

**STRENGTHENING THE POST-EVALUATION FEEDBACK SYSTEM  
THAILAND: IN-COUNTRY FEEDBACK WORKSHOP  
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**COUNTRY SYNTHESIS OF POST-EVALUATION FINDINGS  
IN THAILAND**

**by**

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**I. INTRODUCTION**

1. The main objective of the Country Synthesis of Post-Evaluation Findings (CSPF) is to identify and analyze the key factors affecting the implementation and operation of the Bank-financed projects so that the lessons learned can be used to improve the design, implementation and operation of future development projects/programs. The CSPF is based primarily on the review of the findings of post-evaluation reports prepared by the Post-Evaluation Office (PEO), including the Project Performance Audit Reports (PPARs), Impact Evaluation Studies and the Country Special Study. It also takes into account the information and data stored in the PEO's Post-Evaluation Information System, including the Abstracts of Post-Evaluation Findings.

## II. BANK OPERATIONS IN THAILAND

2. The Bank commenced operations in Thailand in 1968. As of 31 December 1994, the Bank has provided 68 loans (including 2 loans to private sector without government guarantee) for 65 projects amounting to \$3,144 million, of which 3,072 million was from Ordinary Capital Resources (OCR) and \$72 million from the Asian Development Fund (ADF). Of the total lending, about 49 per cent was channelled to the energy sector, particularly for electricity generation and distribution. The transport and communications sector received the second largest share (30 per cent), mainly for highways, followed by social infrastructure sector (11 per cent). The emphasis of the Bank's support to infrastructure development is reflected by the share of these three sectors (90 per cent) in Bank lending to Thailand. The remaining 10 per cent was distributed to agriculture sector (5 per cent), finance (4 per cent) and industry (1 per cent). Details of the sectoral distribution of the Bank's lending to Thailand is presented in Appendix 1. In addition, the Bank provided technical assistance for 93 projects to Thailand for a total amount of \$25 million, of which \$9 million was for project preparation and \$16 million for advisory purposes.

3. Of the 65 Bank-financed projects, 53 have been completed and 35 have been post-evaluated. Aggregate investment for post-evaluated projects totalled \$2,461 million while Bank financing amounted to \$955 million. The 35 post-evaluated projects were approved between 1968-1985 with majority of them completed during the 1980s (see list of projects in Appendix 2). The sectoral distribution of post-evaluated projects shows that energy has the biggest share (13 projects or 37 per cent), followed by agriculture, social infrastructure, and transport and communications (6 projects or 17 per cent each), finance (3 projects or 9 per cent) and industry (1 project or 3 per cent)

## III. MAJOR FINDINGS AND LESSONS LEARNED

4. This section examines the overall impact and issues by sector and extracts the lessons of experience. A summary of post-evaluation results for 35 projects is given in Appendix 3.

### A. Agriculture and Agro-Industry

5. Of the six post-evaluated projects in the agriculture sector, three were in the irrigation and rural development subsector, two in the fisheries subsector and one in the agricultural support services subsector. All the three projects for irrigation and rural development and one for agricultural support services were considered generally successful while the two fisheries projects were rated partly successful at post-evaluation. On average, the delay in implementing the projects in the agriculture sector was 2.1 years. Major causes of delay included slow delivery of construction equipment, late completion of detailed design, postponement in recruitment and fielding of consultants, weaknesses in project management, remoteness of settlement areas and changes in project scope. Five of the projects had cost underruns averaging 35 per cent and one project had cost overrun of 78 per cent.

## 1. Irrigation and Rural Development

6. The three post-evaluated projects (one each for agriculture development, irrigation and land settlement) cost \$103.6 million including \$37.5 million financed by the Bank. All the three projects were successful in achieving their intended objectives of increasing agricultural output and improving the income and standard of living of poor farm families. The experience of these projects provides the following important lessons:

- (i) integrated agricultural projects which are multidisciplinary and multisectoral in character require built-in provisions for adequate consultant support in institutional development and irrigation management;
- (ii) irrigation projects should be formulated and designed in the context of a comprehensive basin development program;
- (iii) rapid adoption of technology without commensurate expansion of field extension services is feasible where adequate price incentives exist and market forces determine the relative profitability of crops; and
- (iv) project design and implementation schedules for complex rural development projects should be realistically determined taking into account the past experience and institutional capability of the executing agencies, the remoteness of the areas and the peace and order situation.

