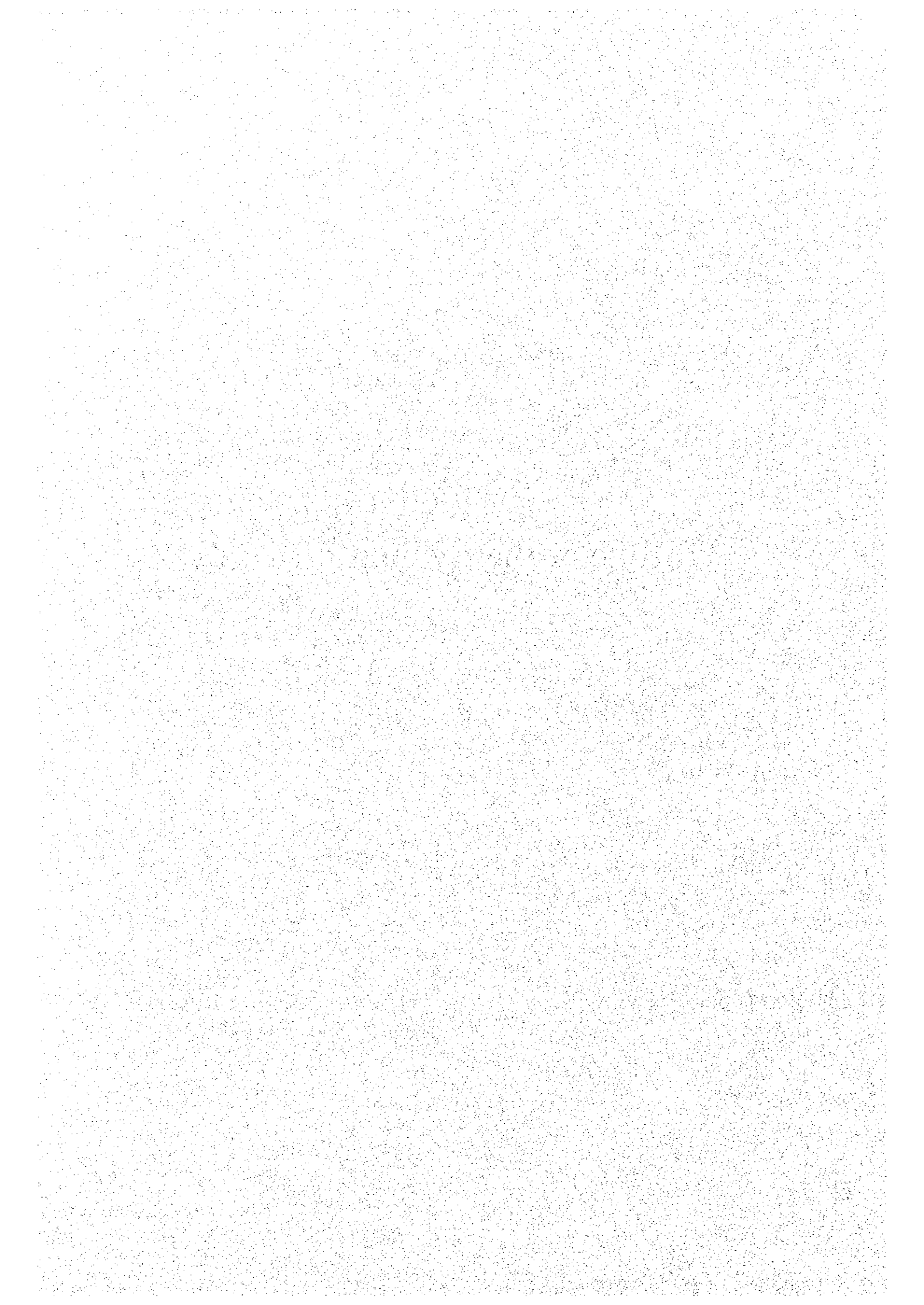


Section 1.
Outline of the Evaluation Study



Section 1. Outline of the Evaluation Study

1-1 History of evaluating development studies

The need to evaluate development studies has increased in recent years inside and outside Japan from the standpoint of securing improved visibility of ODA. It is necessary to promote evaluations and sufficient feedback of the evaluation results for project implementation not only to secure visibility, or accountability, but also to improve the quality of ODA projects themselves.

Under these circumstances, evaluations of development studies will be further promoted in the future. Over 300 development studies are implemented annually, and their ratio to the total amount of JICA loans has remained constant. As shown by the operation costs of JICA (Table 1-1), the cost of development studies was the second largest amount, following the cost for technical cooperation by project type every year, under the heading of the costs for overseas technical cooperation; when the costs of overseas development studies (consignment fees from the Ministry of International Trade and Industry) are included, the total amount is almost equal to the resulting cost of technical cooperation by project type.

Table 1-1. Projects and their ratios to the total JICA operation cost

(100 million yen)						
Operation costs of overseas technical cooperation						
Fiscal year	93	94	95	96	97	98
Technical cooperation by project type	318.4	335.9	351.6	375.7	378.8	405.4
Composition ratio (%)	23.9	24.1	24.4	24.4	24.1	26.0
Cost of development studies (1)	233.7	247.3	238.0	268.6	273.5	248.5
Composition ratio (%)	17.5	17.7	16.5	17.4	17.4	16.0
Acceptance of trainees	200.3	213.6	222.6	245.7	255.9	264.7
Composition ratio (%)	15.0	15.3	15.5	15.9	16.3	17.0
Dispatch of experts	161.3	168.5	171.2	183.4	175.5	175.5
Composition ratio (%)	12.1	12.1	11.9	11.9	11.2	11.3
Japan Overseas Cooperation Volunteers	143.2	149.6	157.3	181.7	189.1	186.7
Composition ratio (%)	10.7	10.7	10.9	11.8	12.0	12.0
Other operations	277.4	279.0	298.4	287.1	301.1	185.8
Composition ratio (%)	20.8	20.0	20.7	18.6	19.1	17.8
Consignment fee (Cost of overseas development studies) (2)	86.4	90.0	92.2	98.4	91.5	83.4
Composition ratio (%)	6.5	6.5	6.4	6.4	5.8	5.4
Cost of immigration to overseas	25.0	24.9	24.6	8.9	8.7	7.8
Composition ratio (%)	1.9	1.8	1.7	0.6	0.6	0.5
Resultant amount of JICA operations	1,334.3	1,394.0	1,439.1	1,542.4	1,574.0	1,557.9
(1)+(2)	320.1	337.3	330.1	367.0	365.0	332.0
	24.0	24.2	22.9	23.8	23.2	21.3

Figures are based on Annual Report 1999 of Japan International Cooperation Association.

However, an examination of the number of development studies evaluated classified

by type of cooperation in Table 1-2 reveals that two development studies under the control of the Ministry of Foreign Affairs were evaluated, as were eleven under JICA (of which five items were subjected to joint evaluation with the OECF). The ratio of studies evaluated (13) to the total amount for development studies (36.5 billion yen as of fiscal 1997) is smaller than the ratio of studies evaluated (45) to the resultant amount of technical cooperation by project type (37.88 billion yen as of fiscal 1997). Furthermore, the Ministry of Foreign Affairs, JICA, and OECF have accumulated schemes of technical cooperation for 15 years or more by project type and gratuitous and non-gratuitous project types. The Ministry of Foreign Affairs and JICA have now decided to evaluate development studies, so there are fewer accumulated evaluations. The ratio of items evaluated to the total number of items implemented in the past is therefore lower than that of gratuitous and non-gratuitous project types. It is thus necessary to further promote development study evaluations in order to improve the quality of the development studies by feeding back the evaluation results. .

