Thailand

Alleviating Regional Disparities between the Bangkok Metropolitan Area and the Northeast Region: A Case Study of the Kingdom of Thailand

Project Sites Northeast Thailand

1. Background and Objectives of Evaluation

There are significant disparities between metropolitan areas and rural regions in middle-income countries and newly industrialized countries. Regional disparities are particularly noticeable in the initial stages of economic development. Large disparities can be observed in the middle-income countries with particularly rapid economic growth.

As an unprecedented empirical study by K.G. Myrdal and S.S. Kuznets in the 1950s [1] showed, the developed countries' experiences prove that the income gap among individuals or income groups tends to widen from the initial stage to a certain stage of economic development.

A similar phenomenon can be seen with regional disparities. Many developing countries have been concentrating on necessary resources (e.g., human resources, capital, and information) in metropolitan areas as means of dealing with international competition. Whereas rural areas play an important role as suppliers of human resources and raw materials, those areas have been left behind from the development process. Disparities between metropolitan areas and rural areas widen not only in terms of income, but also in accessibility of social capital and social services such as education and medical care.

Thailand is a middle-income country with serious disparities between metropolitan areas and rural regions. Since the 1960s, Thailand has achieved remarkable economic growth increasing its national income. However, while the Bangkok Metropolitan Area [2] achieved todays prosperity, the rural areas have become impoverished. The inequality of income distribution and distortion of economic structure are now recognized as social problems in Thailand.

This study evaluated how JICA's projects that had been implemented in various sectoral fields (hereafter 'areas') contributed to redressing disparities between the Bangkok Metropolitan Area and rural areas. Therefore, this study targeted the region with the lowest income in Thailand, the Northeast [3]. The study started by analyzing the situation of the disparities and their cause and structure, and then evaluated JICA's projects implemented in the region. The study discussed the issues against capacity-building off the local population, and suggested how JICA should act to redress the regional disparities.

2. Evaluated Projects

Targeted projects are shown in Table 1.

3. Members of Evaluation Team

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1) K.G. Myrdal, *Economic Theory and Underdeveloped Regions,* Harper and Row, 1957; S.S. Kuznets, "Economic Growth and Income Inequality," *American Economic Review*, 45(1), pp.1-28, 1955. According to Myrdal, in the development process, as market principles begin to work, regional disparities widen. He suggested that this is caused by the fact that economic activity, transportation, trade, universities and economic bodies all center in cities. (Myrdal, op. cit., pp.23-38.)

2) According to the definition given by the National Economic and Social Development Board (NESDB), the Bangkok Metropolitan area consists of the Bangkok Metropolis and surrounding areas such as Samut Prakan, Pathum Thani, Samut Sakhon, Nakhon Pathom, and Nonthaburi.

3) Thailand's northeastern provinces are Amnat Charoen, Buri Rum, Chaiyaphum, Kalasin, Khon Kaen, Loei, Maha Sarakham, Mukdahen, Nakhon Phamom, Nakhon Ratchasima, Nong Bua Lam Phu, Nongkhai, Roi Et, Sakon Nakgon, Si Sa Ket, Suin, Ubon Ratchalhani, and Udon Thani.

Table 1 Evaluated Projects

Sector	Scheme*	FY	Official Names of Projects	Implementing Institution (at time of cooperation)
Macro-economics	M/P	1991～1993	Regional Development Plan for the LowerNortheastand the Upper East Region in the Kingdome of Thailand	National Ecconomic and Social Development Agency
Infrastructure	GAC	1989～1990	Project for Bridge Construction in Northeast Thailand	Public Works Dept., Ministry of Interior
	M/P F/S	1981～1982 1984～1985	Road Development in the Northeast Region Road Development in Northeast Thailand (Phase 2)	Dept., of Highways, Ministry of Transport and Communications
Agriculture & Forestry	PTTC	1984～1991	Agricultural Cooperative Promotion Project	Cooperative Promotion Dept., Ministry of Agricultural Cooperatives
	PTTC	1992～1996	Reforestation and Extension Project in Northeast Thailand	Royal Forestry Dept., Ministry of Agricultural Cooperatives
Vocational training	GAC PTTC	1977 1977～1981	Project for Establishment of the Institute for Skill Development in Northeast Thailand nstitute for Skill Development in Northeast Thailand Project	Labor Dept., Ministry of Intemal Affairs (presently, Skill Development Dept., Ministry of Labor and Social Welfare)
	GAC PTTC	1987～1988 1988～1993	Project for Establishment of the Ubon Institute for Skill Development The Ubon Institute for Skill Development Project	
Health and medical care	GAC PTTC	1982～1984 1982～1989	Project for Establishment of the PHC Training Center The ASEAN Training Center for Primary Health Care	Ministry of Public Health, Mahidol University
	PTTC	1991～1996	Community Health Project in the Kingdom of Thailand	Office of Permanent Secretary Health Planning Div., Rural Health Div.

