Federal Democratic Republic of Ethiopia

FY2020 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Water Supply Development to the Small Towns in Rift Valley Basin in Southern Nations, Nationalities, and Peoples' Regional State"

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0. Summary

This project was aimed at providing safe water by constructing and renovating water supply facilities in 10 small towns, thereby improving access to safe water for local communities in Southern Nations, Nationalities, and Peoples' Regional State (hereinafter referred to as "SNNPR") of Ethiopia.

This project was consistent with the Ethiopia's development plan goal to improve water supply rates in rural areas and the nation overall by developing water resources and improving water supply facilities, and the development need was high. The objective was also consistent with Japan's ODA policy. Project relevance is high for all these reasons. Although some plans have still not been achieved by the Ethiopian side, the project's efficiency is considered high: both the project cost and the period were within those planned; and the water facilities were constructed as planned, with reasonable design changes. The target water supply amount was achieved to certain extent, and positive impacts included decreased water collection time for residents and increased study time for children. However, there were some negative impacts on land acquisition matters. Therefore, the project effectiveness and impacts are fair. In terms of operation and maintenance (O&M), several weaknesses exist, such as insufficient staff numbers and management of monitoring records. However, the necessary financial and technical work was accomplished at each organization. Although some small towns were confronted with a lack of finances within a year, most of the small towns' overall annual finances remain in surplus. Consequently, the sustainability of the project's effects is fair.

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

1. Project Description

Project Location (SNNPR)

Reservoir (Alem Gebeya)

1.1 Background

In Ethiopia, the water supply rate in rural areas is lower than that in urban areas. In SNNPR, the water supply rate was 51.7% (2011/12). In rural areas of the SNNPR, it was 50.4%, lower than the national average of 68.0% (2010). In rural areas, where much of the population lives, residents spend a great deal of time and effort to secure domestic water, including safe drinking water. The occurrence of waterborne diseases caused by unsanitary use of water has also been a problem. The Rift Valley area, which is the target of this project, forms part of the Great Rift Valley of Africa, which is susceptible to drought. The area was severely damaged by drought in 2008 and 2011. Especially in small towns, whose populations are increasing dramatically in SNNPR, the water supply facilities were aging and funds for facility construction were insufficient. Thus, it was necessary to support the development of water supply facilities. Based on this background, Southern Nations Nationalities, and Peoples' Regional State Water Resources Bureau (hereinafter referred to as "WB[1]") requested grant aid from Japan to construct water supply facilities using deep wells and to develop O&M capabilities (by technical support).

1.2 Project Outline

The objective of this project was to provide safe water by constructing and renovating water supply facilities in 10 small towns, thereby contributing to improvement of access to safe water for local communities in Southern Nations, Nationalities, and Peoples' Regional State of Ethiopia.

Grant Limit /Actual Grant Amount	JPY 1,324 million/JPY 1,232 million
Exchange of Notes Date /Grant Agreement Date	March 2015/March 2015
Executing Agency	Southern Nations Nationalities, and Peoples' Regional State Water Resources Bureau, Federal Democratic Republic of Ethiopia
Project Completion	February 2017
Contractor	Tone Engineering Corporation
Consultant	Kokusai Kogyo Co., Ltd.

[1] The name of the counterpart organization varies at each phase:
- At project planning phase: *Southern Nations, Nationalities, and Peoples' Regional State Water Resources Bureau*
- At project completion: *Water and Irrigation Development Bureau of Southern Nations, Nationalities, and Peoples' Regional State*
- At ex-post evaluation survey: *Bureau of Water, Mines, and Energy Development*

*The name of the executing agency is referred to as WB regardless of the phase in this report.

Basic Design Survey	April 2013 - January 2015 (Preparatory Survey) March 2015 - October 2015 (Detailed Design Survey)
Target Area	10 Small Towns in SNNPR (Koshe, Kela, Tiya, Adilo, Teferi Kela, Mito, Alem Gebeya, Kibet, Tebela, Dalocha)
Related Projects	*The Ethiopian Water Technology Center Project*[2] Phase 1: 1998 - 2003 Phase 2: March 2005 - March 2008 Phase 3: January 2009 - January 2014 *The Water Sector Capacity Development Project in Southern Nations, Nationalities, and Peoples' Region* December 2007 - December 2011 Target Areas: 6 woredas of 6 zones: Angacha woreda of Kembata Timbaro zone, Arba Minch Zuria woreda of Gamo Gofa zone, Bolososore woreda of Wolayita zone, Hula woreda of Sidama zone, Loma woreda of Dawro zone, Silte woreda of Silte zone *The Study on Groundwater Resources Assessment in the Rift Valley Lakes Basin* December 2009 - November 2011

[2] Through Phases 1 and 2, the Addis Ababa Training Center (renamed to Ethiopian Water Technology Center in 2005) was established as a core institution for developing the human resources involved in water resource development. The goal was to train and increase the number of engineers engaged in groundwater management and water supply management to construct and maintain sustainable water supply facilities. In Phase 3, the center became a public training institution, the Ethiopian Water Technology Institute (EWTI) in August 2013. EWTI served as a testing center for the water sector to evaluate candidates for the Ethiopian vocational standard qualification. (Source: Ex-post evaluation [internal evaluation] result sheet: The Ethiopian Water Technology Center Project Phase 3)

2. Outline of the Evaluation Study

2.1 External Evaluator

Megumi Sakata, Foundation for Advanced Studies on International Development

2.2 Duration of Evaluation Study

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

Duration of the Survey: October 2020 - November 2021

Duration of the Field Survey: April 6 - May 1 and July 28 - 30, 2021 (Conducted by the local consultant)

2.3 Constraints during the Evaluation Study

This survey was conducted remotely without overseas travel due to the COVID-19 pandemic's outbreak. Consequently, information collection was limited. Online interviews with the executing agency were conducted with a local consultant, but the internet connection was not available in any of the 10 small towns that were the main respondents for the survey. Therefore, interviews of stakeholders such as water management organizations (hereinafter referred to as "WMOs") and residents, as well as water supply facilities inspections and other related information collection, were conducted by the local consultant. It was not possible for the evaluator to check the original raw data during field interviews. Furthermore, the period of the first field survey was close to the election period in Ethiopia. As a result, appointments with respondent organizations were suddenly changed, postponed, or shortened, which affected the amount of information collected.

