CHAPTER 3 OVERVIEW OF EVALUATION FINDINGS BY JAPAN BANK FOR INTERNATIONAL COOPERATION (JBIC)


3.1 Evaluation by Theme (FY1999)

Evaluator:
Yasutami Shimomura: Professor, National Graduate Institute for Policy Studies (third-party evaluator)
JBIC

Project Objectives

“The Eastern Seaboard Development Plan” is an infrastructure improvement project with the purpose of promotion of development of the eastern waterfront region located in the southeast of Bangkok. Its objectives are the alleviation of concentration of the industry into the Bangkok metropolitan area and establishment of a new industrial infrastructure in Thailand. This project emphasizes heavy chemical industry using natural gas developed in Siam Bay from the early 1980s to the first half of 1990 and export-oriented industries located in the outskirts of the newly built international container ports.

Evaluation Findings

Based on the ex-post evaluations of 16 individual infrastructure projects implemented by ODA yen loan, the impacts of the Eastern Seaboard Development Plan were verified and it was confirmed that the Eastern Waterfront Region became the second economic sphere in Thailand, as planned, next to the Bangkok Metropolitan area. It was also clarified that the improvements in infrastructure brought about by these projects were major factors for infusion of private capital into the Eastern Waterfront Region.

“History of the Eastern Seaboard Development Plan and its Significance – Sense of ownership in developing countries and effective use of aids”
This evaluation is to assess details that would show relationship between the Thai government and aid agencies including the World Bank and the Japanese government both of whom have provided capital for the Eastern Seaboard Development Plan. It is also concerned with elucidation of factors that enabled the Thai government to make self-determination from the politico-economic standpoint. In making an autonomous decision, not only mature administration systems and competent technocrats but also the mechanism of check-and-balance reflecting the social/cultural characteristics specific for the country are mandatory and at least free election in some degree and freedom of speech as public rights are required. By this evaluation, the importance of “democratic development principles” was alluded to.

“The Eastern Seaboard Development Plan; Map Ta Phut Port Project (1) ~ (3) and Map Ta Phut Industrial Estate Project” (Evaluator: JBIC)

This project is intended to develop Map Ta Phut District as a heavy chemical industrial District by constructing an industrial complex and an industrial port which meets the transportation demand of the industrial complex.

(2) As a result of the project, the Map Ta Phut Industrial Complex has progressed as a large petrochemical complex using natural gas piped in from Siam Bay and is contributing to the progress of the petrochemical industry in the country as a whole. The traffic in and out of the Map Ta Phut Industrial Port has increased cargo-processing volume above the estimates at appraisal, contributing to the growth of the heavy petrochemical industry.

“The Eastern Seaboard Development Plan; Laem Chabang Industrial Complex Project (1) and (2)” (Evaluator: JBIC)

This project has facilitated utilization of the advantages offered by the adjoining, international deep-sea port (the Laem Chabang Commercial Port), constructed to substitute the Port of Bangkok. This project is to construct an industrial complex for processing industry for export businesses and general light industry. The project included land reclamation, road construction, construction of water purification plant and sewage treatment plant, pipe laying for water and sewer, standard plant construction and other tasks for the industrial complex.

(3) Job opportunities created by this project far exceeded the initial estimate. In the initial stage, estimate for new job opportunities at the Laem Chabang Industrial complex would amount to 25,000 by 2000; however, the Complex actually employed 30,402 workers as of the end of 1997. As for the economical growth and industrialization, Chonburi Province has grown at twice the speed of the whole country in added value of the manufacturing industry. The Laem Chabang Industrial Complex, which is a major industrial complex in Chonburi Province, is considered to have played an important role in industrial development of the province.
“The Eastern Seaboard Development Plan; Laem Chabang Commercial Port Project (1) ~ (3)”  
(Evaluator: JBIC)

This project was to provide a facility for large container ships in order to complement and substitute the Port of Bangkok by constructing a deep-sea commercial port. The completion of the project increased the volume of handled cargo, complemented and substituted the Port of Bangkok and enabled efficient management of the container terminal.

The construction of the Port of Laem Chabang resulted in the increased number of plants in the Eastern Seaboard District, supported industrial development in the Laem Chabang District. In addition, decrease of the volume of handled cargo in the Port of Bangkok reduced the overland truck traffic in and out of the City of Bangkok and reduced traffic congestion in the City.

“The Eastern Seaboard Development Plan; Road Project” (Evaluator: JBIC)

This road network construction effort was conducted in order to absorb anticipated traffic increase upon completion of the Eastern Seaboard Development Projects. The road construction plan related to the plan consisted of three separate projects of highway construction, but for the objective of the evaluation, the Chonburee–Pattaya Highway (extension approximately 68km with four lanes) was considered.

The Chonburee–Pattaya Highway handles approximately 56% of north-south traffic (Chonburee–Pattaya Highway and two national roads running in parallel with it) in the Eastern Seaboard District, and functions as the important artery in the District. According to a simulation with the traffic model of Thailand, the traffic volume would have been less than 80% and the average speed roughly 70% of the case where roads were newly constructed or widened under the Eastern Seaboard Development Plan (as of 1997). The simulation also indicated that, had the ODA yen loan projects not included the Chonburee–Pattaya Highway Project, the traffic volume would have been less than 80% and the average speed at 75% of the case in which the whole road projects were implemented. It shows the massive effect of the construction of the Chonburee–Pattaya Highway on the road traffic patterns in the entire Eastern Seaboard District of Thailand.

The “Eastern Seaboard Development Plan; Railway Project” (Evaluator: JBIC)

The railroad construction project as a part of the Eastern Seaboard Development Plan evaluated here was effected to develop enough capability to respond transportation demand created by newly constructed port facility and an industrial complex in the Eastern Seaboard District by constructing an inland relay point for railroad shipment of general cargo and containers. This measure would also render smooth shipments of goods into the interior Thailand.

The railway network improved under this project transported approximately 21% of containers (in 1998: 12,693,000t) processed by the Port of Laem Chabang, making a considerable contribution as an important element in cargo transportation network. Moreover, this railway
network transports approximately 27% of LPG production (approximately 52% of the production of the Petroleum Authority of Thailand (PTT); The country produces approximately 1,800,000t of LPG) to the northern and the northeastern regions of Thailand. As shown above, this railway network greatly contributes to the long–distant transportation of LPG produced in the Eastern Seaboard District.

“The Eastern Seaboard Development Plan, Water Resources Development and Pipeline Project” (Evaluator: JBIC)

The water resources (dam) development and water pipeline project was implemented to provide water for industrial and daily household use in the Western Coast Area where the Laem Chabang District is located and in the Southern Coastal Area where the Map Ta Phut (7) District is located.

The project realized distribution of 9.4 million m$^3$ of industrial and 13.7 million m$^3$ of daily household water in the Western Coast Area and 58.6 million m$^3$ industrial and 1.9 million m$^3$ of daily household water in the Southern Coastal Area (FY1998). This project has achieved the objectives of the project as planned in response to the anticipate growth in water demand brought by the industrialization and urbanization of the Eastern Seaboard District.


Third–Party Evaluator:
Lin Jia Bin: Development Research Center of the State Council, China

Project Objectives

The objectives of the project is to construct a bypass line for enlargement in the transportation capacity of the Beijing–Guangzhou railroad line and the Beijing–Shanghai line, already at the saturation point, so as to increase the coal feed rate to the southeastern and the coastal industrial regions in China. It is also designed to increase the cargo transportation and passengers capacity between the south and the north of China. The project entails the construction of non–electrified multi–track railway of 401 km starting at Hengshui in Hebei Province, running southward through Hebei and Shanxi Provinces, and reaching Shangqiu in Henan Province.

Evaluation Findings

This project was originally implemented for increasing coal transportation capacity, however, it also induced development of areas along the railway line, which was not anticipated in the initial stage. Economic development along the tracks came about because the Hengshui–Shangqiu line became a part of Beijing–Kowloon (Hong Kong) line later. Specifically, this project met the which are primary objectives smooth coal transportation and the supply of energy. Its completion also affected many sectors of China including promotion of economic development in the areas along the railway line, enriched living style for residents, alleviation of the congestion in the existing
lines, reducing the overcrowding in railway schedule, and increased railroad redundancy (spare transportation capacity), enabling detour at emergencies.

All the local government authorities in the areas along the railway line recognized that the opening of this line, a part of the Beijing–Kowloon line, is a golden opportunity for promotion of the local economy and implemented related development projects to maximize the benefits. Both in Hengshui and Shangqiu, where the evaluator visited for the field survey, city government officials deeply appreciated the ODA yen loan that enabled this project.

According to the Ministry of Railway, the implementation agency of this project, the economic crisis that started from Southeast Asia in 1997 slowed the rate of growth in Chinese economy. This slow down reduced the traffic volume so that the expected volume was not attained. However, in comparison between 1996 when the project was completed and 1998, the passengers traffic volume of 1998 reached approximately six times and the cargo traffic volume increased approximately 12 times, in the Hengshang line.

Railway Administration Agency, the local level organizations of the Ministry of Railway, effects management and maintenance of the line and the operation is quite smooth at present.