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4. Period of Evaluation

(1) Macroeconomics Group

Preliminary study: 29 October − 8 November 2000
Full-Scale study: 4 − 14 December 2000
Follow-up study: 10 − 24 March 2001

(2) Infrastructure Group

Preliminary study: 29 October − 8 November 2000
Full-Scale study: 28 January − 10 February 2001

(3) Agricultural Group

Preliminary study: 4 − 19 November 2000
Full-Scale study: 16 − 18 December 2000

(4) Vocational Training Group

Preliminary study: 30 October − 16 November 2000
Full-Scale study: 17 − 30 December 2000

(5) Health and Medical Care Group

Preliminary study: 31 October − 8 November 2000
Full-scale Study: 3 − 13 February 2001

5. Methods of Evaluation

JICA has used external institutions to carry out evaluation from 1999. This evaluation study was the first to be entrusted to an academic society. The Japan Society for International Development (JASID) is an academic society established in 1990 primarily consists of researchers in the international development field. JASID selected evaluation mission members in terms of two specialties; regional knowledge (East Asian Countries including Thailand) and field study or evaluation study experience.

The preliminary study, main study, and follow-up study were implemented in each of the five areas: macroeconomics, infrastructure, agriculture and forestry, vocational training,and health and medical care; and the evaluation team was dispatched 11 times during the study process. Local consultants were also used to conduct questionnaire surveys.

JICA generally conducts its own project evaluation

study along with the five evaluation criteria recommended by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation Development (OECD). However, it is rare to see long-term development plans that describe specific quantitative goals, even though the plans include development scenarios and projects. Therefore, there are many cases in which it is difficult to conduct a comparison analysis using indicators measuring achievement. In these cases, five criteria could not simply be adopted for use in evaluation.

Thus, this evaluation study only partially used the five criteria. For cases where it is difficult to adopt five evaluation criteria, a new concept and methodology for evaluation analysis was introduced. The framework will be introduced later together with the analysis for the macroeconomic field.

6. Structure of Evaluation Study Report

Evaluation surveys have been conducted on 13 projects in the following five fields: macroeconomics, infrastructure, agriculture and forestry, vocational training, and health and medical care. Six of the projects were project-type technical cooperation, four were grant aid cooperation, and three were Development Studies. The evaluation targeted projects with different cooperation schemes. This study premised that the targeted projects had a similar overall goal, "to redress disparities between metropolitan areas and the Northeast region," regardless of each project's intention during the planning process.

First, the study examined the disparities between Bangkok and the Northeast region, and then analyzed and evaluated the interim output and impact of the Lower Northeast and the Upper East Region in the Kingdom of Thailand (hereafter "Master Plan"). This Master Plan was one of the evaluation-targeted projects in the macroeconomic field of the study, and the new evaluation framework was used for analysis and evaluation. Based on the results of the analysis, the study pointed out future constraints against redressing regional disparities and recommended appropriate pro-poor policies. This summarizes the evaluation study.

Following this, areas other than macroeconomics were analyzed respectively.

In the field of infrastructure, the study conducted ex-post evaluation on the "Project for Bridge Construction in Northeast Thailand" and the "Road Development in the Northeast Thailand (Phases I and II)" projects, and recommendations were made based on the evaluation. In the field of agriculture and forestry, evaluation analysis and recommendations were made from the "Reforestation and Extension Project in Northeast Thailand" and "Agricultural Co-operative Promotion Project." In the field of vocational training, evaluation analysis of the "Institute for Skill Development in Northeast Thailand" and the "Ubon Institute for Skill Development Project" were conducted. Through the evaluation, various problems of the vocational training center, future issues regarding Thailand's education system and workplace were considered, and recommendations for policy were made. Finally, in the field of health and medical care, evaluation analysis was conducted and recommendations were made for the "ASEAN Training Center for Primary Health Care" and the "Community Health Project."

