

Republic of Uzbekistan

FY2016 Ex-Post Evaluation of Technical Cooperation Project

“The Project for Water Management Improvement”

External Evaluator: Keisuke Nishikawa, Japan Economic Research Institute Inc.

0. Summary

The Project for Water Management Improvement was a project in which pilot Water Users' Associations (WUAs) in three provinces of Uzbekistan (Tashkent Province, Syrdarya Province, and Djizzak Province) were targeted and in which the staff in charge from Basin Irrigation System Management (hereinafter referred to as 'BISM') and the Irrigation Systems Department (hereinafter referred to as 'ISD') were expected to disseminate knowledge and technologies on water distribution management and facility maintenance so that the water management skills of the pilot WUAs would be enhanced. This project was in line with the development policy of Uzbekistan, having a focus on efficient usage of water resources and improvements in water management as well as on the needs to improve water distribution management and maintenance by pilot Water Consumers Associations (hereinafter referred to as 'WCAs'¹) for agricultural production. It was also consistent with Japan's priority assistance area at the time of planning, which had a focus on the support for agricultural and rural development as well as for land reforms and regional reforms in Uzbekistan. Therefore, the relevance of the project is high. With regard to the Project Purpose, while the collection rates of irrigation service fees and improved capacities and activities of WCAs were largely achieved, it could not be judged that the Project Purpose was sufficiently achieved as data on the actual irrigation status at the time of completion were difficult to obtain. Also, since project completion, the collection rates of irrigation service fees have been on a declining trend and training for WCAs based on utilizing the outcomes of this project has not been conducted, showing that continuous activities have not evolved. Therefore, the achievement level of the Overall Goal is limited and the effectiveness and the impact of this project are fair. The efficiency is fair as the project period exceeded the plan though the project cost was within the plan. The sustainability of the effects generated by this project is judged to be fair as there were issues in terms of organizational (partially), technical and financial aspects.

In light of the above, the project is evaluated to be partially satisfactory.

¹ WUAs, which were unincorporated associations registered with local governments, became registered with the Ministry of Justice as WCAs because of a revision of the Water Act during the period of this project.

1. Project Description



Project Location



Irrigation Canal Rehabilitated in This Project
(Djizzak Province)

1.1 Background

At the time of ex-ante evaluation, in Uzbekistan, efforts were being made on rehabilitating the irrigation and drainage facilities constructed in the 1970s. However, on-farm irrigation facilities had dilapidated and had reached the end of their useful life. In Uzbekistan, the deterioration had accelerated since its independence in 1991 because of the agriculture sector reform and limited allocation of the national budget for operation and maintenance; meanwhile, WUAs had not learned basic water management techniques, causing problems in water distribution management as well as in the maintenance and renewal of end-point irrigation canals in terms of leakages from dilapidated distribution canals and the adjustment of distribution volumes caused by piled up soil and stones due to the lack of intake gates. As a result, the irrigated land area decreased (gradually decreasing from 3.79 million ha [2003] to 3.56 million ha [2007]) because of losses of irrigation water, excessive distribution of water to certain farms, a lack of water at farms downstream, and widespread salinization caused by water clogging, all of which had caused a decline in agricultural production.

In response to these circumstances, the Government of Uzbekistan planned to improve the WUA's irrigation water management in the areas of Syrdarya Province and Djizzak Province, which were facing issues in the maintenance of irrigation facilities and experiencing salinization damage along the Syrdarya River Basin, which was a major production area of cotton and wheat, and in the area of Tashkent Province, located along the Chirchik River Basin, which was in the same basin system as the two other provinces.

1.2 Project Outline

Overall Goal		Water management conducted by WCAs in Chirchik-Ohangaran BISM and Lower Syrdarya BSIM is improved.
Project Purpose		Water management conducted by pilot WCAs is improved.
Outputs	Output 1	Training system for WCAs is strengthened.
	Output 2	Capacity of pilot WCA staff for water distribution is improved.
	Output 3	Capacity of pilot WCA staff for maintenance of irrigation system is improved.
Total Cost (Japanese side)		348 million yen
Period of Cooperation		November, 2009 – December, 2013 (Extended period: May – December, 2013)
Implementing Agency		Ministry of Agriculture and Water Resources
Other Relevant Agencies / Organizations		None
Supporting Agency / Organization in Japan		Ministry of Agriculture, Forestry and Fisheries
Related Projects		<p>[World Bank] Agricultural Enterprise Support Project (2002-2007), Rural Enterprise Support Project Phase 2 (2009-2016), etc.</p> <p>[Asian Development Bank] Land Improvement Project (2007-2010), Grain Productivity Improvement Project (2004-2009), etc.</p> <p>[International Water Management Institute / Swiss Agency for Development and Cooperation] Integrated Water Resource Management Fergana Valley (2001-2012)</p> <p>[United States Agency for International Development] Water Users' Association Support Project (2004-2009)</p> <p>[Japan International Research Center for Agricultural Sciences] Program for Investigation and Study for Overseas Agriculture and Rural Development and Global Warming Measures (2009-2013)</p>

1.3 Outline of the Terminal Evaluation

In the terminal evaluation conducted in October 2013 (during the extended period²), the

² In this project, while a terminal evaluation was conducted once in November 2012 during the initial project period, an additional evaluation study was conducted in October 2013 during the extended period. In this report, the terminal evaluation conducted during the extended period is shown as 'additional terminal evaluation'.

following judgment had been made regarding the achievement of the Project Purpose and the Overall Goal, and the recommendations described in 1.3.3 had been made.

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

Four out of five indicators set had been achieved and the collection rates of irrigation service fees were on a rising trend after the project had commenced. As the results had improved compared to those at the time of the initial terminal evaluation, it was considered that the Project Purpose, 'Water management conducted by pilot WCAs is improved,' was highly likely to be achieved during the extended period.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation

The possibility of the targets for the collection rates of irrigation service fees being achieved in the target area could not be estimated because of a possible occurrence of water shortage; however, a certain degree of achievement had been expected in 2012.

It was also expected that the capacities of WCAs had been evaluated to have improved by its members and that the operations would become more active.

1.3.3 Recommendations from the Terminal Evaluation

The following recommendations were mainly made in the additional terminal evaluation.

- (1) Indicator 1 of the Overall Goal would be changed from 'Collection rate of irrigation service and other fees is increased by 20% from Year 2010 to Year 2016 in the target regions' to 'in order to improve the collection rate or irrigation service, target BISM/ISDs apply techniques developed in the Project to more than 20% of the WCAs by 2018'.
- (2) A seminar on the achievement of this project would be held for those concerned with water management.
- (3) BISM/ISDs would develop an implementing structure and secure the budget to execute the dissemination plan to be formulated by the lecturers.
- (4) The effects of project intervention would be objectively verified. Diagnostic and maintenance techniques of irrigation and drainage facilities would be developed.
- (5) The outcomes achieved in this project regarding the capacity development of WCAs would be utilized in projects on irrigation infrastructure development.
- (6) Techniques and training materials developed in this project would be utilized.
- (7) Problems related to the equipment (excavators and flumes³) provided through this project would be solved.

³ A flume is an artificial canal with a structure composed of integrated side walls and bottoms.

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the study: November, 2016 – April, 2018

Duration of the Field Study: March 27 – April 14, 2017 and July 17 – 21, 2017

2.3 Constraints during the Evaluation Study

As a consequence of a large-scale transfer of personnel at the Ministry of Agriculture and Water Resources, serving as the implementing agency, after project completion, many of those involved in the project at that time had been transferred prior to the ex-post evaluation, leaving limited project-related data within the ministry. The responses from the implementing agency gathered in the questionnaire of the ex-post evaluation were partial and much of the information remained within the range of what the ISDs and WCAs in each province could provide. Also, it was not possible to have a meeting with the long-term Experts in the agricultural area who had been engaged in this project. Therefore, the information described in this report contains the information from the terminal evaluation which does not indicate the achievement status at the time of project completion as well as some information shown in the completion report.

As this ex-post evaluation has been conducted under these circumstances, the evaluation judgment is not necessarily comprehensive based on sufficient information.