Third–Party Evaluators:
Nobuhiro Mori: KRI International Institute Corporation
Toshisada Katsurada: Alpha Ten Co., Ltd.

Project Objectives

The Hefei–Tongling River Highway Bridge Construction Project consists of two projects of construction of new Class 2 highway (road connecting centers of political and economic activities, large-scale industrial and agricultural bases, ports and harbors and railroad stations) connecting Hefei and Tongling (123km) and erection of a PC cable–stayed bridge connecting the highway across the Yangtze River to the City of Tongling. The Huangshi Yangtze River Bridge Construction Project is to construct a continuous PC rigid–frame bridge connecting the west bank to the east bank of the Yangtze River flowing through the City of Huangshi. The Second Wuhan Yangtze River Bridge Construction Project is to construct the Second Yangtze River Bridge (a PC cable–stayed bridge) in the City of Wuhan divided by the Yangtze River into Hangkou and Wuchang Districts. The Second Chongqing Yangtze River Bridge Construction Project is to erect the Second Yangtze River Bridge (a PC cable–stayed bridge) in the City of Chongqing also divided by two large rivers, the Yangtze and Jialing.
Evaluation Findings

In all of Hefei–Tongling Highway, Tongling River Bridge and Huangshi River Bridge objectives of the projects by the Railway Administration Agency, the actual traffic volumes are lower than the volumes claimed in the appraisal. In contrast, the actual traffic volume in Chongqing reached 85% of the anticipated volume. In Wuhan, the actual traffic volume drastically exceeds the estimation in the appraisal. Reasons for the gap between the estimated traffic volume and the actual traffic volume are (1) Wuhan and Chongqing are both large cities so that their development speed is rapid, however, in local areas including Tongling and Huangshi, the development progressing speed is relatively slow, (2) there seems to be little change in the ferry traffic pattern serving remote regions that it is conceivable that few changes in long distance traffic occurred after the completion of the bridge and (3) in Tongling and Huangshi, the improvement of peripheral roads was delayed. The growth rate of the traffic volume of the Tongling River Bridge and the Huangshi River Bridge after the opening is remarkably high (approximately 20% and 40% per year, respectively) and when the development of the peripheral roads is completed, it will possibly become even higher.

The spin-off effects of highway construction occurred as traffic condition improved and became observable in increase civilian facilities and cargo volume to be transported and eventually reached revitalization of the regional production activities.

After opening the Hefei–Tongling Highway Bridge, enterprises including plastic and pharmaceutical plants were established along the Hefei–Tongling Highway and eight economic development districts were constructed. After completion of the Second Huangshi Yangtze River Bridge, a cement plant near the Second Huangshi Yangtze River Bridge expanded its scale of operation and caused an increase in construction of dwelling houses in Shuixian Province for workers in the development district, and people commuting to Huangshi. After completion of the Second Wuhan Yangtze River Bridge, a fruit and vegetable wholesale market was constructed to take advantage of the improvement in accessibility. Housing complexes were constructed in the both banks of the large bridge. After the erection of the Second Chongqing Yangtze River Bridge, industries of local capitals such as motorcycle and ceramic plants became prosperous, and the Huaxi economic technology development district was constructed in the south side of the large bridge. Housing complexes have been constructed mainly in the south and the north bank near the large bridge.

As for the charge system of public utilities of China, the recent advent of beneficiary-payment principle has compelled the respective bridge management administrations to operate them on the paying basis. In setting the fee, National Bureau of Price of each province and the People’s government compare the fees with those of other traffic control agencies and those of other provinces before granting permits for facility use fees.
4. Philippines: “Batangas Port Development Project”

Third-Party Evaluator:
Emma Porio: Professor, Ateneo de Manilla University

**Project Objectives**

Since the 1980s, the government of the Philippines has had a plan to develop the Port of Batangas, located 110km south of Metropolitan Manila into the country’s second largest port after the Port of Manila. However, in the Port of Batangas, berthing facilities and hinterlands were extremely narrow and congested making the well ordered and efficient harbor management impossible. This project was implemented to promote development of the surrounding area and improvement in the traffic conditions through improving efficiency in cargo transportation, by improvement and expansion of the narrow and insufficient facilities of the Port of Batangas.

**Evaluation Findings**

By the improvement and expansion of this project, especially by construction of berths dedicated to the Ro−Ro vessels (vessels for transporting loaded trucks as they are and passengers), high-speed passenger boats and general cargo vessels were constructed. This arrangement facilitated separation in the flows of vehicles, passengers, and cargoes and efficiency in cargo and passenger processing and safety in the harbor facilities was secured. Furthermore, the time required for the Ro−Ro vessels to cross over to the Port of Calapan on opposite bank was shortened by 1−2 hours by dispensing with their waiting time for the berth. As a rippling effect to the local areas, the cargo and passenger traffic between Mindoro and Luzon Islands became more efficient, and it is expected that development of Mindoro Island will advance in the future. In 1995, only one industrial complex existed in Batangas Province; its number has increased to 15 in the time of evaluation (FY1999). Some far-sighted enterprises started the export by container, and the Port of Batangas is expected to complement functions of the Port of Manila in the future.

In executing this project, the resettlement of residents (illegal residents) living in outskirts of the harbor was required. A group strongly opposed to the resettlement became conspicuous among the residents to be transferred and came to lead the negotiation with the government side. Though the government of the Philippines endeavored to solve the resident resettlement problem at the national level such as directly charging senior officials of the central government for negotiation, the negotiations proved to be difficult. On and after January 1994, the government has frequently issued notifications to leave the area, however, the residents have never responded positively. And finally, the houses were forcefully demolished.

JBIC and the Japanese government demanded from the beginning that the resident resettlement should be peacefully accomplished on the responsibility of the government of the Philippines. However, the forced demolition of houses was carried out with no notice to the Japanese side. In
June 1994, Japanese government froze the financing for this project. As time went on, the number of households that agreed to relocation began to increase and Japanese government accepted the effort of the government of the Philippines as one of good faith to get the agreement of the residents to be relocated. In December 1994, Japanese government released the loan and resumed to hand over funds to the government of the Philippines. In this case, Japanese government managed to get a firm promise from the Philippine government to (1) continue persuasion of illegal residents and (2) take measures for improving the living conditions of the relocated residents. In support of (2), Japanese government and JBIC constructed and equipped clinics as a grassroots grant aid and added road repairs as a part of the loan of this project.

The government of the Philippines executed the new package in its entirety including the forced house demolition in conformity with the laws of the republic, and the support to the residents was preferentially treated compared with other projects in the Philippines. Nevertheless, the negotiations came to forced demolition, because in the process of getting the consensus the hard-liners gained power in the opposition and both the resident side and the government side stood fast on respective positions. There was no systematic transmission of information from the representative of the residents to the residents. In a community-participatory negotiation, it is very important to consider information transmission from the representative to the resident and to ascertain the consensus among opposition members. With this thought, the resident relocation in the phase II of the project of 1998 had been planned carefully based on the experience of the phase I and the project was on its way after due negotiations with the residents.

As for the impact on the resettled residents, most of the residents were satisfied with the living arrangements including housing and basic infrastructure. However, as it is typical in the off-site transfer (transfer to a place located far from the original residence), the major negative impact was the reduction in income level and in job opportunities. Most of the resettled residents had informal jobs closely related to the port facility such as working as street vendors and cargo handlers. Though the government tried some household income generation programs, the residents were mostly skill-less and the programs did not work well in this instance. It is hoped that the residents will have their chances to learn of the life design, formation of organizations, business methods and the like.

5. Thailand: “Tourism Development Project”
Third-Party Evaluator:
Masaharu Shinohara: Head of Research Institute of Tourism Development, International Tourism Development Research Institute of Japan

Project Objectives
This project was to implement 71 small-scale tourist infrastructure projects (hereinafter referred to as "sub-project") in 8 regions in the whole country excluding the Greater Bangkok area. It was also involved in marketing promotion of tourism in Thailand thereby pressing development of tourism, modernization of the Thailand as a whole (through local area development), distribution of income, creation of job opportunities and acquisition of foreign currency. Objectives of the project are development of tourism based on natural touristic resources such as mountainous and marine national parks as well as cultural and artistic touristic resources such as remains and temples. In the project, construction of roads and construction, excavation and restoration of other facilities were in the plan.

Evaluation Findings

The effects of the sub-projects culled from results of the field survey of Chiang Rai and Phuket Districts are mainly as follows. In Doi-Non National Park in Chiang Rai District, the number of visitors increased drastically after the completion of the project. In Chiang Saen District, the remains excavation and conservation project brought about socially and culturally valuable secondary effects. The local residents noticed the importance of their own history and culture. In another locale where road construction project was implemented, traffic volume of the Mae-Sai – Chiang Saen arterial main road reached 5,300 vehicles per day. This road played an important role for the promotion of tourism in the Golden Triangle District (the district where Thailand borders on Myanmar and Laos in the River Mekong). In Phuket District, the improved Ra Wai Beach – Surin Beach local arterial road attracts tourists who enjoy beach hopping (sequentially wandering from one beach to another beach) and also produced a secondary effect, construction of a large-scale theme park.