7. Experimental Study and Recommendations Regarding Alleviating Regional Disparities between the Bangkok Metropolitan Area and Northeast Region

(1) State of Disparities between the Bangkok Metropolitan Area and Northeast Region

1) Difference in GRP Per Person

The Northeast region corresponds to about one-third of Thailand, and the total population of its 19 provinces in 2000 was 20.76 million, equivalent to approximately 34% of Thailand's total population. Figure 1 shows the regional disparities per-capita GRP [4]. The figure gives a value of 1 to the per-capita GRP in the Northeast region, and expresses the magnification of the value of other regions.

Figure 1 shows that Bangkok has the highest GRP per person, and the Northeast the lowest. With rapid growth in the late 1980s, disparities between these regions began growing, and Bangkok's GRP per person increased from 5.3 times that of the Northeast in 1975, to 9.8 times in 1993. According to existing research results, during Thailand's high growth period the country had solid contributions from foreign countries in the form of direct investment from the private sector, exports, and income from tourism [5]. The presence of this external factor in each region determined the

[4] GRP (Gross Regional Product) per person not only indicates the income of residents, but also includes the income of companies and governmental departments.

[5] During this period, the Thai government prioritized and aggressively pursued the acquisition of foreign capital. Including Japanese companies, most foreign investment concentrated in Bangkok and its environs, with the center for exports and imports being Bangkok's Chao Phraya River.

degree of regional disparities [6].

From the mid-1990s, when Thailand's bubble economy came to a burst, the disparity in the two regional incomes narrowed. By shifting out some of the government's functions, promoting foreign investment and tourism in outlying regions, and decentralizing foreign capital policies enacted by the Board of Investment (BOI), the disparity between both regions contracted to 8.2 times in 1998.

2) Comparison of Industrial Structure

The difference in industrial structure is one of the causes of the income gap between the metropolitan area and the Northeast region. The key industry in the Northeast is agriculture, mainly rice cultivation. On the other hand, Bangkok has the largest share of the manufacturing industry, with a 40% share of value-added production. In other words, Bangkok has the highest percentage of industries that are value-added businesses, while the Northeast region has the highest percentage of agriculture, which is with low added value [7].

This suggests that the income gap between these two regions could be caused by discrepancies in the added value of the industries on which they rely.

3) Population Structure and Characteristics of Urbanization

Thailand's urban population account for 21% of the overall population in 1999, which is not high compared to other Asian countries [8]. However, there are significant differences in the percentage of urban populations in each region, according to 1999 statistics. In the Bangkok metropolis, more than 85% of the households reside in urban areas, while less than 10% are city residents in the Northeast. In the Northeast, 80% of household incomes derive from life in a rural village, which is prominent against the population structure in Bangkok.

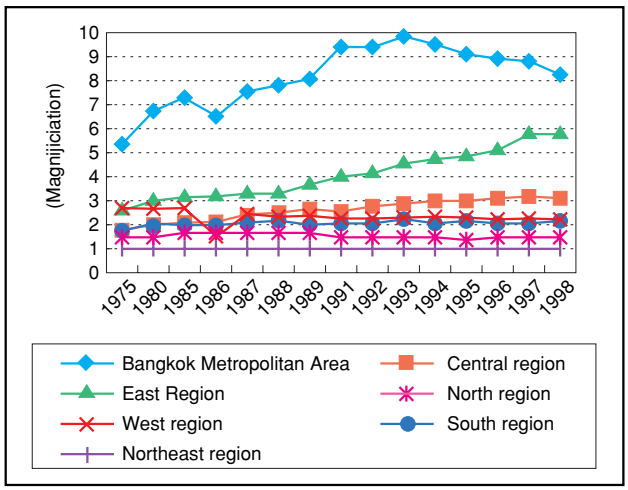
A comparison of birth and mortality rates in Bangkok and the Northeast show that the Northeast has a lower birth rate than that in Bangkok, but a higher mortality rate. As a result, since the mid-1980s, Bangkok's natural population growth has been higher than that in the Northeast, while, the Northeast population has been aging. These factors influenced differences in the regions' industrial structure, productivity, and vitality.

