

1. Outline of the Project		
Country name: People's Republic of China		Project name: Model Planning Project for Water-Saving Measures on Large-Scale Irrigation Scheme
Fields: Agriculture		Assistance type: Technical cooperation project
Supervising office: First Group, Rural Development Department		Monetary amount of cooperation (at time of evaluation): Approximately 820 million yen
Period of cooperation	R/D: June 1, 2001, to May 31, 2006 (five years)	Counterpart organizations: Ministry of Water Resources, China Irrigation and Drainage Development Center, Gansu Provincial Bureaus of Water Resources, Shaanxi Provincial Bureaus of Water Resources, Hunan Provincial Bureaus of Water Resources
	Extension:	
	E/N:	
		Cooperating organizations in Japan: Ministry of Agriculture, Forestry, and Fisheries
		Other associated cooperation:
<p>1-1 Background and outline of the Project</p> <p>In the People's Republic of China (hereinafter "China"), water shortages are becoming increasingly serious as needs for industrial and domestic water are rising in line with socioeconomic development and a growing population. At the same time, in the area of agricultural water, which accounts for approximately 70% of all water use, aging irrigation facilities and poor water management have led to decreasing water-use efficiency, and therefore efficient use of water resources in the agricultural sector has become an urgent issue. In order to address this issue, the Chinese government hammered out policies pertaining to diffusion of water-saving irrigation practices, and began formulating a national facilities construction, renewal, and improvement plan for large-scale irrigation scheme in 1999.</p> <p>Against this backdrop, the Chinese government submitted a request to the Japanese government for project-type technical cooperation (Model Program for Water-Saving Irrigation for Large-Scale Irrigation Scheme) in 1999 for the purpose of promoting more rational and systematic water-saving irrigation projects. In response, the Japan</p>		

International Cooperation Agency (hereinafter “JICA”) dispatched a first short-term study team (July 2000), a second short-term study team (November 2000), and an implementation study team (February 2001) to confirm detailed cooperation content and the implementation structure, etc., of the Chinese side. Based on the results of these studies, it was decided that the Model Program for Water-Saving Irrigation for Large-Scale Irrigation Scheme would be implemented as project-type technical cooperation (currently a technical cooperation project), and that this Project would be commenced from June 1, 2001, to May 31, 2006

1-2 Description of cooperation

(1) Long-term Goal

Stable supply of irrigation water and improved water supply and demand will be achieved.

(2) Overall Goal

- 1) Irrigation efficiency and water-use efficiency will improve in priority model irrigation schemes.
- 2) Appropriate water-saving improvement plans will be prepared in at least the model irrigation schemes.

(3) Project Purpose

Water-saving irrigation technology that can be extended throughout all of China will be established through verification in the priority model irrigation schemes.

(4) Outputs of the project

- 1) Survey and planning methods will be developed for the preparation of appropriate water-saving improvement plans.
- 2) Water management technologies will improve.
- 3) Paddy field-level water-saving technologies will be developed.

(5) Inputs (at time of evaluation)

Japanese side

Dispatch of long-term experts:	Total of 10 experts
Dispatch of short-term experts:	14 experts
Training of C/Ps in Japan:	49 C/Ps
Provision of machinery and equipment:	Approx. 220 million yen

Assumption of local costs:	Approx. 120 million yen
Chinese side	
Allocation of C/Ps:	82 C/Ps
Provision of land and facilities	
Assumption of local costs:	Approx. 63.4 million yuan

2. Outline of the Evaluation Team

Members	Team leader:	Takeaki Sato	Chief, First Group, Rural Development Department, JICA
	Planning standards:	Yoshihiro Doi	Deputy Director, Overseas Land Improvement Cooperation Office; Design Division; Rural Infrastructure Department; Rural Development Bureau; Ministry of Agriculture, Forestry, and Fisheries
	Water-saving irrigation:	Mitsuaki Suzuki	Planning Director; Kiso River Watershed Land Improvement Planning and Management Office; Tokai Regional Agricultural Office; Ministry of Agriculture, Forestry, and Fisheries
	Planning evaluation:	Taro Izumi	Senior Program Officer, Paddy Fields Based Farming Area Team III, Group I, Rural Development Department, JICA
	Evaluation analysis:	Atsushi Tokura	Consultant, IC Net Limited
Evaluation period	November 8, 2005, to November 26, 2005	Evaluation type: Final evaluation	

3. Outline of Evaluation Results

3-1 Confirmation of achievements

The Project Purpose states that “water-saving irrigation technology that can be extended throughout all of China will be established through verification in the priority model irrigation schemes,” and one of the indicators for evaluating achievement of the Project Purpose is “the Ministry of Water Resources will prepare a ‘manual for preparing water-saving improvement plans’.” A trial version of this manual is already

being distributed to large- and medium-scale irrigation schemes throughout China. Although a final version of the manual must be completed and a collection of case studies to accompany the manual must be prepared during the remaining Project Period, it is felt that the Project Purpose is attainable at the present time.