The project implementation agency, Tourism Authority of Thailand, has no authority to perform appropriate maintenance after implementation of the project. Therefore, in cases where more than one execution entities are involved, it is necessary to set up a system to maintain the facility after completion of the project while the Bureau is actively involved. In some cases local governments undertake the responsibility to maintain the sub-project, but facility maintenance cannot be performed when there is a revenue source shortage. In Thailand, where the decentralization is due to be in progress, but for this endeavor to succeed, it is a prerequisite that appropriate revenue sources are also delegated to local governments. There is a suggestion to set up a tax transfer system, in which a part of the special lodging tax applied to hotel visitors is paid to the local government and to use the funds as the source for constructing and managing the tourism-related infrastructure.

6. Pakistan: “Rural Electrification Project”
Third–Party Evaluators:
National Rural Support Programme (NRSP)
Ghazi Barotha Taraqiati Idara (GBTI)
Project Objectives

This project comprises a part of the “Rural Electrification Program” to electrify 24,085 villages in the country. Of those, 6,300 villages will be electrified through the ODA yen loan. The Japanese loan covers the cost of new rural electrification and measures required in the existing lines to accommodate the new load burden placed by the newly electrified area.

Evaluation Findings

Due to the project, 5,977 villages, 95% of the estimates, were electrified. There were various delays caused in the specification of target villages, selection, seeking approvals, selection of local consultants, and procurement of the equipment and materials so that the construction lengthened to more than three times of that planned in the initial stage. One of the reasons for the delay was considered to be the lack of the organizational and management capacity of the implementation agency, the Water and Power Development Authority (WAPDA). As for operation and maintenance, everything was handled on the basis of the prescribed standard procedures and the standard design instruction, although, planned power stoppage meant as a temporary measure went on for a prolonged period in some areas and inadequate ground led to electric shock accidents. Safety standards prescribed by WAPDA were largely followed and there are no particular problems at this point.

According to an impact assessment that was conducted with residents participation in eight villages, electrified 4 – 7 years ago, many residents were satisfied with the electric power services of WAPDA. However, there were some complaints such as the response of WAPDA on the power failure is not quick, the restoration is apt to be quick only in a district where an influential person lives, and in villages far from the WAPDA office, the fee charging system was inappropriate. As negative effects of the electrification, the residents are aware of lowering of the groundwater level in some districts due to excessive pumping of the water.

On the other hand, the positive effects of the electrification are (1) the use of electric lighting, electric fans, and television sets made the home life more convenient and comfortable, (2) the use of electric fans, electric irons, washing machines, water pumps, and electric cookers reduced the household labor of housewives, (3) the popularization of television sets facilitates the acquisition of news and important information on social life and economic activities as well as amusement, (4) the use of electric fan could prevent the people from being bitten by mosquitoes, thereby reduced cases of malaria, and water pump facilitated easy acquisition of water and promoted the improvement in the environmental sanitation, (5) lighting and electric fans were installed in classrooms and lighting at home enabled children to study at home, thereby improving the educational environment, (6) use of electric lighting and electric fans increased the time available for economic activities in shops, (7) tube wells using electric pumps were installed so that the groundwater was used for the irrigation instead of rainwater and channel irrigation, and
(8) The installation of lighting apparatuses reduced the theft so as to secure the safety. This project reduced household work and increased side jobs for women, which strengthened women’s economic power and a right to speak out at home.

7. Mexico: "Monterrey Water Supply and Sewerage Project"

Third-Party Evaluators:
Shunji Matsuoka: Associate Professor, Graduate School of International Cooperation, Hiroshima University
Ikuho Kochi: Doctoral Student, Graduate School of International Cooperation, Hiroshima University

Project Objectives

The objectives of this project is to construct a sewage-treatment system by 2005, as a part of Monterrey Water Supply and Sewerage Project, which endeavors to improve the water and sewage works, so as to respond to the population increase in the Monterrey urban area, the third largest urban area in Mexico. This project prevents the pollution of rivers caused by the discharge of untreated sewerage and enhances the water quality in the downstream areas.

Evaluation Findings

Since 1970, work for the water supply and sewerage improvement project have been supported by the Inter-American Development Bank (IDB) in the urban area of Monterey. This project falls in the stage 1 of the Water Supply and Sewerage Project phase IV (Monterrey IV). This evaluation directly targeted the three sewage-treatment plants, which are the objectives of the ODA yen loan, and also described Monterrey IV including the water collection pipe system and the water supply.

Although the evaluation was based on five criteria of DAC (Development Assistance Committee), the order in the steps of the evaluation were changed into effectiveness, efficiency, sustainability, impact, and relevance. Evaluation results in each item are as follows.

To measure the effectiveness, 1997 was adopted as the target year. Targets were set quantitatively “to operate 100% of the treatment plants”, and the qualitative target was set “to purify the treated water to BOD 30mg/l, TSS 30mg/l, N-NH 32.0mg/l, and the number of Escherichia coli 1000/100m or less. The effectiveness was relatively high in all of the treatment plants and it was concluded that on the whole they attained the initial objectives.

As for the efficiency of the project, though there were some changes such that the sewage treatment methods of three treatment plants were different, the actual maintenance cost has fluctuated in the lower level than the estimation at the planning. It was evaluated that there was no serious problem.
Sustainability of the project was judged on the charge collection rate by the implementation agency is considered to exceed 90%, the number of persons contracting the sewerage is increasing, and other implementation agencies exhibit high managerial ability (by managerial endeavor of selling the treated water as cooling water for plants, etc.). These activities indicate the high sustainability of this project.

From the viewpoint of relevance, this project was evaluated as an environmental conservation project of appropriate level in the development stage of Mexico, and existence of an implementation agency having an outstanding managerial ability was valued.

On the other hand, as for impact of the project, though positive effect was confirmed including the improvement in water quality, there were negative impacts such that the water-right disputes became out of hand and the water system of the catchment basin was disrupted.

As mentioned above, this project was highly evaluated in three evaluation criteria, effectiveness, efficiency of the project, and the sustainability of the project. From the viewpoint of the revelance, this project can be said to be an environmental conservation project adapted to Mexico, while there are negative effects as well as the positive effect in the viewpoint of impacts of the project implementation.

8. China: “Guanyinge Multipurpose Dam Project (I), (II), and (III)”
Evaluator: JBIC

**Project Objectives**

This project is to construct a concrete gravity dam having the total impoundment of 2,168 million m³ on the Taizi River flowing through Liaoning Province in China. In Guanyinge, Xiaoshi, located at approximately 40 km upstream of Benxi City (implementation agency: Liaoning Provincial Resources and Electricity Department (at present, Liaoning Provincial Resources Department)). This project was approved as the 7th 5-year plan in April 1985 and started the construction in 1986. The most important objective of this dam construction was flood control and other purposes were urban and industrial water supply, irrigation water supply, electric power generation, and establishment of fish culture industry.

**Evaluation Findings**

The impact of this project was to improve the livelihood of relocated residents by improving the economic and social infrastructures. The living standard of farmers before the dam construction was low, few in infrastructure including waterworks, gas supply, communication system, roads and others besides schools and hospitals. The housing standard was low as well. A large fund was invested for this dam construction, and it brought about drastic improvement of social and economic infrastructures.
As for flood control, which is the most important objective of this project, a solid effect was observable already. In 1995, right after the completion of the Guanyinge dam, a flood with the probability of occurrence of once in 20 years in the Taize River basin occurred, however, there was no damage by the flood owing to the flood control effected by the dam. According to the calculation by Agency of Design, Liaoning Provincial Resources Department, if this dam had not been constructed, a large quantity of water would have been discharged from a downstream dam and the damage would have amounted approximately 860 million Yuan.

With respect to urban and industrial water supply and the source of irrigation water, in 1998 after the completion of the dam, 780 million m$^3$, 2/3 of the planned supply quantity of 1,180 million m$^3$ was supplied. To three cities of Benxi City, Anshang City and Yingkou City located in the downstream areas, the dam fed 270 million m$^3$ (in 1998) of water in the yearly supply quantities to these cities, approximately 1,030 million m$^3$ (in 1998, Liaoning statistics of 1999). That is to say, this project provides approximately 1/4 of the total water supply and contributes to alleviation of water shortage in these cities. The dam bears 1/4 or more of the irrigation water supplied from Taizi River system, and has supplied water already exceeding in quantity of the figure planned in the initial stage. In 1997, there was a large-scale drought, however, the water necessary in seeding in May was secured by discharging water from the dam. The dam showed its positive impact in the early stage after the completion. The Liaoning Provincial Resources Department estimated that the planned water supply capacity (1,179 million m$^3$) would be attained by 2003.

Under the project, electric power generation attained 170 MWh per year just as planned, and it has been supplied to factories and to private houses.

In the field of fish culture industry, the business performance has just started, and the product still remained approximately 1/3 of the planned value. By the technical instruction of the fish culture team of Dahoufang dam, the staff endeavors to reach the planned yield immediately.