3. Results of the Evaluation (Overall Rating: C⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Consistency with the Development Plan of Uzbekistan

At the time of planning of this project, in Uzbekistan, the '*Welfare Improvement Strategy (2008-2010)*', formulated in 2007 as the country's poverty reduction strategy, pointed out the issue of widening urban-rural disparities, and the reduction of poverty in rural areas was one of its key challenges. In the '*National Drainage Improvement Program*' (a plan of five years from 2008), a plan on the field of irrigation, measures such as those for maintenance and rehabilitation of drainage canals, provision of agricultural finances, and dissemination of drip irrigation were included. This project was consistent with the direction to promote efficient use of water resources and improvements on water management set in the plan.

In the ex-post evaluation, the statuses of these plans at the time of project completion was

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ②: Fair, ①: Low

checked and subsequently revealed that the national plan '*Welfare Improvement Strategy (2013-2015)*' had maintained its focus on poverty reduction in rural areas and had contained a target to reduce the proportion of the widespread low-income population in rural areas from 18.5% in 2011 to 13.7% in 2015. In addition, improvements in WCAs' activities had been regarded important for effective use of water resources that were necessary for agricultural production. At the sector level, the '*Government Drainage Improvement Program Phase 2*' (2013-2017) was formulated, including measures such as the rehabilitation of main and inner canals, provision of equipment, such as excavators and drip irrigation equipment, and so on. It was confirmed that this project had been consistent with the objective to improve water management.

3.1.2 Consistency with the Development Needs of Uzbekistan

At the time of planning of this project, WUAs had not had basic water management techniques, causing problems in water distribution management and in the maintenance and renewal of end-point irrigation canals in terms of leakages from dilapidated distribution canals and the adjustment of distribution volumes caused by piled up soil and stones due to the lack of intake gates. As a result, the irrigate land area decreased (gradually decreased from 3.79 million ha [2003] to 3.56 million ha [2007]) because of losses of irrigation water, excessive distribution of water to certain farms, a lack of water at farms downstream, and widespread salinization caused by water clogging, all of which had caused a decline in agricultural production.

According to the Implementing Agency, WCAs continued to be in charge of operation and maintenance of the end-point canals of the irrigation system at the time of project completion. They were important associations for irrigation in terms of agricultural production as there were no organizations in charge other than the WCAs. However, there were not a few WCAs still lacking capacities for the collection rate of irrigation service fees as well as operation and maintenance, indicating that there was continuously a strong need for capacity enhancement. In fact, the collection rate of irrigation service fees was not necessarily high, as stated later, and it was a major factor in not being able to thoroughly conducting maintenance activities.

In Uzbekistan, the general structure was that WCAs would undertake operations and maintenance of the end-sections of the irrigation system. While the number decreased nationally compared to that of 2009, it was confirmed that more than 1,500 WCAs existed and carried out irrigation management in 2013, when this project was completed, and a total of 419 WCAs existed (in 2013) in the three provinces where this project was implemented, indicating that the maintenance and improvement of management skills continued to be needed.

Table 1: Number of WCAs

	2009	2013	2014	2015	2016
Tashkent Province	191	149	148	148	148
Syrdarya Province	110	119	117	116	116
Djizzak Province	104	151	149	148	148
National Total	1,711	1,508	1,496	1,503	1,503

Source: Information provided by the Implementing Agency

Regarding the irrigation areas, as the data from the WCAs targeted in this project could be obtained for only the years after 2013, it was not possible to make comparisons to years prior to that. However, 11,284 hectares of farmland were irrigated in the areas maintained by six WCAs in 2013, where WCAs had been playing a role to distribute water at the end section.

Table 2: Irrigation Areas of WCAs Targeted in This Project

Name of WCA		(Unit: thousand ha)			
		2013	2014	2015	2016
Tashkent Province	Qarasha	1,395	1,395	1,395	1,395
	Jambul Ota	900	900	1,145	1,486
Syrdarya Province	Dustlik	979	964	964	1,236
	Guliston	2,765	2,904	2,878	2,917
Djizzak Province	Samarqand Quduq	2,626	2,627	3,042	2,773
	Pastki Buloq	2,619	2,653	2,734	2,631

Source: Information provided by each ISD

Based on the above, the needs for water distribution management and canal maintenance by WCAs for agricultural production were high both at the time of planning and completion.

3.1.3 Consistency with Japan's ODA Policy

At the time of planning of this project, in Japan's '*Country Assistance Plan for Uzbekistan*' (formulated in 2006), 'Agricultural and rural development' was positioned as one of the areas to be supported under one of the priority areas: 'Assistance for restructuring the social sector'. In addition, according to JICA's '*Country Assistance Strategy*' at the time of planning, JICA's cooperation for Uzbekistan regarded 'regional development' as a development challenge and agricultural technology improvement was listed as one of the programs; in other words, such policies indicate that there was a direction to strengthen cooperation which was conducive to poverty reduction in the rural areas of the country where disparities were widening in the course of market-oriented economic reform.

Therefore, this project can be said to have been consistent with the priority area, 'Agriculture and rural development', in the Country Assistance Policy for Uzbekistan and with 'Agrarian reform and regional development', which JICA set forth as a cooperation area.

In light of the above, the implementation of this project was highly consistent with Uzbekistan’s development plans and development needs, as well as Japan’s ODA policy. Therefore, the relevance is high.

3.2 Effectiveness and Impact⁶ (Rating: ②)

3.2.1 Effectiveness

3.2.1.1 Project Output

It was expected in this project that the Project Purpose would be achieved through the achievement of the following three Outputs:

[Output 1] Training system for WCAs is strengthened.

[Output 2] Capacity of pilot WCA staff for water distribution is improved.

[Output 3] Capacity of pilot WCA staff for maintenance of irrigation system is improved.

The relationship between the Outputs / Activities and the Project Purpose, as shown in Figure 1, stipulated that the capacities of pilot WCAs for improved water management would be enhanced by developing textbooks on water management and conducting training on (1) planning and facility operations for water distribution and (2) maintenance of irrigation and drainage facilities and water management would be improved.

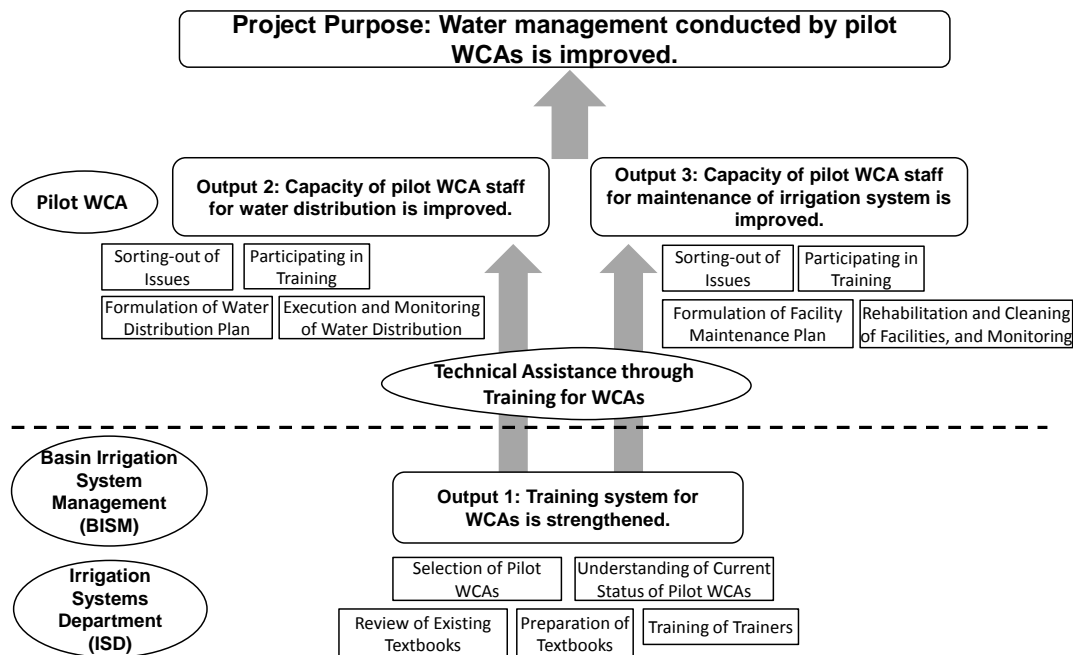


Figure 1: Conceptual Diagram of This Project

⁶ Sub-rating for Effectiveness is to be put with consideration of Impact.

