

1. Outline of the Project		
Country name: Kingdom of Cambodia		Project name: The Technical Service Center for Irrigation System Project in Cambodia
Fields: Agricultural development		Assistance type: Technical cooperation project
Supervising office: First Group, Rural Development Department, JICA		Monetary amount of cooperation (at time of final evaluation): Approx. 720 million yen
Period of cooperation	R/D: January 10, 2001, to January 9, 2006	Counterpart organization: Ministry of Water Resources and Meteorology
	Extension: F/U: E/N: (Grant aid)	Cooperating organizations in Japan: Ministry of Agriculture, Forestry, and Fisheries
		Other associated cooperation:
<p>1-1 Background and outline of the Project</p> <p>Agriculture is the prime industry of Cambodia. Agricultural production contributes to approximately 37% of the country's GDP, and more than 80% of the national working population is engaged in agriculture. However, despite abundant farmland and water resources, agricultural productivity of the country is low. Reasons include the complete destruction of agricultural infrastructure during the 20-year civil war, and the fact that, despite construction of many irrigation-water networks during the reign of the Khmer Rouge (1975 to 1979), these networks were not accompanied by such appropriate technologies as dams and irrigation channels. Thus, of the country's 2.2 million ha of rice farmland, supply irrigation is being provided to only 250,000 ha. Each year, agricultural lands are damaged by floods and drought, and in 1994 Cambodia suffered a rice shortage of between 150,000 and 300,000 tons.</p> <p>Given this background, in 1996 the government of the Kingdom of Cambodia submitted a request to Japan for project-type technical cooperation to rehabilitate small- and medium-scale irrigation facilities that fell into disrepair during the civil war, to foster appropriate maintenance and management of these facilities as well as engineers and technicians capable of handling said maintenance and management, and to establish autonomous and effective use of these facilities by farmers while developing farmers' associations.</p> <p>In response to this request, JICA dispatched a variety of study teams that resulted in</p>		

the beginning of a five-year technical cooperation project in January 2001. As the Project approached the end of the activity period in January 2006, JICA dispatched a final evaluation team to evaluate Project achievements thus far and to formulate advice and extract lessons learned for the future.

#### 1-2 Description of cooperation

##### (1) Overall Goal

Irrigation projects are properly implemented by MOWRAM and PDWRAM.

##### (2) Project Purpose

The technical capacity of the engineers and technicians of MOWRAM and PDWRAM is improved in the fields of survey, planning, design, construction management, and water management with participation of farmers for irrigation systems.

##### (3) Outputs of the project

- 1) The technical capacity of the full-time C/Ps in the fields of survey, planning, design, construction management, and water management with participation of farmers is improved through on-the-job training (OJT).
- 2) A series of training courses is organized to transfer skills in survey, planning, design, construction management, and water management with participation of farmers to other engineers and technicians of MOWRAM and PDWRAM.

##### (4) Inputs (at time of evaluation)

###### Japanese side

Dispatch of long-term experts in five fields:	Total of 10 experts
Dispatch of short-term experts:	16 experts
Training of C/Ps in Japan	15 C/Ps
Provision of machinery and equipment:	127.1 million yen + 252,000 USD
Assumption of local costs:	575,000 USD

###### Cambodian side

Allocation of C/Ps:	Total of 24 C/Ps
Assumption of local costs:	218,000 USD
Provision of land and facilities	

## 2. Outline of the Evaluation Team

Members	Team leader:	Ryuzo Nishimaki	Senior Researcher, Rural Development Department, JICA
	Irrigation technology:	Yoshihiro Doi	Deputy Director, Overseas Land Development Cooperation Office, Rural Development Bureau, Ministry of Agriculture, Forestry, and Fisheries
	Evaluation and analysis:	Isao Dojun	Chuo Kaihatsu Corporation
	Cooperation management:	Kenji Sakurai	Paddy-Based Farming Area Team III, Group I, Rural Development Department, JICA
Evaluation period	July 10, 2005, to July 28, 2005	Evaluation type: Final evaluation	

### 3. Outline of Evaluation Results

#### 3-1 Confirmation of achievements

There are two indicators for the Project Purpose: 1) the 10 full-time C/Ps obtain the technical capacity to conduct training on irrigation systems by the end of the Project, and 2) more than 100 engineers and technicians of MOWRAM & PDWRAM improve their technical capacity through training at TSC by the end of the Project. Looking at the latter indicator, thus far the technical capacity of 92 engineers and technicians of MOWRAM & PDWRAM has been improved through their participation in the training courses, and an additional 51 engineers and technicians are scheduled to participate in training by the end of the Project. Thus, the level of achievement is high and thought to be contributing to achievement of the Project Purpose. On the other hand, the former indicator has improved to a roughly satisfactory level through the further implementation of training courses during the Project Period and completion of manuals and textbooks. It is expected that this indicator will be achieved by the end of the Project Period.