Evaluator: JBIC

Project Objectives

As a measure to handle the increase in cargo processing volume by economic development of Quanzhou City in Fujian Province, China, this project is to newly construct a railroad in Quanzhou City so as to smooth the cargo transportation in Quanzhou City and promote further economic development. The main objective of the project is to construct non-electrified single-track railway of 145.7km in total length, which consists of the trunk line of 128.2 km from Hutou to Xiaocuo, the branch line of 10.5km from Xiaocuo to Xiaocuo Port and another branch line of 7.0 km from Quanzhou to Houzhu Port.

Evaluation Findings
The elimination of congestion of the general road from Quanzhou to Xiamen, which is one of the objectives of the project, is evaluated that it would be attained sufficiently. This is due to the situations that the project is expected to absorb the future increase in the cargo handling volume in Quanzhou City and that the highway between Quanzhou and Xiamen has already been completed. The cargo handling demand will be drastically expanded in the future by the development of the Xiaocuo economic development district and construction of branch lines to ports (and dedicated lines of respective companies to the branch lines). Along the railroad, there are 3 mega-cities with 1 million populations where large railroad station buildings and approach roads were constructed in suburbs having relative development lots, to implement the new town planning centering around the station. When frequency of operation of railways to respective regions is increased, a considerable demand will be absorbed. Therefore, if an appropriate managerial endeavor such as setting a diagram of operational organization is added thereto, another purpose of the project, the contribution to the economic development of Quanzhou City, will be also sufficiently attained.

Moreover, if construction of local railways in Fujian Province and its surrounding Provinces make further progress on the basis of “the Fujian Province Local Railway Development Program” and the railway network is expanded, further is expected to arise. Especially, completion of the railway between Meizhou (Guandong Province) and Kansi (Fujian Province), now under construction, will realize connection between Quanzhou and Guangzhou by approximately 22 hours, which is expected to contribute enormously to the economy of Quanzhou City.

As for the management of the project, the provincial government of Fujian, the city government of Quanzhou and the Ministry of Railway jointly invested in establishment of “Quanzhou Railway Corporation” in December 1997. It is judged that there is no particular problem on the technical level of operation and maintenance, because most of the staff of the corporation are former officials of the Ministry of Railway.

Evaluator: JBIC

**Project Objectives**

This project is a development finance project, one that finances funds to small to medium enterprises through the Development Bank of the Philippines (DBP) and Participating Financial Institutions (PFIs). The objectives of the project were to develop and promote small to medium enterprises in the Philippines through supply of low-interest, long-term, fixed loan which are difficult to be raised by them for improvement of financial know-how in private financial organizations functioning as intermediaries for small to medium enterprises. Raising and
reinforcement of the small to medium enterprises are expected to lead to strengthening of the economic bases in the Philippines.

Evaluation Findings

As for giving loan to end user enterprises, the undertaking related to the scale and sector of the target enterprise, objective of loaned fund (equipment fund including the initial investing fund), financing terms (amount of financing limit, rate of interest and term of repayment) was carried out as initially planned. When the collection rate of sub-loans was examined, there was no delay in repayment from end users to PFIs and that from PFIs to DBP. DBP designates a financial organization as PFI on the condition that its entire delinquency rate is 20% or less in a case of local banks or 15% or less in a case of the other commercial banks excluding organizations which cannot accept the terms. This management method has been recognized to produce good results in the project. However, after the economic crisis, there emerged some cases where PFIs consulted with DBP about rescheduling, which indicated that the transition of economic situation should be closely followed. Concerning designation, DPB plans to intensify the examination. The repayment funds from the end users are secondarily lent through revolving funds. As for the revolving funds, their management has been excellent.

Under the project, equipment investment including secondary lending and accompanying initial operation funding were carried out for 609 end users in total. As seen in the low delinquency rate in end users, growth of the small to medium enterprises was accelerated by provision of low-interest, long-term, fixed loan to small to medium enterprises having investment will and growing possibilities. Another impact of the project was the realization of the long-term fund from private financial organizations, which had been extremely difficult before. Additionally, this project executed the technical support for DBP and PFIs with the aims to establish a well-disciplined financing examination system and to improve the bond managerial capability, which remarkable contributed to the smooth operation and management of the project. DBP has made positive effort to reform its awareness as an implementation and supervisory agency of the policy financing and supervisory organization of the policy financing and to improve its staff’s technology level, then improved ways of human resources management so that the control capacity for PFIs has been elevated. By effective utilization of an information control system introduced through technical support, efficient and high-level PFIs control and sub-loan management are implemented. Furthermore, training cases for PFIs were evaluated that they had contributed to technology improvement regarding the finance of PFIs to small to medium enterprises.

11. Thailand “Small Scale Industry Promotion Program (I) and (II)”
Evaluator: JBIC

Project Objectives
This project is for the development of finance loan to finance funds to small-scale enterprises as end users through the Industrial Finance Corporation of Thailand (IFCT). By supplying low-interest, long-term, fixed loans, which are difficult to be raised by the small-scale enterprises in Thailand, the project is expected to contribute to strengthen the bases of Thai economy.

**Evaluation Findings**

The primary lending of sub-loans to 220 end users were approved in a period from 1989 to 1993. The scale of enterprises and category of business, objective of loaned fund (equipment fund) and financing terms (amount of financing limit, rate of interest and term of repayment) subject to the project were not changed from those planned initially. As for collection of the sub-loans, the rate of delinquency of less than three months has decreased year by year, but the amount and the number of delinquency of more than one year have remained at the same level and require some remedial steps. The principal and interest repaid by end users were secondarily lent by IFCT by establishing revolving funds. As the lending from the revolving funds of the project of phase I, 20 million – 30 million Bahts every year with its peak in 1999 had been approved.

Under the project, low-interest, long-term, fixed loans had been provided to the small-scale enterprises having vital investment will and growth possibility, as planned initially, to accelerate the growth of small-scale enterprises. Many end users actually raised long-term funds from private financial organizations, which had been extremely difficult before, based on results of the project. IFCT had endeavored to improve and accumulate know-how of financing to small-scale enterprises with the implementation of the project, and consequently, the bond managerial capacity was improved for showing a steady reduction in short-term delinquency.

12. Vietnam: “Reconstruction Loan”
Evaluator: JBIC

**Project Objectives**

The main objective of the project is the promotion of “Rehabilitation Program” designed to alleviate economic difficulties with which Vietnam in the transition period to a market economy was confronted by effecting repairs of local roads and waterworks whose improvement had been long overdue. Owing to the reconstruction loan, approximately 950km was paved nationwide under the local road improvement program. The small cities and villages water supply and improvement program had repaired deteriorated facilities for waterworks in 32 local cities nationwide.

**Evaluation Findings**

The project to cover all of 53 provinces (at that time) of Vietnam consisted of about 250 sub-projects. In the ex-post evaluations, 6 sub-projects in three provinces (Ha Tay, Quang Tri and Long An) were selected for evaluation as targets of case studies.
The project impact on road improvement, according to results of the interview to users of roads improved under the projects, was cleared that most of the users thought that the quality of roads was improved by the present efforts. This impact led to the increased road traffic as a consequence. In provinces where the case study was conducted, roads were enlarged and paved; the number of lanes was increased, thereby increasing in the traffic and reducing the travel time. Almost all of waterworks has been just completed that indicator figures on the impact related to the waterworks improvement will be reported in the future. At present, improvement in the waterworks subscription rate and public health were confirmed in three provinces where the case study was performed.

Operation and maintenance of the sub–projects in said three provinces were confirmed to be satisfactory. On the other hand, in connection with the road improvement project, it was noted that the lack of bridges obstructed the increase of traffic. In waterworks improvement, uninstalled equipment in some places was found. Concerning these insufficiencies, JBIC and the implementation agency, Ministry of Planning and Investment (MPI), should continue monitoring efforts.

Evaluator: JBIC

Project Objectives

In an effort to increase agricultural income and improve international balance of payment, this project granted sub–loan to small–scale farmers through the Rural Development Bank of Papua New Guinea (later, Regional Development Bank, hereinafter referred to as RDB) to maintain the production level, and improve the quality of coffee and cocoa, and accomplish diversification of crops.

This project is a so–called two–step–loan, the fund lent from JBIC is lent to the implementation agency, RDB via the government of Papua New Guinea, and then lent it to end users. The original targets of the sub–loan were coffee, cocoa, and other agricultural products, and new export realization products, foods products substitute for the import, and products helpful for nutrition.

Evaluation Findings

Ultimately, 2,313 million yen of project funds was lent by this project. In some cases, it was reported that this project contributed to the increase in manufacturing activities, improvement in productivity, and to the increases of income. The financial support was not the only factor of these results, however, in the activities where the investment in seeds, fertilizer, tools and farm machinery preceded, the introduction of convenient institutional financing has given much incentive to end users. On the other hand, this system produced job opportunities for 229
persons in the interview. This totaled about 20,000 jobs in the entire project, constituting approximately 1.8% of the total job applicants in Papua New Guinea.

Other impacts were (1) end users could purchase new-type of agricultural machines and chemicals so that farm work was automated and simplified relieving many farmers of heavy and dangerous work and (2) various agricultural and fishery products of good quality became available in the market place and in sufficient quantity. In addition, household food situation has improved by the increase of income thereby purchasing sufficient amount of food, and by household consumption of surplus products. On the other hand, a negative impact became notable in such traditional crops as taro, banana, bean, and potato. Their cultivation was underestimated because of the low market values irrespective of the high nutritive values.