Output 1: Training system for WCAs is strengthened.

(Indicator 1) More than 10 kinds of training materials for pilot WCA staff are developed.

(Indicator 2) More than 6 staff of BISM and ISDs participated in Training of Trainers, and are able to conduct training for WCA staff.

(Indicator 3) More than 96 times of training for WCA staff are conducted.

As the level of achievement at the time of completion was neither organized nor captured by the Implementing Agency and it was not described in the completion report, the judgment in this report was made mainly based on the information in the additional terminal evaluation.

In this project, four training modules ([1]Concept and roles of WCA, [2]Management and administration of WCA, [3]Financial management of WCA, and [4]Water distribution management and maintenance of irrigation and drainage facilities) were developed and 10 kinds of training materials and one manual were prepared. Furthermore, one piece of visual material, eight kinds of posters, and six kinds of pamphlets were created. According to BISM, ISDs and WCAs, these materials were utilized in training and the visual material was also distributed to all 52 ISDs across the entire country.

The number of staff that participated in “Training of Trainers” was seven and they conducted training and instruction for WCAs alongside the Experts in this project⁷. However, according to the interview surveys in the additional terminal evaluation, conducted two months before project completion, and those in the ex-post evaluation, while many of these trainers (participants of the Training of Trainers) were feeling a certain degree of improvement in their knowledge and skills, they considered it necessary to have further training on skills for cash flow management, collection rate of irrigation service fees, and business planning of WCAs.

Also, training for WCA staff members was conducted 315 times (number of sessions) by project completion.



Textbooks prepared through this project (DVD)

⁷ As one of the seven trainees (ISD staff in Tashkent Province) had resigned during the project, the trainer certificate was eventually issued to six trainees.

Based on the above, it is estimated that the indicators have been largely achieved. However, it can be said that some issues have remained in terms of the capabilities of trainers to conduct training in part that they had not reached the level where they had become sufficiently equipped with the skills to independently apply the contents of the training they had received. Also, the number of staff trained to be able to conduct training was virtually only six, which is considered insufficient, including the number in the original plan, as there was a total of 419 WCAs (in 2013) in the three provinces targeted by this project.

Output 2: Capacity of pilot WCA staff for water distribution is improved.

(Indicator 1) More than 12 staff of pilot WCAs participated in the training on water distribution.

(Indicator 2) Water distribution plans for model area are formulated by pilot WCAs every year based on the training.

(Indicator 3) Water distribution records in model area are kept by pilot WCAs based on the training

According to the information organized at the time of the additional terminal evaluation, a total of 958 WCA staff members along with a total of 558 WCA members had participated in the training programs on water distribution planning. Regarding the formulation, implementation and recording of water distribution plans, it was confirmed by the pilot WCAs that the water distribution plans by block among the model areas⁸ selected in each district had been formulated and the actual distribution statuses had been recorded⁹. According to each pilot WCA at the time of ex-post evaluation, training and guidance on the recording of distribution status had been conducted in the second half of the project period.

Therefore, Output 2 can be said to have been achieved.

Output 3: Capacity of pilot WCA staff for maintenance of irrigation system is improved.

(Indicator 1) More than 12 staff of pilot WCAs participated in the training on maintenance of irrigation and drainage.

(Indicator 2) Maintenance plans are formulated, implemented and these records are kept

⁸ Areas set to carry out activities for water management through this project in the irrigated areas of pilot WCAs.

⁹ In the terminal evaluation conducted in November 2012, it was stated that water could not be distributed to all blocks in the model area and training on water distribution planning and management had not been sufficiently conducted in the Qarasha WCA, where the quality of flumes delivered in 2011 was poor, leading to a delay in canal rehabilitation. However, delivery and rehabilitation of flumes was conducted again in 2012-2013, and training on water distribution planning and management was carried out after that. (Source: *Additional Terminal Evaluation Report*)

for one selected water canal every year based on the training by the pilot WCAs.

With regard to the enhancement of capacities for maintenance of irrigation and drainage facilities, targeted as Output 3, according to the additional terminal evaluation report, the training program had been conducted 194 times by September 2013, which had a participation including a total of 570 staff from pilot WCA. Regarding the formulation of maintenance plans, while maintenance plans of all of the 36 canals in total of pilot WCAs had been formulated as planned, maintenance work was completed only in three canals and partially completed in 32 canals. No planned maintenance work was conducted in one of the canals. Records were kept on 35 canals. The major factor for not sufficiently implementing the maintenance plan after formulation was the lack of sufficient funds for conducting maintenance as planned under the financial conditions of the WCAs. 36 canals were selected from the ones managed by each WCA, and it was not due to technical problems that the maintenance had not been sufficient.

Therefore, for Output 3, it is considered that while the indicators on the implementation of training have been achieved, there were some issues in terms of the actual implementation status of the maintenance plans.

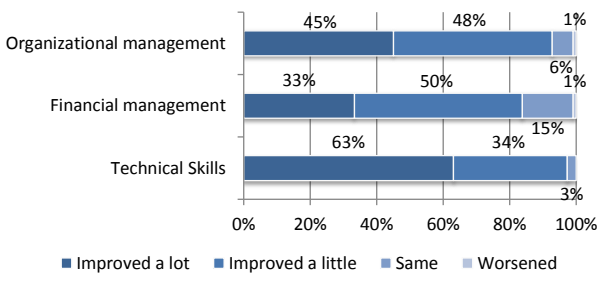
3.2.1.2 Achievement of Project Purpose

The achievement status of Project Purpose at the time of project completion was as shown in Table 3.

Table 3: Achievement Level of the Project Purpose

Purpose	Indicator	Actual Achievement
Project Purpose: Water management conducted by pilot WCAs is improved.	(1) The collection rate of irrigation service and other fees is increased to 60% in the 1st batch of WCAs and to 30% in the 2nd batch of WCAs ¹⁰ .	According to the final data of 2013, at which time this project was completed (information obtained from the ISDs of each province at the time of ex-post evaluation), the collection rates of irrigation service fees were: 68% in Qarasha, 27% in Dustlik and 62% in Pastki Buloq for the first batch; and 55% in Jambul Ota, 28% in Guliston, and 32% in Samarqand Buloq for the second batch. For both batches, all WCAs except Dustlik largely achieved the target values.
	(2) More than 50% of WCA members regard the WCAs' capacity (organization management, efficiency, finance, technique) to have improved.	I In the questionnaire survey conducted with 139 WCA members in September 2012, it became clear that the percentage of those who thought that the capacities of WCAs had improved was: 97% in terms of organizational administration; 97% in terms of efficiency; 98% in terms of financial management; and 96% in terms of technical skills.

¹⁰ As the number of Experts was limited and training was to be efficiently conducted in a sequential manner through this project, six pilot WCAs were divided into two batches (one WCA from each province in each batch), and facilities development and training were conducted with a one-year difference. The first batch included Qarasha, Dustlik and Pastki Buloq and the second batch included Jambul Ota, Guliston and Samarqand Quduk.

