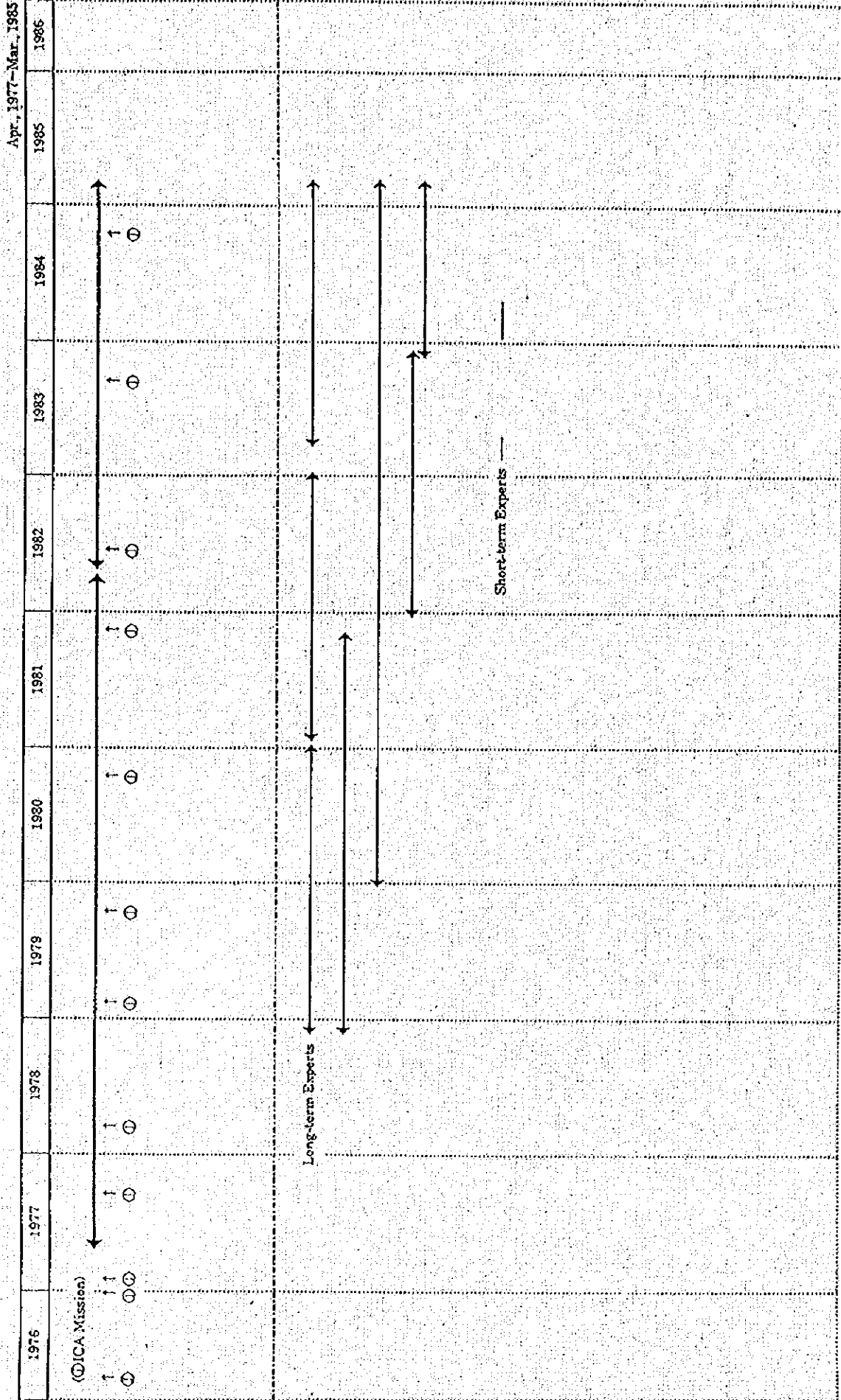
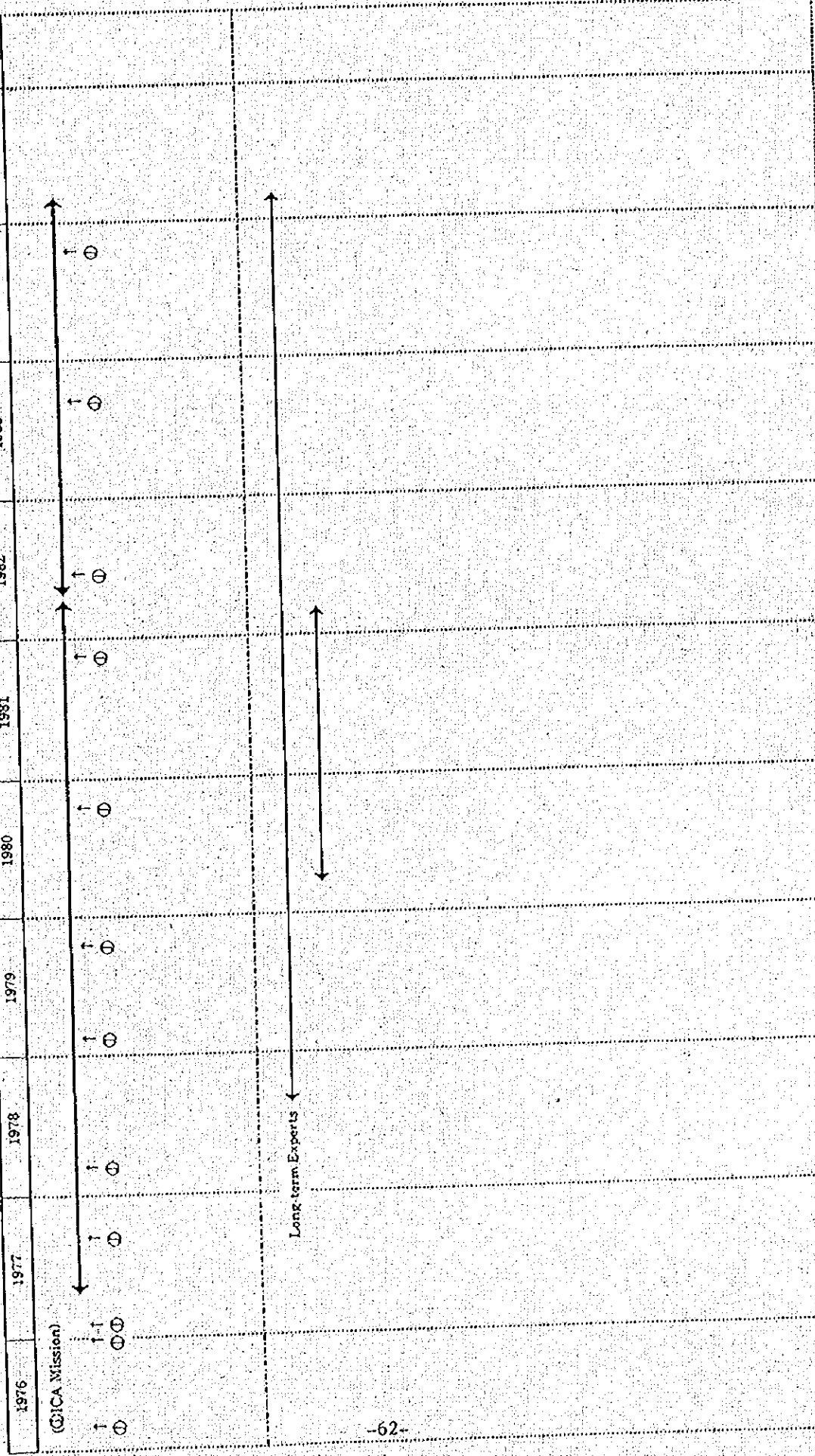


Irrigated Agriculture Development (Macklong Pilot Project) - Royal Irrigation Department: Tha Muang and Tha Maka, Kanchanaburi Province



Irrigated Agriculture Development (Suphanburi Training Center) Department of Agriculture: Muang, Suphan Buri Province

Apr., 1977 - Mar., 1985



## IRRIGATED AGRICULTURE DEVELOPMENT (Chaopya Subproject)

Overall Goal (Indirect Impacts) (In Chaopya Irrigated Agriculture Development Area - Lad Bua Luang -)	Verifiable Indicators	Achievement	Important Assumptions
<p>Production of Rice Area of Irrigated Field Yield of Rice Area for Double Cropping</p>	<p>The project area has an important role as the core in 12,000 ha of developed area financed by OECF.</p> <p>Rice Production Area in Dry Season in Lad Bua Luang 1987 52,000 rai 1991 93,000 rai</p>	<p>High priority on efficient rice production and effective water use in central region.</p> <p>Recently, water use is restricted in a drought year. (Agricultural water use is restricted in the whole country.)</p> <p>Sufficient agricultural inputs can be secured.</p>	<p>Trained counterparts are remaining and working actively in ALRO and the OECF project.</p> <p>Improved seeds ("Suphan Buri 60", "Suphan Buri 90") are introduced and disseminated.</p> <p>Hand tractors and combine harvesters are popularized. (Large scale agricultural machines did not become popular.)</p> <p>Farmers maintain irrigation and drainage facilities well.</p>
<p>Project Purpose (Direct Impact) (in Pilot Area) Development of Improved Agricultural Technology for Increasing Rice Production in each Pilot Area High Yield Technology Double Cropping Technology</p>	<p>Usage of Improved Agricultural Technology in Pilot Areas Production of Rice Yield of Rice Area for Double Cropping Usage of Agricultural Machinery Water Management</p>	<p>(a) Polder Dike 9,068m (a) Improved Farm Land 401ha (a) Trial Farm 6.5ha (b1, 2) Dry 328kg/rai(1981)→715(1983) (b1, 2) Wet 504kg/rai(1981)→712(1983) (b3) Only small scale agricultural machines were used. (c) Water management was carried out by farmers organized into a water user group. (d) Agricultural cooperative was functioning mainly in credit business only.</p>	<p>Sufficient Agricultural Input for Pilot Areas</p> <p>Proper Lot Size for Technical System in the Area</p> <p>Sales of consolidated agricultural land are regulated.</p>
<p>Outputs In Pilot Areas (a) Agricultural Infrastructure Development (b) Extension of Improved Agricultural Technology (c) Appropriate Water Management (d) Development of Farmers' Association</p>	<p>In Pilot Areas (a) Area of Irrigated Field (b1) Yield of Rice (b2) Area for Double Cropping (b3) Usage of Agricultural Machinery (c) Water Management (d) Activities of Farmers' Association</p>	<p>Sufficient Agricultural Input for Pilot Areas</p> <p>Proper Lot Size for Technical System in the Area</p> <p>Sales of consolidated agricultural land are regulated.</p>	<p>Sufficient Agricultural Input for Pilot Areas</p> <p>Proper Lot Size for Technical System in the Area</p> <p>Sales of consolidated agricultural land are regulated.</p>



	Verifiable indicators	Achievement	Important Assumptions
<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>- Pilot Projects (1 Pilot Area)</li> <li>- Plan and Construction to improve Agricultural Infrastructure</li> <li>- Trials of Improved Agricultural Technology at Trial Farm (about 10ha)</li> <li>- Technical Advice on Water Management to Farmers and Staff</li> <li>- Training and Guidance to Farmers in the Pilot Areas and Their Vicinities</li> <li>- Introduction and Demonstration of Improved Agricultural Technology at Model farms</li> <li>- Development and Strengthening of Farmers' Organizations</li> <li>- Experiment and Training Project</li> <li>- Experiments and Training on Improved Agricultural Technology</li> <li>- Project Center</li> <li>- Technical Advice on Planning and Implementation of Irrigated Agriculture</li> <li>- Development in the Basins</li> </ul>	<p>Japanese Inputs</p> <ul style="list-style-type: none"> <li>- Dispatch of Experts</li> <li>- Training in Japan</li> <li>- Provision of Equipment</li> <li>- Construction of Supphan Buri Station (Grant)</li> </ul> <p>Thai Inputs</p> <ul style="list-style-type: none"> <li>- Building and Facility</li> <li>- C/P and Other Personnel</li> <li>- Operational Budget</li> </ul>	<p>Long Term Experts : 11</p> <p>Short term Experts : 6</p> <p>Equipment: 405 million B</p> <p>Thai Budget 47 million B (1977-83)</p>	<p>Sufficient Water Resource in Pilot Areas</p> <p>Sufficient Agricultural Finance System to Acquire Agricultural Machinery and Inputs</p> <p>Well Functioning of Agricultural Extension System</p> <p>Proper Relation between Price of Agricultural Products and Inputs</p> <p>Improved system of Seed Production and Distribution</p>

### IRRIGATED AGRICULTURE DEVELOPMENT (Mekong Subproject)

Overall Goal (Indirect Impact) (in Kanchanaburi Province) - Increase Rice Production - Extension of Agricultural Infrastructure Improvement - Extension of Improved Agricultural Technology	Verifiable Indicators	Achievement	Important Assumptions
<p>Project Purpose (Direct Impact)</p> <p>(in Pilot Area)</p> <p>Development of Improved Agricultural Technology for Increasing Rice Production in each Pilot Area</p> <p>High Yield Technology</p> <p>Double Cropping Technology</p>	<p>Production of Rice</p> <p>Area of Irrigated Field</p> <p>Yield of Rice</p> <p>Area for Double Cropping</p>	<p>Rice Production Area in Kanchanaburi Province during the Dry Season</p> <p>1980 4,948 rais</p> <p>1985 45,289 rais</p> <p>1990 113,577 rais</p>	<p>High priority is given on efficient rice production in the central region.</p> <p>Water supply is currently sufficient. (Agricultural water use is restricted in the entire country.)</p> <p>Sufficient agricultural inputs can be secured.</p>
<p>Usage of Improved Agricultural Technology in Pilot Areas</p> <p>Production of Rice</p> <p>Yield of Rice</p> <p>Area for Double Cropping</p> <p>Usage of Agricultural Machine</p> <p>Water Management</p>	<p>- 2 trained counterparts (long term training in Japan) are working actively in the IBRD project.</p> <p>- Trial farm is used in the IBRD project.</p> <p>- Water management is insufficient due to abundant water supply.</p> <p>- Improved seeds are disseminated.</p> <p>- Hand tractors and combine harvesters have become widespread.</p>	<p>(a) Improved Farm Land (No.1) 404ha (a) Improved Farm Land (No.2) 563ha (a) Trial Farm 9.9ha (b1, 2) Dry 582kg/rai(1982)→659(1988); No.1 (b1, 2) Wet 549kg/rai(1982)→631(1988); No.1 (b1, 2) Dry 569kg/rai(1982)→850(1988); No.2 (b1, 2) Wet 598kg/rai(1982)→696(1988); No.2 (b3) Only small scale agricultural machines were used.</p> <p>(c) Farmers were organized in water users group to maintain the tertiary canal.</p> <p>(d) Agricultural cooperative activities are nonexistent.</p>	<p>Sufficient Agricultural Input for Pilot Areas</p> <p>Proper Lot Size for Technical System in the Area</p> <p>Sales of consolidated agricultural land are regulated.</p>
<p>Outputs</p> <p>In Pilot Areas</p> <p>(a) Development of Agricultural Infrastructure</p> <p>(b) Extension of Improved Agricultural Technology</p> <p>(c) Appropriate Water Management</p> <p>(d) Development of Farmers' Association</p>	<p>In Pilot Areas</p> <p>(a) Area of Irrigated Field</p> <p>(b1) Yield of Rice</p> <p>(b2) Area for Double Cropping</p> <p>(b3) Usage of Agricultural Machine</p> <p>(c) Water Management</p> <p>(d) Activities of Farmers' Association</p>		

Activities	Verifiable Indicators	Achievement	Important Assumptions
<p><b>Pilot Projects (2 Pilot Areas)</b></p> <ul style="list-style-type: none"> <li>- Plan and Construction of Agricultural Infrastructure Improvement</li> <li>- Trials of Improved Agricultural Technology at Trial Farm (about 10ha)</li> <li>- Extension of</li> <li>- Technical Advise of Water Management to Farmers and Staff</li> <li>- Training and Guidance to Farmers in the Pilot Areas and Their Vicinities</li> <li>- Introduction and Demonstration of Improved Agricultural Technology at Model farms</li> <li>- Development and Strengthening of Farmers' Organizations</li> <li>- Experiment and Training Project</li> <li>- Experiments and Training on Improved Agricultural Technology</li> <li>- Project Center</li> <li>- Technical Advice for Planning and Implementation of Irrigated Agriculture Development in the Basins</li> </ul>	<p>Japanese Inputs</p> <ul style="list-style-type: none"> <li>- Dispatch of Experts</li> <li>- Training in Japan</li> <li>- Provision of Equipment</li> <li>- Construction of Suphan Buri Station (Grant)</li> </ul> <p>Thai Inputs</p> <ul style="list-style-type: none"> <li>- Building and Facility</li> <li>- C/P and Other Personnel</li> <li>- Operation Budget</li> </ul>	<p>Long Term Experts : 7</p> <p>Short term Experts : 2</p> <p>Equipment : 164 million B</p> <p>Thai Budget : 36 million B</p>	<p>Sufficient Water Resource in Pilot Areas</p> <p>Sufficient Agricultural Finance System to Acquire Agricultural Machinery and Inputs</p> <p>Well Functioning Agricultural Extension System</p> <p>Proper Relation between Price of Agricultural Products and Inputs</p> <p>Improved system of Seed Production and Distribution</p>

## 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	-Agricultural land consolidation in the pilot areas have been completed, and double cropping and high yielding techniques have been successfully adopted. -Water user groups are contributing to the water management, but the agricultural cooperatives are inactive. -Machine usage, mainly hand tractors and combine harvesters, has become widespread. However, consistent system of mechanization by large scale machines has not been adopted.
要件の効果 Direct impact	2(3)	-Agriculture improvement techniques have been established and increase in rice production has been achieved.
間接の効果 Indirect impact	1(3)	-Double cropping and high yielding techniques have been applied and extended into the adjacent area. -Farmers' incomes have increased in the pilot areas and adjacent areas. -In Chaopya, the tenant farmers farming lands owned by large scale absentee landowners received shares of land due to land reforms, which has contributed to a higher income and living standard, and impartial incomes distribution was attained.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	-Counterparts were trained in Japan in order to promote cooperatives. However, cooperation by Japanese experts was not available. -Although coordination of activities among subprojects by Japanese experts was carried out, interaction and utilization of outputs among subprojects on the Thai side was insufficiently conducted. -A consistent system of mechanization by large scale machinery, that was operated during the project period on the trial farm, was not successfully adopted. -In Mekong, pilot projects using both intensive (large scale land consolidation) and extensive methods (development of tertiary canal on the existing lot) were implemented, but only the extensive method was extended into the adjacent area.
自立可能性 Sustainability	4(4), 3(4), 2(4), 1(4)	-Water management is carried out by water user groups. -Cooperatives which are centered on financing activities are inactive in other areas. However, this situation does not appear to inconvenience the individual farmer. -If water is properly supplied, double cropping and high yields are possible. -Although efficient water use is an important problem in Chaopya, water supply is not critical in Mekong.
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	-In the basic design stage, analysis of natural and social conditions was insufficient and few inaccurate assumptions (irrigation efficiency, field lot size, mechanization system, cooperative promotion) were made. -Despite activities fostering and strengthening agricultural cooperatives, joint cooperative activities on distribution of agricultural materials, collection, and forwarding of agricultural products remain on a small scale.