The organizational ability of RDB was strengthened by introducing MIS (Management Information System), procuring vehicles, and employing consultants using funded loan which resulted in effected improvement of management. Thus, organizational functions were improved and the institutional finance system was extended in rural areas.

Most of the sub-projects were small-scale projects performed by the small-scale farmers working in various rural locations. The operational scale of farms is about 2 to 3 hectares and roughly 10 hectares in a case of group farming operations. As mostly coffee and cocoa farms were covered by sub-projects, replanting of the existing farmlands was the major objective. No adverse environmental effects resulting from this project were noted.

3.2 Evaluation by Theme (FY2000)


Third-Party Evaluators:
Kenji Hori: NJS Consultants Co., Ltd.
Tomohiro Miyagawa: Century Ota Showa & Co.

Project Objectives

In the reform and liberalization policies started in 1978, China has promoted modernization in most cities. As a result, development of commerce and industry, concentration of population in cities, and improvement in the living standard brought about a rapid growth of water demand in cities. This has caused conspicuous water shortages in many cities which led to serious social problems. Other problems were also recognized; for example, loss of water pressure caused by lack of repair work on pipes and water leakages, lowering of the groundwater level by excessive pumping, and deterioration of the quality of water due to overload operations of water purification plants. Therefore, the water shortage conditions in ten cities (Nanjing, Chengdu, Xuzhou, Zhengzhou, Tianjin, Heifei, Anshang, Xiamen, Chogqing, and Kunming) needed to be remedied urgently. Anticipating increase in water demand in the future, water supply facilities of 3,170,000
m$^3$/day in total were required. This evaluation includes (1) Four Cities Water Supply Project (Nanjing, Chengdu, Xuzhou and Zhengzhou), (2) Three Cities Water Supply Project (Tianjin, Heifei, and Anshang), (3) Three Cities Water Supply Project (Xiamen, Chogging and Kunming).

**Evaluation Findings**

The total planned capacity of the water supply facilities constructed by this project was 3,170,000 m$^3$/day, while the total record of water supply reached 3,140,000 m$^3$/day, just short of the target. As a result, the improved facilities could cover the present water demand and facilities of some cities have sufficient water supply capacities to meet future water demand.

As for the impacts of the project, the household water supply is increasing in nine cities except for Tianjin. The increase in water demand was induced by improvement in living standards of the city residents. The increase in the water supply relieved the desperate water situation and contributed to the improvement in the household sanitary conditions. According to Water supply corporation of the municipal management office or municipal government management bureau of each city, nine cities except for Tianjin have experienced improvement in the quality of water. The representatives of the seven cities gave the reason for the improvement as being the high quality of the treated water produced by the water purification plants constructed by this project.

The organization and the structure of water supply corporations varied according to management policies (some cooperations are undertaking various activities.) and the scale of project bodies. Each city is a provincial capital or large enough to represent the province in which it is located and each was a large supplier of water. Especially for maintenance, the headquarters of water supply corporations set up repair shops with 30 to 50 workers that enables repair work for pumps, motors, meters, valves and the like. This capability was considered to constitute a sufficient system for normal maintenance. Each water purification plant has a water quality analysis capability. In addition, water supply cooperation provides a water quality analysis center and monitoring centers to analyze and monitor in accordance with the Water Supply Act.

2. The Philippines: “Impact Evaluation on Transport Projects in Metropolitan Manila”

**Third–Party Evaluators and Evaluation Committees**

Hitoshi Ieda: Professor of Graduate School, the University of Tokyo
Shoshi Mizokami: Professor of Kumamoto University
Tetsuo Kidokoro: Assistant Professor, Graduate School, the University of Tokyo

**Evaluation Projectives**

Since the start of ODA yen loan to the Philippines, many loans have been provided to the transportation projects in Metropolitan Manila. The projects gave a large impact on urban transportation and socioeconomic activities as well as daily lives of the residents of the city. In this endeavor, impact evaluation was performed on the following 10 ODA yen loan transportation
projects to clarify various effects related to the lives of the residents such as traffic congestions, safety, air pollution, living environment and others.

1) Metropolitan Manila Traffic Engineering and Management Project
2) Metropolitan Manila Radial Road No. 10 and Related Roads Construction Project
3) Circumferential Road No. 3 Construction Project
4) Metropolitan Manila Circumferential Road No. 5 and Radial Road No. 4 Construction Project
5) Metropolitan Manila Traffic Engineering and Management Project (III)
6) Metropolitan Manila Urban Transportation Improvement Project
7) Metropolitan Manila Interchange Construction Project (I)
8) Metropolitan Manila Interchange Construction Project (II)
9) Metropolitan Manila Roads Pavement Rehabilitation Project
10) Metropolitan Manila LRT Line 1 Capacity Expansion Project

Evaluation Findings

In a simulation study of traffic patterns, results of quantitative analysis compared project effects with cases where the projects had not been implemented. The study showed that the economic internal revenue rate of each project was high. The revenue rate in the total projects was 33% while 48% in road construction and improvement projects and 24% in intersection improvement project was calculated. Each project directly or indirectly contributed to the economical growth of urban areas. As for the reduction in traffic congestion, compared with the cases where the projects had not been implemented, the average rate of congestion in the Metropolitan Manila area was reduced by 10% and the average driving speed increased by 7%. According to questionnaire surveys to drivers and the residents along the roadside, both were very satisfied with the projects because of the improvement in mobility (ease in movements) and accessibility in the metropolitan area. As the regional residents benefited by the projects felt air pollution being deteriorated, it was mostly caused by the increased traffic. However, seen from the urban area level, a simulation projecting to 2015 makes clear that the total exhaust pollutants will be much higher if it were not for the ODA yen loan projects. The reduction rate of the pollutants of the whole project was estimated at 4.2% in CO2, 0.6% in NOx, 3.0% in SOx and 1.7% in SPM.

3. Thailand: “Environmental Protection Promotion Program”

Third-Party Evaluators:
Toshiharu Sasaki: Mitsubishi Research Institute, Inc.
Kingo Hayashi: Mitsubishi Research Institute, Inc.
Takeshi Takagi: Mitsubishi Research Institute, Inc.

Project Objectives
In the early 1990s, while Thailand was experiencing high economic growth, environmental deterioration became serious. This project was implemented for promoting installation of environmental protection devices (pollution suppression devices) in private enterprises to solve industrial pollution problem. The loan process is a two-step loan, offering yen loan funds to the Industrial Finance Corporation Thailand (IFCT). IFCT in turn uses this fund as capital and makes sub-loans on medium- to long-term basis to private enterprises at a low and fixed interest rate.

**Evaluation Findings**

The objective of this project to provide low-interest loans to private enterprises neglecting environmental conservation measures is relevant. It matched with the national socioeconomic development plan of Thailand at that time. It is also relevant in general because the project of funded enterprises introduced environment protection devices which produced certain improvement in environment.

Though the offer of loans was extended for one year from May 1998 to May 1999, the total amount of the ODA yen loan disbursed to IFCT remained about 70% of the initial plan. Reasons might be as follows: Because economic downturn has reduced capability of enterprises to invest in environmental equipment, and market interest rates fell below the sub-loan interest rate, the number of applicants for sub-loans were not so many as estimated at the initial stage.

Many enterprises that installed the environment protection devices have attained certain level of environmental improvement, and they highly valued the project. 84% of the total loan through this project was used for installation of sewerage treatment facilities. As a result, the efflux load of water pollutants such as BOD decreased, enabling supplies of cleaner and safer air and water to the local society. In the results of an economic analysis for the impact of environmental improvement, certain positive effects can be acknowledged; however, on the national level, the number of plants to which this project has been utilized to install anti-pollution devices is very few. In addition, the scale of each of these plants is small; accordingly, conspicuous effects were not clearly recognized.

Five plants were visited in the field survey. The effects on environment by installation of the devices were determined by cost benefit analysis and an economic evaluation was conducted, applying several evaluations such as benefit transfer utilizing willingness-to-pay (<WTP>) obtained by the method of contingent valuation (<CVM>). In three plants, calculations yielded EIRR of 1 to 74%, which showed that the investment was relevant. The two plants where negative EIRR was obtained, introduction of high-level treatment devices increased investment costs to make EIRR lower. These plants played a role of model cases of environmental protection by receiving site tours for representatives of other plants. On the whole, the investment in the project was considered efficient.
In the plants visited in the field survey, facilities were properly operated, playing a role for improvement of environmental conditions. However, there were some plants where maintenance servicing was unsatisfactory.

4. Thailand: “Large Reservoir Inland Fisheries Project”
Third–Party Evaluators:
Akira Matsumoto: IC Net Ltd.
Mitsuyasu Ida: IC Net Ltd.