The first indicator for Output 1 (survey and planning methods will be developed for the preparation of appropriate water-saving improvement plans) is “verification of water-saving effects in the priority model irrigation schemes is possible.” Thus far, data are being observed and analyzed, and verification of water-saving effects is being conducted. The second indicator is “developed methods (manual) are being utilized in the model schemes.” Here, a trial version of the manual is already being distributed to large- and medium-scale irrigation schemes nationwide. And the third indicator is “farmers’ awareness of water saving improves.” Here, pamphlets have been prepared and distributed and explanatory meetings have been held, and thus it is recognized that awareness of water saving among farmers themselves is improving.

The first indicator of Output 2 (water management technologies will improve) is “appropriate water management methods that are based on facilities improvement and system reinforcement and their water-saving effects will be compiled.” Appropriate water management methods and their water-saving effects are already compiled in the manual. The second indicator is “the amount of water lost for each area unit will be reduced within the scope of the model project.” Here, it is thought that water loss is being reduced based on improved results in “water-saving efficiency” in the priority irrigation schemes. And the third indicator is “compiled methods are incorporated into the model irrigation schemes.” Here, methods that were compiled in the manual are expected to be reflected in water-saving improvement plans for each model irrigation schemes in the future.

And the first indicator of Output 3 (paddy field-level water-saving technologies will be developed) is “water-saving methods at the paddy-field level and their water-conservation effects will be compiled.” In the Shuangpai irrigation scheme, water-saving effects are being compiled based on comparisons with conventional methods. The second indicator is “net water requirements per unit area are reduced in the model paddy fields.” Here, it is confirmed that the net water requirement is decreasing based on the results of verification in model fields of the Shuangpai irrigation scheme. And the third indicator is “compiled methods are incorporated into

the model irrigation schemes.” Here, methods that were compiled in the manual are expected to be reflected in water-saving improvement plans for each model irrigation scheme in the future.

Based on the above, it is expected that Outputs 1, 2, and 3 will be largely achieved.

3-2 Outline of evaluation results

(1) Relevance

The basic direction of the Project adheres to China’s 10th five-year plan, which was commenced in 2001, and its water law that was revised in 2002. Moreover, Japan’s ODA Charter, “medium-term ODA policies,” and “Economic Cooperation Program for China” each contain “efforts to deal with global issues,” which include support for environmental problems and the water sector, among their priority aid fields for China. And JICA’s country program for China lists “cooperation for dealing with environmental and other global issues,” which includes “sustainable use of water resources,” as a priority field in aid to China. From the above, it can be determined that the objective of “establishment of water-saving irrigation technologies” as pursued by the Project remains relevant.

Furthermore, because agricultural water makes up 70% of all water used in China, the establishment of water-saving irrigation technologies and efforts to increase the efficiency of agricultural water use were relevant as means of resolving water shortages. Moreover, Japan’s agricultural water use efficiency is high due to the establishment of irrigation facilities (including management facilities) and formulation of various standards that support these facilities. Consequently, provision of cooperation that utilizes Japan’s technologies and experience is highly significant.

(2) Effectiveness

Up until the time of this evaluation, the operational structure for the Project and inputs by both Japan and China have been extremely well executed, and the necessary Outputs are being achieved; thus, it is expected that the Project Purpose will be achieved. However, while the indicator for the Project Purpose stops at formulation of a “manual for preparation of water-saving improvement plans in irrigation schemes,” one of the indicators for the Outputs goes so far as to mention use of the manual in model irrigation schemes. The relationship between these two indicators is unclear. Nonetheless, despite the existence of some problems with the indicators, it can be

judged that the Project has effectiveness.

Three Outputs have been established toward achievement of the Project Purpose; i.e., “water-saving irrigation technology that can be extended throughout all of China will be established through verification in the priority model irrigation schemes.” Judging from the relationship between the development of water-saving technologies through the achievement of Output 2 (water management technologies will improve) and Output 3 (paddy field-level water-saving technologies will be developed) and generalization of technologies that can be used in other regions through achievement of Output 1 (survey and planning methods will be developed for the preparation of appropriate water-saving improvement plans), it can be said that the planned outputs are adequate as means for achieving the Project Purpose.

(3) Efficiency

Inputs from the Japanese side—dispatch of long-term and short-term experts, training of counterparts (hereinafter “C/Ps”) in Japan, provision of machinery and equipment, assumption of local costs, etc.—have been provided smoothly, efficiently, and essentially according to plan. The Chinese side allocated C/Ps in accordance with details agreed upon in the Record of Discussions. The Chinese side is also working to bear basic expenses that are its responsibility and to provide facilities, etc., needed for Project implementation. Consequently, it can be said that the Project is efficient.