### 効果発現に貢献した要因

Factors contributing to implementation and production of impact

発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>当方に懸念する due to JICA side</p> <p>- Farmers in central Thailand possessed basic techniques in rice cultivation, which indicates that project sites were selected appropriately. Chaopya was a designated area for land reform and land consolidation was easy. Social impact of fair land distribution was large which was another fact or indicating the suitability of the selected site.</p>			<p>Planning was revised during implementation in order to meet the needs of actual conditions. For example, the main technique was selected appropriately from alternatives (transplanting or direct sowing) and extended to farmers.</p>	
			<p>Farmers had knowledge of basic technology that allowed them to easily accept the new technology. The project was managed smoothly. (Model farmers accepted support from the project, and the other neighboring farmers expressed strong interest in the results and borrowed newly introduced techniques.)</p>	<p>- Water resources development was carried out according to the plan.</p>

### 問題惹起要因

Factors inhibiting implementation and production of impact

	発端 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>当方に起因する due to JICA side</p>			<p>- During the selection process of conditions for incorporated into the basic design, some did not reflect actual conditions. - The plan to promote cooperatives was vague.</p>		
<p>相手方に起因する due to Thai side</p>				<p>- A joint committee including the three main organizations of the project was held, however there was no specific coordination among subprojects. (Mutual utilization of outputs among subprojects was not sufficient.)</p>	



### 教訓と提言

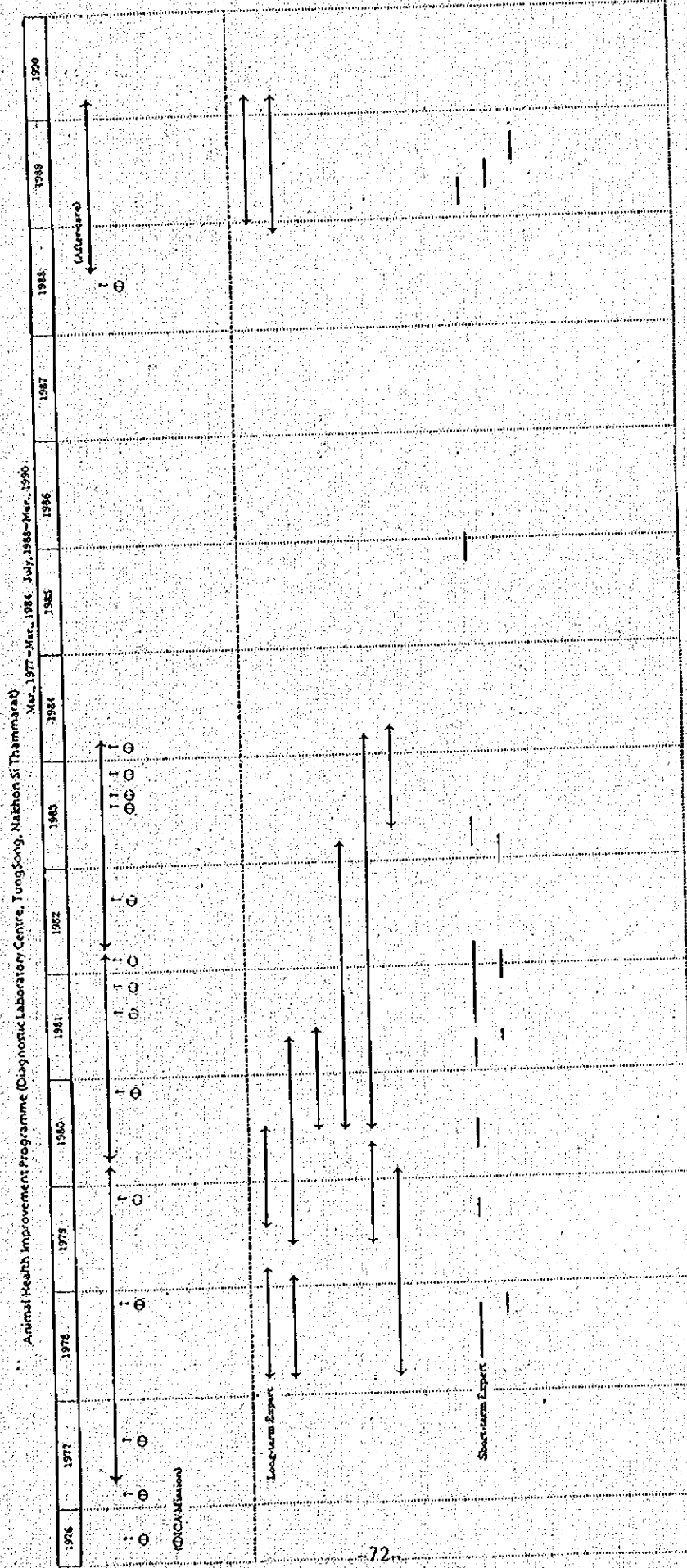
Lessons drawn from evaluation study and suggestions for future cooperation

	教訓 Lessons drawn from evaluation study	短期的提言(一年以内に対応すべき) Suggestions (short term)	中期的提言(1~3年以内に対応すべき) Suggestions (mid term)	長期的提言(今後の制度的改編が必要) Suggestions (long term)
<p>当方に対する To JICA side</p>	<p>Lessons drawn from evaluation study</p> <p>-Project site was selected properly. Farmers had capability to accept new technologies, and water resources were developing favorably, which made double cropping and high yields fairly easy. Project could attain its purpose by reinforcing these factors. It will continue to be important to confirm these conditions in project appraisal.</p>			<p>The following is necessary to implement the project efficiently and effectively.</p> <p>-A socio-economic as well as technical study should be carried out in the project preparation stage. If the project includes components which will bring about large changes in the present system, such as large scale field lot, strengthening of cooperative activities and introduction of consistent system of mechanization, the appropriateness of those components should be analyzed thoroughly.</p> <p>-A substantial preliminary survey should be carried out and proper alternatives should be included in the planned activities. In the implementation stage, appropriate technology should be selected through monitoring activities.</p> <p>-In order to attain project purpose, project activities should be implemented according to the defined plan which follows objectives and components mentioned in the master plan attached to the RD.</p>
<p>相手方に対する To Thai side</p>				<p>-The project should be made more effective by mutually sharing and exchanging the outputs of subprojects through coordinated activities among the organizations concerned.</p>

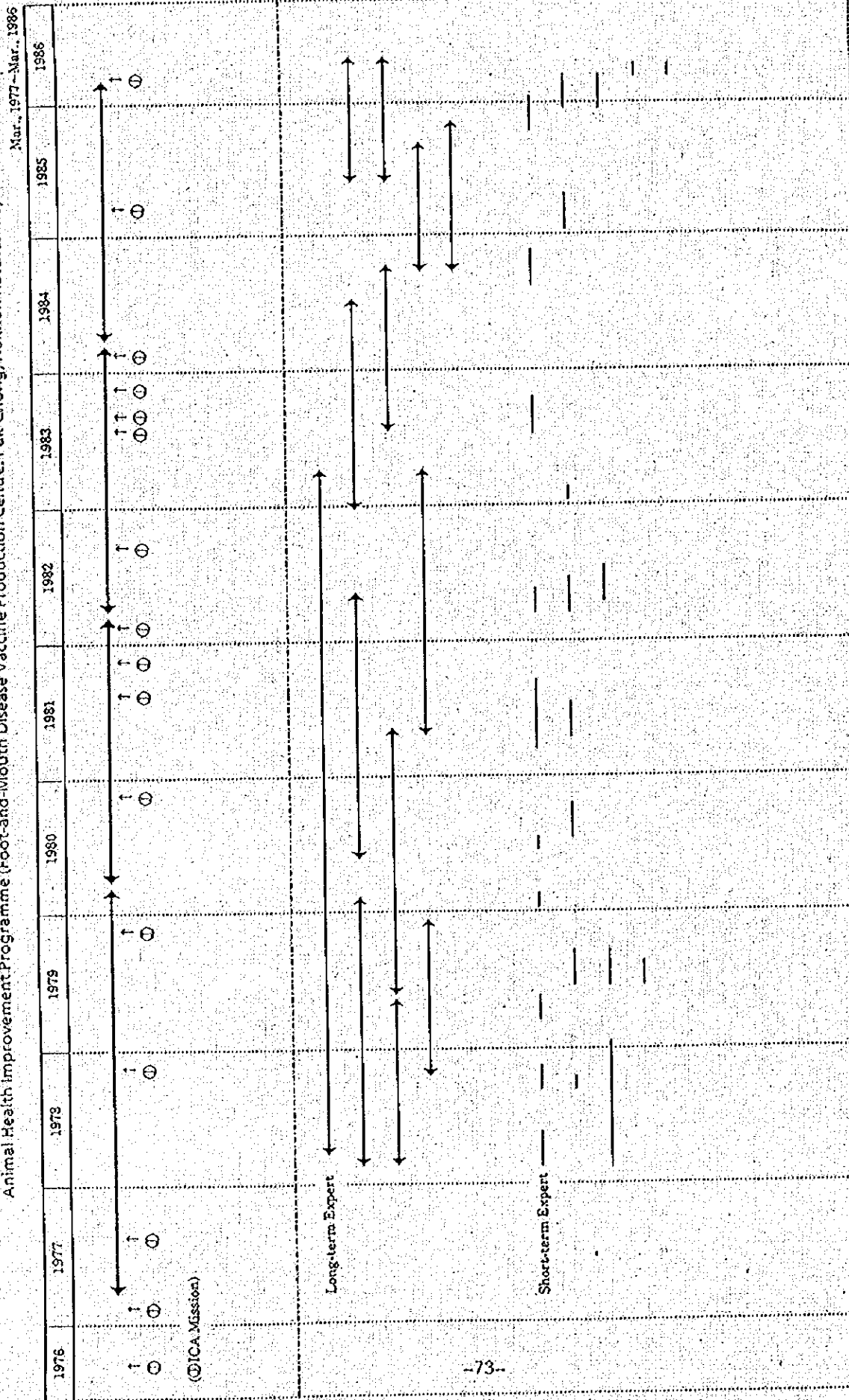


### Animal Health Improvement Programme (DLD, Bangkok)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mar., 1977-Mar., 1986
ICA Mission	↑ ⊙	↑ ⊙	↑ ⊙	↑ ⊙	↑ ⊙	↑ ⊙	↑ ⊙	↑ ⊙ ⊙	↑ ⊙	↑ ⊙	↑ ⊙
Short-term Expert											
Long-term Expert											
Training in Japan	5	3	6	6	6	6	5	3	3	4	
Provision of Equipment (thousand yen)	113,853	65,323	62,100	89,830	107,883	84,517	61,934	97,025	54,036		



Animal Health Improvement Programme (Foot-and-Mouth Disease Vaccine Production Centre, Pak Chong, Nakhon Ratchasima)



### ANIMAL HEALTH IMPROVEMENT PROGRAMME (Diagnostic Laboratory Centre, Thung Song, Nakhon Si Thammarat)

	VERIFIABLE INDICATORS	ACHIEVEMENTS	EXTERNAL FACTORS																		
<p><b>SUPER GOAL</b> Increase livestock production</p>	<p>Number of livestock Produced</p>	<p>Livestock population in Thailand</p> <table border="1"> <tr> <td>Entire Thai</td> <td>1978</td> <td>1990</td> </tr> <tr> <td>Cow &amp; Buffalo</td> <td>11.01 mil</td> <td>10.58 mil</td> </tr> <tr> <td>Pig</td> <td>4.25 mil</td> <td>4.73 mil</td> </tr> <tr> <td>South Thai</td> <td></td> <td></td> </tr> <tr> <td>Cow &amp; Buffalo</td> <td>776 Th.</td> <td>842 Th.</td> </tr> <tr> <td>Pig</td> <td>376 Th.</td> <td>361 Th.</td> </tr> </table>	Entire Thai	1978	1990	Cow & Buffalo	11.01 mil	10.58 mil	Pig	4.25 mil	4.73 mil	South Thai			Cow & Buffalo	776 Th.	842 Th.	Pig	376 Th.	361 Th.	
Entire Thai	1978	1990																			
Cow & Buffalo	11.01 mil	10.58 mil																			
Pig	4.25 mil	4.73 mil																			
South Thai																					
Cow & Buffalo	776 Th.	842 Th.																			
Pig	376 Th.	361 Th.																			
<p><b>OVERALL GOAL (INDIRECT IMPACT)</b> Improve of animal health conditions in south Thai</p>	<p>- Occurrence of animal disease in the area - Training veterinarians in the area</p>	<p>- Statistics of animal disease in the area Example: factoliasis</p> <table border="1"> <tr> <td>1981</td> <td>1983</td> <td>1985</td> </tr> <tr> <td>819</td> <td>679</td> <td>896</td> </tr> </table> <p>Number of training sessions for veterinarians 1982: 6 times, 250 trainees 1991: 3 times, 110 trainees</p>	1981	1983	1985	819	679	896	<p>- Insufficient prevention measures against serious animal disease and improvements for animal health.</p>												
1981	1983	1985																			
819	679	896																			
<p><b>PROJECT PURPOSE (DIRECT IMPACT)</b> Enhance prevention measures against serious animal diseases in the area.</p>	<p>- Field survey of animal disease and decrease animal disease occurrence</p>	<p>- No FMD occurrence since the tremendous epidemic in 1981 in region 8 and 9 (occurred 13,599) - Declining of parasitic disease. (1984: 55.9%, 1988: 11.39%)</p>	<p>- No provisions of animal health facilities. - Insufficient number of veterinarians in the area and nationwide.</p>																		
<p><b>OUTPUTS</b> (A) Grasp present conditions in animal disease occurrence.</p>	<p>(A-1) Types of serious animal disease grasped and number of animal disease cases diagnosed. (A-2) Establish of specimen collection channel for diagnosing animal disease. (A-3) Storage and distribution of diagnostic biological reagents (A-4) Training on specimen collection technology for the veterinarians in veterinary clinic, province and district. (A-5) Number of key and sentinel farms, and specimen collection conditions. (A-6) Number of counterparts and their specialized fields.</p>	<p>(A-1) Animal diseases diagnosed (1978-1983): Number of farmer requests for diagnoses: 7,928, Number of specimens requests for diagnoses: 103,614, Heads of animal diagnosed in the field (1978-1983): 17,858 (Atrophic Rhinitis, Swine pox, chicken Malaria and other diseases were recognized firstly in South Thai.) (A-2) Establishment of cooperation network for DLC. (Cooperation with veterinary clinic and others shown in attached figure) (A-3) No record (14 kinds were supplied from Japan) (A-4) Veterinarian training: 1980: 1 time, 1981: 5 times, 1983: 8 times (A-5) Number of key farms: 11 (among them 2 were cum sentinel farm), 2-6 visits, specimen collection and diagnosis (A-6) Increased from 6 persons in 1978 to 12 persons in 1983.</p>	<p>- DLD is promoting epidemic prevention work. - The regional, provincial, and district administrative livestock breeding organizations were given the right to use the DLC. - The extension system for animal industry technology is functioning well.</p>																		

ANIMAL HEALTH IMPROVEMENT PROGRAMME (Diagnostic Laboratory Centre, Thung Song, Nakhon Si Thammarat)

	VERIFIABLE INDICATORS	ACHIEVEMENTS	EXTERNAL FACTORS
<p>(B) Extension on animal health awareness</p>	<p>(B-1) Radio broadcasts for farmers. (B-2) Training for farmer includes field training. (B-3) Contents of activities and extension efficiency of key and sentinel farms. (B-4) Publication and dissemination of research results.</p>	<p>(B-1) 9 times in 1985, 10 times in 1987, 7 times in 1989 (B-2) Number of farmers in training: 94 farmers in 1985, 350 farmers in 1989. (B-3) Shown in the attached (B-4) Publication of 40 research topics by Thai Veterinarian's Association during the project.</p>	<p>-Cooperation of related agencies such as Vaccine Production Centre, regional, provincial and district DLD offices, veterinary clinic and animal quarantine for the activities and specimen collection of DLC has been achieved. -Vaccine Production Centre is implemented by Thai side.</p>
<p>Activities (14 provinces in region 8 and 9) (A-1) Diagnosis of animal disease (A-1-1) Implementation of specimen collection (A-2) Implementation of field survey (A-3) Storage and distribution of diagnostic biological reagents (A-4) Implement training on specimen collection technology for the veterinarians in veterinary clinic, province and district. (B) Training and instruction on animal health awareness.</p>	<p>Japanese inputs -Dispatch of experts -Provision of equipment (including medical drugs) -Training in Japan -Construction of building and facility (Grant Aid) -Provision of Audio visual materials (slides; 1982)</p>	<p>Japanese experts -Long term experts: 10 persons -Short term experts: 11 persons -Provision of equipment: 275 million Yen -Trainees in Japan: 11 persons -Renovation of washing room, cold room, incinerator and water supply facility. -Provision of instructional slides (2 sets in English, 1 set in Thai) -Provision of 28 counterparts -Provision of budget (in thousand Bath)</p>	<p>-Legal standing of DLC has been achieved. -Cooperation by farmers for animal disease diagnosis and treatment has been achieved -Budget to compensate farmers for the slaughter of diseased animals is available.</p>
<p>(B-1) Implementation of key farm (model farm) and sentinel farm (monitoring farm) programme (B-2) Training of animal health technicians in DLC and related agencies (B-3) Public relations for farmers regarding animal health</p>	<p>Thai input -Provision of building and facilities -Counter parts and other personnel -Operation budget</p>	<p>1978 1,242 1,121 961 1,081 1,152 1980 961 1,081 1,152 1981 1,081 1,152 1982 1,152 1983 1,152</p>	
<p>Advisors in Bangkok -Coordination between FMDVFC and DLC</p>			