Project Objectives

Three reservoirs (Bueng Bora Phet Lake, Nong–Harn Lake and Kwan Pra Yao Lake) located in poor inland regions in Thailand could not keep their water level adequate enough due to deterioration in the structure of dams, etc.. These inadequacies held down fishery resources and degraded reservoirs’ flood control capability. In the 6th Five-Year National Economic and Social Development Plan (1987 – 1991), Thai government laid emphasis on alleviating rural poverty. This project provided funds to develop fishery resources (catch) in reservoirs by improving reservoir and increasing release of fry. The project was also involved in promoting fish cultivation by technology transfer in neighboring areas of the reservoirs. Its objective also included contribution to expansion of agricultural production by the elevation of water level by improving the structure of the reservoirs. From a long-range view, in income generation and nutrition improvement for farmers and fishermen in poor inland regions was the upper objective of Thailand.

Evaluation Findings

Promotion activities in the fishery station located near the three reservoirs were conducted for production of fry and fish cultivation transfer. The production of fry increased and newly constructed hatcheries released the fry in reservoirs as well as rivers in the provinces. In addition, the fry were distributed free of charge to local ponds to support the poor farmers. The increase in fry production and the water level of the reservoirs resulting from the improvement of the reservoirs, fishery industry expanded especially in Lake Bueng Bora Phet to double the number of families participating in the fish cultivation industry, catch and acreage devoted to fish cultivation. In Lake Nong Harn and Lake Bueng Bora Phet, the Rapid Rural Appraisal (RRA) was conducted in order to fathom the impact of the project on poverty alleviation. The survey results showed that small–scale farmers who owned land around Lake Hong Harn benefited most among poor families from the project that availed them ample supply of irrigation water, allowing their income generation by raising crops through dry seasons. Non–landed farmers and fishermen also benefited because of the increased job opportunities in crop cultivation through dry seasons. As many farmers around reservoirs catch fish for self–consumption, releasing activities of fry provide inexpensive food supplies. The impacts on the fishing population, on the other hand, are that their earnings have decreased due to reduction in the number and the size of the caught species. The
number of fishing households involved in commercial operation is small and income increase by fish cultivation was not detected. There are many full–time fishermen around Lake Bueg Bora Phet, the releasing activities of fry to the reservoirs supported their lives directly. The sharecropping farmers could diversify income source. Since farmers in the area began growing crops during the dry season utilizing the stable water supply from reservoirs, share cropping farmers could provide labor forces to farming through dry seasons and fishery cultivation. As in the case of Lake Nong Harn, the role of supplying fish as food for low–income people was recognized. Although the hatchery was established initially for sale and release of the fry produced, it gradually acquired the role of the supporter for various community development programs of the area in cooperation with other agencies. For example, it is now cooperating with the Primary Education Bureau and is supporting the school lunch program so as to alleviate poverty. Each fishing station is maintaining various facilities constructed by the project, and necessary measures have been taken to operate and manage facilities constructed by the project with respect to human resources management and budget.

5. Thailand: “Small–Scale Irrigation Program (Stage IV–VI)”
Third–Party Evaluators
Akira Matsumoto: IC Net Ltd.
Mitsuyasu Ida: IC Net Ltd.

Project Objectives

North and Northeast of Thailand did not have sufficient irrigation water for growing rice in the rainy season, and dry field farming was difficult in the dry season. These regions occasionally experienced drought accompanied by scarcity of drinking water. Therefore the need for construction of small–scale irrigation ditches and functional reservoir was essential in these regions. This project was implemented in order to secure small water resources by constructing a large number of irrigation ditches in the areas without water supply from large–scale water sources. These facilities are intended to supply water to the communities to increase and secure agricultural production and to enhance residents’ welfare. The project built 2,094 small–scale irrigation facilities (reservoirs, levees, water regulating facilities), purchased machines for construction, repair and spare parts.

Evaluation Findings

This evaluation assessed mainly the project impact on poverty alleviation. Among the project regions, 23 locations were selected in Si Sa Ket Province, which was regarded as a relatively poor region, for the questionnaire survey and the Rapid Rural Appraisal (RRA). The Province has the lowest per capita gross provincial product among all provinces in the Northeast Thailand where the largest numbers of project sites are concentrated. As a result of the project, water was supplied by the facilities as well as irrigation facilities to be used in some form. In addition, a large
impact was noted in enhancement of resident welfare in easy access to drinking water and increased rice production by stable supply of irrigation water as well as increased availability of fish for food and higher income. On the other hand, the increase in catch of fish brought about a negative impact as disputes caused by people who violated the terms of fishing agreement among residents. Impacts that were not anticipated in the planning stage were the use of water in the Thai New Year Festival (Songkran Festival: water splashing festival) and improvement in driving convenience due to the access roads constructed for building the irrigation ditches. The impact expected but not realized was an increase in the number of livestock (water buffaloes).

According to interview surveys administered in 10 villages, “households that effectively utilized the opportunity created by the project” were those of relatively wealthy farmers who owned assets such as lands, agricultural equipment and had sufficient labor forces so that they could bear the risk of investment. Benefits they gained were diversified. For example, effective use of land through irrigation, cultivation of crops in the dry seasons, improvement in income through the sale of fish and other edible marine animals, increase in agricultural production through the purchase of agricultural investment goods such as tractors. They also increased income through participation in rice business (mediation and cleaning rice). On the other hand, “poor households” (households having low incomes and short in land and labor forces) were also received some benefits through access to household water supplies, increases in nutritional intake from fish, and manual work in busy farming seasons. Because they owned little or no land (not even rented land) to take advantage of the irrigation system and for other reasons, they gained limited economic benefits (such as increased rice production on owned land and cultivation of crops in the dry seasons) from direct use of the irrigation system.

Thus, from the overall findings of the survey, it is concluded that water supply by “small-scale irrigation facilities” contributed to improvement of the livelihood of beneficiaries by providing household water. However, it should be paid attention that the benefit brought by the project is widely varied, depending upon the situation each beneficiary is in.

6. Bangladesh: “Jamuna Multipurpose Bridge Project; Resettlement in JMBP; Assessing Process and Outcomes”
Third-Party Evaluator:
Hossain Zillur Rahman, Power and Participation Research Centre

Project Objectives

The objective of this project is to span over the River Jamuna a multipurpose bridge (two lanes each way) with provisions for transmission lines, railway tracks, communication cables, and gas pipelines to be laid in the future. Construction of a bridge on this location would solve transportation problems caused by increasing east-west traffic and reduce the economic differences between the eastern and western regions by vitalization of economic activities in
western region. The advent of this bridge would thereby contribute to the economical development of Bangladesh.

**Evaluation Findings**

For constructing the east bank levee, east and west flood levees and approach roads, 2,860ha of land were required. Resettlement and compensation for the Project Affected Persons (PAPs) was prepared in accordance with the provisions of “the Resettlement Action Plan” (revised later forces). The present case was the first case in Bangladesh that the project treated the people affected by it in more comprehensive frame by compensating them on the bases on current market price. It even supported those who were not legally entitled to compensations.

Among the contents of the resettlements, there were unconditional and conditional compensations. The unconditional compensation included cash compensation (including a 50% premium) to PAPs who lost lands and/or houses, one time cash compensation to farmers and farming laborers, cash compensation for house relocation and house construction for PAPs who lost houses and lands. The conditional compensation included payment for difference between statutory value and market price and stamp duty refund for PAPs who purchased replacement land, construction of community facilities in resettlement site prepared by the project and an allotment of land for PAPs who resettled in the lands. These compensation programs attained satisfactory results at the time of survey. However, outcome was not the same for all the PAPs and different between the east and the west banks of the River Jamuna. There are common factors such as improvement in standard of household incomes as a whole, rise of land price and salary and improvement in convenience of transportation. The residents in the east bank of the River Jamuna, however, have received relatively more positive benefits as compared with those in the west bank in the incomes and regional stability. Explanations for those differences might be differences in the initial situation, the precedence of the east side in execution of the project and the compensation program, roles of the positive and effective local leadership in the east side, acquisition of the appropriate lot areas in the east side and others.

Lessons learned through the execution of resident resettlement are as follows: (1) although this project has set fundamental rules of compensation of cases without acquisition of lands, traditional practice in Bangladesh of acquiring excessive amount of land did occur; however, some excess acquisition was unavoidable because of fierce meandering of the River Jamuna, (2) resettlement on the east side was successful, showing high re-settlement rate, while the west side was less fortunate in the location and the incomes of the residents were drastically reduced while the settlement rate remained at 60%, (3) traditional land acquisition process in Bangladesh has been associated with some extent of fraud; however, this project showed to what extend fraud does occur and that it can be stopped finally with appropriate preventive measures, (4) while local leadership was sufficient on the east bank in executing the resident resettlement program, the leadership on the west bank was notably inadequate, (5) though playing an important
role in the execution of “the Resettlement Action Plan 1,” NGOs expected to promote the social reforms has just remained as technical partner in implementing the project.

Third-Party Evaluators:
Shoich Yamashita: Professor, Graduate School for International Development and Cooperation, Hiroshima University
Shunji Matsuoka: Associate Professor, Graduate School of International Development and Cooperation, Hiroshima University
Hiroshi Sato: Senior Researcher, Economic Cooperation Department, Institute of Developing Economies

Project Objectives

This project was afforestation of approximately 150,000 hectares of land for restoring the forest of Araballi Hills in the state of Rajasthan in Northwest of India and improvement in socioeconomic conditions of local residents.