3. Results of the Evaluation (Overall Rating: B[3])

3.1 Relevance (Rating: ③[4])

3.1.1 Consistency with the Development Plan of Ethiopia

At the planning phase (2015), this project was a part of the *Universal Access Program* (*UAP: 2005*; *UAP2: February 2009*), a strategic plan of the World Bank's *Water Sector Development Program (2002)*. Positioned as such, it aimed to improve the water supply rate in rural areas. The UAP's implementation project plan, the *One WASH National Program (Phase 1: 2013 - 2015, Phase 2: 2015-2020)*, aimed to develop water supply facilities in small towns. The Ethiopian government's national development plan (*Growth and Transformation Plan, 2010-2015)* listed improving the nation's water supply rate by developing water resources and water supply facilities as an important matter.

At the time of the ex-post evaluation (2021), the Ethiopian government's national

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[4] ③: High, ②: Fair, ①: Low

development plan (*Growth and Transformation Plan II (GTP II) (2015/16-2019/20)* and its subsequent *Ten Years Development Plan (2021-2030)* list improving the nation's water supply rate by developing water resources and water supply facilities as an important matter.

Based on the above, the Ethiopian government promoted the improvement of the rural water supply rate both at the time of planning and ex-post evaluation, and this project was highly consistent with Ethiopia's development policy.

3.1.2 Consistency with the Development Needs of Ethiopia

More than 90% of the population of 15 million in SNNPR lives in rural areas, and the population is increasing, especially in small towns. SNNPR's water supply rate was 51.7% in 2011 and 2012 (source: WB), and just 50.4% in rural areas. This fell far below the national average of 68.0% (2010). The Rift Valley region of SNNPR is part of the Great Rift Valley of Africa, which is susceptible to drought and was severely affected by drought in 2008 and 2011. At the time of planning, in addition to the aging of facilities in small towns, there was a shortage of facility construction funds. In some target areas, the fluorine concentration of existing water sources was high and the water was not suitable for drinking. There were problems for water source development in terms of quantity and quality of water.

At the time of the ex-post evaluation, all 10 small towns in the target area suffered from water shortages. In 2021, seven of the small towns suffered from droughts[5].

There has been a water shortage from the time of planning through the ex-post evaluation; thus, the need for this project is high.

3.1.3 Consistency with Japan's ODA Policy

In the *Country Assistance Policy for the Federal Democratic Republic of Ethiopia (2014)*, which was developed at the time of planning of this project, agriculture and rural development were set as priority matters. In addition, in the *JICA Country Analysis Paper*, securing water for living, agricultural use, and livestock was considered an important issue that could contribute to reducing rural poverty.

Based on the above, this project was in line with Japan's aid policy at the time of planning.

Implementation of this project has been highly relevant to Ethiopian development policy and needs, as well as Japan's ODA policy. Therefore, its relevance is high.

[5] Source: Interview results from STs' WMOs

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

As for the water supply facilities, the number and locations of public faucets and the number of break pressure tanks changed from the initial plan. These design changes were made for technical validity reasons considering the need for public faucets[6], land use conditions at the time of construction, and topographical differences.

Generator House (Mito)

In the soft component (technical assistance) program, the target number of staff members was not entirely achieved due to the lack of budget of WMOs in each small town. O&M skills were not improved as expected by the woredas' water offices[7] and WMOs. Training time was short according to the participants. Technical training (guidance on basic knowledge of water supply facilities, technical failure diagnosis, reporting, and repair methods), and accounting training (guidance on how to collect and manage water fees, how to keep a balance sheet, how to record the operational status of water supply facilities, etc.) were carried out for only about half a day after the water supply facilities were built. On the other hand, recognition of the WMO support system by related organizations was improved, water fee revision plans were formulated, and training to promote residents' awareness of safe water use were carried out and achieved as planned. Although the Japanese side implemented the soft component program as planned, its expected effects were only partially achieved since the training time was short. The target staffing number was not well achieved due to budget shortages on the executing agency's side.

The obligations of the Ethiopian side were to secure construction land, access roads, and storage space for construction materials; connect wells to commercial power; and construct steel fences (for wells and reservoirs), and wooden fences (for public faucets). Construction sites, access roads, and storage areas for construction materials were secured as planned. Nine of the 14 wells were not connected to commercial power due to reasons such as lack of funds in each small town or lack of foreign currency to procure transformers, which had to be imported. Some steel fences and wooden fences were not installed due to lack of funds in each small town.

As mentioned, the Japanese side implemented the soft component program as planned, but its expected effects were not entirely attained. Although some of the Ethiopian side's obligations were partially unachieved due to lack of funds, the water supply facilities were constructed as

[6] The need for public faucets in some small towns changed under the situation that private household faucets were expected to be promoted by the small towns' budget. Considering the widespread use of private household faucets, the water supply facilities (wells and reservoirs), constructed by this project, are connected to both public faucets (by this project) and private household faucets (by the small towns).

[7] Woreda: the 3rd level of administrative division in Ethiopia. There exist the SNNPR, zones, woredas, and small towns. Water supply departments at each organizational level were engaged in this project.

planned with valid design changes considering the needs at the time of construction. Therefore, the planned outputs were mostly achieved.

