

Follow-up Study

Evaluation Study Report

March 2000

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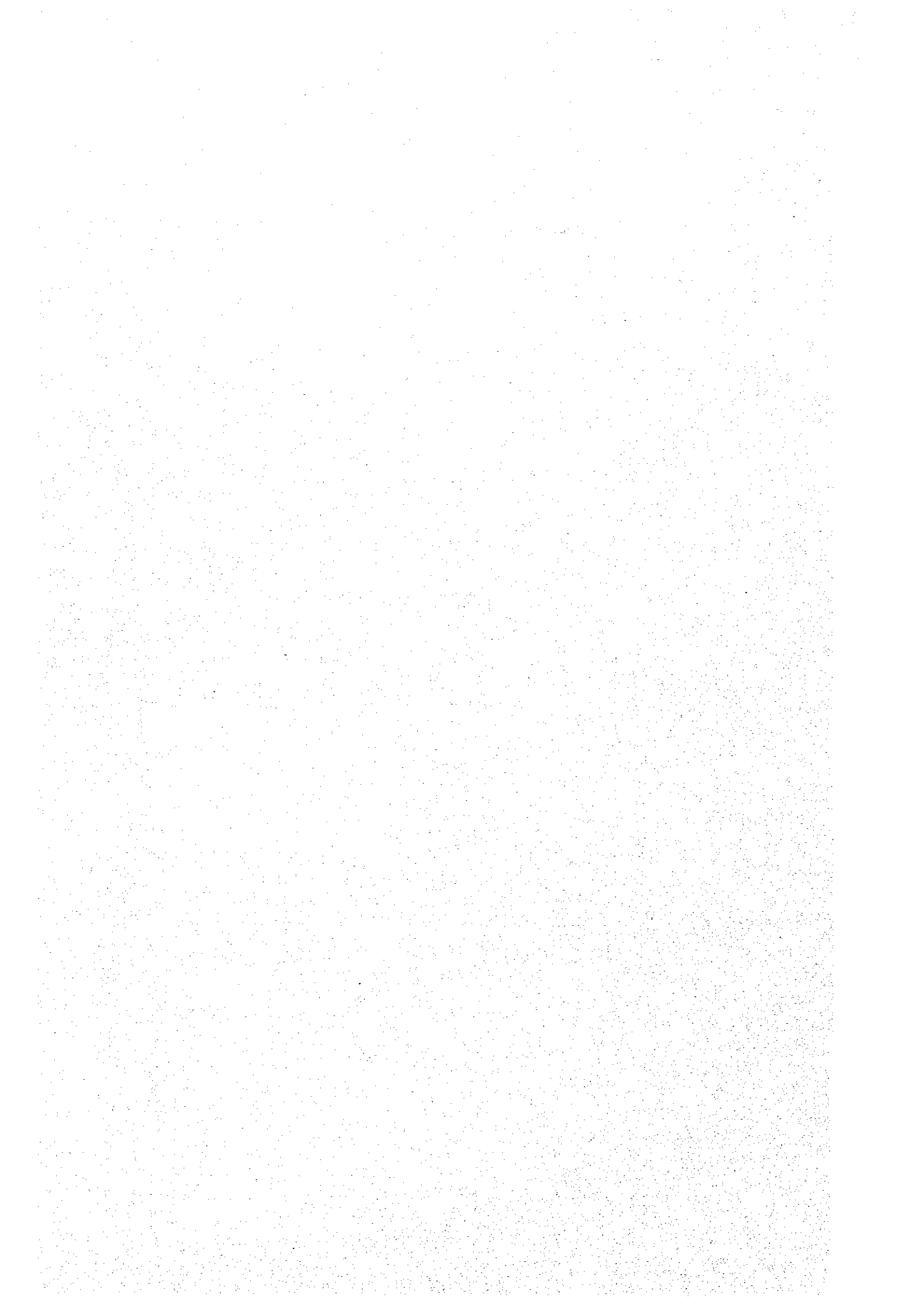


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PREFACE

The Japan International Cooperation Agency (JICA) has conducted a large number of Development Studies as part of its technical cooperation program designed to assist in the nation-building of developing countries to assist in their nation building.

A Development Study is basically completed when a final report is completed and submitted to the recipient government. However, since a Development Study is conducted at the preparatory stage of a project, it can greatly contribute to the progress of developing countries when the findings of the study are utilized in a project, and this enables effective technology transfer.

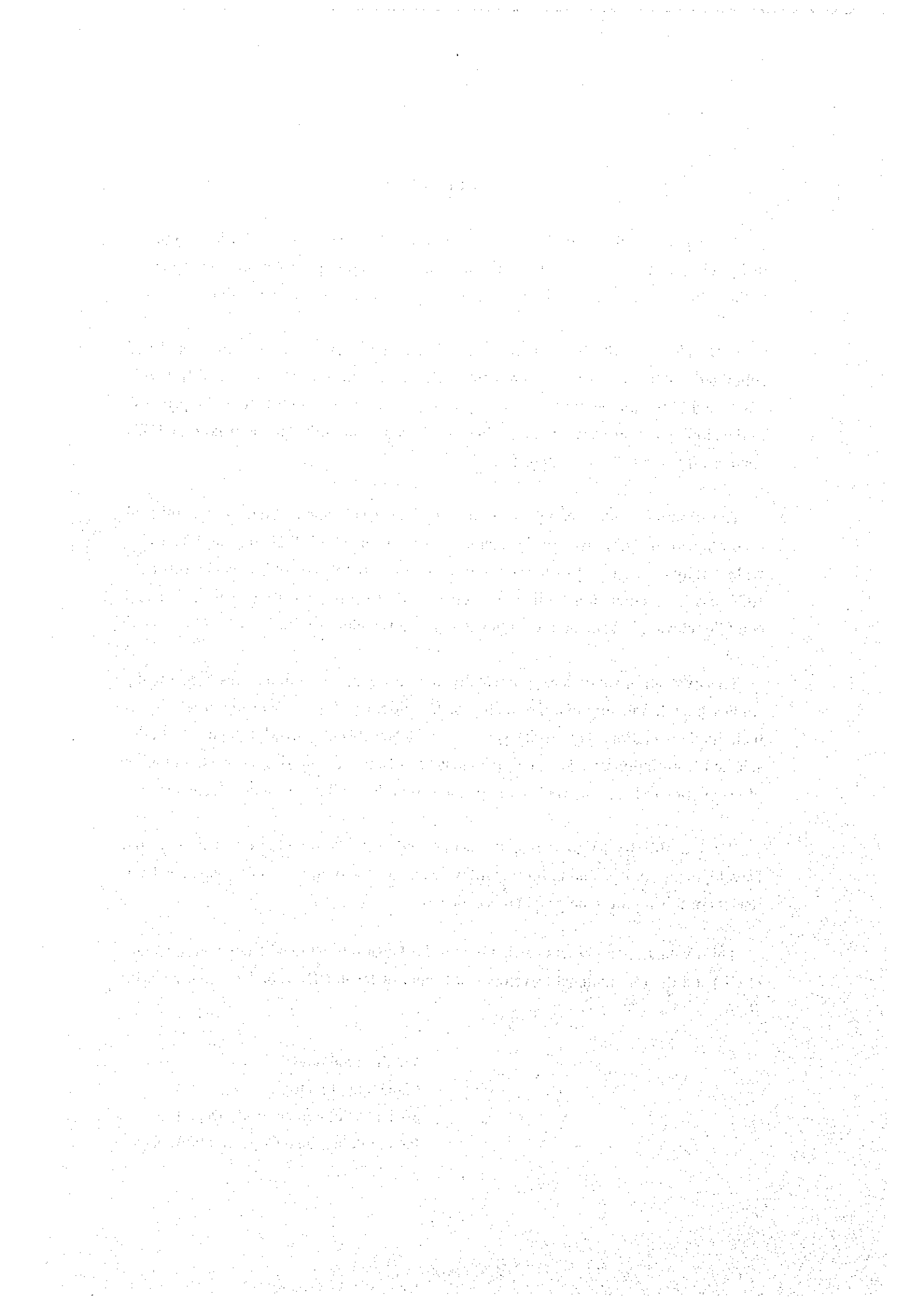
The findings and recommendations of the Development Studies are utilized according to the initiatives of the recipient governments, and they are employed in a wide variety of ways. As gathering information on completed studies can be difficult, JICA has been conducting follow-up studies annually since fiscal 1984 to gather and compile relevant information regarding completed Development Studies.