The Project established priority model irrigation schemes in three provinces having different climatic conditions. It has since then sought to establish water-saving technologies that can be spread throughout China through verification in each priority model irrigation schemes. Although simple comparison with similar projects in other countries is difficult, the fact that the Project has established water-saving irrigation technologies capable of being spread throughout China’s vast territory by dispatching five long-term experts—the same number that similar projects dispatch—shows that the Project has excellent cost effectiveness.

(4) Impact

1) Expectation of achieving the Overall Goal

Looking at the Overall Goal that states “irrigation efficiency and water-use efficiency will improve in priority model irrigation schemes,” this goal has already been achieved at least temporarily. A major reason for this is that facilities and management frameworks have been established based on water-saving improvement

plans. Accordingly, it is highly possible that irrigation efficiency and water-use efficiency will continue at their current levels after the end of the Project, and further improvements can be expected depending on how water-saving improvement plans progress. Looking at the Overall Goal that states “appropriate water-saving improvement plans will be prepared in at least the model irrigation schemes,” problems with existing water-saving improvement plans have been organized in almost all irrigation schemes, and strategies to revise these plans are being formulated. Therefore, it is expected that this goal will be achieved in the future.

2) Ripple effects

a. Extension of systems for disclosing water charge

In the Jinghui-gu irrigation scheme, a tough panel-type system for disclosing water charge was developed and installed. This clarified the grounds upon which water charge are collected and improved the charge collection rate.

b. Improved response to floods

Remote control of gates and improved operational methods at the Shuangpai irrigation scheme made appropriate and swift gate operation possible and reduced damage when floods occurred.

c. Diffusion of the project cycle management (hereinafter “PCM”) method

Instruction on the PCM method was provided in mid-level technicians’ training for employees of local governments’ water-resources agencies and large-scale irrigation schemes. This resulted in recognition among the trainees of the effectiveness of the PCM method and the method’s application in everyday operations.

d. Impact on environmental aspects

In the Jingtachuan irrigation schemes, implementation of irrigation activities led to improved average rainfall and average wind-speed figures, and turned an area that had been a desert into an environment in which agriculture is possible and people can live.

e. Participation in technical exchanges and international conferences with third countries

Technologies and operation and management know-how that were obtained through the Project was shared with other countries, international organizations,

etc., through technical exchanges and participation in international conferences.

f. Collaboration with the Japan Bank for International Cooperation (hereinafter “JBIC”)

Mutual supplementation of project content was made possible through collaboration with projects being implemented by JBIC. Further extension of the Outputs of this Project can be expected in the future.

g. Impact on the projects of other donors

The Irrigation and Drainage Development Center is also a C/P in projects implemented by other donors, including the World Bank. Therefore, utilization of the Outcomes of this Project in the projects of other donors can be expected to make a contribution to these projects.

(5) Sustainability

1) Organizational and financial aspects

The importance of the Irrigation and Drainage Development Center roles in terms of technical guidance and guidance in formulation of plans in the area of water-conserving irrigation is acknowledged, and its position as a public project implementer is recognized by the Ministry of Finance. Thus, enhancement of the center in terms of personnel allocation and finances can be expected. Moreover, fact-finding surveys, evaluations, and other studies by large-scale irrigation schemes are moving forward. Plans call for appropriate budgeting of expenses that contribute to the preparation of water-saving improvement plans by large-scale irrigation schemes is scheduled to take place based on the results of these studies. Thus, it is expected that the personnel and funds necessary to diffuse water-saving irrigation technology will be secured by the Irrigation and Drainage Development Center even after the Project is completed.

2) Technical aspects

The Ministry of Water Resources’ Department of Rural Water Management recognizes the effectiveness of the “manual for preparing water-saving improvement plans” that was created through the Project, and it has clearly stated its intention to diffuse the manual throughout China. Furthermore, the C/Ps of the Irrigation and Wastewater Development Center have already reached a level that allows them to provide guidance in the PCM method, and thus they can be expected to play a central role in efforts to diffuse the method for preparing water-saving improvement plans

throughout the country. The technical level of facilities established in the priority model irrigation schemes is appropriate and the importance of their management is sufficiently understood; therefore, the evaluation team believes that these facilities will continue to be properly managed into the future.

3-3 Factors contributing to emergence of effects

(1) Factors pertaining to planning content

The fact that the Project does not exist as an independent undertaking but rather is linked to other Ministry of Water Resources activities not only raised the Project's relevance but also contributed to stronger Chinese ownership and Project promotion.

(2) Factors pertaining to the implementation process

A "committee for instruction and organization for water-saving improvement in large-scale irrigation schemes" was established in the Ministry of Water Resources. This committee was positioned as an official body of the ministry, with the head of the Rural Water Use Agency serving as chairman, and this made efficient preparation of the manual with the cooperation of concerned organizations possible.