Table 1-2. Number of items evaluated in the post-implementation stage classified by the form of cooperation

		Ministry of Foreign Affairs	JICA	OECF
Technical cooperation	Technical cooperation by project type	20	25	
	Expert dispatching	2	5	
	Japan Overseas Cooperation Volunteers		3	
	Accepting trainees		9	
	Development studies	2	11	
	International emergency aid			
	Furnishing equipment and materials (single equipment and materials)			
	Development cooperation		3	
Cooperation with gratuitous funds	Common gratuitous aid	68	57	
	Gratuitous aid for fishery	17		
	Aid for increasing food production	6	1	
	Food aid			
	Grass-root gratuitous aid	10		
Cooperation with non-gratuitous funds	Non-project gratuitous aid			
	Project loans	26		30
	Commodity loans			
	Two-step loans			
	Relief of debts			

Figures (results in fiscal 1997) are based Economic Cooperation Evaluation Report, Ministry of Foreign Affairs, 1999.

1-2 Purposes of evaluating development studies

Evaluation studies have two objectives:

- 1) To derive lessons by evaluating development studies and feeding back evaluation results to improve the quality of future development studies.
- 2) To examine the methods of evaluation through implementation of evaluation studies and utilize them to improve the quality of the evaluation studies themselves.

The significance of evaluating development studies is that the evaluations enable persons responsible for the development studies to clarify and systematically arrange the lessons accumulated through their experience gained through implementing the studies and to share the lessons by utilizing the evaluation results.

In most cases to date, lessons from development studies have been derived by participants and have been used by those people when they participate in new development studies rather than being shared with third parties. While the participants in development studies can gather valuable experiences and lessons and use them in new development studies, these experiences and lessons are shared only by those who participated in the development studies; it is uncommon to share them with third parties.

Evaluations not only allow us to observe these personal experiences and lessons objectively, so that the development studies can be understood comprehensively and systematically, but also enable us to utilize the lessons in new development studies to emphasize the positive factors revealed by the evaluation and improve the negative elements.

Since evaluations of development studies are new and only recently initiated, and since the evaluation method is not established, it is also important to establish evaluation methods by accumulating evaluations.

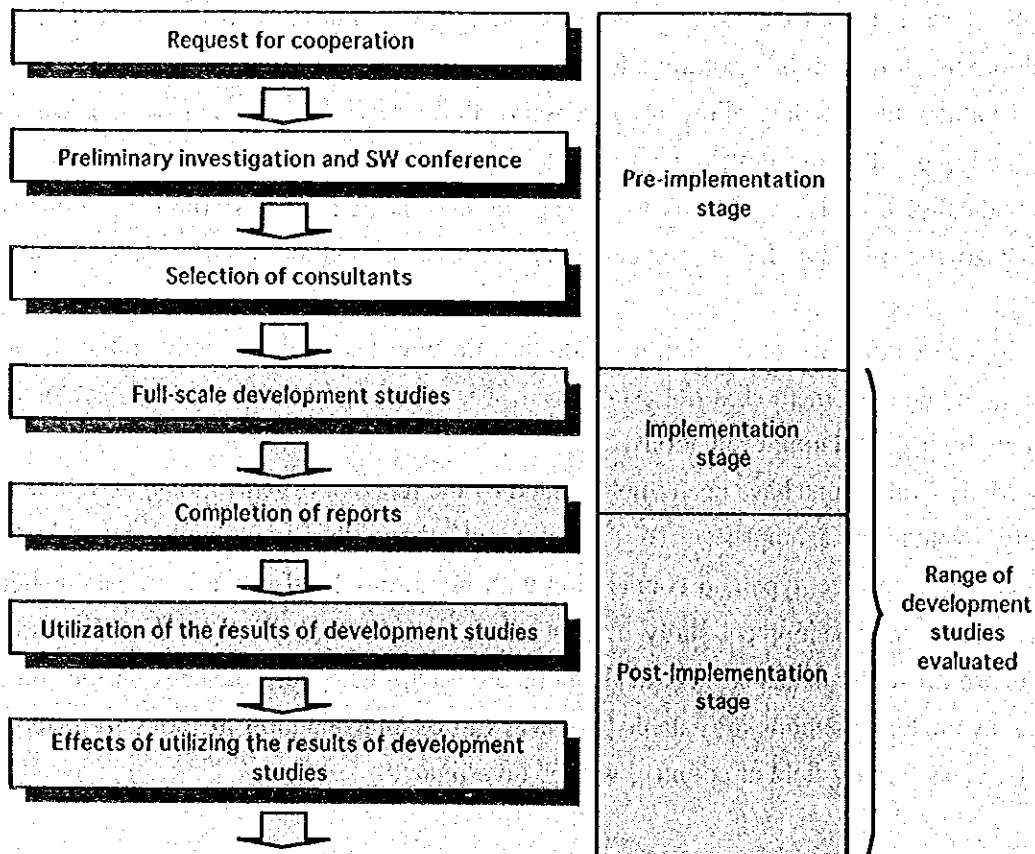
Many evaluations have been implemented by the relevant organizations, and there are already evaluation examples. To some extent, then, the standpoints of technical cooperation by project type and cooperation with gratuitous funds have been established. However, since development study evaluations have just begun, only a few evaluation results are presently available. As evaluations are accumulated and balanced in the future and as evaluation methods are established, ways to adapt evaluation methods to different targets, classified by field or country, will be investigated.

1-3 Evaluation methods

(1) Scope of evaluation

This evaluation will be implemented over the entire process of development studies, from the implementation stage to the post-implementation stage, by focusing on the impacts in the post-implementation stage. The implementation stage commences with the full-scale development study and extends to the completion of the study, submission of the report to the government of the counterpart country, and preparation of the final report after discussions. The post-implementation stage commences after the full-scale development study and preparation of the final report are completed. The scope of the evaluation includes utilizing evaluation results to establish plans for the target area, applying the evaluation results to individual projects, and observing the affects of the applied results.

Figure 1-1. Scope of Evaluation



(2) Evaluation standpoints

This evaluation divides development studies into two stages, the implementation stage and post-implementation stage. The implementation stage includes verifying the need for the development study, establishing a cooperation system between the survey teams and the counterpart, and establishing a system by which the government of the counterpart country can utilize the results of the development study.

The post-implementation stage, which is the main portion of this evaluation, involves verifying the impacts of the development study, such as reflection of the proposed items in development policies, development into next-phase development studies, development into projects, and secondary effects from implementing projects, as well as the implementation system and self-supporting efforts observed in utilizing the development study results.

(3) Implementing the evaluation

This evaluation is implemented in four steps: 1) Information collection in Japan, 2) On-site surveys, 3) Information collection utilizing local consultants, and 4) Analysis of data in Japan.

In Step 1), data available in Japan are acquired from related organizations, reports and related literature are reviewed. In Step 2), the survey teams dispatched to the four target countries collect information by interviewing people in related organizations in charge and those related to development surveys. In Step 3), quantitative information is acquired from local consultants in each of the four target countries who are familiar with local conditions. Step 4) summarizes the results of Steps 1) to 3) and prepares an overall analysis. This report is the result of Step 4).

1-4 Evaluation targets

A relatively large number of development studies have been implemented in Asia and South America in the past. Of these, studies in Thailand and Indonesia, representing Asia, and in Bolivia and Paraguay, representing South America, were selected for this evaluation.

The targets in each country will be assessed in this study by focusing on the primary objective areas, such as transportation and the development of water resources (including flood control and water supply).

Thailand

A total of 13 development studies were implemented in the fields of regional development, transportation, and development of water resources in connection with the Eastern Seaboard Development, which was promoted by the Thai Government. These were assessed by viewing them collectively as an investment in the eastern seaboard area.