This evaluation study is experimentally undertaken as a part of a series of follow-up studies intended to improve the quality of Development Studies and the efficiency of their implementation. This fiscal year, we evaluated twenty-two development studies selected from Indonesia, Thailand, Paraguay, and Bolivia, countries in which a number of Development Studies have been implemented in the field of social development.

We are still trying to define the scope and methodology for evaluation of the Development Studies, and in this regard we welcome the opinions and suggestions from readers of this report to help us in this endeavor.

This evaluation study was carried out by the Japan International Cooperation Center (JICE) and the International Development Center of Japan (IDCJ) under a contract with JICA.

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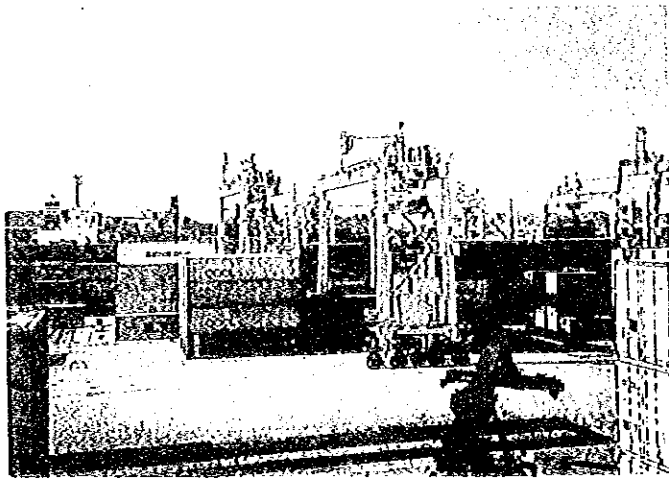
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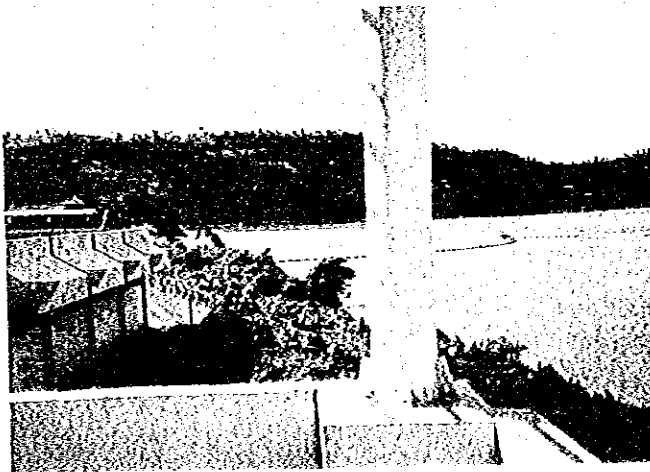
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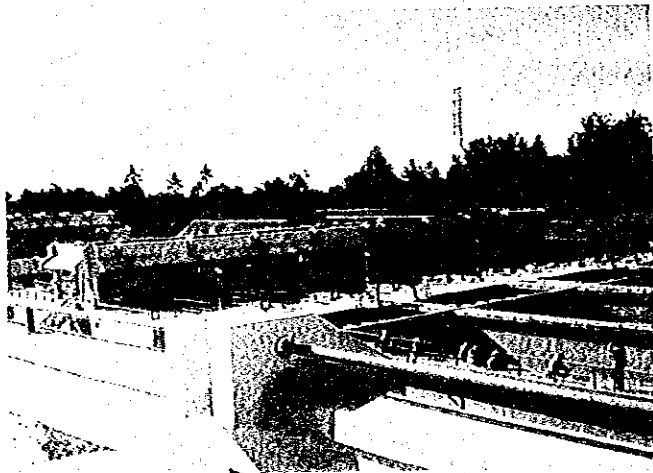
Thailand
Container berth in the Leam Chabang port
(Development Project of Leam Chabang
Coastal Area)



Map Ta Phut industrial zone
(Development Project of the Industrial Port on
the Eastern Seaboard)



Indonesia
The Bili Bili reservoir as viewed from the Bili
Bili Dam Management building
(Jeneberang River Flood Control Project)



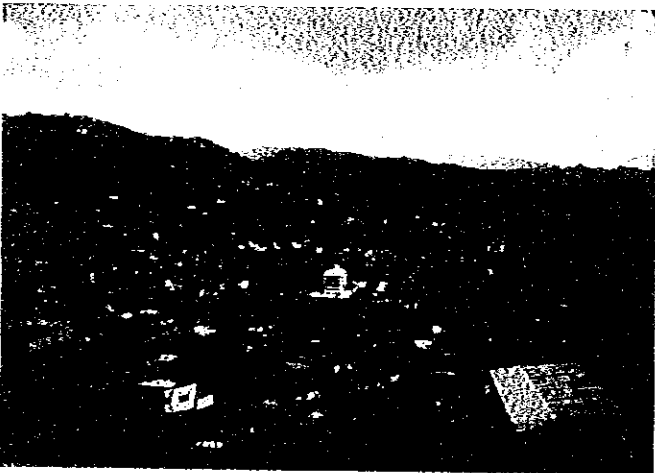
The Somba Op water purification plant, near
completion (as of Feb. 2000)
(Ujung Pangdang Water Supply Development
Project)



Downtown Asuncion, Paraguay
The Madam Lynch Street undergoing
widening
(The Transportation Facilities Improvement
Project of Asuncion Metropolitan Area)



La Colmena City, Paraguay
Roads in the settlement
(La Colmena Highway (follow-up))