## 2. Fisheries

7. Two fisheries projects with a combined cost of \$67.4 million were post-evaluated. One project was aimed at improving the socioeconomic conditions of fishermen and at increasing exploitation of pelagic resources through modernization of fishing vessels and provision of complementary onshore facilities such as refrigeration complexes, refrigerated truck and other auxiliary equipment. The other project was intended to increase shrimp and fish production through provision of credit to farmers for promotion of aquaculture. The two projects underwent significant changes in scope resulting in considerable implementation delays of three and five years, or 138 per cent and 100 per cent longer than originally estimated, respectively. Because of optimistic assumptions, deficiencies in project designs and inexperience of the executing agencies, these two projects were partly successful in meeting their objectives. Under the marine fishery project, although the vessels provided helped increase fish production and income of fishermen, the onshore and marketing facilities were not used to distribute fish to the deficit areas as intended. The aquaculture project did not achieve benefits at the expected level and caused negative environmental impacts in terms of degradation of the coastal ecosystem due to a large-scale conversion of mangrove areas into aqua-farming and discharge of the nutrient laden effluent from shrimp farms. Major lessons learned from the experience of these projects are the following:

- (i) the capability of the executing agencies in relation to the magnitude of the tasks to be performed must be carefully assessed at appraisal and expectations should be modest and in conformity with the institutional capabilities and financial resources of executing agencies;

- (ii) there is a need to undertake prior to appraisal detailed market studies relating to the demand and supply situation for project outputs;
- (iii) flexibility should be reflected in the project design particularly if the design concepts are unproven; and
- (iv) the need to address the negative environmental impacts of a project at the time of appraisal.

### **3. Agricultural Support Services**

8. The only post-evaluated project in this subsector was designed to provide credit facilities through an agricultural development finance institution (DFI) to assist farmers in acquiring fertilizers and farming equipment to increase farm productivity in support of the Government's land use intensification and crop diversification programs. The Project, costing about \$34 million was implemented fairly efficiently. It was able to enhance the overall supply of fertilizer in the country, contributing to the expected increment in paddy yield at the farm level and benefitting substantially more farmers than expected. The major factors accounting for the Project success were the strong institutional capability and the Government's commitment to implement agricultural credit policies which enhance the growth of the farm sector.

9. The Project, however, was prematurely terminated and about \$22 million or 44 per cent of the approved loan amount was cancelled because the executing agency incurred heavy loss as a result of the depreciation of the local currency against the major foreign currencies provided under the Project. The experience of this project indicates the importance of addressing the issue of protecting the executing agency against foreign exchange risk at the time of appraisal. Suitable mechanisms should be considered to allow agricultural DFIs to adequately cover and hedge against foreign exchange losses for projects under Bank financing.

### **B. Energy**

10. The energy sector accounted for 13 of the 35 post-evaluated projects; 12 in the power subsector and one in the natural gas subsector. All the projects were found to be economically viable and judged to be generally successful in achieving their intended objectives of promoting economic development of the country through: (i) substitution of imported energy fuels with indigenous energy resources such as hydropower, natural gas and lignite; (ii) reduction in the cost of power generation; (iii) improved reliability and sufficiency of electric power supply to industrial and domestic consumers; and (iv) acceleration of the Government's rural electrification. Despite their success, the projects in the energy sector experienced an average implementation delay of two years. The major causes of delays were changes in project scope, land acquisition and right-of-way problems, late completion of detailed design, late delivery of materials and equipment, prolonged procurement procedures, poor construction scheduling, technical problems and unsatisfactory performance of contractors. Six of the projects were completed with cost overrun averaging 35 per cent while the remaining seven projects had cost underruns averaging 24 per cent.