4) Disparities in Living Standards and Social Indicators

As described above, after the burst of the economic bubble in the mid-1990s, income disparities between Bangkok and the Northeast narrowed, but other social indicators still show that a large gap remains. For example in Bangkok, the amount of energy consumption per person was 14.1 times that of the Northeast region and the total savings per person was 22.6 times in 1996.

By examining social indicators, the disparities between the two regions can be seen more precisely. Table 2 shows that the living standard in the Northeast region is extremely low compared with that in the

Figure 1 Regional disparities in GRP per capita



Souce：1975-1985 NESDB, Gross Regional and Provincial Product, each year, and others

Cooperatives in Northeast Region - Cooperative Cultivation of chili peppers "Agricultural Cooperative Promotion Project"

6) Disparities between the two regions were at their most extreme in 1993, when the economy was in its bubble period and regions left behind by the bubble showed widening disparities.

7) However, in the northeast regions, despite reliance on agriculture, income from agriculture only comprised 10.8% of the total household income.

8) Other countries showed a high percentage of urban population; 57% in Malaysia, 58% in the Philippines and 40% in Indonesia.

Table 2 Social Indicators for Bangkok Metropolis and Northest Region

	Doctors per person			Nurses per person			Public phones per 1,000 people			Phone lines per 1,000			Population per a car		
	Bangkok	North-east	Gap (x)	Bangkok	North-east	Gap (x)	Bangkok	North-east	Gap (x)	Bangkok	North-east	Gap (x)	Bangkok	North-east	Gap (x)
1987	–	–	–	–	–	–	1.75	0.07	25.0	3.25	0.32	10.2	–	–	–
1988	519	12,128	23.4	211	3,920	18.6	1.72	0.08	21.5	8.24	0.34	24.2	9.8	355.9	36.3
1989	436	11,691	26.8	174	3,631	20.9	1.68	0.09	18.7	9.30	0.38	24.5	11.4	431.8	37.9
1990	443	11,175	25.2	173	3,280	19.0	1.74	0.11	15.8	10.83	0.44	24.6	8.9	397.6	44.7
1991	455	10,690	23.5	188	2,888	15.4	1.90	0.14	13.6	12.30	0.55	22.4	8.9	355.2	39.9
1992	440	10,526	23.9	178	2,748	15.4	2.11	0.19	11.1	13.74	0.69	19.9	8.1	327.9	40.5
1993	448	10,751	24.0	178	2,597	14.6	2.32	0.24	9.7	16.52	0.83	19.9	7.4	220.6	29.8
1994	450	10,655	23.7	165	2,443	14.8	2.50	0.27	9.3	17.52	0.93	18.8	6.7	205.9	30.7
1995	–	10,746	–	–	2,233	–	2.89	0.31	9.3	17.66	0.95	18.6	6.5	169.6	26.1
1996	–	10,183	–	–	2,232	–	3.20	0.36	8.9	28.25	1.52	18.6	6.2	143.5	23.1
1997	–	9,754	–	–	2,090	–	3.50	0.73	4.8	46.52	1.83	25.4	5.8	120.7	20.8
1998	–	–	–	–	–	–	4.07	0.97	4.2	30.98	2.04	15.2	5.4	116.1	21.5
1999	–	–	–	–	–	–	5.57	1.29	4.3	31.60	2.16	14.6	5.3	103.2	19.5

Source：NSO, Statistical Reports of Region Bangkok Metropolitan and Vicinity, 1998; NSO, Statistical Reports of Northeastern Region, 2000; NSO, Statistical Data Bank and Information Dissemination Division.

Bangkok Metropolitan Area.

(2) Regional Development Plan for the Lower Northeast and the Upper East Regions in the Kingdom of Thailand: Results of Mid-term Evaluation [9] and New Evaluation Framework

1) Goal for the Master Plan

The Master Plan is a 20 year-development plan extending from 1990 to 2010.

It aims to suggest a development scenario for the low-income Northeast region [10] based on three goals: ① raise the income of regional residents and reduce the disparity between the national average, ② feature usage of land and water resources with environmental concerns and sustainable development, and ③ encourage local residents to participate in the development process.