### ANIMAL HEALTH IMPROVEMENT PROGRAMME (Foot-and-Mouth Disease Vaccine Production Centre, Pak Chong, Nakhon Ratchasima)

SUPER GOAL	VERIFIABLE INDICATORS	ACHIEVEMENTS	EXTERNAL FACTORS																
<p>-Increase nationwide livestock production</p>	<p>Number of livestock Volume of livestock production</p>	<p>Livestock population in Thailand</p> <table border="1"> <tr> <td>1975</td> <td>1990</td> </tr> <tr> <td>4.3 mil</td> <td>5.4 mil</td> </tr> <tr> <td>4.6 mil</td> <td>4.7 mil</td> </tr> <tr> <td>5.3 mil</td> <td>5.1 mil</td> </tr> <tr> <td>52.8 mil</td> <td>88.9 mil</td> </tr> <tr> <td>7.8 mil</td> <td>17.9 mil</td> </tr> </table>	1975	1990	4.3 mil	5.4 mil	4.6 mil	4.7 mil	5.3 mil	5.1 mil	52.8 mil	88.9 mil	7.8 mil	17.9 mil					
1975	1990																		
4.3 mil	5.4 mil																		
4.6 mil	4.7 mil																		
5.3 mil	5.1 mil																		
52.8 mil	88.9 mil																		
7.8 mil	17.9 mil																		
<p><b>OVERALL GOAL (INDIRECT IMPACT)</b> -Improve of FMD prevention system</p>	<p>-Present conditions in FMD Vaccine storage and dosing technology -Number of occurrences and deaths by FMD -Distribution of FMD Vaccine -Dosing conditions of FMD Vaccine</p>	<p>-Improved the distribution, storage and dosing of FMD Vaccine -Occurrence of FMD in 1975: 10,215 (0 death), in 1987: 7,868 (9 deaths) -Major distribution: more than 60% in Region 3, 4, 7</p>	<p>-Incomplete FMD Vaccine dosing technology in the field (dosing by farmer volunteers, insufficient stocking apparatus)</p>																
<p><b>PROJECT PURPOSE (DIRECT IMPACT)</b> Mass production of appropriate FMD Vaccine</p>	<p>Achieved the targeted 5 million doses of FMD Vaccine production after the termination of the project. Improved recovery rate due to quality inspections.</p>	<p>Production record of FMD Vaccine 1978 : 1,100,000 doses, 1991 : 23,700,000 doses (includes the production from new factory)</p>	<p>Uneffective detection system of FMD infected animals during the marketing stage.</p>																
<p><b>OUTPUTS</b> (A) Adoption of suspension culture method for FMD Vaccine (B) Improved quality of FMD Vaccine (C) Establish vaccine assay system (D) Improved rate of disease detection through diagnosis</p>	<p>(A) Production volume of FMD Vaccine according to method (B) Recovery rate due to quality inspections. (C,D) Isolating the virus through disease transitions.</p>	<p>During project implementation:</p> <table border="1"> <tr> <td>Statistic (thousand doses)</td> <td>1979</td> <td>1983</td> <td>1989</td> </tr> <tr> <td>Suspension</td> <td>250</td> <td>7,000</td> <td>8,234</td> </tr> <tr> <td>Rotary</td> <td>500</td> <td>3,000</td> <td>2,168</td> </tr> <tr> <td>Recovery</td> <td>45-70%</td> <td>90%</td> <td>100%</td> </tr> </table> <p>Isolation of FMD type A, O and Asia I</p>	Statistic (thousand doses)	1979	1983	1989	Suspension	250	7,000	8,234	Rotary	500	3,000	2,168	Recovery	45-70%	90%	100%	<p>Sufficient supply of serum for FMD Vaccine</p>
Statistic (thousand doses)	1979	1983	1989																
Suspension	250	7,000	8,234																
Rotary	500	3,000	2,168																
Recovery	45-70%	90%	100%																



### ANIMAL HEALTH IMPROVEMENT PROGRAMME (Foot-and-Mouth Disease Vaccine Production Centre, Pak Chong, Nakhon Ratchasima)

VERIFIABLE INDICATORS	ACHIEVEMENTS	EXTERNAL FACTORS
<ul style="list-style-type: none"> <li>- Activities (A,B)</li> <li>- Practical experiments for mass production of FMD Vaccine and training of technicians</li> <li>- From rotating bottle method to suspension culture method</li> <li>- Production of adjuvant</li> <li>- Collection system of cattle blood serum</li> <li>- Selection of seed viruses for vaccine production</li> <li>- Titration test for antigenicity of virus fluid and vaccine potency test</li> <li>- Establish diagnosis and typing method of FMD nationwide</li> <li>- Isolation of field viruses</li> <li>- Survey on epidemiology</li> <li>- Advisors in Bangkok</li> <li>- Coordination between FMDVPC and DLC</li> </ul>	<ul style="list-style-type: none"> <li>- Japanese input</li> <li>- Dispatch of experts</li> <li>- Provision of equipment</li> <li>- Training in Japan</li> <li>- Building and facility (Grant Aid)</li> <li>- Provision of 4 Vaccine storage facilities</li> <li>- Provision of related facilities</li> <li>- Formulate audio visual materials (slides 1982)</li> <li>- Thai input</li> <li>- Computer and personnel</li> <li>- Operation budget</li> <li>- Cooperation between FMDVPC and DLC</li> </ul>	<ul style="list-style-type: none"> <li>- Japanese experts</li> <li>- Long-term experts: 13 persons</li> <li>- Short-term experts: 25 persons</li> <li>- Provision of equipment: 529 million Yen</li> <li>- Trainees in Japan: 23 persons</li> <li>- Main building construction in Pakchong</li> <li>- Construction of 4 FMD Vaccine storage facilities in Songkla, Nakhongpatom, Udombhuni and Pisanurok under Japanese Technical Assistance</li> <li>- Provision of instructional slides in English</li> <li>- Provision of 23 computers</li> <li>- Provision of budget (in thousand Baht)</li> <li>year 1987 1980 1982 1984 1987</li> <li>3,009 3,679 45,194 9,505 60,332</li> <li>- 14 trainees from DLD and other agencies</li> </ul>
		<ul style="list-style-type: none"> <li>- Collaboration of farmers on specimen collection and treatment</li> </ul>



### Evaluation result along the five points of evaluation (Diagnostic Laboratory Centre, Thung Song, Nakhon Si Thammarat)

Evaluation Points	Cell No. for Analysis	Evaluation Results
Attainment of Project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	<ul style="list-style-type: none"> <li>-Diagnostic technology for animal disease prevention has improved, and accurate identification technology for animal disease has been established.</li> <li>-Animal health awareness by farmer and veterinarian has been improved partially.</li> <li>-A training system for veterinarians has been established.</li> </ul>
Direct impact	2(3)	<ul style="list-style-type: none"> <li>-Animal disease conditions in south Thai has been grasped, and prevention and eradication methods are becoming known.</li> <li>-Parasitic disease has been decreased.</li> <li>-Epidemics of foot-and-mouth disease in south Thai has been eradicated by appropriate treatments by DLC.</li> </ul>
Indirect impact	1(3)	<ul style="list-style-type: none"> <li>-Animal exports from south Thai to Malaysia and Hong Kong have been able to restart after the eradication of foot-and-mouth disease within short period in south Thai. However, the animal population in south Thai has not increased conspicuously despite a strengthened disease prevention system in south Thai.</li> </ul>
Efficiency Implementation	4(3) and 3(3)	<ul style="list-style-type: none"> <li>-The awareness and technology for the disease identification and diagnosis, and animal health has been improved remarkably due to the appropriate selection of counterparts.</li> <li>-The coordination among the project members has not been well conducted due to the absence of exclusive team leader for the Japanese experts.</li> </ul>
Sustainability	4(1), 3(1), 2(1) and 1(4)	<ul style="list-style-type: none"> <li>-The staffs have been increased steadily, and the activities of DLC is independently being continued by Thai staffs.</li> <li>-New laboratory of toxicology has been established.</li> <li>-New diagnostic technology of ELISA has been introduced by Thai staffs to DLC.</li> <li>-Veterinarian training system is being expanded.</li> </ul>
Relevant Planning	4(4), 3(4), 2(4) and 1(4)	<ul style="list-style-type: none"> <li>-Coordination between the works of grasping serious animal disease in south Thai, establishing of diagnostic technology, extension and training, and establishing system of animal disease prevention has not been conducted smoothly due to an indistinct plan and project activities. (It had found that serious animal diseases at the initial stage were not so serious in south Thai. The disease has not been eradicated and consistent measures have only been taken when the disease has been diagnosed.)</li> <li>-The selection of south Thai to promote animal health was consistent with Thai Government priorities.</li> </ul>

### Evaluation result along the five points of evaluation (Foot-and-Mouth Disease Vaccine Production Centre, Pak Chong, Nakhon Ratchasima)

Evaluation Points	Cell No. for Analysis	Evaluation Results
Attainment of Project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	<ul style="list-style-type: none"> <li>-Initial production target of 5 million doses has been greatly exceeded and the production potential including the new factory is able to meet the entire demand in Thailand.</li> <li>-A mass production system of FMD Vaccine as an output of the project has been achieved by adopting the suspension culture method, improving diagnosis technology, and establishing isolation and identification of field Viruses.</li> </ul>
Direct impact	2(3)	<ul style="list-style-type: none"> <li>-FMD Vaccine mass production has continued.</li> <li>-It has been possible to distribute and store FMD Vaccine up to the district level.</li> </ul>
Indirect impact	1(3)	<ul style="list-style-type: none"> <li>-It has been possible to prevent FMD, however the efficiency is not so high due to insufficient FMD vaccine storage and dosing technology in the field.</li> <li>-Implementation of earlier detection and eradication of FMD.</li> </ul>
Efficiency Implementation	4(3) and 3(3)	<ul style="list-style-type: none"> <li>-It has taken 2 years to develop the suspension culture method although the French experts were not dispatched in spite of the request by Japan.</li> </ul>
Sustainability	4(1), 3(1), 2(1) and 1(4)	<ul style="list-style-type: none"> <li>-12 million doses per year of FMD Vaccine are being produced by the Thai staff, and there is sufficient budget and staff.</li> <li>-Three types of Mixed vaccine to treat 3 typical types of FMD in Thailand is being developed and used in dosing.</li> </ul>
Relevant Planning	4(4), 3(4), 2(4) and 1(4)	<ul style="list-style-type: none"> <li>-Although the initial programme was set at 3 years to establish a production system of 5 million doses, it had actually taken 5 years. This indicates that the project period was too short. Identification of project needs is appreciated, but programme implementation is evaluated as insufficient.</li> <li>-Japanese technical assistance was accepted by Thailand due to existing FMD vaccine production under the assistance of FAO.</li> <li>-The centre is only one centre in Asia for FMD vaccine production and research.</li> </ul>

Diagnostic Laboratory Centre = DLC  
Foot-Mouth Disease Vaccine Production Centre = FMDVPC

### Factors contributing to implementation and production of impact

Project Identification	Appraisal	Implementation design	Implementation	Others
<p>Due to JICA Side</p>	<p>(DLC) -Diagnostic technology to be applied for animal disease has been familiar in Japan. -It had been appropriate and consistent with the Thailand policy to select southern Thailand which was the most important area for animal health care.</p> <p>(FMDVPC) -Knowledge of Japanese expertise on FMD Vaccine production have been applicable. -Project had been coordinated in conjunction with Japan grant aid.</p>		<p>(DLC) -Although there were security problems at the site, the cooperation activities had been continued.</p> <p>(FMDVPC) -The suspension culture method technology of FMD Vaccine production was established in collaboration with Thai counterparts despite the lack of Japanese experience.</p>	
<p>Due to Thai-land side</p>	<p>(DLC) -System and facilities had been nearly complete.</p> <p>(FMDVPC) -Thai side had experience of FMD Vaccine production under the cooperation of FAO.</p>		<p>(Entire Project) -Counterparts were selected properly. (All counterparts were very aggressive in gaining technology from the technology transfer.)</p> <p>(DLC) -Due to the satisfactory collaboration between DLC and other related agencies, DLC was able to implement FMD eradication in its territory. -Counterparts in the centre have settled gradually at the center in spite of its remote location.</p> <p>(FMDVPC) -Materials and specimens which were necessary for FMD vaccine have been supplied appropriately and sufficiently.</p>	

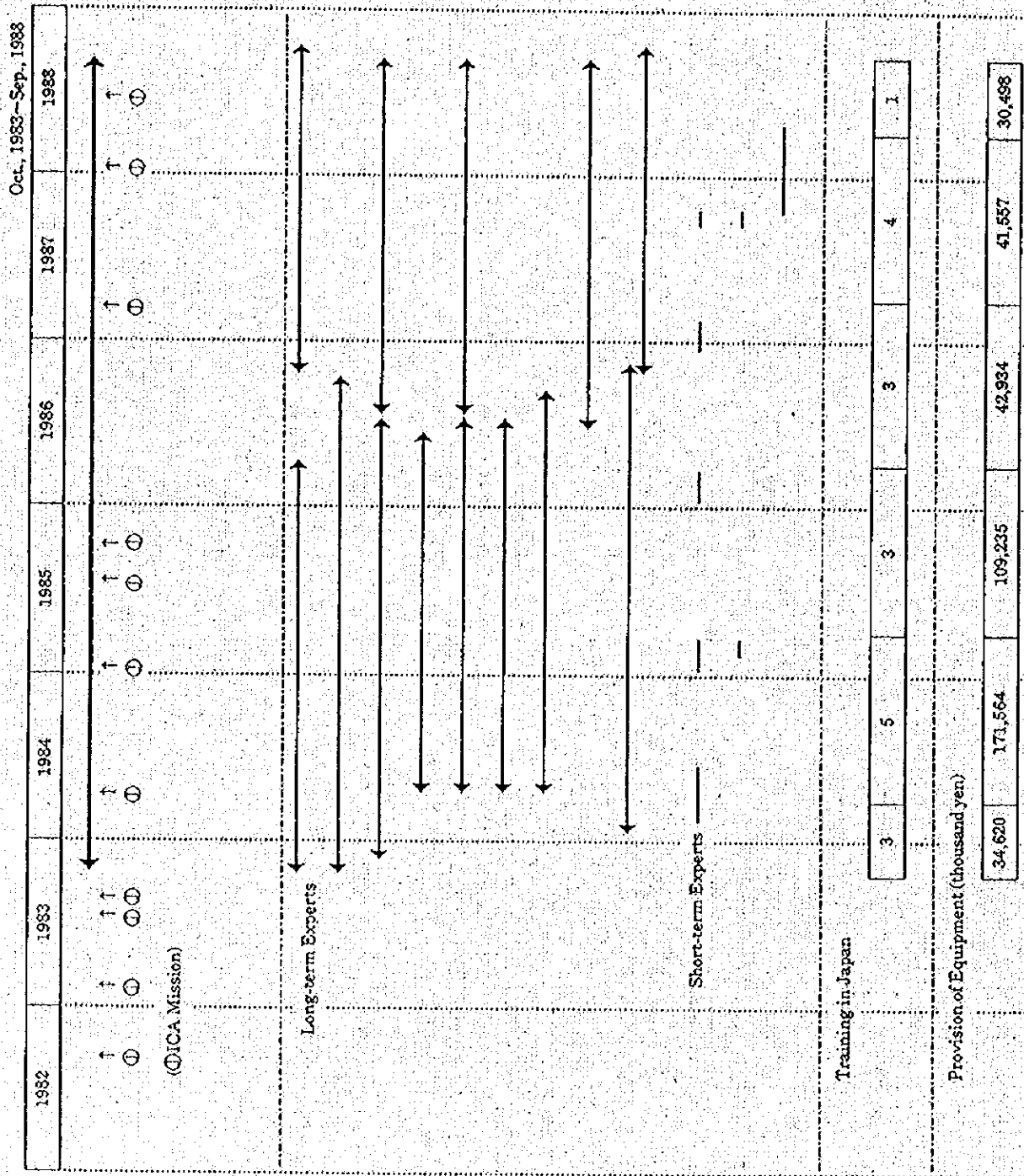
Factors inhibiting implementation and production of impact

Project Identification	Appraisal	Implementation design	Implementation	Others
<p>Due to JICA Side</p>	<p>(FMD/VPC) -Prevention of FMD in Thailand is not complete due to the insufficient storage facilities, distribution network and dosing conditions of the FMD vaccine, although mass production methods for FMD vaccine had been established.</p>	<p>(Entire Project) -The designation and role of team leader for both sub-projects were indistinct. -Activities of the project had not been effectively implemented due to indefinite goals of the project activities and output. (DLC) -Although notifiable and quarantined diseases were recognized as serious diseases in south Thai, it was not consistent with the actual conditions of the area.</p>	<p>(DLC) -Coordination of activities and dispatch of Japanese experts were difficult due to the lack of recognition of serious animal disease in south Thai.</p>	
<p>Due to Thai Side</p>	<p>(DLC) -Recognition of serious animal disease in Thailand was insufficient.</p>	<p>(entire Project) -Replacement of equipment supplied under the project had not been completed.</p>	<p>(DLC) -Information management of the centre was difficult due to a lack of a uniform information management system and multiple information channels.</p>	<p>(FMD/VPC) -The indirect effect has not been evaluated because information on FMD is confidential in Thailand.</p>