Table 1-1: Comparison of Planned and Actual Project Scope (1)

Output 1	**Planned**				**Actual**			
Small Town	Wells	Generator Houses	Pipeline (m)	Public Faucets	Wells	Generator Houses	Pipeline (m)	Public Faucets
Koshe	1	1	8,667	17	1	1	8,849	17
Kela	2	2	14,340	18	2	2	14,622	18
Tiya	2	2	6,600	8	2	2	7,097	8
Adilo	2	2	7,330	12	2	2	7,605	13
Teferi Kela	2	2	7,510	16	2	2	7,737	16
Dalocha	0	0	12,240	18	0	0	12,431	10
Mito	1	1	3,850	15	1	1	3,731	15
Alem Gebeya	1	1	8,300	13	1	1	8,114	13
Kibet	2	2	17,570	23	2	2	18,382	18
Tebela	1	1	16,020	16	1	1	16,604	10
Total	14	14	102,427	156	14	14	105,172	138

(Source: Documents provided by JICA, WMO interview results)

Table 1-2: Comparison of Planned and Actual Project Scope (2)

Output 2	Planned			Actual		
Small Town	Reservoirs	Collection Chambers	Break Pressure Tanks	Reservoirs	Collection Chambers	Break Pressure Tanks
Koshe	1			1	0	
Kela	1			1	0	
Tiya	2			2	0	
Adilo	1		1	1	0	1
Teferi Kela	1			1	0	
Dalocha	0	1	1	0	1	1
Mito	1			1	0	
Alem Gebeya	1			1	0	
Kibet	1			1	0	
Tebela	1		1	1	0	2
Total	10	1	3	10	1	4

(Source: Documents provided by JICA, WMO interview results)

Table 1-3: Comparison of Planned and Actual Project Scope (Soft Component)

Soft Component Program Outputs	Planned	Actual
1. Comprehension of WMO support systems	Recognize the role of each organization and support system for WMOs	Recognized the role of each organization to support WMOs
2. Preparation of operation and maintenance (O&M) systems for the water supply facilities	Review appropriate personnel composition of WMOs: Engineer: 3 Accountant: 3, Water Fee Collector: 1 per public faucet	- Engineer: Unachieved 3: 10 Small towns (STs) (reason for non-achievement: lack of funds) - Accountant: Achieved 3: 2 STs Unachieved 3: 8 STs (reason for non-achievement: lack of funds) -Water Fee Collector: Achieved 1 per public faucet: 10 STs
	Develop terms of use	Developed terms of use: 10 STs

3. Develop plans for appropriate water fee revisions	Develop water fee revision plans	Developed water fee revision plans: 10 STs
4. Improve woreda water offices' (WWOs') O&M skills	Comprehend the content of the technical training with EWTI and invite a lecturer	- Conducted technical training jointly with WWOs and WMOs. Invited a former EWTI staff member as a lecturer. - No improvement in O&M skills: 10 WWOs, 10 STs (Reason: Only a few hours of technical training took place, and did not lead to improvement.)
5. Improve WMOs' O&M skills	- Conduct technical training for WMOs given by WWO staff members who participated in the training above - Conduct accounting training	- Conducted joint technical training with WWOs and WMOs - Conducted accounting training for WMOs - Improved skills: 2 STs - No skill improvement: 8 STs (Reason: Only a few hours of technical/accounting training took place, which did not lead to improvement)
6. Promote residents' understanding of safe water use	Promote residents' understanding of safe water use	Residents started to use water more safely by using public faucets after the construction of the water supply facilities. They had used rainwater or river water before the construction. (10 STs)

(Source: Documents provided by JICA; interviews with WMOs, WWOs, zone water offices, BW)

Table 2: Ethiopian Side Obligations

Planned	Actual
Secure land for construction	Secured land: 8 STs (Exceptions: Dalocha and Mito, no land acquisition needed)
Secure access roads	Secured access roads: 10 STs
Secure storage space for construction materials	Secured storage spaces: 10 STs
Connect to commercial electric power	Not connected to commercial electric power: 9 out of 14 wells[8]
Construct steel fences for wells and reservoirs	No fences constructed: 5 STs (Kela, Tiya, Alem Gebeya, Tebela, and Dalocha) (Reason: lack of funds)[9]
Construct wooden fences for public faucets	No fences constructed: 5 STs (Tiya, Dalocha, Tebela, Alem Gebeya, Teferi Kela) Partially constructed fences: 2 STs (Kela, Kibet) (Reason: lack of funds)[10]

(Source: Documents provided by JICA, interviews with WMOs, BW)

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost during planning was 1,345 million yen (1,324 million yen borne by the Japanese side, 21.4 million yen borne by the Ethiopian side). The actual total cost is unknown, as no information on the actual costs borne by the Ethiopian side was available. The actual cost borne by the Japanese side was 1,232 million yen (93% of the planned budget[11]), which was within the plan. The reason for the decrease in cost borne by the Japanese side was because the number of public faucets decreased from 156 (planned) to 138 (actual), considering the need for public faucets and land use conditions at the time of construction.

3.2.2.2 Project Period

The planned project period was 24 months (April 2015-March 2017). The actual period also took 24 months (March 2015-February 2017).

[8] Commercial electric power connections not completed (at ex-post evaluation): 6 out of 14 wells in 4 STs due to lack of funds (Kela: 2, Adilo: 2, Tebela: 2, Teferi Kela: 1/2)

[9] Steel fences not constructed (at ex-post evaluation): 2 STs (Kela, Tiya).
Partially constructed: 3 STs (Alem Gebeya, Tebela, Dalocha) (Reason: lack of funds)

[10] Wooden fences not constructed (at ex-post evaluation): 1 ST (Alem Gebeya).
Partially constructed: 3 STs (Kela, Dalocha, Tebela) (Reason: lack of funds)

[11] Since no information on the costs borne by the Ethiopian side was available, the evaluation is done by the costs borne by the Japanese side.

Although the obligations of the Ethiopian side (commercial electric power connections, fence construction) and soft component program goals (skill improvement) were partially not achieved, the project cost and period, facility construction (regarding the design changes from planning phase by the consultant as valid), and soft component program implementation took place as planned. Therefore, the project's efficiency is high.

3.3 Effectiveness and Impacts[12] (Rating: ②)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects

(1) Water Supply Amount

The operational and effect indicators targeted by this project resulted in the following.