Indonesia

Three development studies related to the Jeneberang River Flood Control Project in the South Sulawesi Province and the water supply in Makassar City, located in the lower Jeneberang river, were assessed in the field of water resources development.

Paraguay

Four development studies related to local roads in La Colmena City and transport facilities improvement projects for the Asuncion Metropolitan Area and the entire country of Paraguay were assessed in the field of transportation.

Bolivia

Also in the field of transportation, two development studies, one related to the Viru Viru International Airport in Santa Cruz City and the other to El Alto airport of La Paz City, the metropolis of that country, were assessed.

Evaluation targets are listed in the following table.

Table 1-3. Evaluation Targets

Country	Field	Case	Type of development study	Period of implementation
Thailand	National and regional development	Development Project of Leam Chabang Coastal Area	M/P+F/S	Jan. 1984 to Mar. 1985
		Development of Patthaya Area	M/P	Mar. 1989 to July 1990
	Transport (Ports)	Development Project of the Industrial Port on the Eastern Seaboard	M/P+F/S	July 1982 to Nov. 1983
		Establishment of a Large Repair Shipyard	F/S	July 1984 to May 1985
		Effective Port Management and Operation System	Others	Aug. 1985 to Mar. 1988
		Measures to Promote the Container Handling System through Leam Chabang Port	M/P+F/S	Mar. 1988 to July 1989
	(Roads)	Road Development of Central Region	M/P+F/S	Aug. 1987 to Mar. 1989
		Toll Highway Development	M/P	Feb. 1990 to June 1991
		Inter-City Toll Motorway Project	F/S	Aug. 1993 to Mar. 1995
		Social bases (Development of water resources)	East Coast Water Resources Development Project	F/S
	Public projects (Water supply)	Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area	D/D	Nov. 1981 to Aug. 1982
		East Coast Water Resources Development Project (Phase II)	F/S	July 1982 to Mar. 1983
		Nong Kho - Leam Chabang Water Pipeline Project	F/S	Aug. 1983 to Mar. 1984
Indonesia	Social bases (Flood and erosion control)	Lower Jeneberang River Flood Control Project	F/S	June 1979 to Feb. 1980
		Jeneberang River Flood Control Project (Phase II)	F/S	Jan. 1981 to Mar. 1982
	Public projects (Water supply)	Ujung Pandang Water Supply Development Project	M/P+F/S	June 1984 to Oct. 1985
Paraguay	Transport (Urban traffic)	The Transportation Facilities Improvement Project of Asuncion Metropolitan Area	M/P	Aug. 1984 to Aug. 1986
		Transportation Facilities Improvement Project of the Asuncion Metropolitan Area	F/S	Sept. 1987 to Oct. 1988
	(Roads)	La Colmena Highway (follow-up)	Others	Sept. 1976 to Jan. 1977
		National Transport Master Plan	M/P	Mar. 1990 to Jan. 1992
Bolivia	Transport (Airlines, airports)	Viru Viru International Airport Development	F/S	Apr. 1977 to Dec. 1977
		El Alto Airport Modernization Project	M/P+F/S	Jan. 1987 to Feb. 1988

Section 2.
Results of Evaluation Study

Thailand

Section 2. Results of Evaluation Study

2-1 Thailand

Table 2-1-1. Evaluation Targets in Thailand

Case	Field	Type of development study	Period of implementation	Counterpart organization in the target country of cooperation
Development Project of the Industrial Port on the Eastern Seaboard	National and regional development	M/P+F/S	July 1982 to Nov. 1983	Thai Port Bureau (PAT) Industrial Area Public corporation (IEAT)
Development Project of Leam Chabang Coastal Area		M/P+F/S	Jan. 1984 to Mar. 1985	Industrial Area Public corporation (IEAT)
Development of Paththaya Area		M/P	Mar. 1989 to July 1990	Office of Eastern Seaboard Development Committee (OESB)
Establishment of a Large Repair Shipyard	Transport (Ports)	F/S	July 1984 to May 1985	Investment Promoting Agency (BOI)
Measures to Promote the Container Handling System through Leam Chabang Port		M/P	Mar. 1988 to July 1989	Office of Eastern Seaboard Development Committee (OESB), Thai Port Bureau (PAT), etc.
East Coast Water Resources Development Project	Social bases (Development of water resources)	F/S	Feb. 1981 to Mar. 1982	Irrigation Water Utilizing Bureau (RID)
Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area		D/D	Nov. 1981 to Aug. 1982	
East Coast Water Resources Development Project (Phase II)		F/S	July 1982 to Mar. 1983	
Nong Kho - Leam Chabang Water Pipeline Project	Public projects (Water supply)	F/S	Aug. 1983 to Mar. 1984	Public Works Bureau, Ministry of Internal Affairs (PWD, MOI)
Road Development of Central Region	Transport (Roads)	M/P+F/S	Aug. 1987 to Mar. 1989	Road Bureau, Ministry of Transport and Communications (DOH, MOTC)
Toll Highway Development		M/P	Feb. 1990 to June 1991	
Inter-City Toll Motorway Project		F/S	Aug. 1993 to Mar. 1995	
Effective Port Management and Operation System	Transport (Ports)	Others	Aug. 1985 to Mar. 1988	Ministry of Transport and Communications (MOTC)

2-1-1 Background of implementing development studies

The Thai Government has promoted the Eastern Seaboard Development Project as part of the concurrent implementation of development studies that have been conducted in the eastern seaboard area since the beginning of the 1980s. The above-listed targets play important roles in developing the eastern seaboard area, which the Thai Government began on a full scale in 1982. This section overviews the social and economic backgrounds for implementing development studies during the Eastern Seaboard Development Project in

Thailand, the history of the Eastern Seaboard Development Project, and relationships between the national social and economic development projects and the targets of this evaluation.

(1) Social and economic backgrounds

Before the 1970s, when the Eastern Seaboard Development Project was promoted, the Thai economy was largely dependent on agriculture, and the ratio of the manufacturing section in the GDP did not exceed that of the agricultural sector until the beginning of the 1980s. After entering the 1980s, the Thai Government began to give priority to promoting light and heavy industries while still considering agriculture to be the basis of the economy, and a full-scale industrialization policy was promoted. Thereafter, industrialization advanced from the latter half of the 1980s, using direct investments as the motivation.

The value added by the manufacturing industry in the 1960s largely depended on domestic demand because the industrialization policy at that time urged industries to produce substitutes of imported goods for the domestic market. In the 1970s, full-scale efforts were begun to promote exports, and the Export Promotion Act was established. Incentive measures were enacted under the Export Promotion Act, such as exemption from the tariff on imported goods to be used to produce exports, return of the tax imposed on production processes, and exemption from business tax for production for export. However, these incentives were not sufficient to fully promote export-oriented industries. The industrial sector of Thailand grew significantly during the 1970s, largely by relying on the expansion of domestic demand through the export of agricultural products. It was also influenced greatly by the precipitous rise of world prices for manufacturing industry products.

Although there was a deeply held opinion that Thailand should emphasize a development strategy based on agriculture, in the early 1980s the Thai Government initiated studies into a large industrial project as an industrialization strategy that would introduce significant changes in the industrialization process. The resultant project was the Eastern Seaboard Development Project, in which heavy industries, the infrastructure, and industrial areas were promoted rapidly.

In the middle of the 1980s, the Thai Government gave priority to producing goods for export, deployment of industries to rural areas, expansion of basic industries, activation of foreign investments, and promotion of the Eastern Seaboard Development Project. When the rise in the dollar value was suppressed by the Plaza Accord of G5 in 1985, the rise in the Thai baht value, which was linked to dollars, was also suppressed, resulting in a

rapid increase in investments from Japan and Taiwan. Thus, foreign investments, to which priority was given, became active. Thereafter, the value added by the manufacturing sector increased remarkably, in accord with the increase in direct investments.