3-4 Problem areas and factors leading to problems

(1) Factors pertaining to plan content

Some logical inconsistencies were evident in the project design matrix (PDM). Among them was the fact that, while the indicator for the Project Purpose stops at formulation of a "manual for preparation of water-saving improvement plans," one of the indicators for the Outputs goes so far as to mention use of the manual in model irrigation schemes; the relationship between these two indicators is unclear. Moreover, with regard to Activity 4-3 (information input and building of a database), the notation pertaining to the level to which the database should be built was ambiguous. Consequently, information on Project progress was not shared between the experts and the C/Ps. For example, activities that the experts thought were already achieved were seen as incomplete by the C/Ps, and therefore some C/Ps felt that the Project needed to be extended.

(2) Factors pertaining to the implementation process

At the time the final evaluation was conducted, neither the experts nor the C/Ps recognized the abovementioned problem with the PDM. It is thought that if this problem had been recognized by both sides at an early stage and if necessary

countermeasures were taken, the Project might have been able to come to a smoother end.

3-5 Conclusion

As was mentioned above, it is expected that the desired goals of the Project will be largely achieved, and that the achievement process is appropriate. Moreover, the effects of the Project have been verified from the standpoints of the Five Evaluation Criteria. Accordingly, the Project will conclude in accordance with the initial plan on May 31, 2006.

3-6 Recommendations

(1) Activities during the Project Period

1) Preparation of a collection of case studies

A collection of case studies that presents actual examples in the priority model irrigation districts and examples of regulating reservoirs in Japan should be prepared as a material to accompany the “manual for preparing water-saving improvement plans in irrigation schemes.”

2) Trial operation of facility information management systems

At the present time, work to input sample data is being conducted in each priority model irrigation scheme. Trial operation should be completed within the Project Term with technical guidance from Japan.

3) Formulation of an activity plan

An activity plan should be formulated for diffusion of the “manual for preparing water-saving improvement plans in irrigation schemes,” improvement of technical levels pertaining to “facility information management methods,” and extension of water-saving technologies at the paddy-field level.

4) Clarification of the process for revising the manual

The procedure that must be followed when revising the manual as circumstances demand and the organizations to participate in this procedure should be clarified.

(2) Activities following the end of the Project

1) Diffusion of the “manual for preparing water-saving improvement plans in irrigation schemes” throughout China

Activities to diffuse the “manual” throughout China based on the activity plan (scheduled to be formulated during the Project Period) must be pursued after the end of the Project. At the same time, work to enhance the collection of case studies should also be continued.

2) Enhancement of “facility information management methods”

Even after the end of the Project, work to raise the technical level of personnel in charge as well as to enhance the database must be undertaken toward full-scale operation of systems in each priority model irrigation scheme.

3) Utilization of model paddy fields

Using the model paddy fields that were established in the Shuangpai irrigation scheme, efforts must be made to exhibit and diffuse water-saving technologies to other schemes based on the activity plan (scheduled to be formulated during the Project Period).

3-7 Lessons learned

(1) Effective selection of C/Ps

Having a full understanding of JICA’s technical cooperation projects, the Irrigation and Drainage Development Center contributed to the smooth implementation of the Project. Particularly when there are many concerned parties—such as the Ministry of Water Resources, the provincial water resources agencies, and priority model irrigation schemes in this Project—having a mobile organization such as the Irrigation and Drainage Development Center to take charge of project operation makes efficient and effective implementation possible. Furthermore, many C/Ps were allocated to the Irrigation and Drainage Development Center, concerned water resources agencies, and priority model irrigation districts. This built a framework for smooth collaboration among the various organizations and contributed significantly to achievement of the Project Purpose.

(2) Establishment of an organizing committee

At an early stage of the Project, a “committee for instruction and organization for water-saving improvement in large-scale irrigation schemes” was established in the Ministry of Water Resources to handle organization of the ““manual for preparing water-saving improvement plans in irrigation schemes.”” Chaired by the head of the Rural Water Use Agency, this committee was positioned as an official ministry

committee, which allowed it to steadily pursue the work of organizing the manual with the cooperation of concerned organizations. The committee's status also allowed it to implement the Ministry of Water Resources' policies and to quickly reflect these policies in the manual.

(3) Revision of the PDM

Consistency among the indicators was not maintained in the Projects' PDM. For example, it is more difficult to achieve the Output indicators than it is to achieve the Project Purpose indicators. Moreover, PDM notations that pertain to facilities management activities were unclear, which has led to differences in awareness among Project personnel. Because similar PDM-related problems may occur in other projects, revisions should be made to the PDM as necessary based on agreements among project personnel.

3-8 Follow-up situation

No comments in particular.