Table 3-1: Operational and Effect Indicators

Average daily water supply amount (m^3/day) (the amount from reservoirs)	Baseline	Target*1	Actual*2 (rounded to nearest whole number)			
	2013 Actual	2020 (3 years after completion)	2017 June average	2018 June average	2019 June average	2020 June average, percentage of target
9 STs Total*	646	2,137	870	1,062	1,206	1,302 (61%)
Koshe	144	344	295	274	275	218 (63%)
Kela	24	185	37	74	62	114 (61%)
Tiya	29	97	13	32	45	42 (43%)
Adilo	56	240	n/a	83	77	84 (35%)
Teferi Kela	86	174	83	85	75	53 (30%)
Dalocha*3	140	360	n/a	n/a	n/a	n/a
Mito	23	206	50	66	101	130 (63%)
Alem Gebeya	30	188	48	58	89	176 (94%)
Kibet	98	375	246	272	337	312 (83%)
Tebela	156	328	98	118	145	173 (53%)

(Source: Documents provided by JICA and the project consultant, WMO interviews)

*1 *2 Both target and actual amount include the water supply amount from reservoirs which had existed before this project, and the water supply amount from reservoirs by this project. The water supply amount data only from the facilities by this project was not available.

*3 Evaluated data of 9 STs except Dalocha. Outside of this project, Dalocha installed a well, a reservoir, and a generator themselves in February 2018. No information before that time was available, because the facilities were managed by an organization established at the same time. Since the amount of water flow from Dalocha's

[12] Sub-rating for effectiveness is to be put with consideration of impacts.

independent project was not available, Dalocha is excluded from the evaluation of the water supply amount for effectiveness and the water supply amount of the remaining 9 STs is evaluated.

Table 3-2: Relevant Indicators

Reference: Flow amount from well[13] (m^3/day)	Baseline*1	Actual*2			
	2013 Actual	2017 June average	2018 June average	2019 June average	2020 June average
9 STs Total	646	894	1,086	1,259	1,360
Koshe	144	301	280	286	223
Kela	24	40	75	62	114
Tiya	29	14	33	46	44
Adilo	56	n/a	86	87	89
Teferi Kela	86	84	87	75	54
Dalocha	140	n/a	n/a	n/a	n/a
Mito	23	55	69	108	137
Alem Gebeya	30	52	61	95	186
Kibet	98	249	275	353	337
Tebela	156	99	120	147	176

(Source: Documents provided by JICA, WMO interviews)
*1 *2 Both target and actual amount include the flow amount from wells which had existed before this project, and the flow amount from wells by this project. The flow amount data only from the facilities by this project was not available.

The total daily water supply amount (water flow from reservoirs) of the nine small towns was 1,302 m^3/day, which was 61% of the FY2020 target value of 2,137 m^3/day. In Tiya, Adilo, and Teferi Kela, it was as low as 30% - 40%, but the significant factor which made the difference compared to other small towns was not clear from the information collected[14].

The exact reasons why the target values were not achieved are difficult to identify from the limited information collected in the ex-post evaluation (interviews with WB, WMOs, and public

[13] The amount of water that flowed through the reservoir (1,302m^3) in Table 3-1, as well as the flow amount from the well (1,360m^3) in Table 3-2 are approximate values. Therefore, it is regarded that water was distributed appropriately from the well to the reservoir.

[14] Out of all 10 small towns, 7 small towns have increased the operating hours of water supply facilities than those at the time of planning, to respond to the increase in demand. Tiya and Teferi Kela have increased the operating hours by 2 hours each, likewise. However, the increased operating hours are; Tiya: from 12 hours to 14 hours, Teferi Kela: from 10 hours to 12 hours, (Adilo: from 12 hours to 12 hours, no increase). Compared to other small towns, which have increased by 4 to 6 hours, and even the 2 small towns without increase have been operated for a long time of 16 hours or more, the increased hours and final operating hours could be considered as slightly less. Regarding population growth, a significant increase has been seen in all 10 small towns since the time of planning, but the growth rate is about 120% of the estimate at the time of planning in all small towns. Therefore, the population growth of the above mentioned 3 small towns is not particularly remarkable.

faucet users). The points that can be considered as undeniable factors are described below.

As for the undeniable factor related to the existing facilities, there is a possibility that the existing facilities' failures caused by aging led to the decrease in the water supply amount and affected the target amount to be unachieved.

In addition, due to the natural environment, the possibility of a groundwater level decrease due to insufficient precipitation is considered an undeniable factor. Since the rainfall[15] in 2014 and 2017 was lower than average in SNNPR, the groundwater might have had decreased due to insufficient precipitation, although it is not possible to identify a direct causal relationship.

Furthermore, due to the O&M system, deterioration of pumping ability due to aging and filter clogging can be considered as the undeniable potential reasons. Although the WMOs in the small towns can handle necessary repairs at the time of malfunction, pumping ability cannot be checked regularly by regular WMO maintenance. Doing so requires heavy machinery, which these small towns do not possess[16]. Because these factors cannot be examined unless a pump is pulled up using heavy machinery, it cannot be determined whether the cause of the poor flows is decreased pumping ability, but it is still an undeniable factor.

(2) Other Relevant Indicators

In addition to daily average water supply amounts from reservoirs which is set as an indicator of effectiveness, the total population and household numbers of the small towns involved in the project are shown below as reference.

Table 4: Other Relevant Indicators

Relevant Indicators (10 STs Total)	Actual		
	FY2017	FY2018	FY2019
Population	-	107,508	112,643
Estimated number of households[17]	-	19,946	20,899
Private faucet-using households[18]	7,030	10,442	12,241
Public faucet-using households	748	1,110	1,377

(Source: WMO interviews)
*Population and estimated households in FY2017 are unknown.