Table 3 New Evaluation Framework for Master Plan

(1) Relevance of direction and goals
a) Master Plans direction and relevance of goals
(2) Evaluation of plan's progress
a) Achievement evaluation in reference to goals
b) prerequisites and their relevance
c) Development strategies and progress of its scenarios
(3) Plan follow-up and policy issues
a) Were the issues proposed in the plan adopted in Thailand's development and implementation plans?
b) Overall evaluation of achievements at interim stage
c) Future issues of Master Plan study. To what extent did the recipient country's govemment follow up policy discussions and plans?
d) Evaluation method for Master Plan study
(4) Setting up conditions for autonomy and sustainability
a) Environmental considerations
b) Greating conditions for sustainable regional development

2) New Evaluation Framework for the Master Plan

In a long-term development plan such as this, even though development scenarios or projects are described, it is not common for specific quantitative indicators to be given. As a result, it is difficult to compare actual indicators in the evaluation, thus it is also difficult to apply the five evaluation criteria.

In the evaluation study of the Master Plan, a new framework analysis was established using four viewpoints and ten criteria as shown in Table 3

3) Evaluation Results through a New Evaluation Framework

a) Relevance of direction and goals

① The goal and direction of the Master Plan meets the requirements of the Thai government, therefore it is considered relevant. However, the true objective for Northeast regional development was the alleviation of poverty, but the plan did not give enough consideration to the poor and to the development of the resident's capacity.

9) Since this evaluation study fell in 2000, the wedium of the master plan period of 1990 to 2010, it is called the "interim report."

10) The master plan targets the Northeast region's seven southern provinces of Ubon Ratchalhani, Mukdahen, Yasothon, Suin, Si Sa Ket, Buri Ram and Nakhon Ratchasima as well as the northern provinces of Prachin Buri and Nakhon).

b) Evaluation of the progress in terms of the plan's implementation

① The economic growth rate in the targeted area, stipulated by the Master Plan, had fallen short of the plan's expectation due to incidents such as the 1997 currency crisis. The suggested scenario has not yet been activated, and as a result the Northeast region still shows lower economic growth than other regions and the productivity of the entire Northeast region has been reduced.

② Due to the currency crisis and the following economic stagnation, the prerequisite of the Master Plan collapsed. The scenario must be revised in the last half of the plan period.

③ The development scenario and direction were established fairly reasonably based on the principle of the growth poles model and reflected regional characteristics, which many field studies had grasped beforehand. However, the progress of the project was not very good.

c) Follow-up of plan and policy issues

① It is difficult to measure the extent to which the principles of the Master Plan were incorporated into Thailand's development plan. With the exception of some projects, government officials in charge did not follow the Master Plan sufficiently. After establishing the Master Plan, future developments should not be simply left to the recipient country; rather, the Japanese and Thai governments should hold policy debates and establish a system for following up the implementing process.

② The achievements and progress at the interim stage were not satisfactory. Since there were many changes in the course of implementing the project, the scenario must be revised in the last half of the project period. As an alternative, the draft of the mid-term development plan should be revised and re-established.

③ In future Master Plan studies, a donor country and the recipient country must set up a system for policy debate, and both must continuously understand the needs of the beneficiaries. A system should be prepared to enable continuous dialogue and instant reaction to the change of needs and conditions.

④ Many complex factors and conditions such as the recipient government's intentions, changes in the external environment and extension of the plan period, have considerable influence in evaluating the Master Plan study. Evaluations cannot simply apply evaluation criteria automatically. It is crucial to consider and analyze outputs using a broad evaluation framework based on a review of the goals and directions.

Pig farm in Phimai "Agricultural Cooperative Promotion Project"

d) Setting up conditions for autonomy and sustainability

① Environmental consideration is one of the goals of the Master Plan, and from the first stages of the plan, land-use, soil conditions, water quality policies, and flood measures during the rainy season were debated. In addition to resource management and natural environmental conservation for sustainable development, the plan should also take into consideration the direction of the future strategy for agriculture development and urbanization problems. Moreover, prior to the implementation of the environmental impact assessment of a project, Strategic Environmental Assessment (SEA) [11] concepts should be included.

② The condition of sustainable regional development is to build the capacity of all actors in the region. The Master Plan has taken the principle of the growth pole model, but to make regional development sustainable, it should concentrate the plan's goal on encouraging the people's participation and honoring the development process.

4) Importance of a Follow-up System

With the current system, after the Master Plan report has been submitted to the Thai government, the

[11] SEA is an environmental assessment that deals with policy planning and programs and is structured to perform a more extensive environmental consideration from an early stage. Introduction of this strategy is discussed.