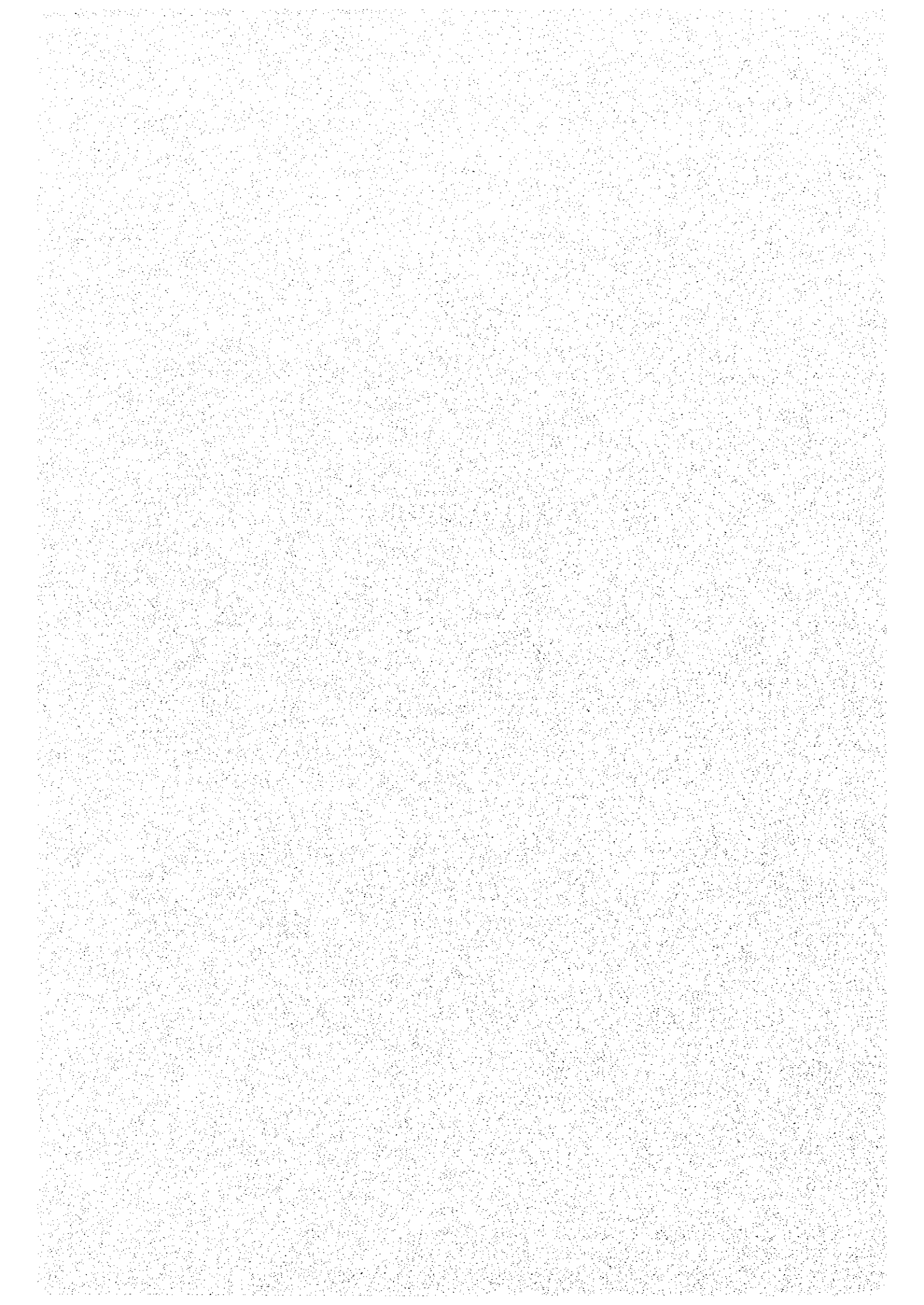


Bolivia
La Paz City, viewed from the El Alt Airport
(El Alt Airport Modernization Plan)



Bolivia
The baggage delivery office of the Viru Viru
International Airport
(Viru Viru International Airport
Development)

Summary

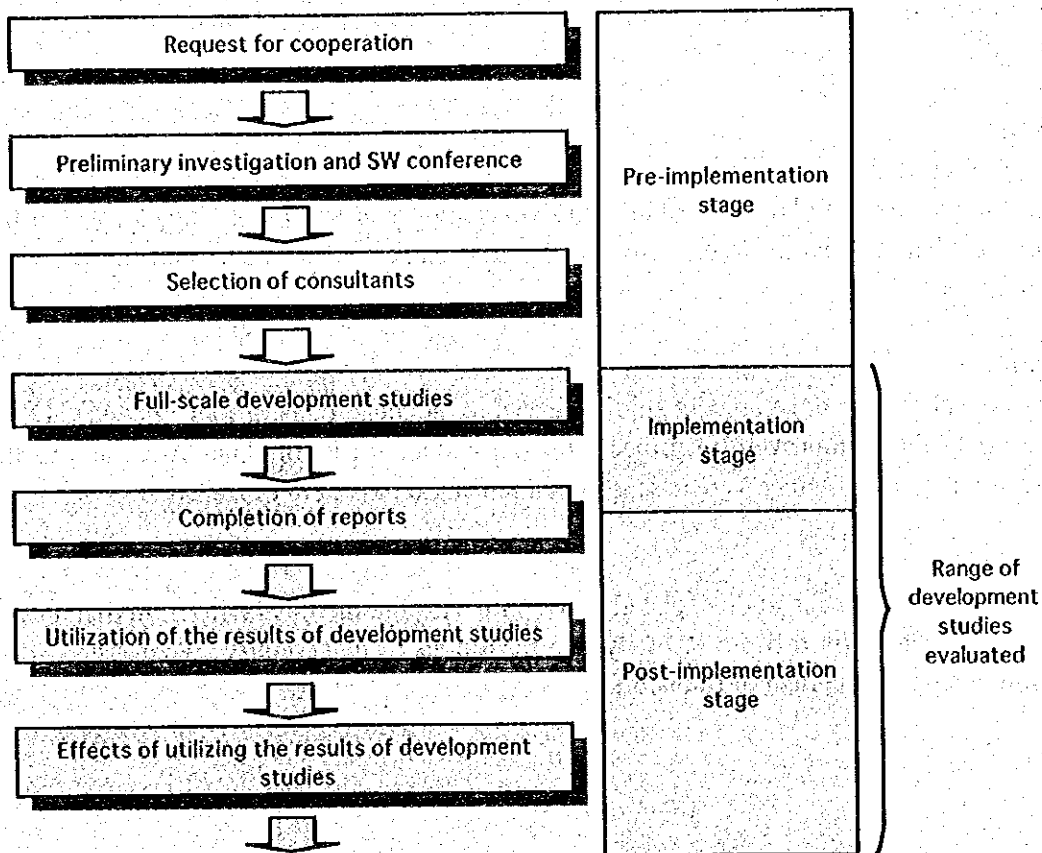


Summary

Section 1. Outline of the Evaluation Study

This evaluation study was implemented for the following purposes. These purposes range from the implementation to post-implementation stages of development studies and focus on the impacts in the post-implementation stage:

- 1) To obtain knowledge from the results of evaluation studies by implementing evaluations of development studies and to use them to improve the quality of future development study projects.
- 2) To examine the evaluation methods through implementation of development study evaluations and use the results to improve the quality of the evaluation study itself.