[15] Source: Annual reports by National Meteorological Agency
[16] Confirmed during WB interview that pump filter clogging cannot be found without using heavy machinery, which the STs do not possess.
[17] Estimated number of households: the estimated number divided by the average household number of 5.39 (same calculation used at time of planning)
[18] The wells and reservoirs constructed by this project had been planned to be connected to private households as well as public faucets by the Ethiopian side. The STs extended pipelines and connected to private households as planned.

Actual numbers for FY2020 were unknown, as ex-post evaluation was conducted before end of fiscal year.

The estimated population in 2020 at the time of planning was 91,688, but it had already reached 112,643 in FY2019, showing that the region's population growth was greater than expected. To meet the greater water supply needs based on this population growth, WMOs in small towns took measures such as increasing the operating hours of generators and pumps.

(3) Quality of Water Sources

The WMOs of eight small towns conduct water quality inspections by bringing water samples to the WB's water quality inspection center. Although testing has not been implemented in two small towns, one of the small towns is considering water quality inspection beginning from 2022. All interviewed residents of the 10 small towns answered that there was no problem with the water quality. No water quality problems were found in any of the eight small towns that have conducted water quality inspections; thus, it is considered that there are almost no problems with water quality.

3.3.1.2 Qualitative Effects (Other Effects)

As qualitative effects of this project, it was expected that incidence of waterborne diseases would decrease, women's advancement in society would improve and children's schooling opportunities would increase thanks to the reduced water-fetching workload. Since it is considered to be appropriate to evaluate these effects by impacts, these are analyzed and evaluated by impacts.

3.3.2 Impacts

3.3.2.1 Intended Impacts

(1) Decrease of Water-Fetching Workload

According to interviews with residents using public faucets in each small town, the average time spent fetching water among all 10 towns decreased to 1.7 hours per day at the time of ex-post evaluation (2021), compared with 3.5 hours per day at the time of project completion (2017). Also, residents stated that the frequency of water fetching had decreased from twice a day to once a day in two of the small towns. Consequently, it can be considered that water-fetching workload decreased.

Table 5: Time Spent Fetching Water

Water-Fetching Time	2017 (at completion)	2021 (at ex-post evaluation)
10 STs' Average	3.5 hours/day	1.7 hours/day

(Source: Interviews with public faucet users in each ST[19])

Public Faucet (Teferi Kela)

(2) Decrease of Waterborne Diseases

According to the information of public clinics in each of the 10 small towns, the total number of patients[20] with waterborne disease symptoms such as diarrhea or skin disease and/or diseases including typhoid was 2,534 out of 107,508 in FY2018 (2.4% morbidity against population). In FY2019, the amount increased to 3,254 (2.9%) out of 112,643. However, there are several factors that can give rise to waterborne diseases, such as unsanitary latrine/waste conditions as well as poor water quality. Therefore, improving the water quality alone does not always reduce waterborne disease prevalence. In addition, the relationship between the number of patients of the public clinics where these data were collected and the users of well water constructed by this project is unknown. As a more direct information source, interview results from the residents who actually used the new public faucets are used for evaluation. According to interviews with residents, waterborne diseases decreased in nine[21] of the 10 small towns. Although the representativeness of the interviews' small sample size is a concern, and the causal relationship between the quality of the water used and the waterborne diseases cannot be clearly determined, it is considered that the effect has been exhibited to some extent.

(3) Promotion of Women's Advancement in Society

According to the interviews with residents using public faucets in each small town, to find out how the time women spent fetching water had changed. Respondents stated that the time freed up by shorter water-fetching times was allocated for housekeeping in eight of the small towns, and for childcare in two of the small towns. Therefore, in terms of women's social advancement, the expected effect is not exhibited.

[19] A total of 40 residents were interviewed who were using the public faucets in all 10 STs during physical facility check of public faucets. Interviews were conducted with the following people who responded to interviews while using public faucets in each small town. There was a time constraint for interviews, as there were many organizations and towns to visit. Thus, the results of the residential interviews are shown by small town. (4 residents each in Koshe, Kela, Kibet, and Alem Gebeya; 3 residents each in Tiya, Teferi Kela, and Tebela; 5 residents each in Dalocha, Mito, and Adilo)

[20] No data was available except for diarrhea, skin disease and typhoid, and the data in FY2018, and FY2019.

[21] No change in 1 ST (Kela)

(4) Increased Study Time for Children

According to the interviews with residents using public faucets to find out how the time children spent fetching water had changed. Residents answered that more time was spent on studying and schooling in eight of the towns[22]. Since the children of the interviewed households had been enrolled in school even before the project's completion, there was no change in enrollment. However, it can be considered that the effect is exhibited to some extent since there were some answers that they spent more time for studying and school.

(5) Changes Due to Public Faucet Installation

Regarding the implementation of hand washing, enough answers were not collected from the resident interviews. However, six towns rarely used rainwater at the time of ex-post evaluation, while seven towns had used it frequently or occasionally before. Furthermore, even in the small towns that responded that they used rainwater occasionally, it was not for drinking purposes, but for other uses such as washing. In this way, the installation of public faucets is considered to have led to behavioral changes among residents to use different water sources properly for their different purposes and to secure safe drinking water.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

The environmental category for this project was B. Because this project was constructed using manual excavation, no pollution, noise, or soil erosion occurred, and no claims of pollution or noise emerged in the resident interviews conducted in the 10 small towns. There is a World Heritage site in Tiya, but the site was divided, and access was controlled using only one entrance. Moreover, it was far from the project site, so the construction caused no impact.

(2) Resettlement and Land Acquisition

As a result of this project's implementation, alternative land compensation was provided in five small towns, and compensation fee was paid in one small town. In 1 small town (Kela), the landowner of the area around one public faucet and the small town's land administration department have not reached an agreement on the amount of compensation, and they remain in dispute, but in the other small towns, compensation was provided. No further details could be obtained because land management is under the jurisdiction of the land administration department, not the interviewed WMOs.

In addition, in 1 small town (Tiya), there was a complaint about farmland used as an access road during the construction, but the farmland was already been returned, and the issue has been resolved. There was also a complaint that the water supply pipe obstructed the passage in 1 small

[22] No change in 2 STs.

town (Adilo), but this was resolved through discussions.