A general view of the flow of the industrial structure from the 1980s to 1990s in terms of the value added by the agricultural sector and industrial sector clearly reveals that the basis of the industrial structure changed from agriculture to the manufacturing industry. The share of the industrial sector did not initially show a large growth rate, which was 22% in 1980 and 21% in 1985 but increased to 27% in 1990. However, the share of the agricultural sector decreased to 23% in 1980, 16% in 1985, and 12% in 1990, though its value-added output exhibited a slight increase. Furthermore, while the GDP grew steadily from 1990 until the economic crisis in 1997, the industrial sector maintained a share of 28% and the agricultural sector held 11%. While the share of industrial export products grew from 31% in 1980 to 35% in 1985, 62% in 1990, and 71% in 1997, the share of exported agricultural products decreased from 48% in 1980 to 51% in 1985, 23% in 1990, and 14% in 1997.

Table 2-1-2. Shares of Agricultural and Industrial Sectors in the GDP and Export Products

Share in the GDP	1980	1985	1990	1997
Agricultural sector	23%	16%	12%	11%
Industrial sector	22%	21%	27%	28%
Share in export products	1980	1985	1990	1997
Agricultural sector	48%	52%	23%	14%
Industrial sector	31%	35%	62%	71%

Data of the NSO (National Planning Office)

As described above, while the industrial structure of Thailand was mainly based on agriculture before the commencement of the Eastern Seaboard Development Project, after that project commenced, it became based on the manufacturing industry through the Plaza Accord in 1985. Furthermore, the manufacturing industry, which had previously relied on domestic demand, became an export-oriented industry as more attention was paid to overseas demand.

(2) History of the Eastern Seaboard Development

The Eastern Seaboard Development Project reportedly originated with the discovery

of natural gas resources in Thailand Bay in 1973. That discovery led to the concept of installing pipelines from Thailand Bay to the mainland and establishing heavy and chemical industries in the Eastern Seaboard to utilize the natural gas. Full-scale development of the Eastern Seaboard commenced when the Eastern Seaboard Development Committee was established in 1981. In 1982, the Thai Government decided upon a general policy for developing the Eastern seaboard area. Under that policy, it was decided to allocate heavy and chemical industries to Map Ta Phut and construct an industrial port to serve them, and to allocate light industries to Leam Chabang and construct a commercial port there.

The Eastern Seaboard Development Project was promoted for three purposes¹.

i) Effectively utilize domestic resources and develop heavy and chemical industries

In Thailand to eliminate the reliance on imported energy by utilizing natural gas, a native resource, for power generating plants, cement plants, and transportation, and to reduce the importation of intermediate goods by developing heavy and chemical industries that utilize natural gas.

ii) Redistribute economic activities from the Bangkok Metropolitan Area.

Industrialization in Thailand mainly consisted of industries that manufacture substitutes of imported goods, producing consumer goods for domestic markets by importing raw materials and intermediate goods. Therefore, industries tended to be concentrated in the areas around Bangkok, which had an import port. Industries concentrated in a single area were to be dispersed in order to alleviate the over-concentrated condition.

iii) Develop export-oriented industries.

The industrialization promoted in Thailand primarily focused on those industries producing substitutes for imported goods was, and industrialization for overseas markets was delayed; therefore, development of export-oriented light industries became an objective.

(3) Relations between the Eastern Seaboard Development Project and the targets of this evaluation study in the National Economic and Social Development Plan (five-year plan)

The Eastern Seaboard Development Project was implemented primarily in the fifth and sixth five-year plans (1982 to 1986; 1987 to 1991). There are significant correlations

¹ Japanese Chamber of Commerce (Kyomin Shimomura, Hiroshi Ohashi), Outline of Thai Economy (1986 to 87), p92 to 93

between these five-year plans and the targets of this evaluation study.

The fifth five-year plan was started in 1982, and the Eastern Seaboard Development commenced full-scale implementation around that time. The following points from the fifth five-year plan are cited as the main issues in the Eastern Seaboard Development: 1) Shortage of water resources for industrial and city water supplies, 2) Problems with industrial lands due to a rise in land prices, 3) Shortage of linkages between the eastern seaboard and the overall eastern area and between the main bases in the eastern seaboard area and the northeastern area and Bangkok, and 4) Concentration of industries in a single area of Bangkok. The fifth five-year plan included relatively clear targets to enable the Eastern Seaboard Development to resolve these problems. Infrastructure improvements included plans for ports, water resources, roads, railways, electric power, and communications. The plans for developing water resources are particularly closely related to the targets of this evaluation study, i.e. East Coast Water Resources Development Project, East Coast Water Resources Development Project (Phase II), and Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area. Feasibility studies and detailed designs of these development studies were performed on the individual projects that were actually affirmed in the five-year plan.

Table 2-1-3. Main Points of the Eastern Seaboard Development Project in the Fifth Five-year Plan

Eastern Seaboard Development Project Affirmed in the Fifth Five-year Plan	
<p>Main issues :</p> <p>1) Shortage of water resources for industrial and city water supplies.</p> <p>2) Problems with industrial land due to a rise in land prices.</p> <p>3) Shortage of linkages between the eastern seaboard area and the overall eastern area and between the main bases in the eastern seaboard area and the north-eastern area and Bangkok.</p> <p>4) Concentration of industries in the single area of Bangkok.</p>	<p><u>1) Support to private investments</u></p> <p><u>2) Provision of infrastructure</u> Ports: Expansion of the Sattahip port. Water resources: Construction of water pipelines between the Dokkari reservoir and Map Ta Phut and between Map Ta Phut and Sattahip. Construction of the Nong-pla-lai reservoir and Ban-Bung reservoir. Roads: Highway between Sattahip and Rayong. Railways: Construction of railway between Sattahip and Rayong. Electric power: Construction of a 230-kV cable between Aou-Pai-Rayong. Communications: Planning and construction of communications systems.</p>
<p><u>Target areas of the Eastern Seaboard Development Project:</u> Between the U-tapao Airport and the area around Rayong Municipality (123,800 rai), and Leam Chabang (2,800 rai)</p>	<p><u>3) Development of human resources and health care.</u></p> <p><u>4) Measures against environmental pollution and soil</u></p> <p><u>5) Establishment of a master plan.</u></p>

The sixth five-year plan was started in 1987. Direct investments from foreign countries expanded at about the same time, following the Plaza Accord in 1985, and export-oriented industrialization was promoted. The Eastern Seaboard Development Project in the five-year plan also clearly reflected an investment environment to secure incentives for private investments and the promotion of export-oriented industries.

The following points were cited in the sixth five-year plan as main issues that Thailand should address to promote the Eastern Seaboard Development: 1) Serious traffic congestion, shortage of residences, shortage of public facilities, etc., due to the concentration of the population in the metropolitan area; 2) Pollution due to the concentration of industries in the metropolitan area, low productivity due to inefficient transportation, and shortage of relevant infrastructures; 3) Inefficiency in the transport of imported and exported goods due to congestion of port facilities arising from the shortage of commercial ports along the Chao Phraya River; 4) Necessity of absorbing the labor force by creating employment opportunities through expanding the industrial sector. Establishment of an investment environment, such as the industrial port and industrial area in Map Ta Phut, as well as establishment of the commercial port, an export-oriented goods manufacturing area, a commercial center, and an industrial area in Leam Chabang were conceived in the five-year plan to address these issues. The Development Project of the Industrial Port on the Eastern Seaboard is largely related to the target infrastructure establishment in Map Ta Phut, and the Development Project of Leam Chabang Coastal Area and Nong Kho - Leam Chabang Water Pipeline Project are related to establishing the target infrastructure in Leam Chabang. Long-term plans of related facilities such as ports, industrial areas, and residences were established in M/P for the Development Project of the Industrial Port on the Eastern Seaboard and short-term plans in an F/S for Development Project of Leam Chabang Coastal Area. An F/S for constructing a water pipeline to meet the future water demand in Leam Chabang was implemented in the Nong Kho - Leam Chabang Water Pipeline Project. Among other projects related to Leam Chabang, an F/S for constructing an inland container depot (CD) and related facilities was implemented in the Measures to Promote the Container Handling System through Leam Chabang Port, and the F/S for constructing a repair shipyard was implemented in Establishment of a Large Repair Shipyard.