Japanese government does not follow-up on the progress systematically. When follow-ups such as a dispatch of Japanese experts to governmental agencies and continuation of policy debates are implemented, they raise the effectiveness of the Master Plan. In establishing an important Master Plan, it is necessary to motivate recipient governments for development and to intervene continuously in the implementing process, including technical transfer after establishment of the Master Plan.

(3) Future Issues for Alleviating Regional Disparities: Focus on regional decentralization and supporting local initiative

1) The Necessity of Simultaneous Achievement of Both Economic Growth and Equity

The disparities in regional income mean that − to be extreme − 10% of Thailand's population live in Bangkok to enjoy its prosperity, while the other 90% of the country's citizens live in other regions with no opportunity to demonstrate their capacity, and in poverty with low-quality social services.

If the conditions necessary for drawing out local residents' capacity are improved, more citizens in rural areas can enjoy higher living standards and regional economic activities will regain vitality. This would contribute to economic development of the entire society. To accomplish this, the government needs to establish specific measures to revitalize people who have not fully realized their potential.

2) Progress of Decentralization of Governmental Function and Financial Support

The basic orientation for alleviating regional disparities is to disperse central governmental functions to the regions and equalizing income distribution. In the past Five-year Plan, the Thai government devised a regional development plan and implemented it along with the basic orientation. However, decentralization and equal income distribution still need to be promoted and corresponding governmental mechanisms must be established.

However, Thailand has a structure whereby local governments are subordinated to the central government; for example, provincial governors are appointed by the central government, and central agencies deeply intervene in regional administration. The central government maintains influence over the regions, especially regarding budget allocation and administration. Therefore, revitalizing the regions will not happen merely with financial support from regional tax allocation and government aid. The essential issue is to improve the efficiency of local governmental agencies, and build systems that effectively utilize such financial support. Moreover, this must be accompanied with improved conditions to enable local residents to participate in the development process and sustainable development.

3) Setting up a Support System for Local Initiatives

In the Northeast region, the activities of small-scale NGOs are developing. Among farmers there are cases of self-organization and direct transactions with factories without intermediaries. Some groups of farmers have been successful in switching to crops with higher returns, boosting productivity of vegetables and rice, and raising incomes. In regions with favorable geographical conditions (such as Nakhon Chanma), farmers have further diversified their management to aquaculture.

These developments were assisted by guidance from the Ministry of Agriculture and Cooperatives and aid to cooperatives provided by the Bank for Agriculture and Agricultural Cooperatives (BAAC), and they can also be attributed to the farmers' awareness towards profitability. This can be considered as the start of local initiatives. These facts indicate the necessity of establishing a support system that focuses on local initiatives and ensures the motivation of self-help and self-management.

Local residents trying to undertake initiatives need temporary support from the central government. Grassroots movements concerned with environmental problems and improving of living standards are linking residents of the center and the Northeast region. This kind

Market held on the 'Agricultural Cooperative Promotion Day' "Agricultural Cooperative Promotion Project"

of continuous exchange between the central and regional residents will raise the awareness of the people. When the participation of regional residents in the development processes is low, it is extremely important to rethink the significance and the role of local initiatiives and that support for this be extended.

8. Results of Sector Evaluation

(1) Field of Infrastructure: Outcome for regional development by road and bridge construction projects

This section evaluates road sector projects implemented by JICA in the Northeast region. The targeted projects are a grant aid cooperation, the "Project for Bridge Construction in Northeast Thailand" and a development study, the "Road Development in the Northeast Region " (Phases I and II). The five evaluation criteria were used for the evaluation.

1) Evaluation of the "Project for Bridge Construction in Northeast Thailand"

a) Relevance

This project was implemented in line with one of the priority development issues regarding regional development under the Sixth National Development Plan (1987 − 1991). The project particularly aimed to contribute to road construction in the less developed Northeast region. Currently, from the perspective of redressing income disparities between Bangkok and regional areas, the Thai government has been considering the Northeast region as a priority development region. Thus, this project is still extremely relevant.

However, although priority was given to less-developed regions for bridge construction, the strategy of improving income levels in the entire Northeast region was not considered. As the plan's overall goal did not explicitly redress regional disparities, it was not particularly relevant in efficiently redressing income disparities between Bangkok and the Northeast.