Therefore, this project's land acquisition activities can be considered that appropriate measures were taken based on the *Guidelines for Environmental and Social Considerations (April 2010)*, even though one issue remains unresolved in 1 small town (Kela). In addition, because land management is under the jurisdiction of the small towns' land administration departments, the WB did not know about this matter. However, they stated that it is possible to urge Kela to solve the problem in the near future.

Table 6: Measurements for Land Acquisition

Small Town	Measurement for Land Acquisition[23]
Koshe	Alternative land compensation for the landowners of a reservoir and a generator
Kela	Alternative land compensation for the landowner of a reservoir (In the ex-post evaluation survey, the WMO made a comment about an ongoing dispute that was not recorded on the inspection sheet. In this conflict between the landowner of one public faucet and the ST's land administration department, the parties did not reach an agreement on the compensation amount. Land management is under the jurisdiction of the land administration department, not the WMO, so no further details could be obtained, such as when the issue occurred.)
Tiya	It seems that the farmland used as an access road has already been returned to the landowner of Reservoir #2.
Adilo	Residents' complaints that the newly installed water supply pipe obstructed pedestrians' walk have been resolved through discussion.
Teferi Kela	Alternative land compensation for the landowner of Generator House #1
Dalocha	No land acquisition
Mito	No land acquisition
Alem Gebeya	Access to Public Faucet #11 inside the bus terminal remains disputed. There are no land acquisition issues. See "Disputes with Residents" for details.
Kibet	Alternative land compensation for the landowner of a reservoir
Tebela	Compensation of Birr 80,000 paid to the landowner of a reservoir for 0.4 ha of land Alternative land compensation for the landowners of Public Faucets #3 and #4

(Source: Inspection report provided by JICA; WMOs interview results in the ex-post evaluation survey)

[23] Since land management and land acquisition are under the jurisdiction of the land administration department, which is different from the interviewed organization (WMOs in STs), the information obtained was limited even after repeated additional surveys.

(3) Disputes with Residents

There have been no particular tribal conflicts related to securing water. However, in the case of the public faucet inside the bus terminal in Alem Gebeya, the installation of a steel fence by the bus terminal company in March 2018 to separate the terminal area from neighboring areas obstructed residents' access to the public faucet. At the time of the ex-post evaluation, the public faucet was not used due to insufficient water supply. The WMO commented that they had a prospect and measurement to resolve the issue to improve the residents' access by consulting with the responsible small town's land administration department at the time of resuming the use of the public faucet.

In light of the above, the construction of the water supply facilities increased the available water supply, and this project achieved 61% of its targeted water supply amount. The residents' workload and the frequency of their water-fetching, and the incidence of waterborne diseases also decreased. And the study time of the children in charge of water-fetching increased. The construction caused no issues such as pollution, noise, soil erosion, or changes to the natural environment. Although there is an unsolved land acquisition issue, appropriate measures were generally taken by the small town, based on the compensation policy. Regarding the use of facilities, there is an unresolved dispute with the residents, but it does not need to be resolved immediately, and there are prospects for resolution.

Considering the above-mentioned matters comprehensively, the effectiveness and impacts are regarded as fair because the expected effects were achieved to a certain extent, though there were some problems emerged to some effects.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

(1) Role of Each Organization

The table below shows the roles of each organization engaged in the operation and maintenance of the water supply facilities. The roles are divided by organizational level. In addition, all the organizations, including the WB, five zone water offices, 10 WWOs, and 10 WMOs, reported that they recognized the roles of each organization in supporting WMOs.

Table 7: Operation and Maintenance Roles of Each Organization

Organization	Role
WB	Address serious technical failures, such as those requiring the rental of heavy machinery
Zone water offices	Address serious technical failures, such as those requiring the rental of heavy machinery

Woreda water offices	Dispatch repair technicians in case of small or medium technical failures
WMOs of STs	Formulate and collect water fees, manage finances, monitor water supply facilities, address small technical failures, etc.

(Source: Documents provided by JICA; interview results from each organization)

(2) Communication among Each Organization

At the time of planning, insufficient reporting to the zone water offices or the WB in the event of serious failures led to delays in repairs. The necessity of strengthening cooperation between organizations was addressed.

At the time of the ex-post evaluation, there were the cases in which the assistance provided by the zone water offices and the WB was delayed for two small towns[24]. However, the WMOs reported issues properly, and there were no delays for other small towns. Therefore, it can be considered that the communication between organizations improved, leading to appropriate operation and management.

(3) WB Personnel Composition

The WB's personnel composition is as shown in the table below, indicating that the number of the staff members increased from the time of planning (2014) to the time of the ex-post evaluation (2021).

Table 8: Composition of Personnel Engaged in the Water Supply Sector in the WB

Role	Planned		Actual	
	Detailed Roles	Number of Personnel	Detailed Roles	Number of Personnel
Engineering	Engineer, Electrician, Geologist, Excavator, Water Inspector, Field Worker	40	Expert	86
Other	Socioeconomist, Driver, Secretariat	24	Administrator, HR, Accountant, Driver, Guard	29
Total		64		115

(Source: Documents provided by JICA; the WB interview results)

[24] Tebela: An assistance for a generator maintenance request was delayed.
Dalocha: An assistance for a pump maintenance request was delayed.
Adilo: The delay resulted from the WMO's lack of ability to pay for generator maintenance, not that of the zone water office or the WB, so it was not included as related to communication issues.

(4) Organizational and Monitoring Aspects of the WWOs

Except for Humbo Woreda, which administers Tebela, staffing at the WWOs was insufficient because additional employment was not possible due to lack of funds.

The WWOs monitored water supply facilities in four of the small towns, but not in six of them. This is because that the WWOs considered that the water supply facility monitoring was to be carried out by the small towns due to the personnel shortage at the WWOs. In addition, except for in Tiya, water quality was not inspected because the WWOs were not capable of performing these inspections, which they left to the small towns.