Lesson drawn from evaluation study and suggestions for future cooperation

	Lesson drawn from evaluation study	Suggestions (short term)	Suggestions (mid-term)	Suggestions (long-term)
<p>Due to JICA side</p>	<p>The suspension culture method in the field of FMD Vaccine production has been succeeded by joint research work between Thailand and Japan. Such joint research work will be promoted positively between both countries.</p>			<p>-An exclusive team leader will be assigned in the future because of the insufficient coordination.                      -Regarding progress management and pre-designed monitoring method of the project, detailed programme will be planned at the initial stage to easily review the on-going project, and to ensure effective project implementation.                      -Basic design which will be the basis of the Record of Discussion, will be provided after sufficient preliminary study prior to the project.</p>
<p>Due to Thailand side</p>		<p>-Depreciation programme will be provided for the equipment supplied.</p>		<p>-A systematic depreciation programme for the equipment provided under the projects will be provided.                      -A system of FMDV storage &amp; distribution, and the firm implementation of training for the field workers of FMDV dosage are required in future.</p>

## Logging and Log Transport Training Project (FIO, Chiang Mai)





### LOGGING AND LOG TRANSPORT TRAINING PROJECT

	Verifiable Indicators	Achievement	Important Assumptions
<p>Overall Goal (Indirect Impacts) (with Consideration of Environment): Effective Use of Forest Resources in Steep Slope Area</p>	<p>Log Production Volume Extension of Developed Technology Extension of Machinery</p>	<p>National Log Production 1,816 thousand m<sup>3</sup>(1983) 2,048 thousand m<sup>3</sup>(1988) 232 thousand m<sup>3</sup>(1991) - Transferred technology is concerned with forest road construction and thinning afforestation areas. (20,000 rai in a 200,000 rai afforestation area is thinned.) - Forest road construction machines were purchased for the southern region.</p>	<p>- In the national development plan, the priority was changed to forest resources conservation from increased log production. After the project terminated, the logging ban came into effect in 1989. - There are no private organizations which conduct logging, with the exception of FIO.</p>
<p>Project Purpose (Direct Impact) Continuation of Development and Training of Mechanical Logging System on the Thai side.</p>	<p>After Project Period Development of Technology Training Setting and Activities of C/P</p>	<p>- Counterparts and ex-trainees remain in FIO. - FIO conducted training courses for 50 trainees in 1989 and 1990. - Under water logging of trees in reservoirs is planned and equipment is under development.</p>	
<p>Outputs Development of Appropriate Technology and Technical Training of Logging and Log Transportation</p>	<p>Developed Technology Number of Trainee in Project Period Logging Manager (5 X 4 years) Logging Staff and Foreman (10 X 4 years) Forest Road (5 X 4 years) Maintenance and Repair (5 X 4 years)</p>	<p>- Logging and log transportation system was established combining a cable system, tractors and elephants. - Number of trainees in the project period Logging Manager: 25 Logging Staff and Foreman: 37 Forest Road: 19 Maintenance and Repair: 21</p>	
<p>Activities Training Institute Development of Appropriate Technology and its Training Mechanical Logging Systems, Forest Road Construction, and Machinery Maintenance Workshop On-the-job Training in Machinery Maintenance Training Field Field Exercise on Mechanical Logging Systems and Forest Road Construction Operation Forest On-the-job Training in Mechanical Logging Systems and Forest Road Construction Project Office Coordination of the Project</p>	<p>JICA Inputs Dispatch of Experts Training in Japan Provision of Equipment Facilities Forest Road Construction Thai Inputs Building and Facilities C/P and other Personnel Operation Budget</p>	<p>Long term Experts 13 Short term Experts 8 Trainees Trained in Japan 19 Equipment Provided 430 million B ¥ Training Facilities in Lampang and Mae Moh Forest Road Construction 1,550 m Training Center in Chiang Mai 16 Counterparts Budget (1983-87) 18,756 thousand B</p>	



## 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	- Transferred technology has been successfully adopted in the Forest Industry Organization (FIO) and has been applied after the logging ban. - Training courses were held as planned. - FIO conducted training courses and 50 staff members were trained in 2 years after the project was completed. However, training activities have stopped since there are no new employees.
案件の効果 Direct impact	2(3)	- Mechanical logging and log transport are still continued despite restrictions in activities by the logging ban. Logging of trees under water in reservoirs is planned and equipment is being developed.
間接の効果 Indirect impact	1(3)	- Counterparts and ex-trainees conducted training courses in 1989 and 1990. - FIO has constructed forest roads in afforestation areas and in an elephant conservation and training center. - In afforestation areas, wire and guide-blocks are being used for thinning to protect trees.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	- Ex-trainees remained in the project and functioned as instructors, assistants, and relayed the technology transferred from experts to their juniors. - The lecture on forest road construction was only 2 to 4 months. Therefore, although construction techniques have been adopted, a comprehensive system from planning, design, to implementation was not fully understood.
自立発展性 Sustainability	4(4), 3(4), 2(4), 1(4)	- FIO provided training courses in 1989 and 1990. - Main equipment are maintained by ex-trainees and are still usable. - Logging activities have decreased after the logging ban. However, logging will start in the afforestation area in 5 years, if permission is granted by the Royal Forest Department (RFD).
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	- Priority on logging no longer exists after the logging ban. Transferred technology practical use in forest resources conservation such as forest management road construction and thinning in afforestation area in future.

## 効果発現に貢献した要因

Factors contributing to implementation and production of impact

	発掘 Project identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
当方に起因する due to JICA side			<p>As cooperation activities were restricted to only PIO, transferred technology is still applied after the logging ban. If the technology was extended to the private sector, it would not be used after the logging ban.</p>		
相手方に起因する due to Thai side				<p>- Counterparts and trainees were selected properly, and transferred technology has been successfully adopted.</p>	

問題惹起要因

Factors inhibiting implementation and production of impact

発現 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>主りに起因する due to JICA side</p>		<p>- Technology concerned with conservation and effective usage of forest resources, such as selective cutting and thinning, were not emphasized in the project. As a result, transferred technology will not be used directly after the logging ban. FIO apply the technology in restricted areas such as cutting trees under water in reservoirs.</p>	<p>- In the field of forest road construction, planning technology was not transferred fully. Route selection and design of forest roads are based on past experience and are practically carried out.</p>	
<p>相手方に起因する due to Thai side</p>				

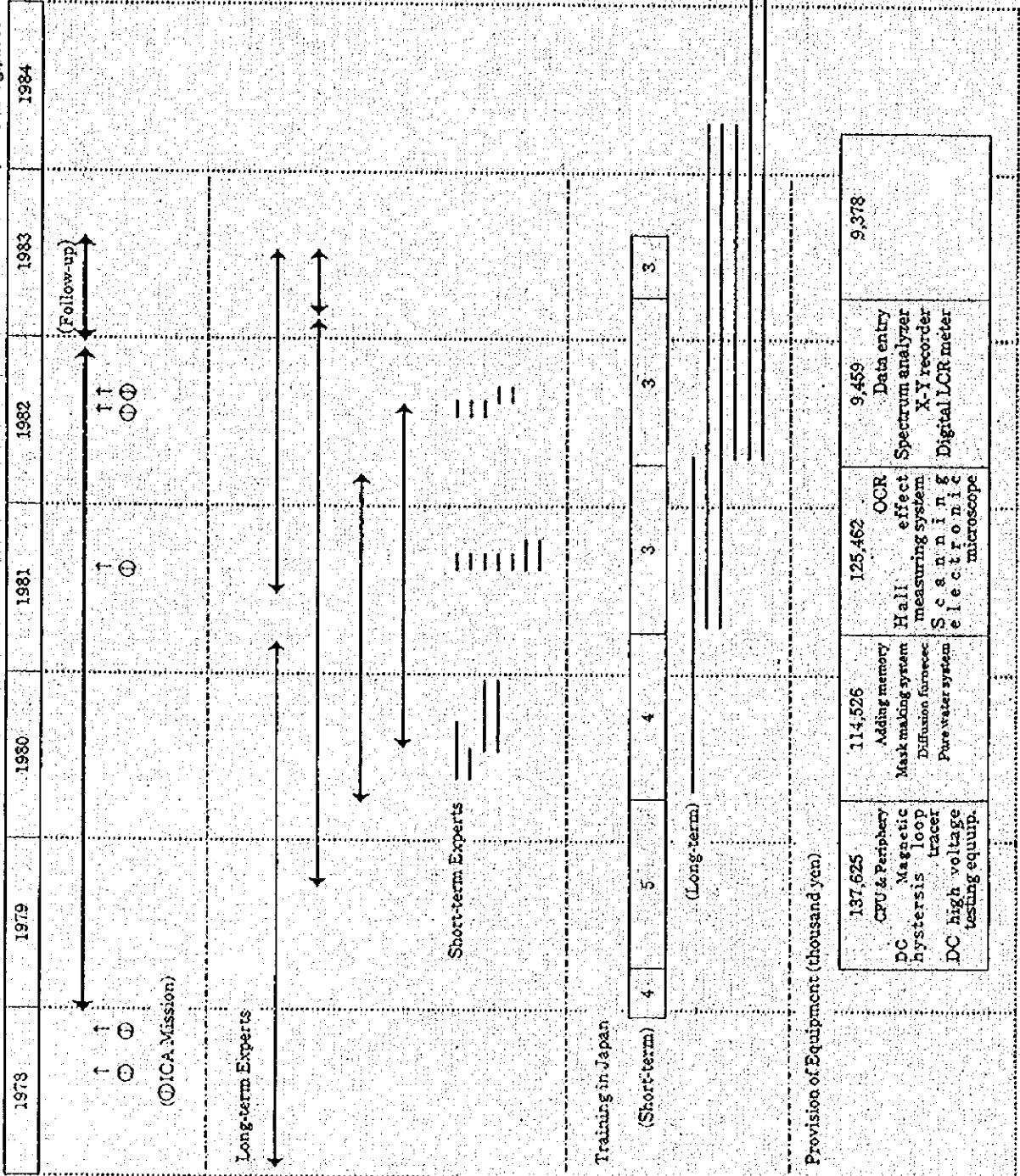
## 教訓と提言

Lessons drawn from evaluation study and suggestions for future cooperation

<p>教訓 Lessons drawn from evaluation study</p>	<p>短期的提言(一年以内に対処すべき) Suggestions (short term)</p>	<p>中期的提言(1~3年以内に対処すべき) Suggestions (mid term)</p>	<p>長期的提言(今後の制度的改竄が必要) Suggestions (long term)</p>
<p>当 方 に 対 す る To JICA side</p> <p>-Even though the policy concerning the project changed, transferred technology could be applied through the efforts of the implementation agency. Ability of implementation agency should be appraised as an important factor in successful project implementation. -If the project seriously affects the environment, environmental impact must be analyzed thoroughly during the project design stage. The plan should include countermeasures to decrease the negative impact on the environment.</p>			
<p>相 手 方 に 対 す る To Thai side</p> <p>-Even though the policy concerning the project changed, transferred technology could be applied through the efforts of the implementation agency. In the implementation agency, counterparts should be selected as an important factor of successful project implementation.</p>			

## King Mongkut's Institute of Technology Ladkrabang (Bangkok)

Dec., 1978 ~ Aug., 1983



### King Mongkut's Institute of Technology Ladkrabang

Super Goal Development of the telecommunication sector	Verifiable Indicators	Achievement	Important Assumptions
<p><b>Overall Goal</b> Supply engineers to telecommunication related industries</p>	<p>1) Number of graduates from engineering related institutes in Thailand and KMUTT's share 2) Number of graduates and employment rate of KMUTT before, during and after the project 3) Evaluation of employers, opinions of graduates</p>	<p>1) Thailand: 4,000 graduates KMUTT: 700 graduates (1990) 18% of Thailand 2) (Faculty of Engineering) 1975 1980 1990 Graduates 231 271 730 Rate of employment 100% 100% 100% 3) 29 graduates were interviewed from 12 companies. They are working with confidence, and employers' evaluation were favorable.</p>	<p>- Based on the 15 Year Plan on Education, the policy emphasizing engineering is continued. - High social demand for engineering. - In 1983, in order to cope with the high social demand for engineering graduates, the 5 year educational system was modified to 4 years.</p>
<p><b>Project Purpose</b> Development of education and research programs in the 3 fields of Data Processing Engineering, Semi-conductor Engineering, and Electric Power Engineering.</p>	<p><b>After Project Completion</b> 1) Staffs - Number - Degree - Academic ranking 2) Graduate and undergraduate program - Number of graduates - Experiment activities 3) Research activities - Number of dissertations 4) Interaction with other universities and industry 5) Social recognition</p>	<p>1) Staffs Total number 1992 55 Ph. D.'s 16 Master's 24 Bachelor's 15 Professor 3 Assistant Professor 14 (including Associate Prof.) Lecturer 26 2) Graduates (Faculty of Engineering) 1990 1995 Bachelor 695 Master 35 Ph. D. 1 - Increase of experiment activities and experiment ratio is being continued. 3) Total in 1990 39 International 5 In Thailand 27 In KMUTT 7 4) - Interaction between KMUTT and Tokai University, and St. Sophia University. - Promotional subsidy research by NECTEC and National Research Center are being carried out. - Have practical education program with more than 20 companies. - Receive scholarship from Thai business world. JEC Scholarship The Kenseisu Scholarship 5) Received prizes for research Toshiba Prize IBM Prize</p>	



Outputs	Verifiable indicators	Achievement	Important Assumptions																																																				
<p>1) Strengthening staff in 3 fields</p> <p>2) Strengthening research activities in 6 fields</p> <p>3) Strengthening of undergraduate and graduate course</p>	<p>During the project</p> <p>1) Staff</p> <ul style="list-style-type: none"> <li>- Total number of staff</li> <li>- Obtained degree</li> <li>- Rank of instructors</li> </ul> <p>2) Research activities</p> <ul style="list-style-type: none"> <li>- Number of theses by staff</li> </ul> <p>3) Undergraduate course, graduate course</p> <ul style="list-style-type: none"> <li>- Number of graduates</li> <li>- Experiment activities</li> </ul>	<p>1) Staff</p> <table border="1"> <thead> <tr> <th></th> <th>1978</th> <th>1983</th> </tr> </thead> <tbody> <tr> <td>Total number</td> <td>22</td> <td>50</td> </tr> <tr> <td>Ph. D's</td> <td>2</td> <td>6</td> </tr> <tr> <td>Master</td> <td>3</td> <td>13</td> </tr> <tr> <td>Bachelor</td> <td>11</td> <td>31</td> </tr> <tr> <td>Professor</td> <td>0</td> <td>3</td> </tr> <tr> <td>Assistant Professor</td> <td>1</td> <td>9</td> </tr> <tr> <td>Lecturer</td> <td>13</td> <td>18</td> </tr> </tbody> </table> <p>2) Number of theses</p> <table border="1"> <thead> <tr> <th></th> <th>1978</th> <th>1983</th> </tr> </thead> <tbody> <tr> <td>International in Thailand</td> <td>1</td> <td>6</td> </tr> <tr> <td>In KMUTT</td> <td>1</td> <td>16</td> </tr> <tr> <td>In KMUTL</td> <td>2</td> <td>2</td> </tr> </tbody> </table> <p>3) - Graduates (Faculty of Engineering)</p> <table border="1"> <thead> <tr> <th></th> <th>1975</th> <th>1980</th> <th>1986</th> </tr> </thead> <tbody> <tr> <td>Diploma</td> <td>102</td> <td>115</td> <td>23</td> </tr> <tr> <td>Bachelor</td> <td>129</td> <td>151</td> <td>286</td> </tr> <tr> <td>Master</td> <td>-</td> <td>-</td> <td>124</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>- Revision of curriculum</li> <li>- Increase of experiment Ratio (15% → 19%)</li> <li>- Increase optional subjects in new technology</li> </ul>		1978	1983	Total number	22	50	Ph. D's	2	6	Master	3	13	Bachelor	11	31	Professor	0	3	Assistant Professor	1	9	Lecturer	13	18		1978	1983	International in Thailand	1	6	In KMUTT	1	16	In KMUTL	2	2		1975	1980	1986	Diploma	102	115	23	Bachelor	129	151	286	Master	-	-	124	<ul style="list-style-type: none"> <li>- In 1982, the first doctorate course was established.</li> <li>- Educational and research equipment is well maintained.</li> <li>- Thai staff are settled in their job.</li> </ul>
	1978	1983																																																					
Total number	22	50																																																					
Ph. D's	2	6																																																					
Master	3	13																																																					
Bachelor	11	31																																																					
Professor	0	3																																																					
Assistant Professor	1	9																																																					
Lecturer	13	18																																																					
	1978	1983																																																					
International in Thailand	1	6																																																					
In KMUTT	1	16																																																					
In KMUTL	2	2																																																					
	1975	1980	1986																																																				
Diploma	102	115	23																																																				
Bachelor	129	151	286																																																				
Master	-	-	124																																																				
<p>Activities</p> <p>The following activities were carried out in the three fields of engineering of data processing, semi-conductor and electric power engineering.</p> <ul style="list-style-type: none"> <li>- Improvement of curriculum (including to add new courses)</li> <li>- Improve experiments</li> <li>- Expand of facilities</li> </ul>	<p>Japanese Inputs</p> <ol style="list-style-type: none"> <li>1) Dispatch of experts</li> <li>2) Training in Japan</li> <li>3) Provision of equipment</li> </ol> <p>Thai Inputs</p> <ol style="list-style-type: none"> <li>4) Counterparts staff</li> <li>5) Building</li> <li>6) Operational budget</li> </ol>	<ol style="list-style-type: none"> <li>1) 22 experts were dispatched (long-term 6, short-term 16)</li> <li>2) 26 trainees were trained in Japan</li> <li>3) 500 million yen of equipment were provided (Major equipment: computer-main body and peripheral equipment, test equipment of ultra high voltage, manufacturing equipment for semi-conductor)</li> <li>4) 50 staffs in 1983</li> <li>5) Building: 13 million Bahts</li> <li>6) Operation budget: 3 million Bahts/year (except salary)</li> </ol>	<ul style="list-style-type: none"> <li>- Sufficient number of qualified Thai staff</li> <li>- Sufficient research budget of Thai side. (budget for construction of new computer building: 100 million Bahts have been appropriated for the years 1990-94)</li> </ul>																																																				



## 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	- Education and research systems were strengthened and expanded in the three fields. - The teaching staff was strengthened, and their abilities were improved.
案件の効果 直接の効果 Direct impact	2(3)	- Education and research systems are continuously being strengthened. Graduates of the master's course remain in KMITL and the number of staff is increasing. - However in the data processing field, Japanese cooperation has implemented a new project since 1988.
間接の効果 Indirect impact	1(3)	- In 1990, KMITL provided 20% of graduates of engineering field in Thailand.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	- Counterparts were selected properly, and their abilities in education and research were improved remarkably. - OCR, scanning electronic microscope and some computer software were sent at the last stage of the project period. Therefore, eight months of follow-up was implemented in the fields of data processing and semiconductor, to sufficiently transfer technology.
自立可能性 Sustainability	4(4), 3(4), 2(4), 1(4)	- Both during and after the project period, Thai staff members increased, their abilities were improved, and their drop out rate has been low. - Staff research publications have increased. - Budget has been gradually allocated. - Social needs of KMITL's graduates are high. - Equipment is maintained properly. But renewal of equipment by the Thai-side is not possible due to high equipment costs and lack of budget allocations by the Thai government.
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	- Project planning and content was timely in view of development trends in Thailand and is still valid at present. - However, dispatch of experts, training programs in Japan, and provision of equipment in the field of new energy conversion in Electrical Engineering have not been carried out. Further discussions are required as to whether it should be included in the project.