Huai Khum Mum bridge build through the 'Project for Bridge Construction in Northeast Thailand'

b) Effectiveness

Because bridges were constructed, people and vehicles could safely cross the river even during the rainy season, and transportation became more convenient. The improvement has not only provided benefit for residents around the bridges, but also dramatically decreased travel time and distance.

According to the traffic volume survey in 1999, almost all 26 checkpoints on bridges measured 1.5 times more than the expected volume. This shows that the project purposes were adequately achieved.

c) Efficiency

The project constructed 51 steel girder bridges, and the construction period and budget were within the initial plan. There were no problems concerning efficiency, However, Thailand's input to the projects were not made certain through this evaluation study. In conducting terminal evaluation of grant aid cooperation in the future, inputs of the counterpart country should also be researched. It should be noted that as Thailand depends on imports for all of its steel, it makes the steel bridges are extremely expensive to constroct.

d) Impact

People have pointed out the following impact of the bridge construction project: ① reduction in transportation costs, ② reduction in transportation costs for the input goods led to improved agricultural productivity, ③ improvement in agricultural productivity and increase in the amount of production, ④ cropping of cash crops increased, ⑤ reduction of the price of consumables due to lower transportation costs, ⑥ access to workplaces improved, so opportunities for work improved, ⑦ access to schools, hospitals, and administrative services improved, so the quality of life improved, and, ⑧ increased agricultural production and more job opportunities meant that disparities between the Northeast and other regions lessened. These results show that the impact of this project is very high.

e) Sustainability

The Ministry of Internal Affairs' Public Works Department (PWD) monitors the 26 bridges once a year. However, according to PWD staff, since there is no steel bridge technicians, monitoring is not accurate.

2) Evaluation of the "Road Development in the Northeast Region" (Phases I and II) Project

The development study consisted of a master plan and feasibility study. The master plan was established to select roads where high-priority development was needed and followed by a feasibility study. Most of the recommendations in the master plan and feasibility study have been put into effect by the Thai government.

a) Relevance

In this evaluation study, as most of the recommended projects in the master plan and feasibility study have been materialized, the relevance of the master plan and feasibility study was evaluated by assessing the impact of the constructed roads. The direct impact from the maintenance of the road network is seen in agricultural development in the Northeast region. In the plan, it was assumed that road construction would increase the use of chemical fertilizers. However, since the lack of knowledge on fertilizers was not resolved, and the excessive use of fertilizers contaminated the soil, production decreased and the production cost increased. As expected in the master plan and the feasibility study, due to the improvement of the roads, production shift to cash crop such as sugar canes were promoted. Although anecdotal evidence implied that the expanded market also increased producers' prices, the precise benefit to agricultural development was not very clear.

The road construction improved traffic conditions, and as a result, living standards improved. Cases showed that as roads were constructed, public transportation facilities had improved in service, and the social impact expanded.

As a result, road construction achieved expected outcomes, at least in terms of living standards; therefore the development study is very relevant. However, the development study did not adequately foresee the impact on agricultural development, industrial cultivation and income improvement, and it also did not consider the policies needed to promote the impact and prevent negative influence. In terms of these aspects, it was concluded that relevance was low.

b) Effectiveness

The effectiveness looks ① at the adequacy of the review process leading to the srecommendations and ② at the structure and contents of the report. Regarding the first point, the benefit of road construction was measured by economic indicators related to agricultural development, road maintenance, cost of maintenance, and social impact. The evaluation of the structure cannot be given high marks in either the master plan or the feasibility study, due to problems with ① the fact that the master plan was not based on a clear regional development strategy; and ② although the master plan considered the length of road needed to be maintained, a more crucial issue for redressing regional disparity was whether the Thai government would allocate its road budget to the Northeast region. However, the master plan did not refer to this issue.

c) Efficiency

The efficiency of the development study was evaluated on whether ① the study was implemented according to the original scope, ②the input, technical transfer, communications, and data were sufficient, and ③ coordination with other studies and projects was sufficient.

However, as it was not possible to obtain this study's S/W or other work documents, it was not possible to evaluate ① and ②. As for ③, while road-related studies and coordination with projects were sufficient, there was no coordination with fields involving agricultural development and improving the people's livelihood, although the study's objective referred to those issues.

Maintenance of Route 199 'Project for Bridge Construction in Northeast Thailand'