## **1. Electric Power**

11. The 12 post-evaluated projects were distributed among investment in generation (two projects), generation and transmission (three projects), transmission (three projects) and distribution (four projects). The combined costs of these projects were \$1,037 million, of which \$419 million were financed by the Bank.

12. All the 12 projects were successfully completed although some of them experienced time and cost overruns because of inappropriate contract packaging, and delays in completion of project designs, selection of consultants, land and right-of-way acquisition and procurement decisions. Subsequent operation of these power projects have been found to be generally satisfactory. The successful performance of post-evaluated power projects can be attributed to four major factors: (i) the projects were well prepared, being preceded by feasibility studies and rigorous economic analysis; (ii) the institutions involved [Electricity Generating Authority of Thailand (EGAT) and Metropolitan Electricity Authority (MEA)] are relatively autonomous and technically and administratively competent; (iii) the technology transfer process was soundly based on proven technology, well adapted to suit local conditions; and (iv) the Government adopted policies to increase power tariffs and eliminate fuel subsidies, enabling the economy to adjust to changes in oil prices in the international markets.

13. However, post-evaluation findings indicate that the EGAT's lignite-based thermal power plant could result in some environmental problems relating to: (i) disposal of ash; (ii) dust control at the mine; (iii) emission of particulate and gases (sulphur dioxide) caused by lignite combustion; (iv) management of waste water from the mine and the generating plant; and (v) reclamation and revegetation of depleted areas. Although EGAT has adopted preventive and corrective measures to counteract such adverse environmental impacts, constant monitoring would be needed to contain the negative environmental impacts to a minimum level.

## **2. Natural Gas**

14. The only post-evaluated project in the natural gas subsector costing \$44 million was implemented with substantial delay and cost underrun. It remains economically viable although the lack of a long-term pricing policy to provide linkages between alternative fuel prices and the company's price of gas for its major customers such as the power utilities led to a cutback on natural gas consumption and a slowdown in the country's efforts to accelerate substitution of fuel oil by domestic natural gas. The Project highlights (i) the risk of error in geological assessment of gas reserves and the need to invoke more refined, longer and sometimes costly procedures when doubt exists about normal assessment results; and (ii) the importance of early formulation and adoption of a clearcut, long-term gas pricing policy.

## **C. Industry**

15. The only post-evaluated project in the industry sector was designed to: (i) create a mineralization data base that would provide information needed for making project investment decisions and for formulating a mineral development policy; and (ii) strengthen the Department of Mineral Resources (DMR) and upgrade its ability to assist mineral resource development. Despite its slow implementation due to its complexity and inadequate preparation, the project has been

successful in strengthening the technical resource base and know-how of DMR and providing a mineralization data base for assisting the private sector in investment in mineral projects and the Government in formulating appropriate policies with regard to mineral exploitation and development. Post-evaluation experience emphasizes that projects related to mineral resources are technologically complex and require a long-term perspective and close monitoring by the Bank, particularly in the early stages of the project. Such projects should not be undertaken without significant and appropriate institutional strengthening, preferably prior to, or in parallel with, the implementation of the project.

## **D. Finance**

16. The three post-evaluated projects in this sector involved lines of credit amounting to a total of \$19.2 million to support the operation of the Industrial Finance Corporation of Thailand (IFCT), the country's major DFI. These three projects were implemented with a minimum delay of 0.6 year and achieved their respective objectives satisfactorily in strengthening IFCT's foreign exchange resources and its institutional capability and contributing to the country's rapid industrialization. IFCT has become a strong institution being managed and operated efficiently by experienced and competent staff. Its financial performance is sound, its profitability satisfactory, its liquidity position healthy and its arrears low. IFCT has also demonstrated its ability to raise funds from foreign capital markets, a notable development and an indication of maturity. The post-evaluation experience clearly shows that institutional capability plays an important role in the successful implementation and performance of DFI projects.