We divided the development studies into implementation and post-implementation stages. The necessities of implementing development studies and a cooperation system between the survey team and its counterpart, and of establishing a system to utilize development studies in the counterpart country were assessed in the implementation stage. In the post-implementation stage, we assessed the reflection of the proposals of development studies on development policies, development of next-stage development

studies, development of projects, and the influences of such projects. We also assessed the implementation system and self-supporting efforts demonstrated in utilizing the results of the development studies from the standpoint of sustainability.

It was decided to select 22 development studies in Asia and South America as the targets of this evaluation study. Those targets were selected from Thailand and Indonesia in Asia and from Bolivia and Paraguay in South America. The cases selected from individual objective countries were assessed by focusing on the primary objectives, such as transport and the development of water resources (including flood control and water supply).

Thailand

A total of 13 development studies were instigated in the fields of regional development, transport, and development of water resources. These were implemented in connection with the Eastern Seaboard Development, which was promoted by the Government of Thailand, and were assessed collectively as investments in the eastern seaboard.

Indonesia

A total of three development studies related to the Jeneberang River Flood Control Project in the South Sulawesi Province and water supply in Makassar City, located in the lower Jeneberang river, were assessed by focusing on the development of water resources.

Paraguay

A total of four development studies related to the local roads in La Colmena City, to transport facilities improvement projects for the Asuncion Metropolitan Area, and to the entire country of Paraguay were assessed by focusing on the field of transport.

Bolivia

Two development studies related to the Viru Viru International Airport in Santa Cruz City and El Alto Airport of La Paz City, the metropolis of that country, were assessed by again focusing on the field of transport.

The targets of this evaluation study are listed in the table below.

Targets of Evaluation study

Country	Field	Case	Type of development studies	Period of implementation	
Thailand	National and regional	Development Project of Leam Chabang Coastal Area	M/P+F/S	84.1~85.3	
		Development of Patthaya Area	M/P	89.3~90.7	
	Transport (Ports)	Development Project of the Industrial Port on the Eastern Seaboard	M/P+F/S	82.7~83.11	
		Establishment of a Large Repair Shipyard	F/S	84.7~85.5	
		Effective Port Management and Operation System	Others	86.8~88.3	
		Measures to Promote Container Handling System through Leam Chabang Port	M/P	88.3~89.7	
		(Roads)	Road Development of Central Region	M/P+F/S	87.8~89.3
			Road Development of Central Region	M/P	90.2~91.6
			Toll Highway Development	M/P	90.2~91.6
			Inter-City Toll Motorway Project	F/S	93.8~95.3
	Social bases (Development of water resources)	East Coast Water Resources Development Project	F/S	81.2~82.3	
		Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area	D/D	81.11~82.8	
		East Coast Water Resources Development Project (Phase II)	F/S	82.7~83.3	
	Public projects (Water supply)	Nong Kho - Leam Chabang Water Pipeline Project	F/S	83.8~84.3	
Indonesia	Social bases (Flood and erosion control)	Lower Jeneberang River Flood Control Project	F/S	79.6~80.2	
		Jeneberang River Flood Control Project (Phase II)	F/S	81.1~82.3	
	Public projects (Water supply)	Ujung Pandang Water Supply Development Project	M/P+F/S	84.6~85.10	
Paraguay	Transport (urban traffic)	The Transportation Facilities Improvement Project of Asuncion Metropolitan Area	M/P	84.8~86.8	
		The Transportation Facilities Improvement Project of Asuncion Metropolitan Area	M/P	84.8~86.8	
	(Roads)	Transportation Facilities Improvement Project of the Asuncion Metropolitan Area	F/S	87.9~88.10	
		La Colmena Highway (follow up)	Others	76.9~77.1	
Bolivia	Transport (Airlines, airports)	National Transport Master Plan	M/P	90.3~92.1	
		Viru Viru International Airport Development	F/S	77.4~77.12	
		El Alto Airport Modernization Project	M/P+F/S	87.1~88.2	

Section 2. Results of the Evaluation Studies

Thailand

Development studies must be evaluated in two stages in order to judge their success: the implementation stage, which depends on the efforts of both the Japanese side and the counterpart government, and the post-implementation stage, which is largely influenced by the efforts of the counterpart government.

This comprehensive evaluation was conducted for 13 development studies that were implemented concurrently in the 1980s and that were directly or indirectly related to the Eastern Seaboard Development Plan in Thailand; the 13 cases are considered collectively as an investment in the whole area. An evaluation of the overall process, including the implementation and post-implementation stages, indicated that the series of development studies executed by Japan to develop the eastern seaboard was generally successful.

The system to utilize the results of the development studies was considered to be well arranged in the implementation stage, in that i) the development studies implemented by Japan to develop the eastern seaboard adequately reflected the needs of that area; ii) the system of cooperation between the Japanese and Thai sides was generally satisfactory; and iii) the Thai Government emphasized the Eastern Seaboard Development Plan by designating it as a national project. Therefore, the development studies were generally successful.

In addition, there were four substantial impacts of the development studies in the post-implementation stage. First, the plans proposed as a result of the development studies largely reflected the actualizing policy for implementation of the projects, while remaining aligned with the development plans of the Thai Government. Second, the results of the development studies were used as development policies and plans on local levels, such as in the case of the Patthaya City Office, where the survey results served as a guide for the development plan of that city. Third, many proposals were developed into next-stage development studies and used to implement projects. Fourth, the effects on the eastern seaboard were significant, as represented by increased economic activities in the eastern seaboard, increased contributions to the Thai economy by the manufacturing and mining industries, an increase in investments by private enterprises, and increased employment in Chon Buri and Rayong Prefectures.

Throughout the implementation and post-implementation stages, the five factors below contributed to the success of the development studies implemented in connection with the Eastern Seaboard Development Plan.

- i) The Government of Thailand's framework for development was clarified in the form of the Eastern Seaboard Development Plan.
- ii) It was intended from the outset of implementation that development studies by Japan would be fully utilized within this framework.
- iii) Decisions for implementation of eastern seaboard development projects were clearly made through the initiative of the Thai Government.
- iv) Given factors i) and ii), an appropriate system for utilizing proposals and plans derived

from the development studies was provided in the implementation and post-implementation stages.

- v) Investments increased after the Plaza Accord, activating the Thai economy.

Factors i) to iv) are closely related to the fact that development of the eastern seaboard has been promoted by the Thai Government. Many of the proposals from the results of development studies were expanded into projects and produced significant impacts. This was achieved as part of a comprehensive plan by the Thai Government, i. e. the eastern seaboard development project and ownership by the Thai Government, which positively promoted the project in the background. This ownership enhanced the system organized to promote the development of the eastern seaboard and precipitated the promotion of actual projects that required precise planning.

Factor v) is an external factor that positively influenced the post-implementation stage of the development studies. In the first half of the 1980s, when a series of development studies played an important role in the development of the eastern seaboard, such as industrial development in Map Ta Phut and Leam Chabang, it was difficult to predict increases in foreign investments in the manufacturing industries after the Plaza Accord. Though implementation of projects related to those industrial zones and industrial ports that relied on loans had once been frozen when the debt repayment rate lowered due to reduced exports, Thailand recorded a high growth rate of over 10% before entering the 1990s, accompanied by a large expansion of exports. By the time the industrial zones and ports were completed, foreign investments had already been activated through changes in the economic situation. The infrastructure was effectively utilized following these changes in economic conditions.

