining | Dec-80 |
| REHABILI. & EXTEN. OF THE KARNAPHULI RAYON PROJECT | Mining and Manufacturing/Manufacturing | Oct-80 |
| CHITTAGONG UREA FERTILIZER PROJECT (I)(II)(III) | Mining and Manufacturing/Manufacturing | Jan-82~ Jan-87 |
| JAMUNA FERTILIZER PROJECT (I)(II)(III) | Mining and Manufacturing/Manufacturing | Nov-88~ Nov-90 |
| GHORASAL UREA FERTILIZER FACTORY RENOVATION PROJECT | Mining and Manufacturing/Manufacturing | Dec-88 |
| CHITTAGONG CAUSTIC SIDA PLANT REHABILITATION PROJECT | Mining and Manufacturing/Manufacturing | Dec-88 |
| DACCA INTERNATIONAL HOTEL CONSTRUCTION PROJECT | Social Services / Tourism | Jul-77 |
| RURAL DEVELOPMENT CREDIT PROGRAM (GRAMEEN BANK) | Social Service / Urban/Rural Community Infrastructure | Nov-95 |

(Note) For projects with multiple yen loan agreements, the date of conclusion of the first and last loan agreement is shown.