In addition, the sixth five-year plan positions Patthaya as the business, commercial, and tourist center. According to the plan, an M/P for comprehensive regional development, including improvements to roads, water supply and sewage, and beaches, was established in the project for Development of the Patthaya Area.

Table 2-1-4. Main Issues of the Eastern Seaboard Development in the Sixth Five-year Plan

Eastern Seaboard Development Project as Stated in the Sixth Five-year Plan	
<p>Main issues :</p> <p>1) Serious traffic congestion, shortage of residences, shortage of public facilities, etc. due to concentration of the population in the metropolitan area.</p> <p>2) Pollution due to concentration of industries in the metropolitan area, low productivity due to inefficient transportation, and shortage of relevant infrastructure.</p> <p>3) Inefficient transport of imported and exported goods due to congestion of port facilities arising from the shortage of commercial ports along the Chao Phraya River.</p> <p>4) Necessity of absorbing the labor force by creating employment opportunities through expansion of the industrial sector.</p>	<p><u>1) Establishment of investment environments in Map Ta Phut</u></p> <p>Map Ta Phut industrial port: For establishing facilities that can handle 140,000 tons/year of cargo ships. Two berths and a breakwater with a length of 1760 m and a channel with a depth of 12.5 m will be constructed to handle 60,000 tons/year of cargo ships for the first phase.</p> <p>Map Ta Phut industrial area: An industrial area with an area of 8,000 rai will be completed in the initial stage.</p> <p>Railway between Sattahip and Map Ta Phut: A railway of 24 km from Sattahip to Chachoengsao will be constructed.</p> <p>Electricity/communications: The telecommunications network in Map Ta Phut will meet the needs.</p> <p>Residences: Construction of residences by the government to secure incentives for private investments.</p> <p>Education/social development: Stimulation of health care and educational and community activities and enhancement of local administration organizations.</p> <p><u>2) Construction of a commercial port, export-oriented goods manufacturing area, commercial center, and industrial area in Leam Chabang</u></p> <p>Leam Chabang commercial port: To provide facilities that can manage 140,000 tons/year of cargo ships in a commercial container port for export cargo, three berths and a breakwater with a length of 1300 m and a channel with a depth of 12.5 m will be constructed to handle 30,000 tons/year of cargo ships for the first phase.</p> <p>Leam Chabang industrial area: In the initial stage, an industrial district with an area of 1,367 rai and an export-oriented goods manufacturing district with an area of 423 rai will be completed.</p> <p>Nong Kho-Leam Chabang Water Pipeline: Construction of a water pipeline with a diameter of 0.9 m and a diameter of 14 km will enable water supply of 22 million m³/year.</p> <p>Si Racha-Leam Chabang Railway: Links the Leam Chabang industrial area/port to the railway between Sattahip and Chachoengsao.</p> <p>Electricity/communications: To expand the telecommunications network in Leam Chabang.</p> <p>Residences: Construction of residences by the government to secure incentives for private investments.</p> <p>Education and social development: Stimulation of health care and educational and community activities and enhancement of local administration organizations.</p> <p><u>3) Others</u></p> <p>Environment: To carefully monitor and control the influences of industrial development in the Eastern Seaboard on the environment.</p>
<p><u>Target area of the Eastern Seaboard Development Project</u></p> <p>Map Ta Phut, Leam Chabang, and the following main cities:</p> <p>Chonburi - Center for business and government administration</p> <p>Pathaya - Business, commercial, and tourist center</p> <p>Rayong - Service center and a base for educational and technological research)</p>	

1 rai = 1,600 m² = 0.16 ha

While the Eastern Seaboard Development still focuses on local development projects for specific cities such as Map Ta Phut and Leam Chabang in the sixth five-year plan, as described above, plans classified by fields of industry across the borders of areas also exist. For example, in the transportation sector, repair of trunk roads and linking of production bases all over the country of Thailand, including the Eastern Seaboard, are planned. These projects are closely related to the Road Development of the Central Region plan, in which the M/P plans to provide a trunk road network and auxiliary road network, rehabilitate the trunk roads, and improve the crossings; the feasibility of those plans that are given higher priority in M/P will be examined in F/S. These plans also include a plan for roads that connect the metropolitan area and the eastern seaboard area.

The seventh five-year plan includes relief of traffic congestion in the metropolitan area, promotion of the construction of highways, and confirmation of a high-speed road network among cities. The Toll Highway Development Project and Inter-City Toll Motorway Project are related to these plans; the M/P for the construction of a countrywide toll highway network based on a long-term plan is established in Toll Highway Development, and a feasibility study and planning will be performed on some routes in the M/P of the Inter-City Toll Motorway Project.

Table 2-1-5. Road Development in the Sixth and Seventh Five-year Plans

Development plans related to the transportation section (roads) in the sixth national development plan	Development plans related to the transportation section (land transportation) in the seventh national development plan
<ol style="list-style-type: none"> 1) Repair of highways in rural areas. 2) Quality improvements to the construction of trunk roads and linking of production bases, markets, and transportation bases through the construction of new roads. 3) Encouragement for the private sector to participate in construction, repair, and fare collection. 4) Policies and implementation plans for construction and repair of highways and configuration of the coordinating organization and operation system. 	<ol style="list-style-type: none"> 1) Relief of traffic congestion <ol style="list-style-type: none"> a) Relief of traffic congestion in the city's downtown area through constructing circular roads and bypasses in Bangkok. b) Constructing secondary trunk roads in the areas around the Bangkok Metropolis. c) Connections between land, sea, and air transport networks through the construction of a central passenger terminal facility. d) Construction of railways and highways. e) Configuration of standards and organizations for imposing restrictions on the use of common passenger cars. f) Suppression of environmental pollution through cooperation between the government and the private sector. 2) Distribution of benefits from developments and meeting of transportation needs <ol style="list-style-type: none"> a) Improvements in transportation efficiency and distribution of the benefits from this development to each area through the configuration of inter-city highway networks. b) Prompt responses to needs of economically developed districts through the development of roads, high-speed railways, and transportation systems. c) Establishment of routes for raw materials, production, and consumption through the development of road and railway networks as well as meeting the expanding transport needs of the industrial and agricultural sectors.

(4) Features of the development studies implemented in connection with the Eastern Seaboard Development

Development studies related to the development of the eastern seaboard area can be

broadly divided into the following three regional categories:

- i) Local plans for specific districts in the eastern seaboard area,
- ii) Plans for the overall eastern seaboard area, and
- iii) Plans for the entire country of Thailand but partially related to the eastern seaboard area.

Local plans for specific districts in the eastern seaboard area in item i) include Development Project of the Industrial Port on the Eastern Seaboard applied to Map Ta Phut, Development Project of the Leam Chabang Coastal Area applied to Leam Chabang, and Development of the Patthaya Area applied to Patthaya. Plans for the overall eastern seaboard area in item ii) include East Coast Water Resources Development Project, East Coast Water Resources Development Project (Phase II), Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area, and Nong Kho - Leam Chabang Water Pipeline Project in the field of water resource development or water supply. Plans for the entire country of Thailand but partially related to the eastern seaboard area in item iii) include Road Development in the Central Region, Toll Highway Development, and Inter-City Toll Motorway Project ² for providing roads, as well as Effective Port Management and Operation System for improving the operation and management of the main ports in Thailand.