### 効果発現に貢献した要因

Factors contributing to implementation and production of impact

	発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
当方に起因する due to JICA side	-Based on former cooperation projects in the telecommunications sector, this project would expand to related sectors.				-Timing of project implementation overlapped development of the telecommunications sector, and also met social needs.
相手方に起因する due to Thai side	-In order to prepare the request for the project, KMITL and DTEC carried out a joint pre-study. As a result of the study, education related telecommunication engineers, for which there was a high social need, was selected.			-Abilities of counterparts were high and improved remarkably.	-Timing of project implementation overlapped development of the telecommunications sector, and also met social needs. -In order to improve staff ability, efforts were made to obtain academic degrees, and applying to other scholarship schemes. -Efforts were made to develop ability by mutual scholarship exchange programs with individual universities in Japan.

問題惹起要因  
Factors inhibiting implementation and production of impact

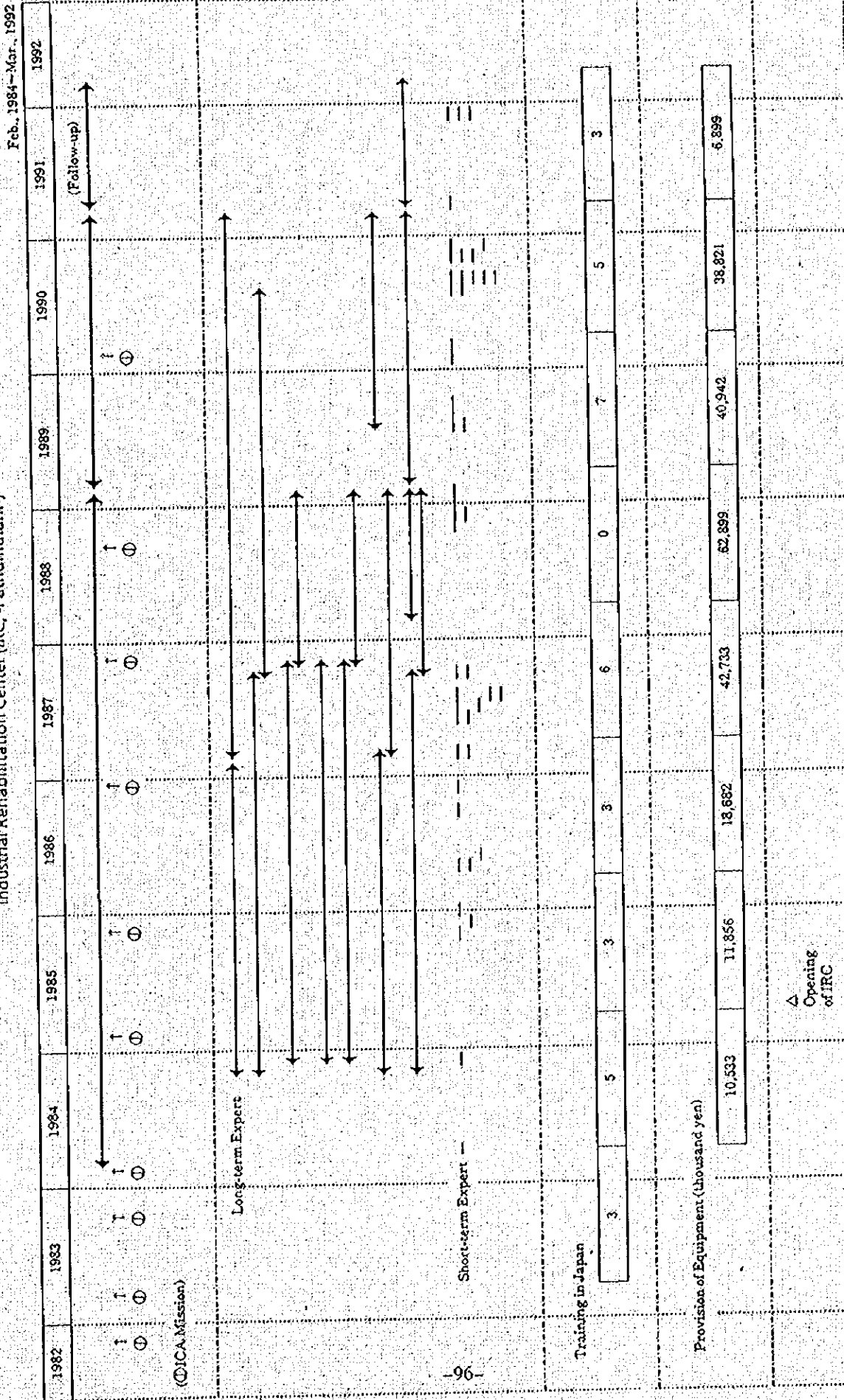
発提 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
当方にて要因する due to JICA side	-Comprehensive discussions should be held on whether a course in new energy conversion in electrical engineering would be included in the project.			
相手方にて要因する due to Thai side				-In the Thai industry, technology is developing very rapidly, and some research facilities and equipment of KMITL have become outdated.

### 教訓と提言

Lessons drawn from evaluation study and suggestions for future cooperation

	<p>教訓 Lessons drawn from evaluation study</p>	<p>短期的提言(一年以内に対応すべき) Suggestions (short term)</p>	<p>中期的提言(1~3年以内に対応すべき) Suggestions (mid term)</p>	<p>長期的提言(今後の制度的改竄が必要な) Suggestions (long-term)</p>
<p>当方に対する To JICA side</p>	<p>-Abilities of counterparts were high and the project was implemented efficiently. In the planning stage, abilities of the counterpart should be taken into consideration.</p>			<p>-In the area of new technology, such as new energy conversion, Japanese technical levels, possibilities of hiring Japanese experts, and the technological level of the recipient country should be studied thoroughly, even in the area of technical cooperation to universities. Discussions on R/D should be held after the possibility of cooperation is sufficiently studied.</p>
<p>相手方に対する To Thai side</p>	<p>-Abilities of counterparts were high and the project was implemented efficiently. When selecting counterparts, it is very important to evaluate their abilities. -The need for and external conditions of the project were clarified through a preliminary study jointly conducted by KMITL and DTEC. In order to achieve appropriate project formulation, preparation study should be conducted thoroughly.</p>			<p>-If the project includes fields where there have been remarkable technological renovations, it is necessary to establish a system where equipment and facilities can be renewed, in order to ensure sustainability of the project.</p>

Industrial Rehabilitation Center (IRC, -Pathumthani-)



### Industrial Rehabilitation Center

	Verifiable indicators	Achievement	Important Assumptions												
<p><b>Super Goal</b> Implement of industrial disabled worker welfare</p>															
<p><b>Overall Goal</b> Industrial disabled worker's early return to work</p>	<p>Number of workmen rehabilitation treatment</p>	<p>IRC achievement levels reflects nationwide achievement levels</p>	<p>Number of industrial worker-accidents</p> <table border="1"> <tr> <td></td> <td>1975</td> <td>1980</td> <td>1986</td> </tr> <tr> <td>Total number</td> <td>10,136</td> <td>25,324</td> <td>80,065</td> </tr> <tr> <td>Rehabilitants in IRC</td> <td>856</td> <td>1,191</td> <td>1,509</td> </tr> </table>		1975	1980	1986	Total number	10,136	25,324	80,065	Rehabilitants in IRC	856	1,191	1,509
	1975	1980	1986												
Total number	10,136	25,324	80,065												
Rehabilitants in IRC	856	1,191	1,509												
<p><b>Project Purpose</b> Establish IRC functions</p>	<p>1) Main indices - Number of admitted disabled workers - Number of medical rehabilitation treatments - Number of re-employed workers 2) The degree of satisfaction of rehabilitants in IRC, graduates and employers.</p>	<p>1) IRC's achievement levels 1986 1992 - Admitted disabled workers 83 192 - Medical rehabilitants 82 186 - Reemployed workers 62 153 2) Interview results - 10 rehabilitants: All participated in medical rehabilitation and were satisfied with the contents of the training program. - 16 discharged rehabilitants: Among them, 3 returned to the company, 4 entered a new company, 2 were self-employed. - They expressed their gratitude to IRC for a second chance at life. Employers' evaluation is also high.</p>	<p>- Industrial Compensation Fund was established. Minimum level of economic livelihood is guaranteed by the compensation fund based on the Labor Law (medical care expenses and family's living expenses are not borne by rehabilitants). - Number of registered enterprises and workers for the Industrial Compensation Fund: Enterprises 1990 1990 Workers 7,337 15,544 745,313 1,826,225 - Income and expenses of Industrial Compensation Fund is favorable. Income (M/B) 1990 1990 Expense (M/B) 152 441 98 413 - In hospitals of Thailand, medical rehabilitation facilities and staff members are insufficient. - Interaction between IRC and external organizations which handle re-employment is weak.</p>												
<p><b>Outputs</b> Strengthening staff members in five fields</p>	<p>Main indices 1) Number of staff members. 2) Obtaining qualifications (OT, PT) 3) Number of medical rehabilitation treatments</p>	<p>1) Number of staff 1985 1992 Evaluation and Guidance Section 3 4 Medical Rehabilitation Section 5 14 Work Preparation Section 7 10 Vocational Training Section 5 8 2) Obtain qualifications OT 1 4 PT 2 4 3) Number of medical rehabilitation treatments PT treatments 46 183 OT treatment 42 180 PO treatment (PO: Prosthesis and Orthotics) - 176</p>	<p>- Budget (thousand Bahts) 1985 1992 Government 2,692 7,468 DTEC 369 201 Khumakorn Fund 1,656 Social Security Fund - 369 Total 3,061 9,694 - Sufficient distribution of operational budget. - Industrial Disaster Insurance premiums are firstly put into the Khumakorn Fund, and then distributed to IRC. - Equipment and facilities are well maintained and renewed.</p>												



Activities	Verifiable indicators	Achievement	Important Assumptions
<p>Technical development in following five fields</p> <ul style="list-style-type: none"> <li>- Medical rehabilitation</li> <li>- Training for organic function recovery and fabrication, repair of prosthesis and orthotics)</li> <li>- Evaluation of work (to evaluate job possibility and vocational ability)</li> <li>- Work preparation (to promote vocational adaptability)</li> <li>- Vocational training (Training which enables self reliance)</li> <li>- Vocational guidance (promote re-employment)</li> </ul>	<p>Japanese inputs</p> <ol style="list-style-type: none"> <li>1) Dispatch of experts</li> <li>2) Training in Japan</li> <li>3) Provision of equipment</li> <li>4) Building construction (grant aid)</li> </ol> <p>Thai inputs</p> <ol style="list-style-type: none"> <li>5) Counterparts staff</li> <li>6) Land and Building</li> <li>7) Operational budget</li> </ol>	<ol style="list-style-type: none"> <li>1) 60 experts were dispatched (long-term 17, short-term 43)</li> <li>2) 32 trainees were trained in Japan</li> <li>3) 140 million yen of equipment were provided</li> <li>4) 1,090 million yen of grant aid</li> <li>5) 20 staff members in 1985, 36 staffs in 1992</li> <li>6) Land and Building: 47 million Bahts</li> <li>7) Operation budget: 5 million Bahts/year</li> </ol>	<ul style="list-style-type: none"> <li>- Distribution of Thai counterparts and number of qualified staff are satisfactory.</li> <li>- Thai counterparts are settled in their job.</li> <li>- Rehabilitants are disabled workers from enterprises (more than 20 workers) receiving the Industrial Compensation Insurance premiums.</li> </ul>

### 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	- Function of the IRC was established.
案件の効果 Direct impact	2(3)	- Disabled workers are rehabilitated at the IRC and return to work earlier. - Number of rehabilitants and reemployed workers are increasing. - Number of rehabilitants per staff member is also increasing.
間接の効果 Indirect impact	1(3)	- Almost all graduates of the IRC return to work. However, the total number of disabled workers in Thailand, who need rehabilitation treatment is rapidly increasing, and IRC provides medical rehabilitation service due to insufficient medical rehabilitation services in hospitals. Therefore, IRC can accept only ten percent of the rehabilitants requiring treatment. - Due to insufficient interaction between IRC and other organizations in charge of employment services, discharged rehabilitants can not return to work immediately.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	- In order to cope with actual needs, the initial plan was modified in during the implementation stage. Although medical rehabilitation section has been strengthened since 1987, it is still unable to fulfill the entire demand. - In order to cope with the needs of employers, vocational rehabilitation was reorganized to integrate vocational preparation and training, and the number of course was increased.
自立可能性 Sustainability	4(4), 3(4), 2(4), 1(4)	- IRC was strengthened financially by the establishment of the Khmakorn Fund and IRC attained financial sustainability. - IRC attained technical sustainability. - The need for IRC's activities is still high and there is a room to expand their activities.
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	- At the initial stage of planning, poor medical rehabilitation facilities in hospitals in Thailand was pointed out, but IRC project was formed assuming that medical rehabilitation activities in hospitals would be expanded and improved in future. However, in spite of such optimistic expectations, such expansion and improvement measures were not taken. Thus IRC was obliged to accept disabled workers requiring medical rehabilitation, and the IRC project was modified to meet this need. - Need for vocational rehabilitation is still high, and the project is still relevant.

## 効果発現に貢献した要因

Factors contributing to implementation and production of impact

	発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>当方に起因する due to JICA side</p>	<p>This project was able to timely cope with the increase of disabled workers, a side effect of rapid industrialization in Thailand.</p>			<p>- During the implementation stage, medical rehabilitation was expanded and improved, and vocational rehabilitation was reorganized. As a result, the project was able to meet actual needs.</p>	
<p>相手方に起因する due to Thai side</p>	<p>In order to improve workers welfare, the Thai government has gradually prepared laws and legal systems, and established basic conditions. In response to these legal arrangement, this project was formed as a concrete measure for disabled workers. Therefore, budget and staff were easily allocated.</p>				<p>- IRC has established its own fund through the contributions of the Khunakorn Fund.</p>

## 問題惹起要因

Factors inhibiting implementation and production of impact

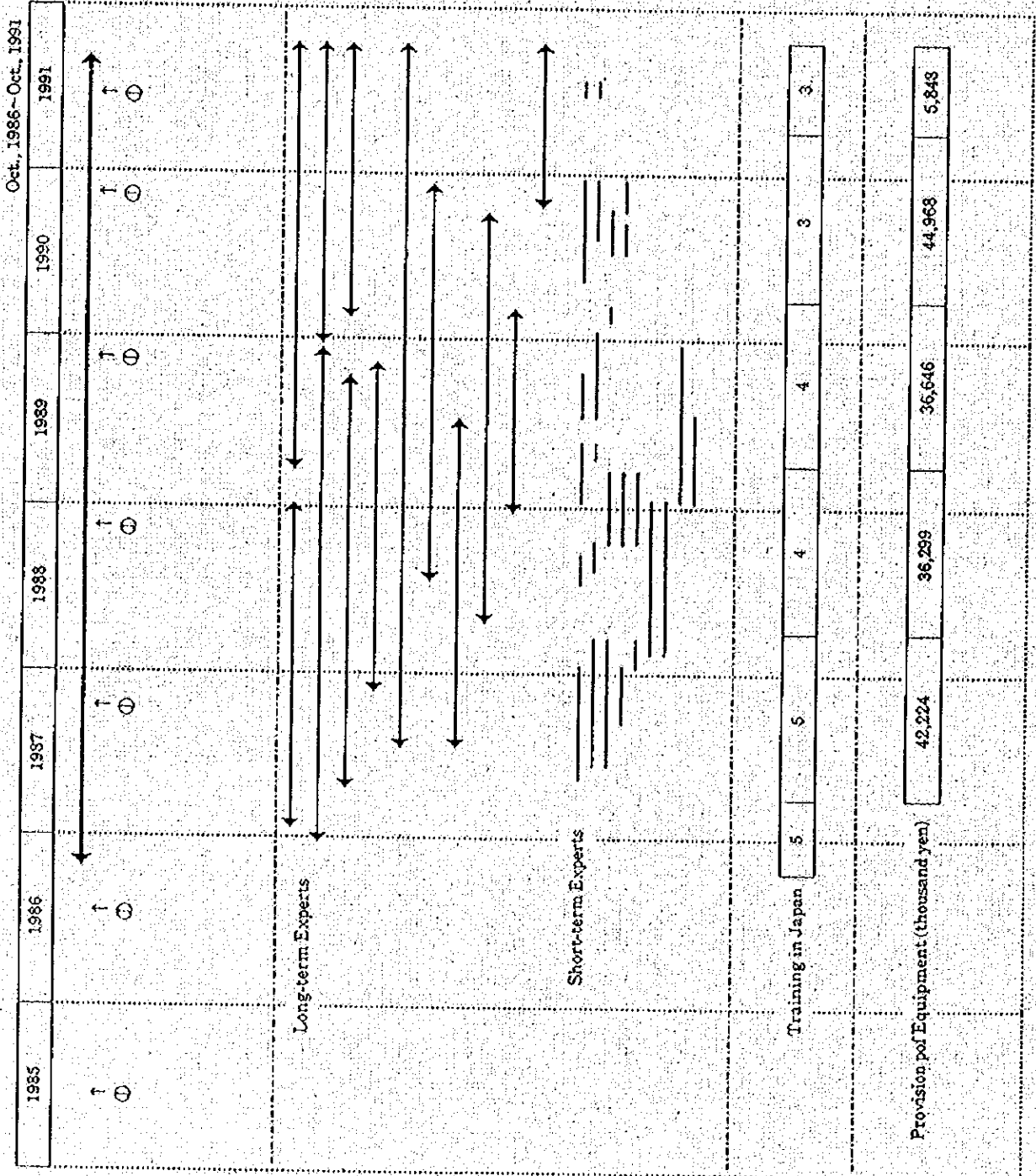
発端 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>差次に要因する due to JICA side</p>		<p>- During the initial stage of planning, poor medical rehabilitation facilities and staff in hospitals in Thailand were pointed out. In spite of this, a concrete program to motivate the expansion and improvement of medical rehabilitation in these hospitals by some external organizations, was not formed.</p>		
<p>相手方に要因する due to Thai side</p>		<p>- During the initial stage of planning, poor medical rehabilitation facilities and staff in hospitals in Thailand were pointed out. In spite of this, a concrete program to motivate the expansion and improvement of medical rehabilitation in these hospitals by some external organizations, was not formed.</p>	<p>- Interaction between IRC and external employment agencies, one of the vocational guidance activities, was insufficient.</p>	