## **E. Transport and Communications**

### **1. Roads and Road Transport**

17. The Bank has so far post-evaluated four projects in the roads and road transport subsector. The main objective of the assistance was to support the Government's development plan for expanding and improving the national road networks in line with projected traffic growth. The combined investment costs amounted to about \$220 million, including \$115 million financed by the Bank. The three highway projects were well prepared and generally implemented in accordance with their design specifications. However, the Highway Sector Project encountered difficulties in the early stages of implementation requiring major changes in its scope largely as a result of changes in Government policies on transport investments.

18. All the four projects were successful in meeting their objectives of promoting economic development through reduced transport costs which enhanced the growth of agro-industries in the rural areas and induced relocation of manufacturing industries to areas outside Metropolitan Bangkok. In addition, significant progress in the institutional development of the Department of Highways (DOH) and substantial policy accomplishments were made under the Highway Sector Project. However, overloading of vehicles is causing pavement deterioration requiring increased maintenance expenditures. The experience of these projects highlights the following lessons:

- (i) allowance should be made for an overloading factor in designing road

pavements to compensate for the ineffective enforcement of laws against overloading vehicles;

- (ii) the economic impact of road projects would be enhanced if they are implemented in the context of wider regional or agricultural development schemes; and
- (iii) the projects based on sector lending approach could achieve a greater impact on policy and institutional reforms if they are designed to address a limited number of key issues in depth rather than deal with all issues in a broad manner.

## **2. Ports and Shipping**

19. The only post-evaluated port project costing \$75.2 million was designed to develop adequate port facilities at Songkhla and Phuket to accommodate the growing volume of cargo traffic and to encourage the economic and social development of the Southern Region of Thailand. The port facilities were constructed in accordance with the original plan, albeit with delays of two years. The two ports in Songkhla and Phuket have been managed and operated by private sector firms since their completion. However, the expected traffic growth and the anticipated industrial and agricultural development did not materialize resulting in the underutilization of the project facilities. While Songkhla Port is found to be barely viable economically, the volume of traffic at the Phuket Port is unlikely to increase to a level to make it viable. The project was rated partly successful at post-evaluation. The project experience demonstrates that:

- (i) forecast of the potential traffic resulting from a new port should be based on realistic assumptions, taking into account the location, existing trade routes, trading patterns and established business relationships;
- (ii) the establishment of a port project should be based on well-conceived development plans for its hinterland, which are already under implementation or are certain to be implemented with governmental backing; and
- (iii) the possible involvement of the private sector in the operation of a port and the views of the intended operators should be considered in the planning stage.

## **3. Telecommunications**

20. The only post-evaluated project in this subsector (costing \$57 million including \$23 million financed by the Bank) was designed to provide nationwide long-distance public and private telephone services to 1,813 subdivisions or 'tambons' in 72 rural provinces throughout Thailand. The project, deploying the Time Division Multiple Access (TDMA) technology countrywide for the first time, was implemented successfully and was able to provide lines to connect selected remote rural areas to the existing central telephone exchanges, thus providing full access to Thailand's telephone network and international services. The experience of this project highlights the need

for telecommunication projects to be closely coordinated and tightly managed at all stages of implementation to minimize delays and to maximize returns on investment. Also, given the complexity and rapid pace of technological changes in telecommunications and informatics, long-term investment planning must adopt highly flexible strategies and approaches to avoid investment in obsolescent facilities.

## **F. Social Infrastructure**

### **1. Water Supply**

21. The three water supply projects post-evaluated were to support the operations of the Metropolitan Waterworks Authority (MWA). These projects with a total cost of \$701 million formed integral parts of the long-term investment program for the development of the Bangkok water supply system and comprised components for the balanced expansion of water treatment capacity, groundwater development, and transmission and distribution.