Categories i) and ii) focus on developing the eastern seaboard area as promoted by the Thai Government. The plans are thus directly related to the Eastern Seaboard Development Project established by the Thai Government. Plans in category i) were established according to the role of each city positioned in the Eastern Seaboard Development Project; the plans in category ii) were established by considering the demand for water in each main city within that area.

In contrast, the plans in category iii) cover all of Thailand while still relating to the Eastern Seaboard Development Project. The plans for roads in Thailand in particular require this evaluation in order to fully assess the linkages between the metropolitan area, where economic activities are concentrated, and local areas, or between local cities, as well as the linkages between the industrial development areas and the main cities. In addition, a wide-area plan that considers not only the linkages between port cities but also their roles as bases for international trades is necessary to assess port operations and management of the main ports in Thailand.

² Though the Inter-City Toll Motorway Project is not directly related to the eastern seaboard development, it is included as one of the targets of this evaluation since it was a development study implemented as a derivative of the Toll Highway Development.

(5) Results of implementing development studies

This section provides a general view of the results of implementing the development studies from the standpoints of the three categories described in the previous section, i.e. i) local plans for specific districts, ii) plans for the overall area of the eastern seaboard, and iii) plans for the entire country of Thailand but partially related to the eastern seaboard area.

i) Local plans for specific districts -- development of Map Ta Phut, Leam Chabang, and Patthaya

Map Ta Phut and Leam Chabang are positioned as two significant bases for development of the eastern seaboard area. In 1992, the Thai Government established its general policy for developing the eastern seaboard area. This policy included locating heavy and chemical industries and constructing an industrial port in Map Ta Phut and locating light industries for the development of manufacturing industries for export-oriented goods in Leam Chabang and constructing a commercial port there. Patthaya is positioned as a tourist and commercial base in the Eastern Seaboard Development Project. The target development studies were evaluated under this positioning.

Map Ta Phut district

An infrastructure development plan was proposed in the Development Project of the Industrial Port on the Eastern Seaboard for developing heavy and chemical industries in Map Ta Phut. The overall plan of that project was established by M/P, and the short-term plans, by F/S, where the industrial development project, port development project, urban development project, and basic facility project were planned and studied. Plans proposed in each project were as follows. An industrial area including a complex for heavy and chemical industries was proposed in the industrial development project; a large 45-berth industrial port, in the port project; installation of a new town, in the urban development project; and plans for roads, railways, water supply and sewage, water discharge, and other facilities such as refuse disposal facilities, in the basic facilities project.

Leam Chabang district

The Development Project of Leam Chabang Coastal Area was implemented for the Leam Chabang district, which is considered in the Eastern Seaboard Development Project as the base for light industries and export-oriented goods manufacturing industries. This project was established in two stages, a long-term project (M/P) and a short-term project

(F/S), wherein the industrial development project, port development project, urban development project, transport project, and public basic facilities project were planned and studied. An industrial area and export-oriented goods manufacturing area were proposed in the industrial development project; a 16-berth commercial port, in the port project; residential areas, in the urban development project; a road network within the district, in the transportation project; and water supply and sewage, water discharge, refuse disposal facilities, power supply facilities, and communications facilities, in the basic facilities project.

The Establishment of a Large Repair Shipyard was implemented because an increased demand for ship repair was anticipated due to the expansion of the shipping business in Thailand. The Development Project of Leam Chabang Coastal Area includes constructing a repair shipyard as part of the port facilities, and a floating dock and a dry dock were compared. The use of a dry dock was ultimately proposed in the Establishment of a Large Repair Shipyard.

Further, Measures to Promote the Container Handling System through Leam Chabang Port was implemented since it was anticipated that the container handling capacity of the Bangkok Port would reach its limit and that the Leam Chabang Port would function as a complementary port. This project consisted of two stages, a long-term project and short-term project; construction of a 48-ha container yard (ICD) was proposed for the long-term project, and construction of a 32-ha ICD for the short-term project.

Patthaya district

Patthaya City is positioned as a commercial and tourist base in the eastern seaboard development project under the Sixth National Development Plan. Though another development study on Patthaya City was implemented by JICA in 1978, Patthaya City was expected to function as part of the commercial and tourist base in the eastern seaboard area after the Eastern Seaboard Development Project was commenced in the 1980s. The provision of multiple functions then became necessary, and a new development study was implemented there. Reclamation of the seaboard area; improvement of the beach; and construction of piers, sewage facilities, rain drainage facilities, refuse disposal facilities, and roads were proposed in that project.

ii) Plans for the overall eastern seaboard area -- development of water resources and supply

As the Eastern Seaboard Development Project commenced, it was predicted at the beginning of the 1980s that the demand for water in Thailand would increase. Industrial

development in the eastern seaboard area utilizing natural gas was progressing particularly well at that time, and development of water resources in the eastern seaboard area was urgently required to manage the associated demand for water.

The East Coast Water Resources Development Project was implemented under these circumstances, and construction of reservoirs and dams, waterway facilities, and irrigation and drainage facilities was proposed and studied. The degree of urgency for water supplied to Map Ta Phut was considered to be particularly high in that project, where a natural gas separation plant had been constructed as a base of heavy industries. In response, a detailed design of a water pipeline from the Dok-Krai reservoir to Map Ta Phut was implemented in the Dok-Krai-Map Ta Phut Water Pipeline Project in the East Coast Area.

In addition, it was predicted that the water supply-demand balance would tighten in the future since agricultural development in the eastern seaboard area was also being promoted, and demand for water in the industrial sector was also anticipated as the Fifth Five-year plan commenced. Therefore, the East Coast Water Resources Development Project (Phase II) was implemented. Three dams were constructed in the eastern seaboard area, and water pipelines and irrigation drainage facilities were planned and studied in this project.

According to the forecast of water demand in the East Coast Water Resources Development Project (Phase II), there would eventually be a shortage of water supply in Pathaya. It was therefore decided to construct a water pipeline from Leam Chabang to Pathaya. A water pipeline from the Nong Kho reservoir to the Leam Chabang water receiving well was studied for the Nong Kho - Leam Chabang Water Pipeline Project, based on the expectation of water demand in Leam Chabang and Pathaya.

iii) Plans for the entire country of Thailand but partially related to the eastern seaboard area

While the above projects provided local infrastructure for specific districts, road networks and port management plans cross the borders of individual areas.

The sixth five-year plan incorporated the necessity of establishing policies and plans for linking production bases, markets, and transportation bases; construction and repair of trunk roads; and other elements. The S/W for the Road Development of Central Region was concluded almost concurrently with the commencement of that five-year plan, and it was implemented by utilizing the plans in the transportation sector of the five-year plan. In that project, which covers the whole central area of Thailand except the Bangkok metropolitan area plus two northern prefectures, a new trunk road network (eight routes), an auxiliary road network (23 routes), repair projects (eight routes), and crossing

improvement projects (48 points) were included in the M/P, and the feasibility of the routes that were given high priorities in the M/P were examined further in the F/S. Among these, access roads to the eastern seaboard region and roads in that area were incorporated in the trunk road network (five routes) and repair project (one route).

Toll Highway Development was implemented because the trunk road plans in the Road Development of Central Region by themselves could not handle a future increase in demand for transportation and therefore inter-city highways would be necessary. Construction of a highway network totaling 4,300 km by 2010 is planned in this project. Among these routes totaling 4,300 km, three routes are access roads to the eastern seaboard area or roads in that area.