The results of this evaluation study in the implementation and post-implementation stages of those targets that were successful due to these factors are described below.

(1) Implementation stage

Verification was performed in the implementation stage primarily based on the following three aspects: i) Did the development studies reflect the needs at that time? ii) Was there sufficient cooperation between the survey team and the counterpart? iii) Was the system to utilize the development studies well arranged by the Government of Thailand?

The development studies implemented for the development of the eastern seaboard were in alignment with the needs at the time of implementation; therefore, those development studies were implemented in a timely manner.

The period when development studies were implemented concurrently in the eastern seaboard corresponded to the first phase of the Eastern Seaboard Development Plan (1981 to 1994). The objectives for the first phase were i) distribute economic activities from Bangkok to the eastern seaboard by creating employment and arranging living quarters and ii) improve the international competitive power through a linkage between the industrial

bases and the international transport network.

These objectives strongly reflected the background at the time the Eastern Seaboard Development Plan was initiated. Therefore, studies to develop industrial zones and ports in Map Ta Phut (a base for heavy and chemical industries) and Leam Chabang (a base for export-oriented light industries) and studies to develop a series of water resources/water supply facilities to meet the demand for water that arose with the development of those industrial zones met the needs of that time. However, the need for new and improved roads was also high, since the plan was implemented when there were urgent demands for land transport in pace with the development of the eastern seaboard and enhancement of direct investments.

The development studies were implemented under the framework of the Development of the Eastern Seaboard, which was established by the Thai Government as a national project. A sufficient support system for cooperation between the survey team and the counterpart was thus established by the Thai Government. Therefore, the development studies were implemented at relatively high efficiency under an effective cooperation system.

Since the development studies were implemented with emphasis on the organization of an infrastructure, a greater expectation was placed on their role as a guide rather than on the transfer of technology. As a result, little importance was placed on the transfer of technology/knowledge since the development studies were viewed more as technical cooperation. The development studies in Thailand were generally implemented by the Japanese team; as a result, many held the opinion that these development studies were implemented with little importance placed on the transfer of technology/knowledge to the Thai team.

However, the Thai side had substantial ownership and exhibited a positive attitude, so no problem was perceived in the communication between the Japanese and Thai sides in the implementation stage. The cooperative attitude of the Thai side can be confirmed by the fact that informal meetings between the Thai team and Japanese team were held frequently.

An organized system was established in the implementation stage of the development studies to enable the Government of Thailand to utilize the results of development studies. Since the results of the development studies in the post-implementation stage were widely utilized, a great expectation was placed on the development studies that were implemented by the Japanese team in the implementation stage; therefore, it can be judged that the system for utilization of the results was sufficient. In fact, the Eastern Seaboard Development Plan was a large industrial development project initiated by the Thai Government as the first industrial development project in that country, and it was implemented from the start under the ownership of the Thai Government.

Therefore, in the 1980s, when the development studies were implemented, the relevant organizations were enhanced through the establishment of the East Coastal Area Development Committee (chaired by Mr. Plem, Prime Minister) and the secretary's office for that committee. Such organizations were established in the first half of the 1980s, when development studies were implemented as core portions of the development of the

eastern seaboard in connection with the industrial development plans in Leam Chabang and Map Ta Phut. In the middle of the 1980s, when the plans proposed and examined in these development studies began to be utilized, detailed investigations were conducted into the assignment of budgets and feasibility studies, and many related projects were implemented.

(2) Post-implementation stage

The possibility of developments following implementation of the plans that were proposed and examined as a result of these development studies was evaluated.

Impacts were assessed with regard to i) reflection on the development policy, ii) utilization of the development policies and plans on local levels, iii) development of next-phase development studies and projects, and iv) the effects on the eastern seaboard. The results confirmed that the effects of the post-implementation stage were significant.

i) Reflection on the development policy

The studies of developments implemented by Japan, which were performed in step with the progress of the development of the eastern seaboard, were reflected in the policies of the Thai Government for mid-zone development, including the eastern seaboard. The plans examined and established from the targets of this evaluation were largely reflected in the policies for implementing projects while remaining aligned with the national social and economic development plans of the Thai Government, rather than being utilized to convert policies related to developments.

ii) Utilization in the development policies and plans on local levels

Local self-governing organizations in districts where development studies were implemented include the Leam Chabang self-governing office, Map Ta Phut self-governing office, and the Pathaya City Office. Among these, the Leam Chabang self-governing office and Map Ta Phut self-governing office did not implement the plans that were proposed as a result of the development studies. This was because implementation of industrial development plans in Map Ta Phut and Leam Chabang are promoted mainly by the relevant organizations and ministries and agencies of the central government. Therefore, neither the Leam Chabang nor Map Ta Phut self-governing office received the results of the pertinent development studies after their completion, which suggests a lack of cooperation between the prefectural government and the office of the central government. However, some officers of the city office in Pathaya City participated in the Development of Pathaya Area when it was implemented, and results of the development studies have been periodically submitted from the beginning of the implementation stage. According to officers of the city office, the results of the development studies are still used by the city office as blueprints for establishing their own development policies.

iii) Development into the next-phase development studies and projects

Next-phase development studies

Developments into next-phase development studies of the plans examined and

proposed from the targets of this evaluation study could be classified into the following four patterns: i) from M/P of the development studies to F/S or D/D, funded by the counterpart government, ii) from F/S of the development studies to D/D, funded by the counterpart government, iii) from F/S of the development studies to E/S as a preliminary phase of the project funded by JBIC, and iv) from M/P and F/S of the development studies to further the next-phase development studies.

Development into projects

Developments for projects from the targets of this evaluation study were achieved by funds from the counterpart government, funds from Japan (loans from JBIC), or funds from the private sector. After a series of administrative procedures and assignment of budgets by the Thai Government, many projects could be achieved through Government funds. However, it was also confirmed that the funds from JBIC made a large contribution.

iv) Effects on the eastern seaboard

The eastern seaboard was significantly affected by the developments. Effects included enhanced economic activities in the eastern seaboard, increased rates of contributions to the Thai economy by the manufacturing and mining industries in Chon Buri and Rayong Prefectures, expanded investments by private enterprises, and increased employment opportunities, as well as other effects in Map Ta Phut, Leam Chabang, and Patthaya. These effects arose from a combination of various factors, such as the effects from original projects of the Thai Government and effects from private projects in addition to the consequences of the projects developed from the development studies.

Enhanced economic activities in the eastern seaboard

The increased economic activities in the eastern seaboard are represented by the fact that the growth rate of the GDP in the eastern area of Thailand, including the eastern seaboard, has exceeded the growth rate of the overall economy of Thailand since 1991. When the average growth rates of the GDP from 1982 to 1996 are compared with those of the entire country of Thailand, the eastern area, and Chon Buri and Rayong Prefectures, where development studies targeted by this evaluation study were implemented, the growth rates of both Chon Buri and Rayong Prefectures are significantly higher than the average of the entire country of Thailand.