Evaluation Findings

Economic and Environmental Effects

Effectiveness: Three goals of the project include afforestation, job creation for women, designated tribesmen, and members of the prescribed castes, and improvement of habitat for wild animals. And the goals were sufficiently attained. On the other hand, the goal of supplement of the fuel, fertilizers, etc. to local areas was not attained effectively. Though major goals were generally attained, an issue remains such as to reform the data monitoring system for each goal by introducing project designing.

Sustainability: This project aimed to break the vicious cycle of poverty and environmental destruction through the scheme of Joint Forest Management (JFM) implemented jointly by the Department of Forest and the local community residents. The scheme would create a mechanism of using sustainable forest resources in the region. Therefore, the main theme of the sustainability evaluation of this project is whether or not the JFM scheme functions continuously. The major incentive of the forest resources maintenance is pasture obtained from the forest. Therefore, compatible growth of trees and grasses is essential for the sustainability of the Village Forest Protection and Management Committee (VFPM) by the villagers. If the things go on as they are at present, the forest resources management system based on JFM scheme may not function sufficiently and for enhancing the sustainability of the project, it is necessary to renovate an operational system such as early lopping and frequent thinning.

Efficiency: The survival rate of afforested trees is high excluding the farm forestry and the
efficiency is sufficiently high from the viewpoint of the cost and benefit of the project operation.

Impact: The positive impact was lowering the pressure on the environment caused by the advanced qualitative composition among domestic animals (conversion from goats, etc. into water buffaloes, etc.) and activation of the self-governing organizations. The negative impact is the possibility that some villagers were excluded from the afforested areas.

Relevance: This project is one of the effective measures to break the vicious cycle of poverty and environmental destruction, and its necessity is high. The objectives of this project such as prevention of soil deterioration and desertification by the promotion of the afforestation project and improvement in the environment still remain significant and rational at present. However, as shown in the sustainability analysis, the design of JFM approach with the continuous incentives for the forest resources management has not been matured yet.

Social Development Effects

JFM and VFPMC: This project is a social forestry project which can be classified into a resident participatory development project in a broad sense and is a pioneering project that it is the first case of the ODA yen loan project supporting the JFM and targeting the poor population even in the indirect sense. This project also has economical effects on the poor people through employment in afforestation and benefits such as priority provision of wood and fuel. The social development effects through VEPM activities have also been observed, however, these effects are incidental and difficult to think that the poverty alleviation can be obtained from the effects of this project alone.

Various Effects of JFM: The wage gained by the afforestation activities employed by the Department of Forest has a significant effect as a temporary income and also has the expenditure reducing effects by obtaining pasture and fuel from the afforestation areas. In the JFM activities, it was often observed that VEPMCs directly contributed to the forest protection activities through the participation in the monitoring activities. However, there is almost no case where the forest protection activities are subjectively performed without any support from the Department of Forest.

Entry Point Activity (EPA): EPA is beyond the scope of this project but was made as a focus of the evaluation because of its importance from the viewpoint of the social development. The present EPA sometimes has an effect to give motivation to the residents and contributes to the construction of a prescribed level of the social infrastructure but there is a problem in the sustainability of its effects.

Issues of JFM: This project has attained prescribed results as the first JFM support by ODA yen loan. However, from the viewpoint of the social development and reduction of the poverty, it needs to be radically improved, including a method for organizing residents, monitoring system of social development activities, preliminary survey and monitoring on
sustainable growth of the forest monitoring system.

Overall Evaluation: When evaluating the project with five levels for each of the five DAC evaluation criteria (4.0 or more: excellent, 3.0 or more: good, 2.0 or less: poor, and 1.0 or less: very poor), the average point of the respective evaluation criteria was 3.7. It can be said that this project is producing good results overall. In the social development impact assessment, (3) this project can also be positively evaluated including the evaluation of the future possibility. Though the issues concerning the sustainability are serious, those are difficulties confronted by the community forestry projects similarly. Therefore, the fact that formation of VEPMC and their high afforestation results made the problems more obvious should be valued positively as the results of this project.

View of JBIC

Ideals of JFM (concerning 1. 1) and 2. 2))
In JFM, it was thought essential for the sustainability and self development of VEPMC that all the VEPMCs are ultimately independent of the Department of Forest and its fund allocations, however, according to the guidelines of Rajasthan state in March 1991, “the conservation, development and management of the deteriorated and deserted forest lands shall be conducted through cooperation and participation of the residents’ organizations, etc.”. Therefore, the complete and independent forest management by JEPMC alone was not determined from the beginning.

Entry Point Activity (EPA) (concerning 1. 5) and 2. 3))
Entry Point Activity has been performed in another ODA loan Afforestation Project in Tamil Nadu State. The project is called buffer zone activities and its major objectives are the community development for confidence building and the creation of alternative sources of income. EPA is defined as activities univocally aiming at confidence building, considering the residents and involving the contribution from the residents as is the case in the Tamil Nadu afforestation, and continuously protecting the afforestation lands through the alternative income source activities fitted to the lifecycle of the forestry resources and independence of the residents. Considering these high significances, JBIC will continue to examine Entry Point Activity as a possible approach in the future ODA yen loan projects.

Third-Party Evaluator:
Mitsuhiko Hosaka: Professor, Nihon Fukushi University
Tomoko Ogura: Graduate student, Nihon Fukushi University

Project Objectives
The Great Colombo area includes the City of Colombo, the largest in Sri Lanka, and its suburbs. A majority of it comprises a low flatland, within 6m above the sea level. Marsh areas scattered in the area 1m above the sea level functioned as temporary reservoirs (retarding basins) of rainwater. However, with the progress of the urban development, the declining of the marsh areas and the lowering of the drainage function of the river had prompted floods almost every year. The inundation to dwelling houses of the urban poverty areas (shanty community) along the rivers and spread of diseases within became a serious social problem. Under these circumstances, the project was implemented aiming at control of the annual flooding in the Great Colombo area through improvement of the river system (improvement of rivers, retarding basins, etc.), upgrading of the living environment by relocating the shanty residents or improving their housing areas, and improvement of the waterfront environment.

**Evaluation Findings**

By the execution of this project, the water level of the rivers, the frequency of inundation and damage were reduced. Before the implementation of the project, most of the project targeted rivers could not withstand torrential rains on the scale of two-year probability (a scale of heavy rains occurring once in two years), however, the rainfall in April 1999, when the project had already completed, of the scale of 25-year probability occupied the rivers within the height of the banks. There was a tendency that the maximum water levels of the major rivers remained lower after the completion of the project, due to the improvement of the drainage conditions.

Questionnaire survey performed on the residents along the rivers revealed the effects of the project such as remarkable decrease in the inundation frequency, depth, and duration, the reduction of the flooding damage of houses, household effects, intersection of road traffic, absences from work, and others. Besides these, the survey showed other impact such as the improvement in the sanitation states and reduction of the epidemics.

Impact assessments of the project on the residents’ resettlement and the improvement of the housing environment were also implemented. Shanties affected by this project are classified into three types, 1) resettlement zones where households moved to an off site location, 2) improved zones subjected to the resettlement within the same area or the facilities improvement, and 3) unimproved zones affected by this project but being unimproved related thereto. As a result, the improvement in the living environment of the transferred residents was quite obvious. Especially, the project brought about favorable impacts such as reduction of the floods, improvement in the public health, acquisition of the social recognition, and in some areas, increase in job opportunities. During these processes, there was almost no forcible relocation, which is a notable achievement. However, the residents did not move spontaneously but most of them did so from resignation, because they thought it unavoidable circumstances. That is the result affected by the fixed construction term of the implementation agency side and an idea of the results-oriented plan. On the other hand, the flexibility of the planning system of Sri Lanka receiving the objections and suggestions of the residents and accepting the involvement of various actors besides the project
implementation agency was one effective factor in implementing the project. Changes in the housing environment in the respective areas were varied. In the resettlement zones, most of the residents have experienced housing difficulties caused by the delay of the facilities improvement after the resettlement. But afterwards, the residents’ organization was restored in the resettlement zones, the facilities construction progressed by the negotiation with the project implementation agency side, and with investments of various bodies except for the implementation agency and activities of the aid organizations, the residents themselves positively participated in the improvement of their living environment.

Third-Party Evaluators:
Masahisa Nakamura: Lake Biwa Research Institute
Shigeo Tsujimura: Lake Biwa Research Institute
Ryozo Kakizawa: Yamashina Institute for Ornithology

Project Objectives

As part of Japan’s support for the Republic of Kenya, the “Greater Nakuru Water Supply Project” improving the water supply facilities in the eastern division of the Greater Nakuru District was implemented by a loan aid project (ODA yen loan) and sequentially, the sewerage and drainage systems in Nakuru City were repaired and expanded under the development survey and grant aid project, “the Nakuru Sewage Works Repair and Expansion Project”.

Evaluation Findings

The facilities of the water supply project were completed as planned and no functional problems occurred so far. The result of the social survey showed that generally the recipients gained benefits in their health and sanitation states. The attainment rate of the water supply in quantity at a time of the evaluation was 60 – 70% of the planned supply quantity. However, as the water fed to Nakuru City under the project occupied nearly 30% of the water supply to Nakuru City, the project can be evaluated to have attained a prescribed effect on eliminating the water shortage. While the water quality examination and control system required some improvements, there is no problem in the quality of the supplied water.