(5) Organizational/Monitoring Aspects of the WMOs

The table below shows the WMOs' personnel composition.

Table 9: Personnel Composition of the WMOs

Role	Planned Number of Personnel	Actual Number of Personnel (at ex-post evaluation in 2021)
Engineer	Greater than or equal to 3	Achieved: 10 STs (All 10 STs considered this insufficient, but additional recruitment was impossible due to lack of funds.)
Accountant	3	Achieved: 2 STs (Dalocha considered this number insufficient despite having greater than or equal to three accountants, but additional recruitment was impossible due to lack of funds.)
		Not achieved (1 or 2 accountants): 8 STs (However, two STs considered this number sufficient.)
Water Fee Collector	1 per public faucet	Achieved: 10 STs (1 collector per operating public faucet)

(Source: Documents provided by JICA; WMOs interview results)

Although the planned engineer staffing levels were achieved in all 10 small towns, the WMOs considered these levels insufficient. They stated that there was a shortage of personnel with the required skills; this is not necessarily related to the number of engineers but one of the causes could be considered as a lack of technical ability due to lack of training. In contrast, no small towns reported delays in handling small and medium technical failures that could be handled at the small-town level.

During planning, it was pointed out that the accounting management methods and ability level varied from town to town, and there were cases of lost past account ledgers, as well as unknown numbers and calculation mistakes in the ledgers, even though accountants recorded monthly expenditures in these ledgers. At the time of the ex-post evaluation, all 10 small towns reported that they recorded information properly without problems and the necessary financial information was collected by the 10 small towns, although the original data were unavailable. Consequently, it can be considered that the accounting has been basically done properly. Even so, certain WMOs took more time than others to calculate the average daily water supply, so gaps in accounting skills emerged among the small towns.

Regarding water fee collectors, one collector assigned per public faucet was planned and one collector per public faucet in operation was assigned in all 10 small towns[25].

Water supply facilities were monitored irregularly in nine small towns. Of these, only Tiya reported that it kept monitoring records. In Koshe, monitoring was not conducted. The reason for this is unknown, but as is the case with inexecution of water quality inspections (described later) it is thought that they did not have a custom of monitoring.

Regarding water quality inspections, the WMOs in eight small towns brought sample water to the WB's water quality inspection center on an irregular basis to request inspections. Of these towns, only Tiya reported keeping inspection records. Inspections were not conducted in two small towns, one of which (Koshe) reported that there was no custom of conducting water inspections, but that they would consider doing so starting the next year. Adilo reported that no inspections were performed due to a lack of inspection tools. In the interviews, residents from all 10 small towns reported that the water quality was good and without any problems. In all eight small towns where inspections were conducted, it was confirmed that no issues related to water quality arose. Therefore, it can be considered that there were basically no problems with the water quality.

As explained above, although communication between organizations improved, and necessary repair and accounting measures were implemented, there was a shortage of skilled personnel. Furthermore, in many cases, no monitoring records were kept despite the fact that monitoring has been generally conducted, hence, the operation and maintenance system can be considered as vulnerable.

(6) Cooperation with Related Projects

At the time of planning, human resource development for water supply management[26] was

[25] Several public faucets were not in operation due to the shortage of water supply. See 3.4.4 Status of Operation and Maintenance for details.

[26] In a related project, the EWTI, was established as a human resource development center for engineers engaged in the management of groundwater and water supplies to facilitate the construction, operation, and maintenance of sustainable water supply facilities.

done through the EWTI (1998-2013), and synergistic effects with this project were expected. As a result, a former staff of EWTI, which was established in the related project, was invited to serve as a lecturer for technical training on the soft component program for the WWOs and WMOs. At the time of project completion, there were the comments that the training guidance was effective and the manual was useful for technical improvement, however, at the time of ex-post evaluation, there were the comments from 8 WMOs that the training time was only a few hours and could not lead to the improvement of the technical skills. Therefore, although there was a connection to a related project in that a former employee of the training institution established in the related project was served as a training instructor, it is considered that the expected synergistic effect was not clearly exhibited.

3.4.2 Technical Aspects of Operation and Maintenance

The WWOs provided support for minor and medium technical failures that could not be handled by the WMOs in the small towns alone. Zone-level water offices and the WB also provided support for serious technical failures requiring heavy machinery.

In the event of minor or medium failures to be addressed by the WWOs, six small towns reported no delays, and four reported occasional delays. Delays occurred due to a lack of repair funds at the town level or due to high repair request volume at the woreda level. In the event of serious failures to be addressed by the zone water offices or the WB, three small towns reported delays. In the case of one such town, the delay arose from a lack of generator maintenance funds at the town level.

Regarding small and medium-sized failures, woreda-level support was seldom necessary in nine small towns, as the WMOs in those towns were able to handle these issues. As for the frequency with which the small towns made repair requests of other organizations, nine small towns reported that the frequency had decreased at the time of project completion, but at the time of the ex-post evaluation, five small towns[27] reported that the request frequency had increased due to technical failures associated with long-term use of parts.

For those technical failures that the small towns could address themselves, repairs occurred in a timely manner and without delays[28]. Those failures beyond the small towns' ability to address were reported properly, and requests were made to the appropriate organizations such as the woreda, zone, or WB[29]. Consequently, matters which could be handled by the small towns were addressed appropriately even though the towns' technical abilities were limited.

[27] The other five small towns reported that the frequency decreased.

[28] All 10 small towns reported handling the repairs they were equipped to address in a timely manner and without delays.

[29] Although reports and requests to upper administrative organizations were made appropriately, there were some delays due to a lack of repair funds. See 3.4.3 Financial Aspects of Operation and Maintenance for details.