#### 3-2 Outline of evaluation results

##### (1) Relevance

The Project Purpose and Overall Goal of the Project are consistent with the fields of poverty reduction, enhancement of the agricultural sector, improvement of rural livelihoods, and capacity building and human resources development, which are emphasized in 1) the Second Five-Year Socioeconomic Development Plan (2001-2005), 2) the National Poverty Reduction Strategy (2003-2005), and 3) the Rectangular Strategy (presented by the government in 2004). Moreover, they are in line with

“Agriculture and Rural Development and the Improvement of Agricultural Production,” which is a priority area of Japan’s cooperation policy for Cambodia. Because frequent floods and droughts have occurred in recent years, needs for improvement of irrigation facilities and human resources development in the irrigation sector are increasing. And because most rice production depends on the unreliable rainy season, farmers require stable supply of irrigation water in order to stabilize rice production. Thus, the Project is consistent with the need to foster engineers and technicians of MOWRAM and the needs of farmers, and therefore it has high relevance.

#### (2) Effectiveness

The technical capacity of the 11 full-time counterparts is expected to improve to a roughly satisfactory level by the end of the Project. Furthermore, the technical capacity of 92 engineers and technicians of MOWRAM and PDWRAM is being improved through their participation in the training courses. Plans call for the technical capacity of 51 more engineers and technicians to be improved through the training courses by the end of the Project. Because the Outputs of the Project are expected to be met for the most part, they are contributing to achievement of the Project Purpose. Moreover, the Project Purpose itself is expected to be roughly achieved by the end of the Project. Therefore, the Project can be judged as having high effectiveness.

#### (3) Efficiency

Inputs having positive impacts toward smooth Project progress included the Cambodian side’s construction of TSC with government funds and its provision of an office, research room, and laboratory of sufficient size. Also having a positive impact was the safe execution of Project activities through the appropriate implementation of countermeasures whenever a landmine was discovered on the model site. Items having negative impacts included the fact that procurement of equipment and supplies from Japan as well as repairs required time, which forced a rethinking of the activity schedule, and the fact that the period for dispatch of short-term experts was delayed. However, the team determines that the Project has high efficiency as Inputs from both the Japanese side and the Cambodian side were implemented in a largely appropriate manner in terms of quantity, quality, and timing.

#### (4) Impact

##### 1) Review of Overall Goal achievement

Tertiary canals and related structures in the Kandal Stung irrigation area, which is

the model site, are scheduled to be developed using techniques that were transferred through the Project. Moreover, it is expected that the government will implement eight or more irrigation projects with its own budget; these projects will be in addition to the 27 irrigation projects the government implemented with its own budget in 2005. Furthermore, the implementation of irrigation projects using Japan's Grant Aid for Grass-Roots Projects scheme is also scheduled. Thus, if the implementation of irrigation projects using both government funds and Japan's Grant Aid for Grass-Roots Projects scheme are considered, it becomes clear that there are many projects capable of utilizing technologies that were transferred through the Project. If engineers and technicians of MOWRAM and PDWRAM carry out irrigation projects by applying the knowledge and skills they have learned in the Project's training courses, it is expected that the Overall Goal should be attainable by 2011.

## 2) Other impacts

The following other items are seen as having a positive impact:

- i. Roads along tertiary canals of the model site facilitated transport of harvested rice from paddy fields as well as fertilizers, etc., to the fields. They also provide good access for children to go to and from school.
- ii. Water users' groups that were organized through the Project prepared group rules on farmers' own initiative.
- iii. The relevant department of MOWRAM incorporated Project technologies and started further organization of the farmers' group within the model site.
- iv. Farmers constructed field canals connected with tertiary canals by themselves.
- v. The amount of rice harvested at the model site was increased.
- vi. Staff members of PDWRAM that participated in training shared what they learned in training with their colleagues.

## (5) Sustainability

### 1) Organizational stability

TSC is not a body that was formally organized based on a government ordinance. Accordingly, in order to allow TSC to continue activities for the capacity development of engineers and technicians of MOWRAM and PDWRAM and to strengthen TSC's roles and functions, it will be necessary to position TSC as an official body within MOWRAM through a government ordinance. Moreover, TSC's

roles, functions, and organizational structure as an official body must be clarified in order to ensure its organizational sustainability.

2) Financial sustainability

MOWRAM has disbursed budgetary funds for the Project to cover expenses for construction of the TSC building (approximately 155,000 USD); expenses for operation and maintenance of facilities; expenses for electricity, water supply, and other utilities; fuel for vehicles; etc. MOWRAM has made a particular effort to provide significant funding for TSC building construction. However, if the amount of money allocated to construction costs and staff salaries are excluded, annual expenditure for the Project amounts to roughly 4,000 to 5,000 USD.