## 教訓と提言

Lessons drawn from evaluation study and suggestions for future cooperation

	<p>教訓 Lessons drawn from evaluation study</p>	<p>短期的提言(一年以内に対応すべき) Suggestions (short term)</p>	<p>中期的提言(1-3年以内に対応すべき) Suggestions (mid term)</p>	<p>長期的提言(今後の制度的改編が必要) Suggestions (long term)</p>
<p>当方に対する To JICA side</p>	<p>-When external factors which greatly affect implementation of the project is confirmed, countermeasures (whether to secure the support of external organizations for the project) should be discussed, and the share of responsibility should be cleared.</p>			<p>-In case of modification of planning, actual facts, progress of change (situation of needs, external conditions) and reasons shall be made clear, and keep a record of these.</p>
<p>相手方に対する To Thai side</p>	<p>-It is important to take into account interaction between IRC and the hospitals, and the employment agencies.</p>		<p>-It is necessary to perform a follow up survey of discharged rehabilitants of IRC, and utilize the results of the survey in rehabilitation activities.</p>	<p>-In order to prevent industrial accidents, it is necessary to institute comprehensive-labor safety controls. -It is necessary to expand and improve the functions of medical rehabilitation service at hospitals.</p>

Metalworking and Machinery Industries Development Institute (MIDI, Ministry of Industry: Bangkok)





### Metalworking and Machinery Industries Development Institute

Overall Goal	Verifiable Indicators	Achievement	Important Assumptions
<p>1) Promotion of metalworking and machinery industry</p> <p>2) Productivity and quality improvement of small and medium enterprises (SMEs)</p>	<p>1-1 Transition and export of metalworking and machinery industry</p> <p>2-1 Number and transition in production of SMEs in metalworking and machinery industry</p> <p>2-2 Number, production and employees of SMEs</p> <p>2-3 Opinions of buyers (large scale firms)</p>	<p>1-1 Metalworking and machinery industry has developed more rapidly than other manufacturing subsectors.</p> <p>2-1 N/A</p> <p>2-2 N/A</p> <p>2-3 Some of the SMEs' products have improved their quality</p>	<p>- Special loan programs specifically targeted for SMEs are limited.</p> <p>- Metalworking industry is one of the priority industrial sectors in the 7th plan.</p> <p>- Metalworking and machinery industry has been growing rapidly</p>
<p>Project Purpose</p> <p>1) Establish MIDI support system for SMEs in metalworking and machinery industry</p>	<p>1-1 Activities following project completion</p> <p>1-1-1 Number of trainees</p> <p>1-1-2 Number of advisory services</p> <p>1-1-3 Number of testing services</p> <p>1-1-4 Number of trial manufacturing</p> <p>1-1-5 Number of publications</p> <p>1-2 Opinion of the private sector regarding MIDI</p>	<p>1-1-1 1,224 (FY1992)</p> <p>1-1-2 110</p> <p>1-1-3 332</p> <p>1-1-4 80</p> <p>1-1-5 7</p> <p>1-2 All twelve companies interviewed appreciate the activities of MIDI.</p>	<p>- MIDI's budget has steadily increased (1.6M in '87 to 21.3M in '93)</p> <p>- Insufficient communication with private sector and concerned government agencies.</p> <p>- Most of C/P personnel have stayed in MIDI (2 within government, 4 to private sector)</p> <p>- Machinery and equipment well maintained</p>
<p>Outputs</p> <p>1) Upgrading technology level of MIDI staff</p> <p>2) Upgrading technology guidance capabilities of MIDI staff</p> <p>3) Dissemination of technology information</p> <p>4) Organize forums</p>	<p>1-1 Number of testing services</p> <p>1-2 Number of trial manufacturing</p> <p>2-1 Number of trainees</p> <p>2-2 Number of advisory services</p> <p>3-1 Number of publications</p> <p>4-1 Number of forums</p>	<p>FY1987 FY1991</p> <p>1-1 112 329</p> <p>1-2 67 56 2</p> <p>2-1 662 1,889</p> <p>2-2 40 120</p> <p>3-1 Total of 94, 1987-91.</p> <p>4-1 Three (3) forums established: foundry, electroplating, tools &amp; die.</p>	
<p>Activities</p> <p>Technology transfer in 12 technical fields:</p> <ul style="list-style-type: none"> <li>Seminars, training courses</li> <li>Extension services</li> <li>Testing and inspection</li> <li>Trial manufacturing</li> <li>Research and development activities</li> <li>Information services</li> </ul> <p>Activities of Thai side:</p> <ul style="list-style-type: none"> <li>Establish forum</li> </ul>	<p>Japanese Inputs</p> <ol style="list-style-type: none"> <li>1) Dispatch of experts</li> <li>2) Training in Japan</li> <li>3) Provision of equipment</li> <li>4) Building and facility (Grant aid)</li> </ol> <p>Thai Inputs</p> <ol style="list-style-type: none"> <li>5) Counterparts staff</li> <li>6) Budget allocation</li> </ol>	<ol style="list-style-type: none"> <li>1) 42 experts were dispatched (long-term 13, short-term 29)</li> <li>2) 26 trainees were trained in Japan</li> <li>3) 164.5 million yen of equipment were provided (Major equipment: induction furnace, hardness tester, zinc electroplating line, NC milling machine)</li> <li>4) 2,915 million yen of grant aid</li> <li>5) 65 C/Ps</li> <li>6) Budget: 37.4 million Baht</li> </ol>	

Note: 1. Main fields: casting, heat treatment, material testing and inspection, machining, precise measuring and inspection, machinery design, Subfields: educational material and information system, welding and sheetmetal works, electroplating, managerial and control technology, forging.

2. Fee collection started in 1991.

## 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	- The technology level of MIDI staff has been improved and a support system for small and medium enterprises has been established.
案件の効果 Direct impact	2(3)	- MIDI is contributing to the improvement of the technology level for those enterprises that received training and technological guidance.
間接の効果 Indirect impact	1(3)	- Many interviewees in the private sector hope that the services of MIDI are provided faster. - Metalworking and machinery industry has been developing faster than other industries of the manufacturing sector. - Some enterprises that received MIDI services developed new products based on what they gained from MIDI which contributed to their sales and profits. - Some large scale enterprises valued the importance of MIDI services and recommended their small scale suppliers to seek MIDI advice.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	- As a result of consultation mission in October 1987, the evaluation methods on technology transfer was adopted which made systematic assistance possible. Measures to improve communication between the Japanese experts and Thai counterparts were also instituted.
自立持続性 Sustainability	4(4), 3(4), 2(4), 1(4)	- It has been only one year since project completion and it is somewhat too early to make any definite assessment about sustainability. It is assumed, however, that sustainability has been achieved since the budget has been properly allocated, many of the counterparts have remained in MIDI, and maintenance and management of machinery and equipment have been properly carried out. - For the future development of MIDI, continued technological upgrading of staff, acquisition of new equipment, and proper response to the needs of target groups should be secured by the management and staff.
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	- Metalworking and machinery industry has been developing rapidly and the need for this institute is high. The project purpose is still valid at present.

### 効果発現に貢献した要因

Factors contributing to implementation and production of impact

	発現 Project identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
当方に起因する due to JICA side	- Project was formulated based on such studies as "Study for the promotion of metal-working industries in Thailand (1982-84)", etc.			- During the project, evaluation methods determining the degree of technology transfer was adopted, which made organized assistance activities possible.	
相手方に起因する due to Thai side	- The request was made, in anticipation of an investment boom in the manufacturing sector. The need to improve the technology level of small and medium enterprises were met in a timely manner.	- The project was build on the existing organization, ISD. As a result, the knowledge and experience of the staff was utilized and assistance was smoothly provided.			- Since the project coincided with an investment boom in the manufacturing sector, it was able to meet the increased needs for technological improvement. - By coordinating assistance schemes by other organizations such as JETRO, JODC, APO, etc., the opportunities for training and dispatch of experts have increased.

### 問題惹起要因

Factors inhibiting implementation and production of impact

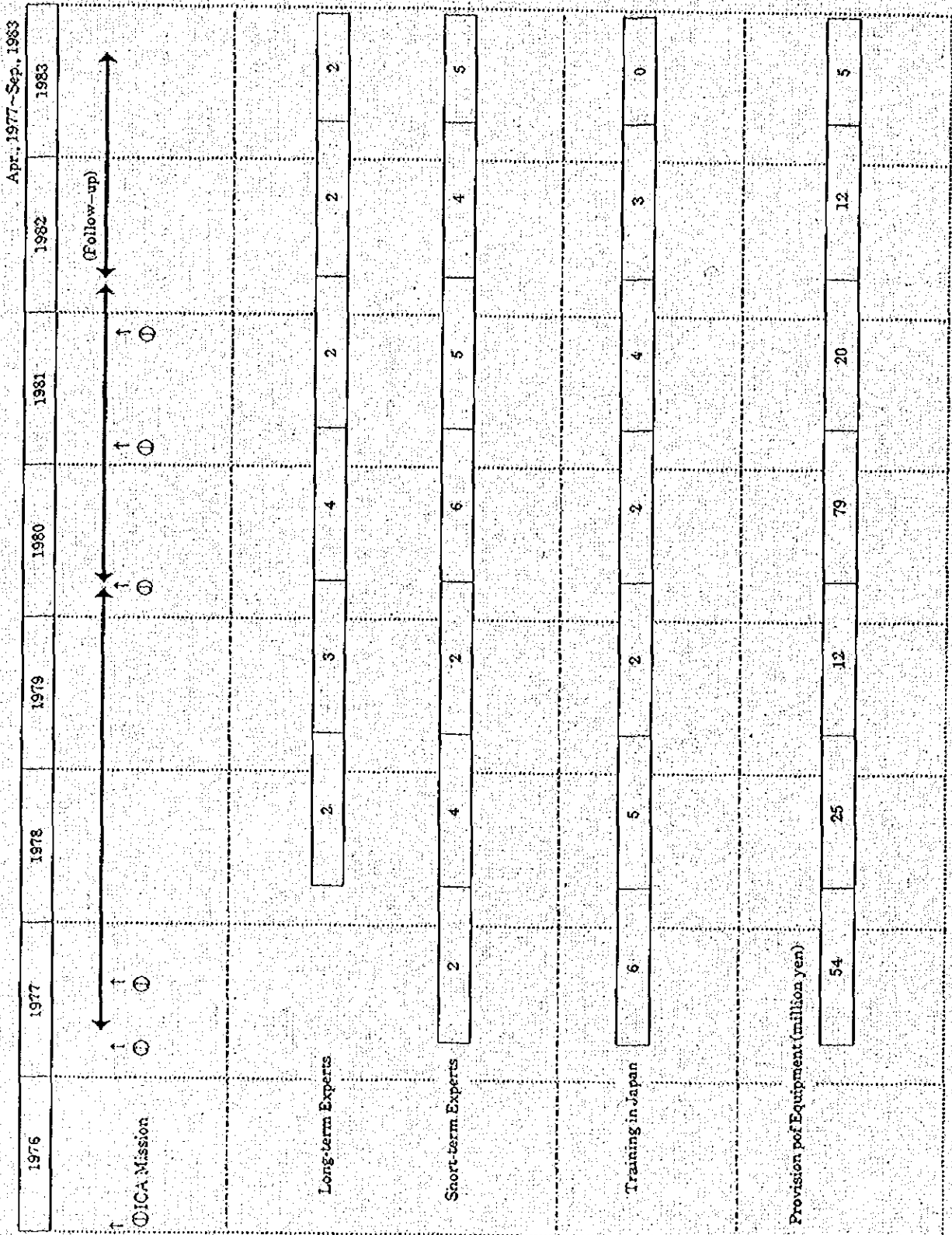
発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
<p>並にJICAに起因する due to JICA side</p>			<p>- During the early stage of the project, communication gaps arose between the Japanese experts and Thai counterparts because differences in cultural backgrounds and difficulties in speaking a third language; and the technology transfer process was delayed</p>	
<p>相手側に起因する due to Thai side</p>			<p>- During the early stage of the project, communication gaps arose between the Japanese experts and Thai counterparts because differences in cultural backgrounds and difficulties in speaking a third language; and the technology transfer process was delayed - There is no incentive for active P.R. efforts and factory visits for technology guidance.</p>	<p>- The future direction of MIDI is not clearly defined, especially in areas concerning continued improvement of the technology level of staff members, acquisition of new equipment, and the response to needs of target groups.</p>

### 教訓と提言

Lessons drawn from evaluation study and suggestions for future cooperation

	教訓 Lessons drawn from evaluation study	短期的提言(一年以内に対応すべき) Suggestions (short term)	中期的提言(1~3年以内に対応すべき) Suggestions (mid term)	長期的提言(今後の制度的改善が必要) Suggestions (long term)
<p>相手側 To JICA side</p>	<p>During the project formulation stage, thorough studies should be carried out. - Target groups should be clearly defined.</p>			<p>- Comprehensive training programs should be developed in order to improve the interaction between the dispatched experts and the local counterparts. - Small and medium enterprises should be clearly defined at the outset of the project and cooperation activities should be provided to them.</p>
<p>相手側 To Thai side</p>	<p>- Target groups should be clearly defined. - It is necessary to establish a system of timely response to changing needs by strengthening cooperation with the private sector and the relevant ministry.</p>		<p>- A system to continually upgrade the staffs technological level should be established. - Sufficient budget for periodic upgrading of required machinery and equipment should be allocated. - Interaction with the private sector should be increased. - A follow-up system for analyzing the needs of beneficiaries should be improved.</p>	<p>- Financial sustainability should be enhanced by making use of the MIDI foundation, i.e. making fee incomes directly available for MIDI activities, and providing financial incentive for P.R. activities by staff. - Special loan programs targeted specifically for small and medium enterprises should be enhanced.</p>

## Technological Development of Natural Rubber Processing (RRC, Ministry of Agriculture -Hat Yai-)





### Technological Development of Natural Rubber Processing

Super Goal	Verifiable indicators	Achievement	Important Assumptions
<p>1) Promotion of rubber industry</p> <p>Overall Goal</p> <p>1) Improved quality of natural rubber</p>	<p>1-1 Production and export volume of natural rubber according to category</p> <p>1-2 Opinions of shippers and rubber product manufacturers (buyers of TPR and RSS)</p>	<p>1-1 In the past ten years, the production and export of Thai natural rubber have rapidly increased. In particular, the growth of RSS3 and TPR20 has been remarkable.</p> <p>1-2 The quality of natural rubber in Thailand has considerably improved over the past ten years.</p>	<p>- Sufficient demand for improved NR.</p> <p>- Domestic rubber product industry has developed steadily</p> <p>- The activities of RRC are recognized by smallholders and NR producers through seminars and training courses</p> <p>- The private sector has made aggressive efforts to improve the quality of NR</p> <p>- Priority is high for NR and supported at the national policy level.</p>
<p>Project Purpose</p> <p>1) Quality control capacities of natural rubber processing at the Rubber Research Center (RRC)</p>	<p>1-1 Number of physical tests after project completion</p> <p>1-2 Activities of RRC for quality improvement of NR</p> <p>1-3 Application of research activities</p> <p>1-4 Use and renewal of equipment provided.</p> <p>1-5 Improvement of staff capabilities</p>	<p>1-1 Income from physical tests: 5,905 Baht in '86, 12,460 Baht in '91</p> <p>1-2 Physical testing is included in the training courses in rubber technology.</p> <p>1-3 Physical testing is utilized in new rubber product development research.</p> <p>1-4 Acquisition of new equipment (tensile strength tester, etc.)</p> <p>1-5 Eight C/P obtained master's degree.</p>	<p>- Maintenance is available for equipment provided by the project and physical tests are still conducted.</p> <p>- Budget allocations has been steadily increased (13% p.a. 83-92) after project completion.</p> <p>- 30% of C/P have left. However, all have remained employed in rubber research organizations.</p> <p>- Relationship between rubber product quality and natural rubber quality is well understood within RRC.</p> <p>- Thai government has formulated master plan for development of natural rubber.</p>
<p>Outputs</p> <p>1) Standardization of physical testing procedure</p> <p>2) Establish maintenance system for equipment</p> <p>3) Transfer of common rubber technology</p>	<p>1-1 Standardized manuals</p> <p>1-2 Number of physical tests</p> <p>2-1 Documents for maintenance procedures</p> <p>3-1 Number of seminars and training courses implemented</p>	<p>1-1 RRC documents published (Physical testing method, Method of analysis for compound chemicals)</p> <p>1-2 N/A</p> <p>2-1 Formulated a check point list and a record of problem areas.</p> <p>3-1 N/A</p>	<p>- Maintenance is available for equipment provided by the project and physical tests are still conducted.</p> <p>- Budget allocations has been steadily increased (13% p.a. 83-92) after project completion.</p> <p>- 30% of C/P have left. However, all have remained employed in rubber research organizations.</p> <p>- Relationship between rubber product quality and natural rubber quality is well understood within RRC.</p> <p>- Thai government has formulated master plan for development of natural rubber.</p>
<p>Activities</p> <p>- Technology transfer of physical testing method.</p> <p>- Transfer of operation and maintenance techniques for testing machinery and equipment.</p> <p>- Introduction of periodic maintenance system.</p> <p>- Manpower development for common rubber technology.</p>	<p>Japanese Inputs</p> <p>1) Dispatch of experts</p> <p>2) Training in Japan</p> <p>3) Provision of equipment</p> <p>Thai Inputs</p> <p>4) Building</p> <p>5) Counterparts staff</p>	<p>1) 48 experts were dispatched (long-term 17, short-term 31)</p> <p>2) 22 trainees were trained in Japan</p> <p>3) 208 million yen of equipment were provided (Major equipment vulcanizing press, boiler, banbury mixer, automatic Mooney viscometer, conical disc rheometer, tensile strength tester)</p> <p>4) Building (UNDP, 1965)</p> <p>5) 19 counterparts staff</p>	<p>- Maintenance is available for equipment provided by the project and physical tests are still conducted.</p> <p>- Budget allocations has been steadily increased (13% p.a. 83-92) after project completion.</p> <p>- 30% of C/P have left. However, all have remained employed in rubber research organizations.</p> <p>- Relationship between rubber product quality and natural rubber quality is well understood within RRC.</p> <p>- Thai government has formulated master plan for development of natural rubber.</p>