Rates of contribution to Thai economy from the manufacturing industry in Chon Buri Prefecture and the mining industry in Rayong Prefecture

Data computation by the National Statistics Office (NSO) indicates that the rate of contribution from the manufacturing industry in Chon Buri Prefecture to the total value-added goods and services was 6% in 1990 but had already increased to 10% in 1996. In addition, this industry contributed greatly to the industrial development achieved through the arrangements of the Leam Chabang port and Leam Chabang industrial area, to development studies for creating a series of water resources that were implemented to meet

the water demand in the eastern seaboard, and to generating an investment environment through the arrangement of common roads.

Rayong Prefecture has contributed regularly to the mining sector of Thailand since the mid-1980s as a result of the development of natural gas resources, which were promoted from the beginning of the 1980s after the discovery of natural gas resources in 1973. Since the mid-1980s, Rayong Prefecture has achieved a high contribution rate, accounting for 40% or more of the added value of the overall mining sector of Thailand. This is largely influenced by the fact that natural gas mined in the Siam Bay is stored at Map Ta Phut. This natural gas also contributed to the development of a petrochemical complex to utilize it, so this district already plays a central role in the petrochemical industries of Thailand.

Increase in private investments

Private investments contributed greatly to industrial developments in Chon Buri and Rayong Prefectures. According to the Eastern Seaboard Development Committee (OESB), 1.26 trillion yen (420 billion bahts) of initial investment was invested during the Eastern Seaboard Development Plan (Phase 1) (1984 to 94); the amount of investments from the public sector was 310 billion yen (104 billion bahts), while the investment amount from the private sector was 950 billion yen (316 billion bahts).

Similarly, the growth rate of the number of enterprises indicates that, while the total number of enterprises in Thailand has been decreasing since 1981, the number of enterprises in Chon Buri and Rayong Prefectures has been increasing since about 1987, and the growth rate has exceeded the growth rate of the total number of enterprises in Thailand since 1990.

Creation of employment

As the number of enterprises increased, new employment opportunities were created in the eastern seaboard. According to the OESB, the number of employment opportunities generated by the Eastern Seaboard Development Plan (Phase 1) (1981 to 94) reached as many as 460,000. It has been reported that the promotion of industrial development by the eastern seaboard development projects resulted in an increase in the number of employment opportunities, particularly in the service and manufacturing industries. However, the configuration of the labor population on prefectural levels, particularly in Chon Buri Prefecture, shows that the manufacturing and service industries contain an overwhelmingly large ratio of the population. This has occurred because investments have been actively made primarily in the manufacturing industry. The number of enterprises has accordingly increased, and the needs for the service industry have increased in step with the activation of the local economy.

Effects in Map Ta Phut, Leam Chabang, and Patthaya

- Map Ta Phut -

Since the completion of the Map Ta Phut port in 1992, the frequency of use of that port has improved, and the annual volume of cargo handled reached 16,233 tons by 1997.

The volume of cargo is increasing in accordance with the increase in the number of enterprises located in the Map Ta Phut industrial area.

- Leam Chabang -

The volume of cargo handled, the number of containers handled, and the number of cargo vessels that use the port have been decreasing since 1994 in the Bangkok port, but are increasing in the Leam Chabang port.

According to the IEAT, use of the Leam Chabang industrial area is also good; most of the divisions in the industrial area are already occupied or contracted (100 enterprises as of 1997). It was reported that 30,000 or more employment opportunities were created in that state.

- Patthaya -

Patthaya City is a large sightseeing spot, second only to Bangkok. Though the direct effects of development studies in Patthaya City are not yet clarified because projects in that city advanced in relatively recent years, Patthaya has already hosted the greatest number of visitors of any city except Bangkok, having 1/3 of the visitors of that city. Furthermore, Bangkok serves as a metropolis, so many visitors come for business purposes. As a result, Patthaya may actually be the most popular sightseeing city. Depending on the number of tourists and the amount of future new investments related to progress in the projects, including waste water treatment facilities, it is highly probable that the tourist industry will contribute to an increase in added value.

Indonesia

The three objective items can generally be judged to have been achieved in terms of the implementation stage of the development studies, the system during the process of implementation, the utilization after implementation of the development studies, and the utilization system. The factors that contributed to achieving the three objectives are outlined below from the standpoints of the system during and after the implementation of the development studies, the needs to be met by the development studies, and the impacts observed after implementation of the development studies.

(1) Implementation stage of development studies

All three items targeted by this evaluation suited the needs of that time, so the implementation of the development studies was timely. Development studies for the Lower Jeneberang River Flood Control Project and Jeneberang River Flood Control Project (Phase II) were implemented because the need for flood control was high. Development studies for the Ujung Pandang Water Supply Development Project were implemented because a future increase in the demand for water was expected.

The studies were implemented between the end of the 1970s and the mid-1980s, and it was impossible to locate sufficient information sources to collect information about the implementation 15 to 20 years later. While the credibility of the information is not very high because of insufficient information sources, members of the counterpart team recall that there were no problems in communication between the Japanese and Indonesian teams then and that the counterpart team was positively participating in development studies.

Furthermore, since the Ministry of Public Projects (currently the Ministry of Residence and Area Development), the counterpart organization at that time, had established a system to utilize the results of development studies from the implementation stage in the post-implementation stage, the development studies seem to have been implemented efficiently.

(2) After the implementation of the development studies

Plans proposed during the implementation stage of the development studies were fully utilized. As a result, significant effects were observed in increased both flood control and water supply over the whole area.

Proposals that arose from the development studies acted as blueprints for the policies of flood control and water resource development in the lower stream area of the Jeneberang river and the provision of water supply facilities for Makassar City. Most of the plans proposed developed into next-generation development studies and projects.

One impact of the project implementation was improved flood control. Although in 2000 the region suffered the heaviest rainfall in several decades, flood control of the Jeneberang river was able to completely prevent flooding of the river. In addition, the water supply rate was improved due to the improved pure water supply capacity achieved

through the initiation of filtration plans as well as the expansion of water pipe networks.

The Ministry of Public Projects, which had been the counterpart organization for the three targets since the implementation stage, adopted a positive viewpoint and effectively established systems for utilizing the development studies. The results were thus easily utilized in the post-implementation stage because the Ministry of Public Projects implemented various administrative processes and efforts to secure funds to develop the proposals that arose from the development studies into projects.

Paraguay

The four development studies related to the local roads in La Colmena City and the traffic plans for the Asuncion metropolitan area and the whole country of Paraguay were assessed in this investigation by focusing on the field of transport. The four development studies targeted by this evaluation can be assessed as generally successful since they met the needs in Paraguay during the implementation and post-implementation stages. Results of the evaluation study during the implementation and post-implementation stages of the four development studies are described below.

(1) Implementation stage of the development studies

All four development studies evaluated in this analysis addressed needs of that time, so the implementation of the development studies was timely. Development studies for post-construction care of roads in La Colmena were implemented by considering the objectives in the land transport area of the National Social and Economic Development Plan of Paraguay (1977 to 1981). Development studies for The Transportation Facilities Improvement Project of Asuncion Metropolitan Area (M/P) and Transportation Facilities Improvement Project of the Asuncion Metropolitan Area (F/S) were implemented to accommodate the increase in population and concentration of industries in the metropolis; development studies for the National Transport Master Plan were implemented to handle motorization after 1980.