On the other hand, implementation of one training course costs between 3,000 and 4,000 USD. Accordingly, if financial sustainability is to be maintained, budgetary funding for TSC activities, and particularly for implementation of training courses, must be ensured.

3) Technical sustainability

The main objectives of capacity development of the full-time C/Ps are to strengthen technical knowledge and skills in the fields of survey, planning, design, construction management, and water management with participation of farmers for irrigation systems, and to give the C/Ps the ability to conduct the training courses of the Project as instructors. It is judged that the 11 full-time C/Ps have acquired a satisfactory level of competence in these capacities. If these C/Ps continue to work at TSC as instructors for the training courses of the Project, technical sustainability should be ensured. In order to ensure this technical sustainability, organization of TSC as an official body, regular implementation of the training courses of the Project, and provision of incentives that will encourage full-time counterparts to continue working at TSC will be necessary.

4) Short-term measures necessary to ensure sustainability

The government of Cambodia and JICA have agreed to implement a phase II TSC project. To ensure the sustainability of the Project as well as the phase II project, necessary measures for this purpose must be taken during the remaining Project Period.

### 3-3 Factors contributing to emergence of effects

As was mentioned in the section on efficiency, technical transfer activities—including OJT for C/Ps and training for engineers and technicians of MOWRAM and PDWRAM—were conducted smoothly because the Cambodian side constructed the TSC building for the Project and provided an office, research room, and laboratory of sufficient size. Furthermore, Project activities were conducted safely through the appropriate implementation of countermeasures whenever a landmine was discovered on the model site. On top of this, efforts to ensure good communication between the C/Ps and Japanese experts facilitated smooth technical transfer. Project activities proceeded smoothly for these reasons.

### 3-4 Problem areas and factors leading to problems

Low salaries led some full-time C/Ps to leave their positions; technologies had to be retransferred to the new C/Ps whenever this happened. Also, smooth technical transfer became problematic when full-time C/Ps had insufficient English-language ability.

Furthermore, as was mentioned above, procurement of equipment and supplies from Japan as well as repairs required time, which forced a rethinking of the activity schedule. Also, the period for dispatch of short-term experts was delayed. These problems had a negative impact on Project activities.

### 3-5 Conclusion

The Project is in conformity with the development policy of the Cambodian government, the needs of engineers and technicians of MOWRAM and PDWRAM, and the cooperation policy of Japan. It is judged that the Project Purpose and the Outputs of the Project will be achieved satisfactorily by the end of the Project. Various positive impacts have been produced as results of Project activities. However, the Project's sustainability still faces issues in terms of organizational, financial, and technical aspects.

Taking all of the evaluation results into consideration, it can be judged that the Project has been successfully implemented and achieved the Project Purpose with good effectiveness and positive impacts. With regard to sustainability of the Project, appropriate measures should be taken for sustaining outcomes of the Project.

Consequently, although some issues remain with regard to sustainability, it is concluded that the Project will be completed as planned on January 9, 2006.

### 3-6 Recommendations (specific measures, proposals, and advice pertaining to the

Project)

3-6-1 Recommendations for activities during the remaining Project Period

- 1) Accomplishment of scheduled activities in the remaining Project Period
- 2) Conduct of the three kinds of scheduled training courses
- 3) Completion of work to prepare manuals and textbooks
- 4) Conduct of a seminar for presenting outcomes and good examples of the Project to higher officials of MOWRAM and PDWRAM

3-6-2 Recommendations for activities after the Project Period

- 1) Implementation of a follow-up study on the training courses
- 2) Examination of training course periods
- 3) Regular implementation of training courses
- 4) Further improvement of manuals and texts
- 5) Provision of simple tools and instruments to PDWRAM (instruments necessary for application of knowledge and skills acquired in training)
- 6) Completion of irrigation-system construction work in the model site
- 7) Extension and expansion of TSC activities
- 8) Provision of incentives that will encourage full-time Project C/Ps to continue working at TSC

3-7 Lessons learned (items drawn from the Project that will prove useful as references when identifying and formulating, implementing, and managing similar projects)

- (1) When planning projects, it would be desirable to fully consider the time needed for procurement and repair of equipment and materials and the time needed for procedures related to dispatch of short-term experts, and then to formulate an appropriate activities plan that takes these times into account.
- (2) One of the advantages of Japan's method for technical transfer is that it pursues steady capacity development by having participants experience practices through direct instruction from Japanese experts in the field. The purpose of technical transfer in the field is to give engineers and technicians experience that is matched to the field. It is very important for this advantage to be recognized by not only C/Ps but also persons concerned of relevant government ministries and agencies, donor agencies, and other stakeholders.