## 評価5項目に沿った評価結果

Evaluation result along the five points of evaluation

評価項目 Evaluation points	分析対象セル番号 Cell no. for analysis	評価結果 Evaluation result
目標達成度 Attainment of project purpose	4(1), 3(1), 2(1) and 4(3), 3(3), 2(3)	- The physical testing technology of natural rubber was established.
要件の効果 直接の効果 Direct impact	2(3)	- Physical testing technology was established at RRC.
間接の効果 Indirect impact	1(3)	- Physical testing technology is utilized in new rubber product development. - RRC provided guidance to foreign investors and promoted investment (medical glove manufacturer). - Physical tests of natural rubber products are performed on request from the buyers. The results are conveyed to the rubber factories and advice is given to improve quality.
実施の効率性 Efficiency of implementation	4(3) and 3(3)	- Equipment was well effectively utilized. - The training program in Japan was well focused and properly carried out, enabling the Thai counterparts to successfully learn basic technology.
自立発展性 Sustainability	4(4), 3(4), 2(4), 1(4)	- New machinery and equipment have been acquired (tensile strength tester, etc.); and technological sustainability has been maintained. - Counterparts have stayed within the rubber research institute system. Eight of them acquired master's degrees after the project, which reflects improved capabilities. - Counterparts acquired basic technological knowledge through training, etc., and they are capable of using new equipment.
計画の妥当性 Relevance of planning	4(4), 3(4), 2(4), 1(4)	- Physical testing technology is used in quality testing of various natural rubber products and in research activities. Therefore, the project still meets current needs. - Project impact was great since the selected project site was located in a natural rubber producing area. - It was highly effective to focus the project on physical testing technology which dealt with the processing aspect of natural rubber, after UNDP assistance in the agricultural aspect was completed.

## 効果発現に貢献した要因

Factors contributing to implementation and production of impact

	発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
当方に起因する due to JICA side	<p>The project site was selected in a natural rubber producing area.</p>	<p>By succeeding in the footsteps of other donors, it was possible to reaffirm the external factors and to confirm the need for Thailand to introduce physical testing technology from Japan.</p>			
相手方に起因する due to Thai side	<p>The Thai side had the capacity to manage the master plan for natural rubber. - Following UNDP, World Bank assistance, etc. in the agricultural aspect, the request for Japanese assistance was focused on the issue of improved quality of intermediate products.</p>			<p>- Qualified counterparts, who were capable of absorbing relevant technology, were assigned.</p>	

### 問題惹起要因

Factors inhibiting implementation and production of impact

	発掘 Project Identification	審査 Appraisal	実行計画 Implementation design	実施 Implementation	その他 Others
相手側に原因する due to JICA side					
相手方に原因する due to Thai side					-Incentives for increasing interaction with outside do not exist, i.e. insufficient P.R. activities. -An increase in maintenance costs have been observed due to insufficient maintenance and control of machinery and equipment deterioration, and the inability to acquire new equipment.

## 教訓と提言

Lessons drawn from evaluation study and suggestions for future cooperation

	短期的提言(一年以内に対応すべき) Suggestions (short term)	中期的提言(1~3年以内に対応すべき) Suggestions (mid term)	長期的提言(今後の制度的改組が必要な) Suggestions (long term)
<p>教訓 Lessons drawn from evaluation study</p> <p>External factors and development needs were confirmed in the foot/step by succeeding of other donors. Coordination with other donors should be encouraged in future cooperation projects.</p> <p>-By limiting the scope of assistance and clearly defining its activities, the output and the attainment of project purpose can be clearly evaluated. It is necessary to follow this method in future projects.</p> <p>-When identifying a project, the master plan should be obtained, the assistance by other donors should be clarified, and the findings recorded in order to define Japanese cooperation.</p>			
<p>当方に対する To JICA side</p>			<p>-In order to improve the activities of RRC, it is necessary to utilize independent capital to cover operating costs by incorporating a system to collect testing fees.</p>
<p>相手方に対する To Thai side</p>			

#### General Issue Approach vs. Specific Problem Solving Approach

	General Issue Approach	Specific Problem Solving Approach
ASEAN Training Centre for Primary Health Care		Development of human resources was the focus of the project in the area of PHC. Project purpose was attained.
Family Planning and Maternal and Child Health	Monitoring the completed project in order to institute after care services has been difficult as it was implemented as part of the national Thai program.	
National Weed Science Research Institute Project		Cooperation was implemented with the objective of improving the basic research system in weed science research. Suitable joint research topics were selected with successful results.
Irrigated Agriculture Development Project		In the pilot project area, double cropping of rice and high yield technology was introduced. The greatest benefit to farmers in this area was their improved economic standing.
Animal Health Improvement Programme	(DLC) Serious diseases in south Thai have not been identified and categorized. Measures against diseases are implemented only when there is an outbreak.	(FMDVPC) A concrete achievement was increased vaccine production in line with the goal to establish large scale production technology for FMD vaccine.
Logging and Log Transport Training Project		The scope of project implementation was limited to development and training in log production technology. As a result, the technology still remains viable despite the logging ban.
King Mongkut's Institute of Technology Ladkrabang	In order to develop the telecommunications sector, cooperation was provided at the university level in engineering to foster engineers in telecommunications related fields. The impact of this project in promoting this sector is not clear.	
Industrial Rehabilitation Center		The project was implemented to rehabilitate disabled industrial workers and it has greatly contributed to their reemployment.
Metalworking and Machinery Industries Development Institute		The project purpose was to establish a support system for small and medium enterprises in metalworking and machinery industries. This area was further divided into main and subdivision in the project.
Technological Development of Natural Rubber Processing		Project implementation focused on technology transfer in the area of physical testing technology of natural rubber. (It was confirmed that cooperation in other areas had been implemented by other agencies and was being carried out independently by the Thai government.)

Project achievements could be easily observed and project purpose had been attained when the project was approached with the objective of resolving specific problems.

Proposal to Japanese Side	<ul style="list-style-type: none"> <li>- It is necessary to carry out a comprehensive preliminary study even in projects where the geographic area has been specified, in order to fully grasp and clarify the problems and to prevent the project scope from expanding.</li> <li>- If problems had not been specified, the project team would not be able to determine the direction of the project during the implementation stage. As a result, it has been difficult to produce concrete results.</li> <li>- Problems have not been resolved despite periodic extensions in project implementation. It has become cooperation without a conclusive end.</li> <li>- It is necessary to define the target group as clearly as possible even in cooperation to national programs.</li> </ul>
Suggestions to Thai Side	<ul style="list-style-type: none"> <li>- If the project is being implemented within the framework of a larger program, the entire overall program and the bearing of the project within this program should be clearly defined.</li> <li>- Even if the project area is restricted, an accurate assessment of the problems and issues should be clearly delineated in the request.</li> <li>- Project scope should be clearly defined in the Family Planning and Maternal and Child Health Project.</li> <li>- The project scope was clearly defined under a specific plan in the Irrigated Agriculture Development Project. In future, projects should be implemented under the same project approach.</li> </ul>



### Positive Impact of External Factors vs. Negative Impact of External Factors

	Positive Impact of External Factors	Negative Impact of External Factors
ASEAN Training Centre for Primary Health Care	The project was implemented at a time when measures to strengthen PHC activities were being carried out within Thailand following the WHO Alma-ata declaration; and economic activities were expanding favorably. Medical facilities in the provinces and the infrastructure in the villages had been improved.	
Family Planning and Maternal and Child Health	The nationwide program implemented by the Thai government has been functioning successfully. As a result, the JICA project was implemented at a time when the importance of maternal and child health care had been given recognition.	
National Weed Science Research Institute Project	The project was implemented at a time of serious farm labor shortages and a growing awareness for countermeasures against weeds.	
Irrigated Agriculture Development Project	The farmers in the project area possessed basic skills in rice production; and therefore, there existed a high capability to incorporate the new technology.	Priorities in agricultural production had shifted from increased rice production to crop diversification. This transition coincided with an intense water shortage which has promoted crops requiring less water and a restriction on dry season crops.
Animal Health Improvement Programme		(DLC) The administrative standing of the DLC is vague due to the lack of a nationwide animal disease prevention and health improvement system (in future there are plans to organize a network centered on NAHP in the area of animal health technology). (FMDVPC) Prevention measures against FMD has not been very effective due to the lack of a vaccine dosing system at the grass roots level.
Logging and Log Transport Training Project		Project effectiveness has been diminished due to the logging ban instituted in the aftermath of flood.
King Mongkut's Institute of Technology Ladkrabang	In conjunction with the recent progress of industrialization, there has been a rise in the social status of the university and an increased demand for graduates. The large number of yearly graduates play an important role as engineers in both the government and private sectors.	
Industrial Rehabilitation Center		Although there has been marked promotion of the industrial sector, countermeasures on safe working conditions has been lacking; and accident victims at the workplace have increased. Since medical rehabilitation functions in hospitals are limited, excessive burden has been placed on IRC.
Metalworking and Machinery Industries Development Institute	The manufacturing sector of the metalworking and machinery industries has shown a strong growth. As a result, expectations for MID are high.	
Technological Development of Natural Rubber Processing	There is sufficient demand for good quality natural rubber and physical testing technology for natural rubber meets the present day needs.	

In the face of deepening environmental problems, the diminishing impact of cooperation due to rapid changes in external factors, increased social evaluation of human resources in the engineering field stemming from industrial development, etc., some projects have expanded their cooperative effectiveness due to positive changes in external factors.

Proposal to Japanese Side	- Deepening environmental issues may greatly change national policy framework. Therefore, it is essential that external factors are included as an important study item in the socio-economic analysis of sector studies, etc.
Suggestions to Thai Side	- Thai side should provide information on their analysis and forecasting of socio-economic conditions over the next 5 to 10 years and on the country's priority policies anticipated for that period. Information should also be provided on projects and activities on-going and being planned in those key areas in order to better understand the trends which may impact on Japanese cooperation projects. Indications should be given on how the cooperation projects have been allocated in order to achieve the priority policies.

### Multiple Interrelated Implementation Agencies vs. Individual Implementation Agencies

	Multiple Interrelated Implementation Agencies	Individual Implementation Agencies
ASEAN Training Centre for Primary Health Care	Project effectiveness was pursued by promoting interaction between the ATC (under the university) and RTC (under the ministry). Although a joint committee was established between these two institutions, its efficacy was undermined by bureaucratic red tape.	
Family Planning and Maternal and Child Health		Family Health Division, Department of Health, Ministry of Public Health is the implementing institution for family planning and maternal and child health care; and the project was incorporated into their national program.
National Weed Science Research Institute Project	Research results were passed on to the farmers through the Department of Agricultural Extension. However, feedback from the field to the research center was limited. Although a joint committee was established in order to promote interaction between related institutions, its function was undermined by bureaucratic red tape.	
Irrigated Agriculture Development Project	Although there were four relevant agricultural departments related to the project, their interaction did not exceed administrative levels. Combined efforts toward attaining a uniform purpose was ineffectual.	
Animal Health Improvement Programme	Each sub-project was carried out independently and they were not coordinated into one project.	
Logging and Log Transport Training Project		Development of technology and implementation of training programs were carried out within FIO. The technology transferred has been utilized even after institution of the logging ban (although it is limited in scope).
King Mongkut's Institute of Technology Ladkrabang		The project was implemented at the faculty level of the university; and there has been a notable strengthening of educational and research functions.
Industrial Rehabilitation Center	Associations with hospitals and employment agencies were ineffectual. As a result, all rehabilitation functions were incorporated within the center.	
Metalworking and Machinery Industries Development Institute		The existing organization was developed under the project and during its implementation, the knowledge and experience of staff members were incorporated.
Technological Development of Natural Rubber Processing		The Department of Agriculture encompasses a wide area on matters pertaining to natural rubber. As a result, the project which was mainly concerned with product development, was implemented smoothly.

Projects implemented by individual agencies have a higher success rate in Thailand than projects initiated by multiple interrelated agencies due to the bureaucratic red tape which exists among organizations.

Proposal to Japanese Side	- It is not realistic to define project content by incorporating the activities of multiple organizations in the alternative analysis. It is more realistic to formulate a project based on the premise that interaction among Thai organizations is difficult. However, for large projects which require interaction among organizations, one of the activities to be implemented by the Thai side will be to promote interaction among relevant institutions; and this will be an issue in project provision. This organizational interaction will be closely monitored and its progress will be accelerated at all times.
Suggestions to Thai Side	- DTTC should investigate and clearly define the relationships between the institutions relevant to the project, the existing mechanisms for communication and coordination, the nature and extent of joint activities, including participation in existing joint committees in order that Japan side understand the nature of the institutional system framework which will be involved in and impact on the success of the project. If any weaknesses in this system framework are noticed, information should be provided on what measures will be taken by Thai side to remedy them.

### Effective Linkage with the Private Sector vs. Less Effective Linkage with the Private Sector

	Effective Linkage with the Private Sector	Less Effective Linkage with the Private Sector
ASEAN Training Centre for Primary Health Care	There was a high awareness level among the VHC/VHV and activities at the village level were aggressively carried out. As a result, PHC was widespread among villagers.	
Family Planning and Maternal and Child Health	Knowledge of family planning was widespread and accepted by the populace. The objective to decrease the population growth rate was achieved.	
National Weed Science Research Institute Project		Contact with farmers was carried out by the Department of Agricultural Extension. As a result, feedback from the field to the research center was ineffectual.
Irrigated Agriculture Development Project	The farmers' interest in the new technology was high and their cooperation was obtained. New technology was disseminated to the ordinary farmers through exhibition of model farmers.	
Animal Health Improvement Programme	Livestock farms were cooperative in diagnosis, treatment, PMD vaccine assays, etc.	Extension activities in the private sector have been ineffectual; and dissemination of livestock sanitation measures has not progressed.
Logging and Log Transport Training Project		Development of technology and implementation of training programs were restricted to within the FIC. (Technology transfer was not carried out in the private sector; and logging has been discontinued in the private sector following the logging ban.)
King Mongkut's Institute of Technology Ladkrabang		The rapid development of technology in the industrial sector has been conspicuous; and it is necessary to strengthen the linkage between the private sector and the university, to develop basic research that will contribute to industrial growth, and to educate and foster human resources.
Industrial Rehabilitation Center		Reemployment activities in the private sector for discharged rehabilitants have been insufficient. Therefore, it is necessary to raise the effectiveness of such activities by strengthening linkage with the private sector through incentives, and stimulating vocational guidance activities.
Metalworking and Machinery Industries Development Institute		It is necessary to promote interaction with the private sector, to grasp its needs, and to cope with them in a more organized manner.
Technological Development of Natural Rubber Processing		It is necessary to increase interaction with external organizations such as rubber factories, etc. by providing incentives, and to stimulate private consignments on testing, etc.