		<p>In the interviews with each WCA at the time of ex-post evaluation, many comments were heard that technical instructions in this project, particularly the concrete repairing methods, had been useful. Many comments were also heard on financial aspects stating that they could ask how to sort out figures in a concrete manner. In the beneficiary survey¹¹, changes shown in Figure 2 were confirmed through project implementation.</p>  <table border="1"> <caption>Data for Figure 2: Evaluation on the Enhancement of the WCAs' Capacities</caption> <thead> <tr> <th>Category</th> <th>Improved a lot</th> <th>Improved a little</th> <th>Same</th> <th>Worsened</th> </tr> </thead> <tbody> <tr> <td>Organizational management</td> <td>45%</td> <td>48%</td> <td>1%</td> <td>6%</td> </tr> <tr> <td>Financial management</td> <td>33%</td> <td>50%</td> <td>1%</td> <td>1%</td> </tr> <tr> <td>Technical Skills</td> <td>63%</td> <td>34%</td> <td>15%</td> <td>3%</td> </tr> </tbody> </table> <p>Figure 2: Evaluation on the Enhancement of the WCAs' Capacities</p> <p>As for organizational management, financial management and technical skills, target values of the indicators are considered to have been sufficiently achieved based on the results from both the interviews with the WCAs and the beneficiary survey.</p>	Category	Improved a lot	Improved a little	Same	Worsened	Organizational management	45%	48%	1%	6%	Financial management	33%	50%	1%	1%	Technical Skills	63%	34%	15%	3%
Category	Improved a lot	Improved a little	Same	Worsened																		
Organizational management	45%	48%	1%	6%																		
Financial management	33%	50%	1%	1%																		
Technical Skills	63%	34%	15%	3%																		
(3) More than 50% of WCA members increase their participation in WCA's activities.		<p>According to the results of the interviews with 34 WCA members conducted by the Experts in September 2012, 91% of the members thought that WCA meetings had increased and 97% of them thought that maintenance work had increased. In the interviews in the terminal evaluation (November 2012), the results on the recognition by the members of the importance of WCAs being strengthened and on the participation in maintenance of irrigation and drainage facilities and canals having increased were obtained.</p> <p>According to the interviews with WCAs in the ex-post evaluation, operations done by the WCAs had become more active during the project period and the number of meetings and maintenance activities had increased. In the beneficiary survey, of 13 WCA staff members interviewed, responses were obtained from all of them in which they</p>																				

¹¹ An interview survey with the participants of training courses from six pilot WCAs in Tashkent Province, Syrdarya Province, and Djizzak Province was conducted by the local assistant from July to August, 2017. Responses were obtained from a total of 111 staff and members (13 WCA staff and 98 WCA members: 8 in Qarasha, 18 in Jambul Ota, 29 in Dustlik, 23 in Guliston, 20 in Pastki Buloq, and 13 in Samarqand Quduk; 93 males and 18 females) who could be interviewed on the days of visits at each WCA. The main questions were as follows:

- Satisfaction with the training provided through this project (improvements in the level of understanding through training courses in this project; number of training sessions taken and its sufficiency; whether the capacities of WCAs as a whole had been enhanced as a result of taking the training courses)
- Active operations of WCAs (increases in WCA meetings; increases in facility maintenance work by WCAs)
- Indirect effects caused by capacity enhancement of WCAs (increases in agricultural production and agricultural revenues through the improvements in irrigation conditions; cases of reduction of salinization damages; other economic and social impacts)
- Environmental and social impacts (negative impacts on the natural environment after implementing this project; resettlement of residents or land acquisition)

		stated that both meetings and maintenance activities had increased. From 111 respondents, including 98 members, opinions were heard that 63% of them thought that the relationship between the WCAs and the members (participation in activities, etc.) had improved through this project, and 37% thought it had remained the same. Therefore, this indicator is considered to have been sufficiently achieved.
	(4) 70% of irrigated land in model areas is irrigated based on the WCAs' business plan.	At the time of terminal evaluation in 2012, among the seven model areas, the size of the area where water is distributed in accordance with the plan fell short of the target values in three areas of two WCAs (46% - 55%). 83.8% was recorded as a whole. According to the additional terminal evaluation, two areas out of three had 100% of their land distributed with water as planned in 2013. A severe water shortage occurred in the other area (in Qarasha WCA) in 2013, and the area had to be excluded from the target area. Therefore, the target values were achieved in six model areas, apart from one area in Qarasha WCA where severe water shortage occurred.
	(5) Farm land in model areas that cannot be irrigated is decreased by 10%.	According to the terminal evaluation report (November 2012), the reduction rates of non-irrigated farmland in the model areas in all pilot WCAs were 24.5% – 100% (56.7% on average), indicating that the target was achieved.

Source: Terminal Evaluation Report (November 2012), Additional Terminal Evaluation Survey Report (October 2013) and information collected at the time of ex-post evaluation

There were five indicators set for the Project Purpose shown in Table 3, and their achievement levels can be summarized as follows:

- Indicator 1: This indicator is judged to have been largely achieved as the collection rates of irrigation service fees exceeded the target values in all WCAs except Dustlik WCA.
- Indicator 2: This indicator can be said to have been achieved as capacity enhancement was sufficiently recognized to have been above the target values in the interviews with each WCA and information from the beneficiary survey.
- Indicator 3: Increases in WCA activities and improvements in the relationship were seen at a high level among the WCA staff and the members. Therefore, the indicator is considered to have been achieved.
- Indicators 4 and 5: As no annual data on actual irrigated and non-irrigated land areas were provided by the Implementing Agency or any of the WCAs, the achievement level at the time of completion could not be quantitatively captured. Based on the results of the terminal evaluation, the target values of Indicator 4 were achieved in six model areas, apart from one area in Qarasha WCA where a severe water shortage had occurred, and Indicator 5 was also achieved.

Based on the above, the Project Purpose with an aim to improve water management in

the pilot WCAs is estimated to have been largely achieved. However, it cannot be judged to have been sufficiently achieved, as the data at the time of completion could not be confirmed.

In this project, in addition to the development of training modules and the fosterage of trainers, training programs on water distribution and facility maintenance were conducted for WCA staff and the capacities of staff at BISM, ISDs, and WCAs were aimed to be enhanced. It was confirmed that the three Outputs were closely related to the Project Purpose. While Output 2 was achieved, Output 1 had an aspect in which the capacities of trainers had not reached a sufficient level to be able to apply the outcomes of training, and there were some issues with the Output 3 regarding the actual implementation status of maintenance plans. With regard to the indicators for the Project Purpose, the indicators on the collection rate of irrigation service fees, capacity enhancement, and more active operations of WCAs were largely achieved, but the data on the actual irrigation status at the time of completion remained uncertain. Therefore, no conclusive judgment that all the indicators of the Project Purpose were sufficiently achieved can be made.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

In this project, it was expected as the Overall Goal that water management by WCAs in the areas under the jurisdiction of targeted BISM would improve. The indicators to measure the achievement level and their achievement statuses at the time of ex-post evaluation were as described in Table 4.

Table 4: Achievement of the Overall Goal

Goal	Indicator	Actual Achievement
Overall Goal: Water management conducted by WCAs in Chirchik-Ohangaran BISM and Lower Syrdarya BISM is improved.	(1) Collection rate of irrigation service and other fees is increased by 20% from Year 2010 to Year 2016 in the target regions.	<p>[At the time of terminal evaluation (November, 2012)] As it was difficult to obtain data that could be used as a basis for estimating increases in the collection rate of irrigation service fees from all WCAs (369 WCAs) for all of the areas under the jurisdiction of two BISM, the data were only captured for the pilot WCAs. The actual rate at the end of FY2009 was 13.4% but it increased 17.7% to reach 31.2% at the end of September, 2012. Therefore, a certain degree of achievement of the Overall Goal was expected.</p> <p>[At the time of additional terminal evaluation (October, 2013)] Due to concerns on the occurrence of water shortage, there was an opinion that the possibility of achieving a 20% increase could not be predicted, and there was another opinion that achievements in all WCAs would be impossible due to a shortage of manpower. Therefore, a revision of the indicator itself was recommended as the achievement of Indicator 1 would be difficult and it could be affected by external factors. In the</p>