The facilities for the sewerage project were also completed as planned, with no functional problems in particular. However, though the past overload states were eliminated by repair work and expansion of the sewerage, the operational rates of the facilities have not risen from 70% of their treatment capacity. These resulted from the facts that, because the inflow to the facilities is not enough, the sewage connection rate is low, the sewer network has suffered from leakage, and the water supply volume to Nakuru City is lower than the planned volume. There are no special
problems in quality of the treated water. It can be concluded that the sewage treatment project contributed to the reduction of load on the aquatic environment of Lake Nakuru.

The environmental impact of the water supply and sewage project on Lake Nakuru was evaluated by the third-party and the findings are as follows.

Overall Conservation of Lake Nakuru and its Catchment Area: By Mr. Masahisa Nakamura, Lake Biwa Research Institute

The water purification facilities and the sewage treatment facilities constructed by the project are essential urban infrastructures for the development of Nakuru City, and are important elements for promoting urbanization, industrialization and population concentration of Nakuru City. On the other hand, observing the relationship between the environmental infrastructure improvement and the sustainable development of the whole region, there are fears about expansion of the gap with the non-targeted areas in the basic service level, rapid conversion of the surrounding forest area into farmlands for supporting the growing population, and consequential increased use of the agricultural chemicals. The facilities improved by the projects are very important in considering the future integral conservation of Lake Nakuru and its catchment area. It is necessary to examine the follow-up measures such as functional reinforcement of the water quality testing laboratories, prevention of noxious chemical substances, and accumulation of scientific knowledge for integral conservation of the Lake Nakuru basin.

The Natural Environment of Lake Nakuru and Recent Changes in its Ecology:
By Mr. Shigeo Tsujimura, Lake Biwa Research Institute

Recently, it has been indicated that besides the water level fluctuation, the organic contamination and heavy metal pollution might bring about decrease in "spirulina", plant plankton that is a feed for the small-size flamingoes. As for the heavy metal pollution, it is said to be a cause of the mass death of flamingoes. The sewerage project appears to contribute to the prevention of the organic contamination and the heavy metal pollution, however, prevention of the heavy metal pollution is difficult only by the sewage treatment plant, because the heavy metal treatment was not included in the original plan of the plant and there are large amounts of drainage discharged without passing through the plant. For surely reducing the load, other new measures besides the sewage treatment project are required such as an obligation of the primary treatment of the industrial wastewater and a guidance of the usage of the agricultural chemicals.

The Impact of Changes in the Aquatic Environment of Lake Nakuru on the Flamingos and Other Waterfowl:
(3) By Mr. Ryozo Kakizawa, Yamashina Institute for Ornithology

As for the relation between the water level fluctuation in Lake Nakuru and the number of flamingoes flying thereto, there is a tendency that the number of the flamingoes increases
when the water level increases. However, there are times when the number of the flamingoes increases or decreases irrelevant to the water level fluctuation. The number of migrant flamingoes is not controlled only by the water level of Lake Nakuru, but also influenced largely by the situation of the adjacent soda reservoirs and the reproductive behavior of them. Therefore, it is not appropriate to use flamingoes as an indicator of the changes in the water quality. The fish-eating waterfowls are more appropriate as indicators of the water quality changes. The examination using such animals as indicators suggested that the water quality of Lake Nakuru was likely to be further deteriorated.

Third-Party Evaluators:
Toshiharu Sasaki: Mitsubishi Research Institute, Ltd.
Kingo Hayashi: Mitsubishi Research Institute, Ltd.
Takeshi Takagi: Mitsubishi Research Institute, Ltd.

Project Objectives

For reducing the emission rate of SO2, one of the causative substances of the air pollution in the Mexico City Metropolitan Area, this project is implemented to reduce the sulfur content in heavy oil and diesel oil supplied to Mexico City Metropolitan Area by Petroleos Mexicanos (PEMEX), and to reduce SO2 emitted from Azcapotzalco Refinery of PEMEX located in Mexico City. This project comprises the sub-project A (heavy oil desulfurization facility), the sub-project B (diesel oil desulfurization facility), and the sub-project C (sulfur recovery facility). The sub-project C was not implemented because Azcapotzako Refinery was closed.

Evaluation Findings

Approximately 1/6 of the low-sulfur heavy oil produced by the sub-project A is supplied to the Mexico City Metropolitan Area and the 5/6 is supplied to its outskirts area excluding the metropolitan area. Approximately 70% of the low-sulfur diesel oil produced by the sub-project B is supplied to the metropolitan area and the residual 30% is supplied to the outskirts areas excluding the metropolitan area. Comparing the SO2 emission reduction rate (133,800 t/year) of 2000 estimated in the planning stage with the actual value (85,750 t/year), the actual value is roughly 2/3 of the planned value. The reduction rate in the metropolitan area (40,130 t/year) is roughly 30% of the planned value.

As for the improvement of air pollution in the Mexico City Metropolitan Area, economic internal rate of return (EIRR) evaluation of effect of desulfurization equipment on environment (decrease in health hazard of human body by reduction of the SO2 emission) was executed through calculation of the decrease in the income and the fee for the treatment for the continuous cough and sputum. As a result, EIRR of the sub-project A was calculated to 1.31 – 9.25% and that of the
sub-project B in Tula Oil Refinery was 9.89 – 24.05%, and the totaling of the sub-projects A and B was 4.37 – 13.85%. Both the sub-projects A and B gave sufficient effects on the Mexico City Metropolitan Area.

As mentioned above, the desulfurization equipment of the sub-projects A and B have been installed as planned and are smoothly operating at present. It was found that the sulfur content included in the fuel was drastically reduced by the project and it greatly contributed to the reduction of the SO2 emission rate. However, different from the initial assumption, consumption of fuel in the Mexico City metropolitan area was reduced by the conversion to the natural gas in the thermal power plants and the others so that the oil product was supplied to some extent to other areas. Therefore, the SO2 reduction was extended to the wider areas including the metropolitan area.

The implementation agency, PEMEX has been managing the refineries for past several decades as the only oil-refining agency in Mexico. It is believed that there will not be a problem.


Evaluators:
JBIC, other donors, and the Government of Ghana

**Evaluation Objectives**

The evaluation was a joint evaluation on the Road Sub-Sector Programme in Ghana from 1996 to 2000 by the Government of the Republic of Ghana, and donors (JBIC, Danish International Development Agency (Danida), the World Bank, German Agency for Technical Cooperation (GTZ), The Department for International Development (DfID), the Government of the Netherlands, the African Development Bank, and EU which are implementing the aid for the Road Sub-Sectors in Ghana. The evaluation is quite different from the conventional independent evaluations (some of them are project-specified evaluations) and reflects the greater cooperation in the evaluation field. The target of the evaluation is the road sector expenditure programme covering the term and its objectives are 1) to assess the effectiveness of the sub-sector target with focus on the sustainability, 2) to identify key issues, constraints, problems, advantages and disadvantages, and success, and 3) to yield lessons learned for improving the future support.

**Evaluation Findings**

The evaluation results are as follows.

As for the relevance of the programme, though there were differences in ways of emphasizing among respective donors, the expenditure programme was evaluated to accord with needs of the Ghana communities and the policies of the government of Ghana.
According to the effectiveness by objectives, the effect of the programme on cost collection was “good,” those on the participation of private sectors, finance and the collaboration among the donors were “rather good”, those on the organizational capacity, human resource management, handling of pending issues, and priority ranking of investment were “average”, those on dependency on the foreign technology support, environmental and safety assessment, expenditure management and control, and road related law and regulation systems were “rather bad”, and those on “non-motorized traffic (bicycles and pedestrian roads)” were evaluated “bad”. Evaluation of the efficiency of the programme was implemented from two viewpoints, the financial aspect and the organizational aspect. As for the former, though the supply of maintenance fund started by the establishment of the road fund, the fund supply has been unstable and the progress of the program was impeded by the delay in the fund payment. As for the latter, though the related organizations have been reduced in scale, there remain problems in the human resource development and others.

For sustainability of the programme, the donors’ supports are essential not only in the financial aspect but also the skill development aspect. Therefore the attainments in this aspect were not much recognized. However, the government of Ghana took various qualitative improvement actions and endeavors to improve the road network at the firm intension so that the sustainability in the qualitative maintenance of the road network was confirmed.

Concerning the impact of the programme, examination of the present state shows some profitable effects of the improvement of branch roads on the poverty problem in local areas. To maximize the socioeconomic impact, overall and well-balanced local development including other support measures such as supply of agricultural credits, vehicles, etc. besides long-term maintenance of the road will be required.

Based on the aforementioned evaluation findings, the evaluation yielded various lessons such as re-organization of the road sector related organizations, improvement in the domestic training programme, well-balanced investment between the equal distribution and sound economic principle, strengthening of the financial infrastructure of road fund, speed enhancement of procedure of approval for payment to contractors, axis priority restriction programme, standardization of procedures among donors, and others.