F/S was implemented for the Inter-City Toll Motorway Project on high-priority routes among the 4,300 km planned in the Toll Highway Development. These routes include two main routes not directly related to the eastern seaboard area.

The Effective Port Management and Operation System, a development study on port operation and management, crosses the borders of individual areas. This development study was implemented to attain greater efficiency in the operation and management of the main ports in Thailand. Proposals were made regarding basic principles of operation and management, basic framework of the administration system, management systems, review of legislation, and improvement of cargo handling methods, and include many proposals concerning the Map Ta Phut and Lam Chabang ports.

Table 2-1-6. Development Project of the Industrial Port on the Eastern Seaboard

M/P	
Industrial development project	Gas separation plant, soda ash complex, fertilizer complex, iron & steel plant, supporting industries, and related industries
Port development project	Volume of cargo, 23 million tons; 45 berths (total length 5,750 m); breakwaters
Urban development project	A new town - Population 71,000 (17,000 households). Area 575 ha.
Basic facilities project	Roads, railways, water supply and sewage, drainage, refuse disposal facilities, power supply and communications facilities
F/S	
Industrial development project	Industrial park - Area: 410 ha (petrochemical complex, fertilizer complex, soda complex). Wharf wall: 820 m.
Port development project	Wharf wall, 850 m; wharf, 280 m; breakwater, 3,000 m; length of berth, 1,750 m; yearly volume of cargo, 400 tons.
Urban development project	Area, 131 ha; population, 18,000 (4,800 households)
Basic facilities project	Roads, railways (extension, 24 km; yearly volume of cargo transport, 2 million tons), water supply and sewage, drainage, refuse disposal facilities, power supply (total demand: 133.5 MW), telephone lines (3000)

Table 2-1-7. Development Project of Leam Chabang Coastal Area

M/P (Long-term plans until 2001)	
Industrial development	Industrial area, 2,100 rai; export-oriented goods manufacturing area, 700 rai (1 rai = 1,600 m ²).
Port development	16 berths; wharf, 1,100 m; wharf area, 258 ha; length of breakwater, 3,070 m
Urban development	Residential area; planned population, 120,000; planned area, 930 ha
Transportation plan	Inter-city trunk roads, intra-city trunk roads, auxiliary trunk roads, block-dividing streets, small streets, connecting roads
Basic public facilities	Water supply and sewage, drainage, refuse disposal facilities, power supply (substations), communications facilities, land reclamation (banking bases, 3 million m ³)
F/S (Short-term plans until 1991)	
Industrial development	Industrial area: 219 ha
Port development	6 berths; wharf, 280 m; wharf area, 116 ha; length of breakwater, 2,400 m
Urban development	Residential area - Planned population, 24,000; planned area, 130 ha
Transportation plan	Intra-city trunk roads, auxiliary trunk roads, block-dividing streets, small streets, connecting roads
Basic public facilities	Water supply and sewage, drainage, refuse disposing facilities, power supply (total demand 88.5 MW), 32 telex terminals, land reclamation, etc.

Table 2-1-8. Development of the Patthaya Area

M/P (until 1996)	
South Patthaya seaboard reclamation project	Reclamation project with a total area of 19 ha
Tourist port construction project	Construction of a pier for tourists, terminal building, pier for high-speed boats, and boat yard
Improvement of Patthaya beach	Beach expansion project
Ta-Van pier	Construction of a pier beside TaVan beach on Ko Lan Island
Sewage project	Emergency projects in the Na Klua district and Jomtien district and expansion of existing facilities in the urban area of Patthaya
Rain water drainage project	Conservation of rivers and provision of water collection facilities
Water supply project	Raw water pipeline, pump plant, filtration plant, waste water treatment facility
Refuse disposal facility project	Sanitization of the reclaimed land, construction of the ultimate disposal facility
Road project	Expansion and arrangement of Patthaya 3 Roads

Table 2-1-9. Establishment of a Large Repair Shipyard

F/S	
Dry dock	175 m x 28 m x 11.1 m on reclaimed land with an area of 300 m x 300 m = 90,000 m ² ; mooring wall, 150 m

Table 2-1-10. Measures to Promote the Container Handling System through Leam Chabang Port

M/P (target year = 1996 (short term), 2001 (long term))	
Construction of ICDs (Long term)	6 ICDs (300 rai)
First-phase plan (short term) of the above	4 ICDs (container freight station, container yard, loading-unloading equipment, parking area, container gate, management office building, maintenance shop), branch line of railway, management zone (main office, 1,200 m ² ; over-time cargo warehouse, 2,100 m ²) (200 rai)

Table 2-1-11. East Coast Water Resources Development Project

F/S	
Nong Burai sub-project	
Reservoir and dam	Accumulated area, 426 m ² ; total storage capacity, 200,700,000 m ³
Water pipelines	Between Dok-Krai and Map Ta Phut, between Map Ta Phut and Sattahip, between Dok-Krai and Leam Chabang
Irrigation and drainage systems	Irrigation area, 3,600 ha; extension of irrigation channel, 46.2 km (trunk channel), 20 km (branch channel)
Ban Bung sub-project	
Reservoir and dam	Accumulated area, 53 m ² ; total storage capacity, 21,900,000 m ³

Table 2-1-12. East Coast Water Resources Development Project (Phase II)

F/S	
Kron Ruan	Multipurpose dam, water pipeline between the dam and Chon Buri, irrigation drainage facilities
Kron Yai	Multipurpose dam, water pipeline between the Nong Burai dam and the Nong-Kho dam, irrigation drainage facilities
Kron Tap Ma	Multipurpose dam, irrigation drainage facilities

Table 2-1-13. Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area

D/D	
Between Dok-Krai and Map Ta Phut	Intake facility, pipeline, head tank, reservoir

Table 2-1-14. Nong Kho - Leam Chabang Water Pipeline Project

F/S	
Water pipeline	Between Nong Kho and the turnout, and between the turnout and the water receiving well
Turnout	Water conveying pipe, gate valve
Pipe beam	27.5 x 900 mm
Water receiving well	63.3 (W) x 4.4 (H) x 16.4 (L)

Table 2-1-15. Road Development in the Central Region

M/P	
Trunk road network	8 links, 288.8 km
Auxiliary road network	33 links, 718.2 km
Repair project	8 links, 206.8 km
Crossing improvements	48 points
F/S	
Trunk road network	7 links, 320.3 km
Auxiliary road network	11 links, 297.2 km
Repair project	3 links, 96.7 km

Table 2-1-16. Toll Highway Development

M/P	
1st phase (1991 to 1995)	900 km
2nd phase (1996 to 2000)	1,000 km
3rd phase (2001 to 2010)	2,400 km

Table 2-1-17. Inter-City Toll Motorway Project

F/S	
Between Rang Bang and Dosaiket	5 interchanges, 2 tunnels, 30 bridges, 35 elevated bridges
Between Bang Bong and Chaam	8 interchange junctions, 111 bridges, 21 elevated bridges

Table 2-1-18 Effective Port Management and Operation System

Development studies on management systems of ports
Proposal of basic principles for managing and operating ports
Proposal of the basic framework for the administration of ports
Practical proposals on a management system for international ports
Proposal on the review of legislation on ports
Proposals for improving loading-unloading methods

2-1-2 Implementation Stage of the Development Studies

(1) Necessity of Implementing Development Studies

The studies that were implemented for the development of the eastern seaboard area can be said to have been timely, as they were in line with actual needs at the time of their implementation.