		<p>new PDM, this indicator was revised to state, ‘In order to improve the collection rate of irrigation service fees, target BISM/ISDs apply techniques developed in the Project to more than 20% of WCA by 2018’.</p> <p>[Information collected at the time of ex-post evaluation] A comparison of the collection rates of irrigation service fees of 2009 and 2016 (actual amount of collection / amount planned at the beginning of the financial year) that could be obtained from the six pilot WCAs showed an increase from 13.4% in 2009 to 30.3% in 2016.</p> <p>Regarding the spreading of activities to other WCAs, some textbooks developed through this project could have been utilized when the Ministry of Agriculture and Water Resources conducts training for WCAs in each region, but no concrete data on the level of their utilization existed.</p>																
	<p>(2) More than 50% of sample WCA members show appreciation for the improvement of the capacity of WCAs and increase their participation in the WCAs’ activities in the target regions.</p>	<p>[At the time of terminal evaluation] While the extraction of WCAs needs to be done carefully, the target value was likely to have been achieved.</p> <p>[At the time of ex-post evaluation] As the beneficiary survey results in Figure 3 indicate, many opinions were heard that the capacities of WCA members had improved after participating in the training courses of this project. Also, regarding the frequency of WCA meetings and maintenance activities, 69% of the 13 respondents (WCA staff) replied ‘Increased’, 15% ‘Same’ and 15% ‘Decreased’.</p> <table border="1"> <caption>Data for Figure 3: Evaluation on the capacity enhancement of individual WCA staff and members</caption> <thead> <tr> <th>Category</th> <th>Improved a lot</th> <th>Improved a little</th> <th>Same</th> </tr> </thead> <tbody> <tr> <td>Organizational management</td> <td>48%</td> <td>47%</td> <td>5%</td> </tr> <tr> <td>Financial management</td> <td>42%</td> <td>46%</td> <td>12%</td> </tr> <tr> <td>Technical Skills</td> <td>53%</td> <td>45%</td> <td>2%</td> </tr> </tbody> </table> <p>Figure 3: Evaluation on the capacity enhancement of individual WCA staff and members</p>	Category	Improved a lot	Improved a little	Same	Organizational management	48%	47%	5%	Financial management	42%	46%	12%	Technical Skills	53%	45%	2%
Category	Improved a lot	Improved a little	Same															
Organizational management	48%	47%	5%															
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Technical Skills	53%	45%	2%															

Source: Terminal Evaluation Report (November, 2012), Additional Terminal Evaluation Report (October, 2013), and information collected at the time of ex-post evaluation

As a rise in the collection rate of irrigation service fees and an increase in the members’ participation in activities was most important for the improvement of water management by WCAs, there was a close link between the achievement of the indicators and the Overall Goal. Dissemination of outcomes from this project to other WCAs under the jurisdiction of BISM/ ISDs targeted in this project was also incorporated into the Overall Goal.

Regarding Indicator 1, it was difficult to comprehensively capture the collection rates of irrigation service fees of the three provinces targeted in this project after 2009, and

only analysis of data from the pilot WCAs of this project could eventually be conducted. While the collection rate of irrigation service fees of these six WCAs increased by 16.9% (from 13.4% to 30.3%) from 2009 to 2016, it had been declining every year after it had reached 41.0% in 2013, which was the completion year of this project, as indicated in '3.4.4 Financial Aspects for the Sustainability of Project Effects'. Also, no spreading of activities from the pilot WCAs to other WCAs was observed after project completion. The main factors heard from the people concerned with this project were that: (1) while the fund to repair canals and flumes had been required to let sufficient irrigation water reach farms and the collection of the irrigation service fees were to be subsequently made, such endeavors had not been realized; and (2) revenues had not increased much as the international market trends for wheat and cotton had not been favorable; while, the cropping of wheat and cotton had been controlled by the government (making it impossible to shift to cultivation of horticulture produce which have higher values).

While Indicator 1 was set as the indicator for the Overall Goal for nearly four years since the project commenced, it was changed to a different indicator at the time of the additional terminal evaluation as it was difficult to achieve and could be influenced by weather conditions. However, for the majority of the project period, as the activities had been conducted with a view to achieving the indicator set at the beginning, the initial indicator was evaluated in this ex-post evaluation. The achievement status of the indicator set at the time of additional terminal evaluation was uncertain as no information was provided by the Implementing Agency. However, from the interviews with BISM/ISDs, it was clear that training by utilizing the outcomes of this project had not been continued, meaning that further evolutions of surrounding WCAs were limited.

As for Indicator 2, while the meaning for 'sample' was not clear, it was considered to be synonymous with the WCAs that had been randomly selected from the WCAs under the jurisdictions of the two BISM. However, as no data were provided by the Implementing Agency and while it was difficult in this ex-post evaluation to randomly extract non-targeted WCAs and to conduct a survey due to time constraints, the judgment was made based on the beneficiary survey and the interviews with the pilot WCAs. As the members usually participated in various activities of WCAs, capacity enhancement of the staff and the members was important. In the beneficiary survey, it was seen that they had been feeling the enhancement of capacities in organizational management, financial management, and technical skills. Regarding the active operations of WCAs, it was confirmed that they had declined in Tashkent Province and largely increased in the two other provinces. It has been considered that the major factor for reduced activities in Qarasha WCA, Tashkent Province, was that several locations where the rehabilitated flumes had collapsed again were observed and were not rehabilitated further.

Based on the above, while the information to make a judgment was not necessarily sufficient, the achievement level of the Overall Goal can be said to have been limited based on the information obtained.

The continuation statuses of the Outputs and the Project Purpose after project completion are shown below.

Table 5: Continuation Status of the Outputs and the Project Purpose

Outputs, Project Purpose, Indicators	Achievement Status of the Indicators
<u>Output 1: Training system for WCAs is strengthened.</u>	
(Indicator 1) More than 10 kinds of training materials for pilot WCA staff are developed.	It was heard that the textbooks created had been used as needed depending on the contents of the training programs conducted by the Ministry of Agriculture and Water Resources (e.g., drip irrigation techniques). Revisions had not been made in particular.
(Indicator 2) More than 6 staff from BISM and ISDs participate in Training of Trainers, and are able to conduct training for WCA staff.	While the lecturers trained in this project sometimes gave lectures as needed in the training program conducted by the Ministry of Agriculture and Water Resources, there were no systematic training programs in place for WCAs.
(Indicator 3) More than 96 times of training for WCA staff are conducted.	No training programs utilizing the outcomes of this project had been conducted for the pilot WCA staff and the staff of neighboring WCAs.
<u>Output 2: Capacity of pilot WCA staff for water distribution is improved.</u>	
(Indicator 1) More than 12 staff of pilot WCAs participate in the training on water distribution.	No similar training had been conducted after this project was completed.
(Indicator 2) Water distribution plans for model areas are formulated by pilot WCAs every year based on the training.	The plans confirmed at every site visited in the ex-post evaluation were called the 'Business Plans', in which water distribution and maintenance for that year had been planned and necessary costs had been set based on the plan, and the amounts implemented and collected for irrigation services had been recorded. In doing this, forms for water distribution and maintenance plans created in this project were being utilized.
(Indicator 3) Water distribution records in model areas are kept by pilot WCAs based on the training.	
<u>Output 3: Capacity of pilot WCA staff for maintenance of irrigation systems is improved.</u>	
(Indicator 1) More than 12 staff of pilot WCAs participate in the training on maintenance of irrigation and drainage.	No similar training had been conducted after this project was completed.
(Indicator 2) Maintenance plans are formulated and implemented, and these records are kept for one selected water canal every year based on the training by the pilot WCAs.	The plans confirmed at every site visited in the ex-post evaluation were called the 'Business Plans', in which water distribution and maintenance for that year had been planned and necessary costs had been set based on the plan, and the amounts implemented and collected for irrigation services had been recorded. In doing this, the water distribution and maintenance plans created in this project were being utilized.
<u>Project Purpose: Water management conducted by pilot WCAs is improved.</u>	
(Indicator 1) The collection rate of irrigation service and other fees is increased to 60% in the 1st batch of WCAs and to 30% in the 2nd batch of WCAs.	The collection rates of irrigation service fees in 2016 were: 41% in Qarasha, 26% in Dustlik, and 33% in Pastki Buloq for the Batch 1; and 34% in Jambul Ota, 26% in Guliston, and 26% in Samarqand Buloq for the Batch 2. All of the WCAs showed declines from 2013.