The JICA survey team and the counterpart team communicated sufficiently through periodic meetings and seminars, and technology was transferred from the survey team to the counterpart during all four development studies. Thus, there was a satisfactory cooperation system between the survey team and the counterpart team in the implementation stage.

In order to utilize the results of studies on The Transportation Facilities Improvement Project of Asuncion Metropolitan Area (M/P), Transportation Facilities Improvement Project of the Asuncion Metropolitan Area (F/S), and the National Transport Master Plan, a system that enabled providing necessary advice, judgment, and cooperation on an administrative or technical level was established in the implementation stage. This system was implemented by organizing a steering committee consisting of representatives of both the execution organization and other related organizations. The system not only enhanced the understanding of and interest in development studies among members of the government but also played an important role in the early transition of plans into projects.

(2) Post-implementation stage of development studies

The results of four targeted development studies were reflected in policies of the government and were utilized in next-stage development studies or projects. La Colmena Highway (follow-up) was immediately developed into a project because it was considered to contribute to the development of agriculture, which was the main objective of the

development plan at that time. The National Transport Master Plan is still referred to as the blueprint for transport plans in that country, and the proposals from the development studies are always considered when implementing individual transport projects.

Three of the four targeted studies, Transportation Facilities Improvement Project of Asuncion Metropolitan Area (M/P), Transportation Facilities Improvement Project of the Asuncion Metropolitan Area (F/S), and the National Transport Master Plan, were developed into next-stage development surveys, and some plans were thereafter developed into projects. Projects such as the widening of circular roads (widening work on the Madam Lynch street), improvements to primary intersections, new installation of bus terminals, and centralized management of signals in the transport control center have already been initiated using the original funds of the Asuncion municipal government and loans from the World Bank, as a result of the Transportation Facilities Improvement Project of the Asuncion Metropolitan Area (F/S). On-site surveys have confirmed that some of the plans proposed for the National Transport Master Plan were developed into projects and are being implemented. In addition, the OECF (currently JBIC) of Japan twice provided roads for the road projects, in 1990 and 1998.

The "La Colmena Highway (follow-up)," for which all plans were developed into projects, made significant indirect social and economical impacts through improved convenience and efficiency for the local inhabitants, enhanced importance of each region, and improved access to public facilities. Effects of the Transportation Facilities Improvement Project of the Asuncion Metropolitan Area (F/S) were observed in terms of improved traffic conditions through the paving and widening of roads, decreasing traffic accidents in Asuncion City, and other enhancements. Indirect impacts were confirmed from the National Transport Master Plan, as in other items, including reductions in the time required to travel over distances and the promotion of foreign trade through the provision of import and export routes.

The sustainability of development studies can be assessed from the standpoint of whether the internal system to develop plans into projects functions well and whether the technologies transferred from the survey team during the implementation of development studies are still in effect in the counterpart country. Since most of the counterpart members who were involved in the development studies for the Transportation Facilities Improvement Project of the Asuncion Metropolitan Area left their positions due to the coup d'état in 1989 and the subsequent reorganization of the municipal administration, that project was not sustainable. Projects are being promoted under the National Transport Master Plan (M/P), which has been integrated into a national plan and is overseen by the transport administration and the Comprehensive Transport Planning Dept., Section in Charge of Transport (OPIT) of the Ministry of Public Projects and Communications, which decides priorities and conducts comprehensive monitoring.

The technologies transferred have remained in effect. According to the counterpart members from that time who received transfers of technology while implementing studies for The Transportation Facilities Improvement Project of Asuncion Metropolitan Area (M/P) and the National Transport Master Plan (M/P), the information regarding transport civil engineering, and signals and transport planning that they learned through

implementation of these development studies is still useful in their current workplaces, more than ten years since the completion of the studies. Therefore, it can be judged that there was sustainability.

Bolivia

This evaluation study focused on the field of transport, particularly those aspects related to airports, and assessed two target development studies in relation to the Viru Viru International Airport located in Santa Cruz City and the El Alto Airport located in La Paz City, the metropolis of that country. The two target development studies were aligned with the needs of Bolivia in the implementation and post-implementation stages. Those development studies were thus generally successful. The evaluation results for the two targeted development studies in the implementation and post-implementation stages are described below.

(1) Implementation stage of development studies

Development studies on the Viru Viru International Airport and the El Alto Airport were targeted in this evaluation study because they were judged to be necessary for future economic developments in that country. The plan for Viru Viru International Airport Development (F/S) was established to complement the El Alto International Airport, enhancing its significance as the hub (transit point) of the north-south and east-west international air routes, and improving the safety of inhabitants around the airport. The El Alto Airport Modernization Project (M/P+F/S) was established primarily to prevent endangering air traffic, since the facility as a whole is extremely aged.

Periodic meetings were held between the JICA survey team and the counterpart during the implementation stage of both development surveys. Technology transferred by the survey team to the counterpart included data collection methods, planning techniques for airport repair and expansion projects, and proficiency in airplane noise measurements. There was thus sufficient cooperation between the survey team and the counterpart.

A system was organized for project development after completion of the development surveys for Viru Viru International Airport Development in order to utilize the results of development studies in their implementation stage. However, since most members of the counterpart team for development studies of the El Alto Airport Modernization Project had retired or transferred to other positions, no project execution committee was organized.

(2) Post-implementation stage of development studies

The results of the two target cases of development studies were utilized as policies of the state, and they have remained in effect. The Viru Viru International Airport Development was given a higher priority in the five-year plan for the social and economic development of the Government of Bolivia (1976 to 1980). It was thus developed into a project during that plan, with aid from Japan. In contrast, though the need to expand El Alto Airport had been a national subject before the construction of the Viru Viru International Airport, it was given a lower priority. However, the need for organized transportation facilities increased after the establishment of MERCOSUR (Southern South American Common Market) due to the network established among South American

countries. The Government of Bolivia has demonstrated support for early development of this project into a business, within the framework of its policy of transferring state enterprises to private hands.

Detailed design studies (D/D) for both these target projects were implemented as next-stage development studies immediately upon completion of the development surveys. Detailed design studies on the Viru Viru International Airport Development were implemented in February 1978, the year following completion of the development studies. The detailed design studies on the El Alto Airport Modernization Project were implemented in 1994, five years after completion of development studies. Both projects received gratuitous aid from Japan.

Some plans have been developed into projects in both target items. Loans in yen were provided by the OECF in 1979 (10.8 billion yen) and in 1983 (6,680 million yen) for the Viru Viru International Airport Development (F/S), and construction work for the project was completed in 1984. Gratuitous funds were provided by the OECF three times for the El Alto Airport Modernization Project (M/P+F/S) (in 1994 (893 million yen), in 1995 (2,374 million yen), and in 1996 (278 million yen)). The modification of runways, new construction of the control tower, installation of aviation aid facilities, provision of communications facilities, and purchases of communications devices and landing-aid-related devices were then implemented.