22. The first project was rated partly successful because: (i) the deep wells constructed under the project had aggravated subsidence problems in the metropolitan Bangkok area; (ii) the target of reducing non-revenue water (NRW) was not achieved; and (iii) as a result of water losses, cost of production was high, and Government constraints on tariff increases resulted in MWA's poor financial performance. The second and third projects were successful in helping to provide piped water to more than four million people in Bangkok, thereby preventing groundwater abstraction on a large scale by private consumers, which would have accentuated the problem of land subsidence in the metropolitan area. Also the projects helped reduce NRW substantially and strengthen the management capability of MWA through staff training, reorganization and rationalization of operation and system procedures. The significant improvement in institutional performance coupled with the raising of water tariffs have led to marked improvement in MWA's financial position. However, the increased use of water, encouraged by non-economic approach to water pricing, was not accompanied by proper treatment of wastewater produced and this has contributed to the pollution of the river passing through Bangkok. The experience of water supply projects highlights the importance of progressively promoting institution-building for enhancing sustainable operating efficiency, water service and financial viability. Other major lessons learned are the following:

- (i) the traditional least-cost approach to water supply project planning is inadequate to achieve sustainable resource use efficiency because only the financial cost of supplying water is taken into account;
- (ii) prices should play an important role in managing water demand and in conserving the environment; and
- (iii) the approach to water pricing should be reviewed to provide pricing framework which will meet social, economic and financial requirements.

### **2. Education**

23. The Bank has so far post-evaluated two projects in the education sector. Despite experiencing delays in their implementation, the projects which cost about \$40 million were generally successful in meeting their objectives of improving the quality of vocational education and to increase the supply of skilled manpower. The projects have made significant contribution in improving curricula, enhancing teaching skills, establishing teacher upgrading centers and providing new course options in consonance with the emerging industrial needs of the various regions. However, no systematic mechanism exists to monitor the internal and external efficiency of the projects. The two important lessons based on the experience of the education projects are as follows:

- (i) the need for interaction between vocational schools and employers to ensure that curricula are relevant to job requirements; and
- (ii) the need for technical guidance and training and more effective Bank supervision in implementing benefit monitoring and evaluation system if its value as a management tool for monitoring internal and external efficiency aspects is to be adequately recognized.

### **3. Urban Development and Housing**

24. The only post-evaluated housing project costing \$45 million was intended to contribute to the Government's program of providing affordable housing for lower income groups and to counteract increasing congestion and pressure on heavily strained facilities in the urban core of Bangkok by attracting some economic activity and migration into a satellite town. The project's physical components were all completed to specifications and with satisfactory workmanship though with substantial delays of 4.5 years. However, the project was only partly successful in achieving its objectives as the town has not reached the status of a dynamic, self-sustaining urban growth center. The number of residents was stagnant, as 40 per cent of the housing units remained unoccupied and were apparently held for investment rather than providing urgently needed shelter. The intended social mix of the new town with a predominant proportion of low-income households was not sufficiently achieved. The town's development was impeded by shortcomings in operation, maintenance and administration. Institutional issues, in particular the difficulties in coordination between various government agencies, remain unresolved. The project provided the following valuable lessons:

- (i) while the creation of new urban growth centers is desirable, the social aspects of promoting a new viable community has proven more difficult than anticipated;
- (ii) in addition to physical planning, aspects relating to administration, asset management and maintenance need to be given attention in the design of housing projects;
- (iii) full commitment and effective coordination among the various agencies involved in a multi-faceted new town development project is essential for successful implementation and post-completion operation;
- (iv) maintenance of the improved living environment in a new town, land use controls and environmental checks are required; and

- (v) as long as sociocultural tenets prevent strict application of selection criteria and enforcement of rules, the question arises whether a program to provide housing for the poor is practicable.

## IV. CONCLUSIONS

### A. Overall Assessment

25. Post-evaluation findings indicate that Bank-financed projects in Thailand have generally been successful in contributing to economic and social development of the country. Bank assistance has helped expand and improve basic infrastructure facilities notably power, roads and water supply, which are considered essential elements for stimulating growth and improving the standard of living of people. The credit lines extended to IFCT were effectively used to support the private-sector enterprises contributing to the country's rapid industrialization. Bank assistance also helped expand and improve the quality of vocational and technical education to meet the growing demand for skilled technicians. Although agriculture accounts for a relatively small share of the Bank's lending operations in Thailand, the two post-evaluated irrigation projects were found to have generated benefits in terms of increased agricultural production and farm incomes in less developed areas.