(Indicator 2) More than 50% of WCA members regard that the WCAs' capacity (organization management, efficiency, finance, technique) is improved.	According to the beneficiary survey, the skills acquired in this project were maintained after project completion (the same status as the achievement status of the Project Purpose).
(Indicator 3) More than 50% of WCA members increase their participation in the WCAs' activities.	(As described in Indicator 2 of the Overall Goal) In the beneficiary survey, 69% of the 13 respondents (WCA staff) replied 'Increased', 15% 'Same', and 15% 'Decreased'. Also, according to the interviews with each WCA, many members always participated in the formulation of WCAs' business plans and maintenance activities.
(Indicator 4) 70% of irrigated land in model areas is irrigated based on the WCAs' business plan.	The achievement status was uncertain as no data on the actual irrigated and non-irrigated areas by year had been provided by the Implementing Agency or WCAs.
(Indicator 5) Farm land in model areas that cannot be irrigated is decreased by 10%.	

Source: Information obtained from the interviews conducted during both the site visit and the beneficiary survey

The continuation statuses of each Output and the Project Purpose of this project were organized as shown in the table above based on the information obtained when each BISM, ISD and WCA was visited. The result shows that no similar training by using the textbooks created through this project had been conducted as a whole, and it was only when the textbooks were consistent with the contents of a different training program conducted by the Ministry of Agriculture and Water Resources (e.g. a program on drip irrigation technique) that the textbooks created through this project were utilized and the lecturers participated as needed. Regarding the formulation and the implementation of water distribution and maintenance plans, it was required that each WCA prepare business plans every year, and the forms from the water distribution and maintenance plans created through this project were being utilized in that case.

With regard to the Project Purpose, the collection rates of irrigation service fees had declined in all WCAs after project completion, and all WCAs except Jambul Ota had fallen below the target values set for the time of project completion. In the beneficiary survey, responses stating that the capacities had been enhanced through training were obtained, and it was confirmed in the site survey that the maintenance of the facilities rehabilitated and the accounting management were being conducted. However, the overall achievement cannot be said to be sufficient as the information on the irrigation areas had not been compiled.

3.2.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

In this project, no negative impacts on the natural environment were expected. As the rehabilitation work on basic facilities, such as canals, drainage canals and gates, was

carried out in areas maintained by the pilot WCAs, it was checked with the Implementing Agency and other organizations concerned whether there were any impacts to the natural environment caused by the work, all of whom indicated that there was none. In the beneficiary survey, all the respondents replied that no negative impacts were seen. It is considered that there have been no problems as a whole.

(2) Resettlement and Land Acquisition

According to the Implementing Agency and other organizations concerned, neither the resettlement of residents nor land acquisition occurred as a small-scale rehabilitation of existing facilities was conducted during this project. In the beneficiary survey, responses were obtained from all of the respondents indicating that there were no such cases, which suggests that there have been no problems.

(3) Other Impacts

In the terminal evaluation, it was reported from some WCA members that the effects in the form of increases in agricultural production had been generated as a result of the improvements in water distribution. Therefore, in the ex-post evaluation, the beneficiary survey was conducted to confirm the changes in agricultural production and revenues in the pilot WCAs.

The result is, as shown in the Figures 4 and 5 below, that the proportion of members with increases in agricultural production was 87%, and the proportion of the members with increases in revenues was 69%. The average rate of increase in revenues was 58% and it is regarded that this project made a certain degree of contribution through the improvement of water distribution.

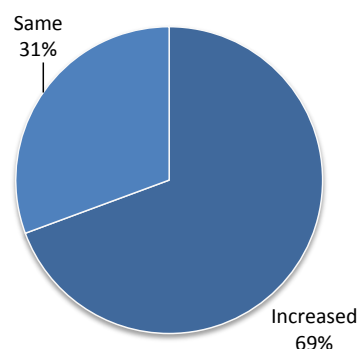
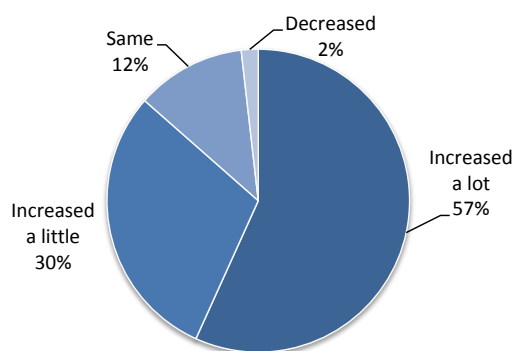


Figure 4: Changes in Agricultural Production Figure 5: Changes in Agricultural Revenues

In addition, as certain information in the terminal evaluation explained that some

WCAs had reported salinization damages as being alleviated, it was checked through the beneficiary survey in the ex-post evaluation. As a result, 77% of the respondents answered that this project had generated the effect of salinization damage alleviation. More concretely, water flows became smoother with the excavators procured through this project, which led to an improvement in drainage management. Therefore, in this project, it is considered that the alleviation effect of salinization damages had been felt by the WCAs and the rehabilitation of canals had contributed to the improvement in agricultural environment.

In this project, capacity enhancement of WCAs in the field of water management was planned by developing training materials, fostering the staff of BISM and ISDs as trainers, and providing training to the WCAs, and various activities were carried out during the project period. Regarding the Outputs, while the training materials were developed and a number of training sessions on water distribution and maintenance were conducted, the trainers-to-be did not reach a level where they were sufficiently equipped with the skills to apply the outcomes of training, and some issues were seen in the actual implementation status of maintenance plans. Concerning the Project Purpose, while the indicators on the collection rates of irrigation service fees as well as the capacity enhancement and active operations of WCAs had largely been achieved, no data on the actual irrigation situations at the time of completion could be obtained. Therefore, the effectiveness is judged to be fair.

With regard to the Impact, the target cannot be said to have been achieved as the collection rates of irrigation service fees have been declining in recent years. The level of achievement was limited as no systematic expansion from the pilot WCAs to the WCAs in other areas was observed. Also, continued activities related to the Outputs and the Project Purpose were not seen after project completion, and the information on irrigated and non-irrigated land areas was not sufficient. Therefore, it cannot be said that the activities have been sufficiently continued. On the other hand, neither negative impacts on the natural environment nor resettlement of residents / land acquisition occurred, and a certain degree of increase both in agricultural production and revenues as well as alleviation effects on salinization damage were observed.

In light of the above, the effectiveness and impact of this project are fair.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The planned and actual inputs of this project were mainly as shown below.

Table 6: Planned and Actual Inputs of This Project

Inputs	Plan	Actual (At the time of project completion)
(1) Experts	3 Long-term Short-term (approx. 8 man-months a year)	Long-term: 4 in total Short-term: 6 in total
(2) Participants received	Approx. 3 participants x 3 years (Regional training ‘WCA Strengthening’, etc.)	6 participants (Counterpart training in Japan)
(3) Equipment	For BISM and ISD: Vehicles, water measurement devices, PCs, etc. For WUA: Excavators, small vehicles, motorbikes / bicycles, water measurement devices, PCs, communication equipment, etc.	12 small vehicles, audiovisual equipment for training, heavy equipment for WCAs’ activities (6 excavators), motorbikes / bicycles, PCs, etc. 878 thousand US dollars (Approx. 70 million yen)
(4) Local costs borne	Unknown	1.546 million dollars (Approx. 133 million yen)
Japanese Side: Total Project Cost	350 million yen	348 million yen
Inputs from Uzbekistan	<ol style="list-style-type: none"> 1. Assignment of Counterparts (Ministry’s headquarters and at the local level) 2. Provision of facilities, such as the project office, etc. (Ministry’s headquarters and BISM’s) 3. Project operation cost (Salaries for the counterparts, office supplies, etc.) 	<ol style="list-style-type: none"> 1. Assignment of 12 counterparts 2. Project office within the Water Planning Board, incidental materials and equipment, electricity and water supply, provision of offices and incidental facilities at each pilot WCA 3. Project operation cost: 168.3 million in sum (Central government: 45.3million sum, Local government: 123 million sum)



Light Van Procured through This Project



Excavator Provided to Each WCA

3.3.1.1 Elements of Inputs

Table 6 summarizes as much information as possible on the planned and actual inputs from project-related materials. According to the Implementing Agency, elements of inputs from the Japanese and Uzbek sides were mostly in accordance with the plan.