The social and economic impacts on the local community due to airport development studies that developed into projects can be assessed quantitatively from several sources. These include changes in income due to the increase in passengers using the airport and the volume of cargo handled in the airport, improved safety factors of air transportation (i.e., a comparison between the accident rates before and after implementation of the project), increased employment in the target area (airport site area), and promotions for developing sightseeing resources (increase or decrease in passengers using that airport).

The social and economic impacts of the Viru Viru International Airport Development project can be assessed based on the above indexes since the airport had already been constructed and was in use. The data collected was limited, however, since the airport had been planned more than 20 years earlier. Furthermore, AASANA was in charge of general management of the airport when these development studies were planned, but SABSA has been managing the airport since it was transferred to private hands. Differing methods of collecting statistical data between 20 years ago and the present meant that not all factors could be assessed quantitatively. The following points were confirmed by assessment based on these circumstances. ① Transport services and the comfort of airport patrons improved. ② There is increased demand for air passenger transport. ③ The volume of cargo handled has increased. ④ Employment opportunities in Santa Cruz Prefecture have increased. ⑤ Various costs were saved for construction of a new airport.

The impacts from development studies on the El Alto Airport Modernization Project developing into projects are similar. However, it is impossible to assess substantial impacts from these projects since the facilities in the project were limited to the provision of control facilities related to the safety of the airport and only two years have passed since the

implementation of the projects. Improvements in the safety factors, modernization of aviation technology, and other elements can be cited as the impacts confirmed through surveys.

Whether the remaining projects from these two development studies will be implemented in the future depends largely on the discretion of the SABSA. The main factors that hinder the implementation of projects are the shortage of funds and poor growth of air transport demand (passengers and cargo). These projects are quite likely to be implemented according to a proposal if these problems are solved. Furthermore, the Ministry of Transport is considering establishing a National Transport Master Plan. The projects will therefore be implemented when the proposed development studies for the Viru Viru International Airport Development and El Alto Airport Modernization Project are reviewed in that master plan.

The sustainability of the transfer of technology is low from the standpoint of human resources, since almost all members of the counterpart team at the time of the development studies on the two target items have been replaced through changes of regime and other events. However, since the reports on the development studies for the two target items are still important references for the current SABSA, the development studies results may have sustainability themselves.

Section 3. Proposals

Proposals to improve the quality of development studies

(1) Reconfirmation of the purpose of development studies - From the standpoint of technical cooperation -

When implementing development studies, it is necessary to reconfirm the purposes of such studies in order to emphasize the development surveys by Japan that were implemented as links for technical cooperation.

While the purpose of assisting in the establishment of plans has been achieved, the degree of achievement brought by cooperation from Japan has been generally low with respect to transfers of technology. If Japan intends to continue to place importance on the transfer of technology, it is necessary to employ the following strategies:

- 1) Encourage the government of the cooperating counterpart country to strengthen its perception of the development studies by Japan as technical cooperation. Requests for transfers of technology should be incorporated into the development study request and current development studies that emphasize the government of the cooperating counterpart country during the study stage of selection and confirmation of projects (studies for forming projects, etc.).
- 2) Select and empower consultants who have the ability to transfer technology and, in the process of selection, instruct the bidders to prepare proposals that place importance on the transfer of technology in the process. Incorporate long-term experts who are specialized in the transfer of technology into the development study team on the Japanese side, depending on individual cases.
- 3) Prepare physical environments that enable the transfer of technology from the Japanese team to the cooperating counterpart country team in order to promote participation by members of the cooperating counterpart country.

(2) Clarification of the role of development studies in the development plans of the cooperating counterpart country

When implementing development studies, it is necessary to clarify the positioning of the relevant development studies in the national development plans of the cooperating counterpart country or in the development plans of each ministry in charge.

The development studies will be reflected in the development policies of the cooperating counterpart country and utilized to a greater degree in individual projects when their function and their importance are recognized by the counterpart country, when the expectations for the development studies are clarified, and after they are implemented.

(3) Clarification of the utilization target of development studies

The purpose of implementing development studies varies depending on the study

type and subject. The method for utilizing development studies after implementation will also vary depending on the implementation objective. The utilization target must be clarified in the pre-implementation and implementation stages of the pertinent development studies. Furthermore, it is necessary to verify that the utilization corresponds to the objective when assessing the development studies after implementation.

(4) Assumption of scenarios according to changes in external conditions

It is necessary to prepare scenarios for each of the plans proposed from the M/P and studied in F/S that allow for the possibility that the plan will be suspended due to changes in external conditions after implementation of the development studies.

In the most frequent situation, a plan proposed and/or examined in the description studies is not implemented because the cooperating counterpart country has not allocated a budget for it. An alternative plan of reduced size or a plan that starts small and then gradually expands could effectively remedy this situation.

Proposals for improving evaluations of development studies

(1) Setting the utilization target according to the years of implementation, type of development study, and the purpose(s) of the development study

When evaluating a development study, it is necessary to set the utilization target according to the number of years since implementation, the type of development study (MP, F/S, D/D, etc.), and the purpose(s) of the development study. Given these elements, it is possible to adequately assess the utilization and/or achievement of the target of a development study at any time for a plan of any type or purpose.

(2) Introduction of the assessment upon completion of a development study

Introducing assessments after development studies are completed is the optimal way to judge their efficiency in the implementation stage.

It is difficult to collect the information necessary to evaluate the implementation stage of development studies that were implemented 15 or 20 years ago, and, even if information can be collected, it is difficult to derive a clear assessment result in most cases due to the low credibility of the information.

Concrete matters, such as identifying the technologies transferred in the implementation stage of the development studies and determining whether cooperation with the counterpart country was sufficient, can be clarified by introducing the assessment upon completion of the development studies. This will enhance the credibility of the development study evaluations in the implementation state.

(3) Necessity of examining the method of evaluation - Positioning of development studies using the logical configuration of PDM

Evaluations of Japanese ODA, particularly evaluations of projects, include five criteria on which the evaluation is established (efficiency, degree of achieving the target, impacts, adequacy, and possibility of autonomous development), based on the logical configuration of PDM. The PDM, which forms the relationships between the PDM configuration of "inputs and activities" → "results" → "targets of the project" → "upper-level targets" and external factors into a matrix, is set along the flow of the project and therefore is very clear from a logical standpoint. However, it is necessary to use the logical configuration of PDM to fully examine the flow of development studies from the implementation stage to the post-implementation stage when implementing an evaluation study using a similar method for projects such as the technical cooperation of a project type.

(4) Examination of methods other than the assessment method using five evaluation criteria

It is not always necessary to use these five criteria as indicators in an evaluation; if there is a more suitable method to evaluate the development studies, such method may be used. An evaluation using the five criteria based on the logical configuration of PDM has some disadvantages. For example, the evaluation content may vary widely, depending on the positioning of the target. Furthermore, when the five evaluation criteria are used as indicators, the examination contents may be duplicated within these criteria.

There are two alternatives for establishing future methods for evaluating development studies. We may improve the current evaluation method using the five criteria as references, or we may establish new evaluation methods while continuing to refer to the original five criteria.