Proposal to Japanese Side	<ul style="list-style-type: none"> <li>Overseas offices should aggressively participate in joint committee meetings and will help resolve key issues such as controlling external conditions, procuring the support of relevant institutions, budget, personnel, renewal of equipment, etc.</li> <li>A full-time team leader should be appointed who will act as the direct negotiator with the project administrator from the government office in charge of the project. An advisory position will be procured on project operations, including a grasp of the entire project as well as external factors.</li> </ul>
Suggestions to Thai Side	<ul style="list-style-type: none"> <li>Contact with private industries should be expanded and their needs should be grasped.</li> <li>The practice of including representatives from the private sector as a member of the joint committee should be systematized.</li> <li>An overall plan which delineates accelerated cooperative efforts between relevant institutions should be submitted.</li> <li>Joint committee meetings should be held frequently in order to activate their control.</li> <li>A system to monitor interaction with external organizations (e.g. four times a year) should be established.</li> <li>Joint committee should be considered essential not only for the project implementation but should continue to meet after the project end in order to ensure project sustainability. A joint committee meeting should be held at project completion in order to analyze problems and issues, and identify measures necessary to ensure on-going project sustainability.</li> </ul>

### Project Assisted by High Policy Priority after Cooperation -vs. Low Policy Priority

	High Policy Priority	Low Policy Priority
ASEAN Training Centre for Primary Health Care	The project was implemented in the aftermath of the WHO Alma-ata Declaration when strengthening PHC activities was a major issue.	
Family Planning and Maternal and Child Health	A nationwide program was being implemented to give family planning high priority status, in line with the national goal to decrease the population growth rate.	
National Weed Science Research Institute Project		Budget allocations have not increased after project completion. Maintenance and control of equipment have been inadequate and equipment renewal has been insufficient. Dissemination of research results has been deficient since weed control has not been given high priority by the Department of Agricultural Extension.
Irrigated Agriculture Development Project	Increased rice production was a high policy priority at the time of project implementation. Improved rice varieties developed by the Suphanburi Center were accepted and disseminated among the local farmers. In addition, labor saving by germinated direct sowing for weed control measures have been disseminated and widely accepted.	
Animal Health Improvement Programme	Increased livestock production (particularly beef) was a major issue in the agricultural sector. Both the DLC and the FMDVPC have expanded and continued their activities after project completion.	
Logging and Log Transport Training Project		The project was implemented with the aim to increase log production at a time when the importance of forest conservation in conjunction with national development, was being emphasized. However, after the project was completed a logging ban was instituted in the aftermath of flood damage; and project effectiveness was diminished.
King Mongkut's Institute of Technology Ladkrabang	Project implementation overlapped with government efforts to develop the telecommunications sector in Thailand.	
Industrial Rehabilitation Center	The project was implemented in order to provide concrete countermeasures for the rapidly increasing number of disabled workers, paralleling the growth of the industrial sector. It was also implemented at a time when the laws and the system pertaining to worker welfare were being improved.	
Metalworking and Machinery Industries Development Institute	The growth of the metalworking and machinery industries in the manufacturing sector has been remarkable; and the MITI budget has been gradually increasing.	
Technological Development of Natural Rubber Processing	The project for the technological development of natural rubber was implemented after cooperation projects from other agencies in the area of agricultural production were completed. After this project was completed, the demand for rubber continues to increase and the technology transferred remains viable at the present time.	

Although their importance are recognized, low policy priority projects continually have problems in budget allocations and achieving effective impact. It is exceedingly easy for high policy priority projects that have achieved successful results, to disseminate their results and to persuade outside organizations for support.

Proposal to Japanese Side	It is essential to verify the capabilities of the counterpart agencies and cooperation should be given after ascertaining that budget allocations can be obtained after the project has been completed. The criteria for determining the capabilities should include a verification of their connections with external institutions (e.g. rating within research institutions, evaluation of dissemination efforts in external organizations) and participation analysis.
Suggestions to Thai Side	<ul style="list-style-type: none"> <li>- In order to verify project priority, data on the basic plan, budget and personnel distribution according to sector should be provided at the time of the request.</li> <li>- If a low policy priority project is requested by the Thai side, a program should be included in the request, delineating how dissemination of achievements resulting from technology transfer will be carried out and how these achievements will be utilized.</li> <li>- The final beneficiaries should be defined and how the benefits are communicated should be explained.</li> </ul>

### Introduction of New Systems vs. Improvement of Existing Systems

	Introduction of New Systems	Improvement of Existing Systems
ASEAN Training Centre for Primary Health Care		Although a PHC system was already in effect, its implementation was further strengthened by carrying out measures to develop human resources.
Family Planning and Maternal and Child Health		The project was implemented to strengthen the services of the family planning program which had been improved by the national family planning program of Thailand.
National Wood Science Research Institute Project		The project was implemented in order to strengthen and expand the research system of the existing research center. Although research content has been curtailed due to an insufficient budget following project completion, research activities have continued.
Irrigated Agriculture Development Project	New technology in the form of a consistent system of mechanization by large scale machines and large scale field lots was not successfully adopted and it was not disseminated in the private sector. Agricultural cooperatives did not undergo any major changes as well.	The recipient farmers in the project possessed a basic knowledge of rice production. Thus, they were able to accept the assistance offered by the project and they incorporated technology which met their needs.
Animal Health Improvement Programme		The project strengthened the functions of the existing organization of the DLO and the FMDVPC.
Logging and Log Transport Training Project		The project developed a cable logging system combined with traditional system (elephants and tractors), and implemented a training program on its operation.
King Mongkut's Institute of Technology Ladkrabang		The project focus was on strengthening the functions of research and education in certain field at an existing university.
Industrial Rehabilitation Center	This was the first rehabilitation facility in Thailand which was established for the main purpose of vocational rehabilitation for disabled workers to allow an early return to jobs. However, due to inadequate medical rehabilitation facilities in hospitals, the need for the IRC was higher than initially anticipated. Presently, IRC is conducting instruction seminars for medical staff in hospitals. However, the demand for medical rehabilitation services at IRC has not abated; and currently, the demand exceeds the capacity of the center.	
Metalworking and Machinery Industries Development Institute		An existing organization was expanded and project operations were based on the past experience of the organization.
Technological Development of Natural Rubber Processing		The project introduced new testing technology pertinent to improving product quality at an existing rubber research center.

A thorough investigation of the interrelationships between relevant institutions and a comprehensive understanding of the socio-economic conditions of the country are essential in introducing new systems.

Proposal to Japanese Side	- Japanese systems which have been perfected in Japan should not simply be introduced to another country in that form, but a plan which is appropriate to local conditions based on comprehensive preliminary analysis of the capabilities of relevant external institutions, socio-economic conditions, and needs should be formulated. If there are areas which the Japanese side cannot cope with, it is necessary to clearly define them and a consensus should be reached on the measures which need to be taken.
Suggestions to Thai Side	- It is necessary to define clearly the overall approach in stages (defining cooperation according to priority) and the delineation of the factors that are introduced in the new systems during the request phase.



# Marcon Group

## Marketing & Consultancy

### Incremental Planning with Broadly Defined Implementation Program vs.

### Explicit Planning with Concrete Implementation Program

	Incremental Planning with Broadly Defined Implementation Program	Explicit Planning with Concrete Implementation Program
ASEAN Training Centre for Primary Health Care	Actual project activities were implemented on the individual judgment of the dispatched experts, due to inadequate consensus on activity content before their departure from Japan.	
Family Planning and Maternal and Child Health	Initially, project cooperation was limited due to the uncertainty of the conditions. However, after the conditions were clarified a lucid review of the plan and preparation of TOR for the experts were not implemented, producing a loss in activity.	
National Weed Science Research Institute Project		The project was implemented after establishing a joint research topic where basic research methods could be transferred.
Irrigated Agriculture Development Project		The framework of the project was established according to the implementation design study, and the implementation design of agricultural improvement activities within the pilot project area and a reform plan on farm operations were formulated.
Animal Health Improvement Programme	(DLC) Diseases which were initially believed to be serious were not considered troublesome at the project site. As a result, a system of establishing serious diseases was not implemented and measures were taken to diagnose and treat only those diseases which had occurred.	(FMD)VPC Production goals for FMD vaccine production was established and the project was implemented in order to achieve those goals.
Logging and Log Transport Training Project		Project implementation was carried out without any major changes; and the implementation period and number of trainees for the training course were decided in the initial plan.
King Mongkut's Institute of Technology Ladkrabang	Cooperation in the field of new energy conversion could not be implemented due to the lack of an expert in this field.	
Industrial Rehabilitation Center	There is no organized network in the area of vocational guidance. Currently, discharged rehabilitants are dependent on an individual network of IRC staff. The great demand for medical rehabilitation services was discovered after the project was implemented. However, the project was unable to cope with this demand.	
Metalworking and Machinery Industries Development Institute	The plan on project activities was vague at its initial commencement. (→→→→→→→→→→→→→→→→)	(→→→→) Technology transfer through experts was clarified one year after project commencement. Evaluation methods to assess achievement levels were introduced and project implementation was carried out systematically.
Technological Development of Natural Rubber Processing		Project results and achievement levels were clearly assessed due to the restricted scope of the project and its specific content.

There is constant cooperative activity in the area of health and education and concrete results stemming from these activities as well as their objectives have had an impact on the progress of the projects.

Proposal to Japanese Side	<ul style="list-style-type: none"> <li>The country's needs should be clearly defined during the request phase and the scope of technical cooperation should be established after determining and separating the areas where the Japanese side can offer cooperation and where they cannot.</li> <li>The accuracy of the preliminary study should be upgraded and the TOR for experts should be more closely scrutinized.</li> <li>After the initial start of the project, consultations should be made with the implementing agency on concrete activities in the area of technology transfer and monitoring methods to be employed in this area. Cooperation following these consultations will determine project direction and establish joint management of the progress in technology transfer.</li> <li>It is necessary to draw up a detailed explicit plan as soon as possible and to obtain a consensus from both sides, despite a detailed review of the traditional incremental planning method used in the past.</li> </ul>
Suggestions to Thai Side	<ul style="list-style-type: none"> <li>The overall plan and standing of the project should be clearly defined in the request.</li> <li>In the area of family planning, a detailed explanation of the entire program should be given in the request, as well as details on Japanese input such as equipment, etc., the location, reason, and way the input will be used and how its impact will be measured.</li> <li>The activity plan should be determined at an early stage and a monitoring system should be established. In addition, periodic meetings should be held among counterparts, their superiors, and Japanese experts team to verify the project's progress.</li> </ul>



Closing Remarks  
DTEC Deputy Director General  
Mr. Pichet Soontornpijit

---

Thank you Dr. Somchob Chaiyavej  
Mr. Kagami, Members of Japanese Mission and Evaluation Team  
Representative of the Thai Implementing agencies.

First of all, I would like to express my sincere appreciation for the contribution everybody did during this seminar. The recommendations, suggestions and observations from both Thai and Japanese during this one and a half days have made the result of this seminar a very fruitful one.

On behalf of DTEC, I would like to ensure you that, we count the evaluation as a very important step of the project cycle. Planning, implementation and evaluation should go together in order to assure the success of implementing the project. DTEC will try the best to strengthening its role in evaluating the technical cooperation projects.

Myself have been working as a chief of DTEC evaluation section for some years and from my experiences at that time, I can tell you that, the word "evaluation" as well as "the evaluators" themselves are not popular among the project implementators. Or somehow, they misunderstand that, the evaluation is the process of finding out their mistake.

Coming to this 10 evaluation projects, I observe that, the

co-evaluation team had deeply considered the objectives, impact efficiency, and sustainability of each project carefully before making any conclusion, so in general, I would like to agree that each project had achieved their target and contributed to the development of the country at some certain level. I accepted that, the input from the project assistant may look very small compared to the overall budget for development but that small portion is a very important portion, such as, the transfer of technology and know-how.

However, from the evaluation results, it shows that, there are some problems during the implementation of the project, which could not be solved in a short period of time for example:-

- there have still been inadequate FMD vaccine for FMD under the Animal Health Improvement Program.

- or the lack of coordination between Public and Private Sector as well as among Public sector concerned on activities, and so on.

In this connection, I would like to make an observation of some necessary measures for the effective management of cooperation in the future as follows.

Firstly, in the planning stage - A systematic and a long-term planning is a necessary measure. It can guide those concerned to some direction. DTEC is aware of the significance of long-term planning hence we launched the Technical Cooperation Plan which is in accordance with the Seventh National Economic and Social Development Plan. The Plan is a framework for the Thai implementing agencies to develop the project and also for donors to consider their contribution to the development activities in

Thailand. However, the Technical Cooperation Plan is a broad framework so we need something more concrete. As a result, the Thai authorities concerned are now working towards a concrete plan on environment, for example, in which we will indicate our requirement for technical cooperation from donors. After that, participation from donors is welcome.

Secondly, Project Identification/ Project appraisal stage Log frame should be used at a designing stage so as to be a guideline for project implementation and project evaluation and to avoid the confusion at the evaluation stage; nevertheless, people involved should be trained on this project design matrix. As for the project appraisal, screening criteria should vary according to the type of the project, for example research project, human resource development project, institutional building or strengthening project, etc.

Thirdly, Project implementation stage To implement the project effectively, the matching of all inputs should be properly undertaken by the management staff from the Japanese side and the Thai side to ensure the smooth running of the project. The critical issue must be cleared up; counterpart budget, counterpart personnel have to be settled down during the preparatory period.

The Thai counterpart has to study all rules, regulations and procedures concerned in order to facilitate the implementation of the project as well as to provide services to the expert.

To recruit expert or to select participant, as special attention should be paid to the language capabilities as well as a cross cultural aspect to ensure transfer of technology.

Terms of reference of expert and specification of equipment should be seriously discussed for the benefit of the project. Also, the operation, maintenance, and renewal of equipment have to be kept in mind.

Fourthly, Monitoring stage While the project is being implemented, a regular monitoring is necessary for all parties concerned to know the progress and problems, if any, of the project. The monitoring can be undertaken in the form of periodic reports, site visits, and Joint Committee meetings. It should also occur more frequently than it does now.

Lastly, Evaluation stage This is one of the key elements of the project cycle. This particular point does not need elaboration since it is the reason why we are here. However, I have one observation that, the complete evaluation system should be done both before and after project implementation period.

Concerning the DTEC role and responsibility on screening project request, I would like to say that we try to do the best we can. We are not using our own judgment. Besides using the national plan, ministerial plan, technical assistance plan, we also set up the committee comprised of the representative of the central agency concerned, for example, the National Planning Board, the Budget Bureau, Civil Services Commission to give advice to DTEC but unfortunately nobody's perfect in this kind of work so we have to face the problem from time to time.

I would like to end my remarks by stating that a close and continuous consultation at every level between donor and recipient will yield success to the cooperation program, I

always believe that the past problem should be a very good lesson for the future work.

Thanks again to the Japanese Mission and the representatives from various Thai agencies as well as my colleagues from DTEC.  
Thank you very much.

---

Closing Remarks  
by  
Mr. Takeshi Kagami  
Managing Director of Planning Division  
JICA Headquarters

---

Thank you Dr. Somchob

First of all, let me say that I am very pleased to administer and frank discussion <sup>of this seminar</sup> and very happy that we could obtain a number of lessons and suggestions which could be very useful for the better management of JICA project in the future. This morning various important points are already picked up by previous speakers. But from JICA's point of view let me overview the whole discussion once again and highlight several elements which I think we should bear in mind for the effective management of future projects in this country.

First of all when formulating the project, it is very important to take into account the external condition which may affect the project afterward. This must be the key element to the success of the project in order to ensure the external conditions are favourable or at least not go against the project. We need information regarding the social condition 5 to 10 years ahead as well as the country's priority policies for the same period. This information is more or less expected to be provided by the Thai agencies concerned. The information has to include the key areas where the Thai government offers full policy support as the strategical important area and this point as I



think clearly indicated by the project for King Mongkut's Institute of Technology. King Mongkut's Institute of Technology produces almost 80% of the total graduates of students of Thailand in electric power engineering and this figure is very impressive, and this fact itself is the reflection as the project has been going along the broad trend of the Thai economy as a whole. It will also be very much useful the information would be supplied by the Thai Government on how the other donors have extended or will extend cooperation in the same area in the implementation of this priority policy and this particular point I mean the importance of technology and policy area of priority area is very important and should be strengthened or emphasized when we talk about the sustainability of the project after the completion of our cooperation, and the second point is related with the intervention among Thai organizations or agencies. Regarding the project of ASEAN training centre for primary health care we have already discussed this morning also the relation between the central or ATC and the local RTC, and this example seems to us shows the necessity for intervention among the organizations concerned to assure we establish the real mechanism, not as a formality, composed of the related agencies. And there is some sort of such mechanism requires defining clearly the role and function of each agency involved in the project and consultation system in advance of the implementation. Through this mechanism, agencies concerned should keep close contact and consultations among themselves to maintain good coordination and this coordination or mechanism is very much required to ensure the sustainability after completion of JICA cooperation.

Thirdly, effective linkage with the private sector is also very much strengthened and emphasized in this seminar. We fully agree to this point and to this good communication should be started

with the private orientation and we can see a very good example in the irrigated agriculture development project in which good impact spread over into the area near the project site and also in this connection the view was expressed that we have to utilize non-governmental organizations as much as possible whenever necessary.

And fourth point is that the project should continue to receive a high policy priority even after the termination of cooperation period. In this connection, activities of some projects decline after the termination of JICA's cooperation and other project's on the other hand, continue to receive good support and became indispensable for other organizations and obtained necessary budget and personnel. Miss Patana's explanation indicate that the Family Planning Project as an example of this as a good case and this shows the question of priority is concerned with sustainability, I think.

Fifth point is that when the project aims at introducing a new system, careful planning is needed, so that the unexpected problems may not cause the difficulties for the attainment of the project objective.

To minimize such problems it is necessary for the agencies concerned to conduct the follow-up investigation of the problems including the correlation with other institutions. In the Industrial Rehabilitation Centre Project, we recognize the approach to the question of medical rehabilitation was not correctly designed and thereby caused some problems. And these are some of the points which seem to be important and may serve to improve management of the future JICA cooperation project. But apart from these points relating to the better management of the

project, we this morning particularly, notice some confusion in understanding log frame, in other words what is made by overall goals, or what is the project purpose or project output. I think this is a debatable to a certain degree since the log frame which we employ for evaluation at this time is still relatively new and is not too much known to the people. But if we talk about this, no accountants will show how to analyse financial situation of the company, one day report to the president. The president of the company is only interested in the result of the evaluation of the finance situation and he does not request to explain what is the tool or a method of analysis or financial situation of a company. So we may have to clear the distinction between the tool which we use for evaluation and the report itself to the people concerned which is made as the result of the analysis. For your information, JICA started to use this method about two years ago and apply this tool to roughly about 20 projects in this fiscal year, and we intend to use this tool for as many projects as possible for the coming fiscal year starting in April because we regard this tool as a very powerful and effective method for analysis for evaluation. But as we have already discussed we use this method not only for evaluation but for formulating the project starting at the beginning of the project cycle. And we also use this tool for monitoring the implementation of the project. The JICA personnel department request the staff of JICA to go through the training course after 2-3 years after the entrance to JICA. This is a half compulsory training course. These are more or less the points which I wanted to make. Thanks for the frank exchange of view in this seminar. I hope the participants of this seminar now have a better understanding of what should be done to ensure the maximum positive output from the project. I understand that Thailand has started providing assistance to the neighbouring

countries and hence the points made here today and yesterday may also be very useful to the Thai government in extending such cooperation. Once again I would like to express my gratitude for the full cooperation given by the Thai government and participants. Thank you very much.

---