There was one more long-term Expert from Japan compared to the total in the plan. However, the table above shows the total number and this increase was actually due to a change of the Expert in charge of ‘Project Coordination / Training’ during the project period, and technical assistance was provided virtually by three long-term Experts. Likewise, the number of counterparts is the total number and there were seven counterparts each at the time of commencement and completion of this project.

The elements of inputs are considered to have been adequate in light of the contents of the project and its implementation situations. In this project, procurement of excavators and flumes as well as rehabilitation of the target irrigation facilities that had been damaged were also carried out. Each WCA commented that they were effective for improving the collection rate of irrigation service fees, along with formulating and implementing water distribution and maintenance plans.

3.3.1.2 Project Cost

The actual project cost of this project (inputs from Japan) was 348 million yen. Despite the extended period, it was within the planned amount (350 million yen, 98% of the plan). While the details are unknown, the project costs are considered to have been utilized efficiently as there were no insufficient activities.

3.3.1.3 Project Period

The planned period of this project was 42 months, from November 2009 to April 2013, and the actual period was 50 months, from November 2009 to December 2013. Because of a delay of activities caused by the delay of the rehabilitation work of facilities and a shortage in the achievement level of some Outputs and the Project Purpose, an extension of the project period was proposed in the terminal evaluation. As a consequence, the cooperation period was extended by eight months and concluded at 119% of the plan.

In light of the above, while the project cost was within the plan, the project period exceeded the plan. Therefore, the efficiency is fair.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

In order to continue the efforts for capacity enhancement of WCA staff, it is necessary to

have a policy focus on agricultural promotion through adequate water management. According to the Implementing Agency, improvements in water management is one of the top priorities for the Ministry of Agriculture and Water Resources, and similar to the ‘Government Drainage Improvement Program Phase 2’ (2013-2017), which was the irrigation sector policy at the time of project completion and ex-post evaluation, the ‘Government Drainage Improvement Program Phase 3’ (2018-2022), being formulated, would be planned to include a stronger focus on the efforts for soil enrichment, water resources development and the development of water-saving techniques.

Also, the roles to be played by BISM, in charge of inter-provincial canals, and ISD, in charge of large-scale canals within provinces, are institutionalized, and regular communications and coordination as well as information channels between BISM, ISDs, and WCAs are established. Therefore, the sustainability of policies and institutions on agricultural promotion through irrigation is considered to be high as a whole.

3.4.2 Organizational Aspects for the Sustainability of Project Effects

It will be necessary to establish an organizational structure to continue capacity enhancement of the staff and to conduct training so that water management by WCAs will be carried out appropriately.

The organizational structure of the target area of this project is summarized as shown in Table 7.

Table 7: Relationship between the Agencies Involved in This Project

Name of BISM	Name of ISD	Province	Name of WCA	
Chirchik-Ohangaran BISM	Parkent Korasuv ISD	Tashkent Province	First batch	Qarasha
			Second batch	Jambul Ota
Lower Syrdarya BISM	Shuruzak Syrdarya ISD	Syrdarya Province	First batch	Dustlik
			Second batch	Guliston
	Hovos-Zomin ISD	Djizzak Province	First batch	Pastki Buloq
			Second batch	Samarqand Quduk

The Qarasha and Jambul Ota WCAs in Tashkent Province are managed by the Parkent Korasuv ISD (546 staff), positioned under the Chirchik-Ohangaran BISM. The Dustlik and Guliston WCAs in Syrdarya Province are under the Shuruzak Syrdarya ISD (275 staff), and the Pastki Buloq and Samarqand Quduk WCAs in Djizzak Province are under the Hovos-Zomin ISD (416 staff). Both of these two ISDs are those under the Lower Syrdarya BISM.

Each WCA is mainly structured with the director, technician, and accountant, comprising a

total of three to six members. A WCA is an independent body and is not a subordinate organization of BISM or ISDs, which are government organizations, but the information related to irrigation statuses and the collection rates of irrigation service fees and so forth are collected by ISDs. Also, most of the WCA staff members are also farmers and the WCAs have a structure with several staff members being elected by the members to play the function as secretariats and persons in charge of planning and implementing the maintenance plan. They have been conducting such work in the office as necessary.

Table 8 shows the total number of members and farmers of each WCA.

Table 8: Number of WCA Members (2016)

Name of WCA	Total number of members	Number of farmers among the total members
Qarasha	25	25
Jambul Ota	25	24
Dustlik	73	68
Guliston	47	43
Pastki Buloq	40	40
Samarqand Quduk	40	40

Source: Information provided by each ISD

Note: As the number of members is shown per farmer household, no breakdown by gender is available. Each house has females, but mostly, males attend WCA meetings.

As described above, the roles related to canal management by the BISM, ISDs, and WCAs were clearly demarcated according to the size of irrigation canals. The information on WCAs' irrigation area sizes and the collection rates of irrigation service fees was collected and captured by the BISM and ISDs. As the maintenance of irrigation facilities was largely carried out by the BISM and ISDs without any problems, it was considered that they had a sufficient structure and number of staff members. However, no structure in which BISM and ISD staff members was to provide training and guidance to the WCA staff had been established and seven trainers fostered through this project had not been seen to be systematically conducting training courses to the WCAs or playing a leading role. In the additional terminal evaluation, one of the recommendations was that the BISM/ISDs develop an implementing structure and secure a budget to formulate dissemination plans for the other WCAs, but those actions had not been conducted by the time of the ex-post evaluation.

Therefore, while it is regarded that there have been no problems in the structure to operate and maintain the facilities of the BISM and ISDs, there were some issues in terms of capacity enhancement of the WCAs in that no structure to continuously conduct and expand training programs to the staff or members of WCA had been developed.

3.4.3 Technical Aspects for the Sustainability of Project Effects

According to the Implementing Agency, textbooks, manuals, and so forth created through this project were utilized only when the contents were related to the training courses the Ministry of Agriculture and Water Resources had conducted, instead of continuing independent training programs. From observing the actual storing conditions of those textbooks, it was not seen that they were continuously being utilized after project completion, and had been used only limitedly. In relation to the preparation of water distribution plans and the development of accounting records in the WCAs, it was uniformly heard at the time of site surveys that their knowledge had deepened and they had been utilizing the methods at the time as a result of carrying out this project. It was thought that they were equipped with the technical skills to formulate and manage the plans. However, while the collection rates of irrigation service fees did not rise, maintenance of equipment was not conducted in a sufficient manner, and no training was provided by the BISM or ISDs. It cannot be said that the pilot WCAs were playing a leading role for neighboring WCAs.

With regard to the equipment, out of the six excavators procured— which was regarded as a major piece of equipment among the equipment procured through this project—only one excavator, that is, the one at the Jambul Ota WCA, was operating at the time of the site survey of ex-post evaluation, while the rest of them were out of order, including two excavators which had been used just before the site survey. All of the excavators were managed by the WCAs. According to the WCAs, spare parts were procured after they had broken down and they were then repaired, but they had been left in a broken condition during the winter when the excavators were not being used, mainly because of financial issues. It was considered uncertain whether they would be repaired and re-operated every time impending breakdowns occurred. It was of concern that the dredging work on canals would not be conducted efficiently if they couldn't re-operate the equipment.

12 light vans procured as another major piece of equipment were confirmed to have generally been utilized as a means of transport for the staff of the BISM, ISDs and WCAs.

Regarding the maintenance of flumes, while they were managed largely in good condition in most of the pilot WCAs, two flume systems that had been repaired during this project and had subsequently



A flume which collapsed after project completion (Qarasha WCA)

collapsed after project completion had not been repaired at the Qarasha WCA, and it was confirmed that sufficient water had not been supplied to the majority of the members along those flumes. In the beneficiary survey, more opinions stating that the WCA's operation and maintenance had become worse were heard at Qarasha WCA more frequently than those heard in other WCAs. However, as major damage, such as the collapse of flumes, was not a phenomenon that could be repaired independently by the WCAs, it was thought that technical assistance from an ISD would be necessary.

Based on the above, it can be said that there have been issues in implementing the training programs necessary for the maintenance and improvement of capacities in water management and in operation and maintenance of the facilities and equipment.