26. Sectorwise, all post-evaluated projects in the energy, finance, and industry sectors were generally successful. Of the five partly successful projects, two each were in agriculture and social infrastructure sectors and one in transport and communications sector.

27. The satisfactory performance of projects in the energy and finance sectors were mainly due to adequate project preparation, strong institutional capability and commitment of the executing agencies and firm government support. On the other hand, projects with partly successful performance were affected by weak project management, over-ambitious targets, deficiencies in project designs and incompatibility of government policy with project objectives.

28. Despite achieving satisfactory results, many post-evaluated projects in Thailand experienced implementation delays. The average delay for all the post-evaluated projects was 2.1 years or 58 per cent longer than estimated at appraisal. Substantial delays of four years or more were observed in the two fisheries projects and one housing project while the least delay was recorded in the DFI projects (see Appendix 4). Implementation delays were caused by changes in project scope, slow delivery of construction equipment, late completion of detailed design, land acquisition and right-of-way problems, postponement in recruitment and fielding of consultants, weaknesses of the executing agencies in the early stages of implementation and poor coordination among Government agencies. Delays also reflected overoptimistic schedules envisaged at appraisal.

29. The actual costs of most of the post-evaluated projects in Thailand varied from appraisal estimates, but the degree of cost variation was relatively small. Of the 32 projects from which estimated and actual costs were available, 21 projects had cost underruns averaging 29 per cent while 11 projects had cost overruns averaging 37 per cent (see Appendix 5). The major causes of cost underruns were reduced project scope, overestimation of cost at appraisal especially the provision for contingency allowance and low bid prices as a result of intense competition. On the other hand, cost overruns were caused by implementation delays, effects of inflation, and the expansion in project components.

30. Overall, 30 of the 35 post-evaluated projects or 86 per cent were considered generally successful and the remaining 5 projects partly successful in achieving their intended

objectives. The generally successful rating of 86 per cent with no project classified under the unsuccessful category clearly indicates the effectiveness of the Bank assistance to Thailand. The generally successful rating of 86 per cent for Bank-financed projects in Thailand compares favorably with the rating in other Group B countries of 52 per cent and with that in Group C countries of 78 per cent. In terms of actual investment costs and loan amount disbursed associated with the post-evaluated projects, the generally successful rates were 83 per cent and 89 per cent, respectively (see Appendix 6).

## **B. Major Lessons Learned**

31. Post-evaluation experience demonstrates that the most important factor responsible for the success of Bank-financed projects in Thailand is the institutional capability (in terms of well-designed organizational structure, staff strength and efficient operational systems and procedures) and extensive experience of the executing agencies. This is obviously the case of projects in electric power, water supply, DFI, roads and irrigation subsectors where the Bank dealt with the same executing agencies over a long period through successive loans. These executing agencies (EGAT, MEA, IFCT, DOH and Royal Irrigation Department) have been strengthened and gained experience through association with the implementation of a series of projects financed by multilateral and bilateral aid agencies, enabling them to improve project design, project supervision and operation of project facilities. Hence, greater attention needs to be paid to analyze institutional aspects at the time of project preparation and appraisal and technical assistance for strengthening the capability of the executing agencies should be incorporated in the project design.

32. The experience of post-evaluated projects in Thailand also indicates that the project success is greatly influenced by the policy environment in which a project operates. It is, therefore, important that relevant sectoral and macroeconomic policies need to be carefully reviewed at appraisal and policy dialogue should be conducted with the Government to ensure that a conducive policy environment is created for sustaining project performance.

33. Despite their generally successful performance, many post-evaluated projects in Thailand experienced implementation delays due to land acquisition and right-of-way problems, procurement difficulties and lack of efficient coordination among agencies concerned. In addition, certain projects for aquaculture, water supply and energy development were found to have some adverse environmental impacts. Processing of future projects in Thailand should reflect these problems and measures to address them should be taken into account during project preparation and implementation.