The development studies were implemented convergently in the eastern seaboard from 1981 to 1990 by the Thai Government in the first phase of the Eastern Seaboard Development Project. According to the Office of the Secretary for the Eastern Seaboard Development Committee (OESB), the objectives for the first phase were as follows:

- i) to distribute economic activity from Bangkok to the eastern seaboard by the creation of employment and housing
- ii) to increase international competitiveness by linking the industrial base with the international transport network

The choice of these objectives reflects the particular circumstances when the eastern seaboard development project was instigated. The following three reasons can be cited as background to the promotion of the eastern seaboard development project:

First, Thailand aimed to remove its dependence on imported energy by utilizing natural gas, one of its own resources, for power generating plants, cement plants and transportation and, further, to reduce imports of intermediate goods by developing heavy and chemical industries that utilize natural gas.

Second, industrialization in Thailand consisted mainly of industries that produced substitutes for imported consumer goods for the domestic market but which imported raw materials and intermediate goods. There was a fear of an over-concentration of industry in Bangkok since there was a tendency for industries to concentrate around the city, which had an entrepôt port.

Third, because of the promotion of import substitution in Thailand, industrialization for overseas markets had been delayed, and the need for the development of export-orientated light industries was apparent.

This was the background to the promotion of the Eastern Seaboard Development Project and the implementation of the development studies. In keeping with the requirements of the time, development studies were implemented on industrial areas and port development in Map Ta Phut (a base for heavy and chemical industries) and Lam

Chabang (a base for export-orientated light industries)³, with additional development studies on a series of water resource development/water supply projects to meet the demand for water by industrial development⁴.

In 1985, after the implementation of development studies, the Thai Government decided to freeze the Eastern Seaboard Development Project in order to give priority to the stabilization of the financial situation when the debt repayment rate lowered. However, a decision to continue the project was made later on, at the ministerial level. Furthermore, since direct investment increased rapidly after 1986, in response to the Plaza Accord, it was considered to be an urgent necessity to bring about direct investment through promotion of industrial areas and industrial ports.

Where demand for a large volume of land transport was predicted, due to the promotion of the development of eastern seaboard area and increase in direct investment, the provision of an adequate road network was implemented.

In the latter half of the 1980s, development studies for upgrading common national roads⁵ were implemented and, thereafter, in the 1990s, development studies on the toll highway network⁶ were implemented.

³ "Development Project of the Industrial Port on the Eastern Seaboard" and "Development Project of Leam Chabang Coastal Area".

⁴ "East Coast Water Resources Development Project", "Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area", "East Coast Water Resources Development Project (Phase II)" and "Nong Kho - Leam Chabang Water Pipeline Project".

⁵ "Road Development of the Central Region"

⁶ "Toll Highway Development" and "Inter-City Toll Motorway Project"

Table 2-1-19. Chronological Implementation of the Targets of the Evaluation Study

		80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
Water resource Development / water supply	East Coast Water Resources Development Project		■													
	Dok-Krai - Map Ta Phut Water Pipeline Project in the East Coast Area		■													
	East Coast Water Resources Development Project (Phase II)			■												
	Nong Kho - Leam Chabang Water Pipeline Project				■											
Development in Map Ta Phut	Development Project of the Industrial Port on the Eastern Seaboard			■	■											
Development in Leam Chabang	Development Project of the Leam Chabang Coastal Area				■	■										
	Establishment of a large Repair Shipyard					■										
	Measures to Promote the Container Handling System through Leam Chabang Port									■	■					
Development in Patthaya	Development of the Patthaya Area										■	■				
Improvement of road network	Road Development of the Central Region									■	■					
	Toll Highway Development											■	■			
	Inter-City Toll Motorway Project														■	■
Port management	Effective Port Management and Operation System								■	■						

(2) The System of Cooperation between the Survey Team and the Counterpart

It can be judged that the development studies applied to the eastern seaboard area were implemented relatively well. Because the development studies, as targeted by this evaluation study, were implemented in a large framework of eastern seaboard development projects, clearly established by the Thai Government as a national project, the support system was sufficient. We consider this was because high expectations were attached to the development studies at that time.

However, it is true that less importance was placed on the transfer of technology. Because the eastern seaboard development project, which commenced full scale at the beginning of the 1980s, had been implemented by focusing on infrastructure, the studies were expected to serve as blueprints, and, indeed, they appear to concentrate on the provision of infrastructure. Therefore, less importance was placed on the transfer of technology and skills, assuming that development studies are a kind of technical cooperation. However, this can be said with regard to all development studies implemented in Thailand, because development studies as technical cooperation, i.e. the transfer of technology and skills, were not strongly required by the Thai side during the

implementation of development studies. Because most of the operational work for the development studies in Thailand was generally implemented by the Japanese team, many were of the opinion that the development studies were implemented with little importance attached to the transfer of technology/skills to the Thai team.

According to the DTEC, it is partly influenced by the attitude of related organizations as to whether they place importance on the preparation of reports. Indeed, development studies are often understood to be the same thing as the F/S implemented by international organizations, where the implementation of development studies is itself the objective.

Though some hold the opinion that the transfer of technology and knowledge to the Thai team was not sufficient, it does not mean that the Thai Government was not positive. On the contrary, the Thai Government has engaged positively in the development of each area according to a large framework of eastern seaboard development. It is also a fact that ownership on the Thai side is firm and their positive attitude has been shown clearly. With regard to communication between the Japanese and Thai sides during the implementation stage, most people say that communication was sufficient and thus no problems were found. The positive attitude of the Thai side can be confirmed from the fact that, in addition to formal meetings for completion of the inception, progress, and interim reports, informal meetings were held frequently between the Thai and Japanese teams.

(3) Establishment of a System for the Utilization of the Results of Development Studies by the Counterpart Government

By the positive efforts of the Thai Government, a structure for utilization of the results of development studies was already in existence during the implementation stage. Furthermore, in view of the fact that the degree of utilization of the results of the development studies is very high, as stated later in the section on 'Impact', it can be said that there were high expectations for the development studies implemented by the Japanese team and the system for utilization of results was sufficient.

Against this background, it can be said that the Eastern Seaboard Development project was the first large-scale industrial development project in the country to be instigated by the initiative of the Thai Government, and from the beginning it was a project that was implemented under their ownership.

Taking a general view of the situation in the 1980s, when the development studies were implemented, with regard to the structure of the Thai Government, the system for implementing a full-scale development of the eastern seaboard can be traced back to the installation of the Committee to Develop Basic Industries on the Eastern Seaboard

(CDBIES), after the organization of the Plem cabinet in 1981. The importance of the Eastern Seaboard Development Project was recognized when the CDBIES was later developed into the Eastern Seaboard Development Committee (ESDC). Mr. Plem, the Prime Minister, took the chair of the Eastern Seaboard Development Committee himself in 1981 and the basic policies of the development of the eastern seaboard were decided by this committee. Under the Eastern Seaboard Development Committee, sub-committees in charge of investment, finance and social education were installed. Implementation policies for concrete projects were studied while coordinating with related ministries and agencies, as well as with implementation organizations.

Additionally, the Center for Integrated Plan of Operation (CIPO), the Office of the Secretary for the Eastern Seaboard Development Committee, was established as an internal organization of the National Economic and Social Development Agency to promote the formation of the project. Thereafter, as the Eastern Seaboard Development Project progressed, the Office of the Eastern Seaboard (OESB) was newly established in 1985 and, while taking over operations under the control of the CIPO, was given the authority to supervise directly the implementation organizations in each field of the Eastern Seaboard Development Project. The OESB still plays its role as the core organization for promoting the implementation of the Eastern Seaboard Development Project.

Because of 1980s structural enhancement where development studies were implemented, the projects proposed and examined as a result of development studies can be developed in their post-implementation stage after being subjected to further careful examination with regard to budgetary and feasibility considerations.