3.4.4 Financial Aspects for the Sustainability of Project Effects

It was necessary to secure a budget for conducting training and continue healthy operation and maintenance of facilities and equipment in order to improve the collection rate of irrigation service fees of the WCAs, all of which would lead to improvements of the textbooks developed in this project to be utilized and the capacities of WCAs. At the time of terminal evaluation, there were constraints in the financial scales of the BISM and ISDs, and it was anticipated that the assistance to the WCAs, other than that for training, would be at a much smaller scale compared to that of the project implementation period, and it was pointed out that the pilot WCAs had the challenges of further strengthening the collection of irrigation service fees and operating the heavy equipment provided through this project.

In the ex-post evaluation, no information on the budget situations of the BISM or ISDs had been provided, which made it impossible to confirm the amount and proportion of the budget allotted to training programs for WCAs in recent years. On the other hand, the annual data on the collection rate of irrigation service fees could be obtained from each WCA, which are summarized in Table 9 below.

Table 9: Changes in the Collection Rate of Irrigation Service Fees at the Pilot WCAs

(Unit: thousand Sum)

		Actual in 2009			Actual in 2013			Actual in 2014			Actual in 2015			Actual in 2016		
		Planned Amount	Amount Collected	Rate of Collection	Planned Amount	Amount Collected	Rate of Collection	Planned Amount	Amount Collected	Rate of Collection	Planned Amount	Amount Collected	Rate of Collection	Planned Amount	Amount Collected	Rate of Collection
First batch	Qarasha	3,622	956	26.4%	13,920	9,450	67.8%	13,920	9,680	69.5%	18,890	10,990	58.2%	25,003	10,254	41.0%
	Dustlik	30,163	4,000	13.3%	34,863	9,447	27.1%	42,482	9,867	23.2%	39,695	9,988	25.2%	42,002	10,975	26.1%
	Pastki	21,796	3,569	16.4%	32,000	19,800	61.9%	35,862	16,269	45.4%	35,862	15,858	44.2%	46,800	15,650	33.4%
	Buloq															
Second batch	Jambul	15,757	2,197	13.9%	13,500	7,400	54.8%	13,500	8,600	63.7%	17,175	5,800	33.8%	24,127	8,100	33.6%
	Ota															
	Guliston	77,573	3,845	5.0%	36,326	10,195	28.1%	45,435	12,311	27.1%	42,807	13,809	32.3%	38,251	9,871	25.8%
	Samarqand	26,220	8,965	34.2%	29,883	9,565	32.0%	35,138	8,635	24.6%	35,145	8,760	24.9%	35,145	9,120	25.9%
	Quduk															
Total		175,131	23,532	13.4%	160,492	65,857	41.0%	186,337	65,362	35.1%	189,574	65,205	34.4%	211,328	63,970	30.3%

Source: Terminal Evaluation Report (for 2009) and information provided by ISDs in each province (2013-2016)

The situations of the collection of irrigation service fees by each WCA show a gradually worsening trend after project completion. The collection rate, which was 41% on average in 2013 (completion year), had been consistently declining to 35% in 2014, 34% in 2015 and 30% in 2016. Therefore, operation and maintenance activities had still been limited and the maintenance of excavators and so on had not been sufficiently carried out. As stated above, while the revenues of member farmers had been increasing according to the Implementing Agency and WCAs, costs for agricultural materials and ingredients had also been on the rise, and each farmer prioritized the repayment of their existing debts, and, the issue that the revenues were not necessarily being directed to payments of irrigation service fees which did not carry any penalties for non-payment was the major factor for the declining trend. Therefore, there is a concern about the sustainability of the financial status as the training budget of the BISM and ISDs was uncertain and the revenues of the WCAs were deteriorating.

In light of the above, some problems were observed in terms of the organizational, technical and financial aspects of this project. Therefore, the sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project for Water Management Improvement was a project in which pilot WUAs in three provinces of Uzbekistan (Tashkent Province, Syrdarya Province, and Djizzak Province) were

targeted and in which the staff in charge from BISM and the ISD were expected to disseminate knowledge and technologies on water distribution management and facility maintenance so that the water management skills of the pilot WUAs would be enhanced. This project was in line with the development policy of Uzbekistan, having a focus on efficient usage of water resources and improvements in water management as well as on the needs to improve water distribution management and maintenance by pilot WCAs for agricultural production. It was also consistent with Japan's priority assistance area at the time of planning, which had a focus on the support for agricultural and rural development as well as for land reforms and regional reforms in Uzbekistan. Therefore, the relevance of the project is high. With regard to the Project Purpose, while the collection rates of irrigation service fees and improved capacities and activities of WCAs were largely achieved, it could not be judged that the Project Purpose was sufficiently achieved as data on the actual irrigation status at the time of completion were difficult to obtain. Also, since project completion, the collection rates of irrigation service fees have been on a declining trend and training for WCAs based on utilizing the outcomes of this project has not been conducted, showing that continuous activities have not evolved. Therefore, the achievement level of the Overall Goal is limited and the effectiveness and the impact of this project are fair. The efficiency is fair as the project period exceeded the plan though the project cost was within the plan. The sustainability of the effects generated by this project is judged to be fair as there were issues in terms of organizational (partially), technical and financial aspects.

In light of the above, the project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

In this project, it was confirmed that various activities had been conducted during the implementation period and that the capacities of persons in the BISM, ISDs and WCAs had been enhanced. However, some issues were observed in terms of the sustainability of the effects generated after project implementation as no similar activities had continued and the collection rates of irrigation service fees had declined after the project was completed. In order to improve operation and maintenance statuses of a number of WCAs, including those targeted in this project, it is considered effective that the Ministry of Agriculture and Water Resources allocate the budget to rehabilitate water distribution facilities and provide technical assistance (training) on such rehabilitation and WCA operations at the same time. Moreover, it is thought to be important to improve the productivity in cotton and wheat cultivation sectors and further encourage the cultivation of produce with higher monetary values so that farmers will be able to pay the irrigation service fees without delay.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Importance of the business plan with an objective of creating highly sustainable and applicable cases of success

In this project, two WCAs were selected from each of the three provinces under certain criteria and assistance was provided. Through the rehabilitation of facilities and training on operation management as well as on financial and technical aspects, a certain level of effect was observed, such as a certain improvement in the collection rate of irrigation service fees during the implementation of this project. However, while the facilities were improved in this project, operation and maintenance statuses of some WCAs had been deteriorating again because of low collection rates of irrigation service fees after project completion. For the improvement of water management, consistent collection of irrigation service fees is essential in the medium to long term. Therefore, it is considered effective: to make the cultivation of cotton and wheat (means of foreign exchange earnings) more efficient; to encourage the cultivation of highly-valued agricultural produce at the same time so that the stable payment of irrigation service fees will be possible; and to promote the diversification of farmers' revenue sources and structural changes. Under the agricultural policy emphasizing foreign exchange earning, while there was a constraint making it difficult to shift from the cultivation of cotton and wheat to the cultivation of other crops, a desired approach when a similar project is planned in the future would be to partially adopt factors to promote increases of farmers' revenues (e.g., encouraging the cultivation of high-valued crops) and to create successful cases by experimenting with such factors as pilot activities with a view to providing necessary cooperation for improving the collection rate of irrigation service fees. Also, in such cases, it is important to have an approach that can be practically disseminated to other regions and to have the perspective to link with other projects as necessary.

Need to formulate an exit strategy associated with project completion

It became clear in the ex-post evaluation that the series of training programs conducted in this project had seldom been conducted after project completion. Also, the collection rates of irrigation service fees had been gradually declining after the project was completed, and it was observed that the project effects were not necessarily continued. One of the factors was the lack of formulating an activity plan, securing of the budget and the development of the implementing structure to ensure the sustainability of the project effects during the project period. Therefore, in planning a technical cooperation project, it is important to formulate a post-project activity plan with a view to continuing the project's activities and disseminating them to other regions,

which is an exit strategy in other words, and to secure the budget and develop a structure so that the Implementing Agency will be able to implement it consistently even after the completion of the project.

End