Furthermore, at the time of planning, the soft component program was aimed at improving operation and maintenance skills through technical and accounting training, but at the time of the ex-post evaluation, only two small towns reported that staff members had improved their technical skills through the training provided, and the other eight reported that staff members' skills did not improve. In particular, some training sessions lasted only a few hours, so they did not lead to substantial skill improvement. In addition, there were no technical training opportunities in nine small towns, and no towns offered accounting training after project completion[30]. However, although it was not training, eight small towns reported receiving accounting advice from the WWOs about once a year.

3.4.3 Financial Aspects of Operation and Maintenance

(1) Annual Financial Status of the WMOs

The financial status of the WMOs is shown below.

Table 10: Annual Financial Status of STs' WMOs at Planning and at the Ex-Post Evaluation

Small Town	At Planning (2014)	At Ex-Post Evaluation (2021)
	Balance	Balance
Koshe	Surplus	Surplus (The town was occasionally unable to pay repair costs, so it paid them after collecting the following month's water fees.)
Kela	Deficit	Surplus (The town was occasionally unable to pay staff members' salaries, so the woreda provided support instead.) (The town was occasionally unable to pay repair costs, so it paid them after collecting the following month's water fees.)
Tiya	Surplus	Surplus
Adilo	Surplus	Surplus (There were delays in generator maintenance due to a lack of repair funds.) (The town was occasionally unable to pay staff members' salaries, so it paid them after collecting the following month's water fees.)

[30] The WB provided annual technical and accounting training for zone water offices, but no training was provided for the WWOs and the WMOs.

Teferi Kela	Deficit	Nearly at the break-even point (financially unstable) (The town was occasionally unable to pay its staff members' salaries, so the woreda provided support instead. This occurred because of the lack of water supply, which is the source of income, and the WMOs implemented measures such as increasing pump operation time.) (The town was occasionally unable to pay repair costs, so the woreda provided support instead.)
Dalocha	Surplus	Surplus
Mito	Surplus	Surplus
Alem Gebeya	Deficit	Surplus
Kibet	Deficit	Surplus
Tebela	Deficit	Surplus

(Source: Documents provided by JICA; WMOs interview results)

(2) Water Fee Collection

The water fee collection status of the small towns' WMOs is shown below.

Table 11: Water Fee Collection Status

Status of Water Fee Collection	Public Faucet	Private Household Faucet
	Number of Small Towns	
No Delays	5 STs	5 STs
Rarely Delayed	2 STs	2 STs
Occasionally Delayed	2 STs (Measure: the water supply was stopped if the fee remained unpaid after warnings were issued.)	2 STs (Measure: the water supply was stopped if the fee remained unpaid after warnings were issued.)
Frequently Delayed	1 ST (Measure: the water supply was stopped if the fee remained unpaid after warnings were issued.)	1 ST (Measure: the water supply was stopped if the fee remained unpaid after warnings were issued.)

(Source: WMO interview results)

Water fees were revised as needed in each small town, even after the soft component program and project were completed. The WMO interview results indicate that the residents of seven small towns accepted these revisions, whereas the residents of the other three small towns dissented. Interviews with residents revealed that they opposed the revised fees because they

were dissatisfied with the lack of water supply.

Based on the above, the financial statuses of the 10 small towns' WMOs were generally in surplus, but within a year, some small towns faced a lack of funds to cover repair costs and staff salaries. Although there were some instances of delinquent payments for public and private household faucets, appropriate measures were implemented, and the water fee collection was performed appropriately. Considering the mentioned matters comprehensively, it is considered that there have been no serious financial problems, although some issues did arise.

3.4.4 Status of Operation and Maintenance

The operation status of the water supply facilities constructed by this project is as shown below.

Table 12: Operation Status of the Water Supply Facilities

Small Town	Well	Generator House	Reservoir	Pipeline	Break Pressure Tank	Public Faucet*1
Koshe	In operation	In operation	In operation	In operation	-	Partially in operation (5/17 in operation. Reason: low pressure)
Kela	In operation	In operation	In operation	In operation	-	Partially in operation (9/18 in operation Reason: none provided)
Tiya	In operation	In operation	In operation	In Operation	-	Partially in operation (3/8 in operation. Reason: a lack of water supply)
Adilo	Partially in operation (1/2 not in operation due to lack of water supply.)	Partially in operation (1/2 not in operation due to maintenance requirement.)	In operation	In operation	In operation	Partially in operation (8/13 in operation. Reason: none provided)

Teferi Kela	In operation	In operation	In operation	In operation	-	In operation (all 16 in operation)
Dalocha	In operation*	In operation*	In operation*[2]	In operation	In operation	Partially in operation (occasionally water did not reach to the public faucets due to a lack of water supply)
Mito	In operation	In operation	In operation	In operation	-	Partially in operation (14/15 in operation. Reason: low pressure)
Alem Gebeya	In operation	In operation	In operation	In operation	-	Partially in operation (7/13 in operation. Reason: a lack of water supply)
Kibet	In operation	In operation	In operation	In operation	-	Partially in operation (10/18 in operation. Reason: none provided.)
Tebela	In operation	In operation	In operation	In operation	Partially in operation (1/2 not in operation due to insufficient water pressure*)	Partially in operation (2/10 in operation. Reason: decreased needs due to increase in private household faucets*[3])

(Source: WMO interview results)

Break Pressure Tank: The symbol "-" indicates that such a tank was not needed and not planned.

*1 Public faucets were partially in operation except for in Teferi Kela. Although Dalocha reported that all 10 of its faucets were in operation, water occasionally did not reach to an unspecified number of these faucets due to a lack of water supply. Therefore, it is considered as partially in operation.

*2 Dalocha: The ST developed the well, reservoir, and generator house on its own outside of this project; the water is distributed to the public faucets, which were developed by this project. (Source: Inspection sheet; WMO interview results)

*3 Tebela: Although two break pressure tanks were installed, one installed in the lower area became unnecessary because the number of private household faucets connected within the area from that break pressure tank till the end

of the public faucets increased more than expected, causing the water pressure of the public faucets to decrease. Therefore, only the break pressure tank installed in the upper area was used. At the time of project completion, the need for public faucets had decreased because private household faucets became common after water fees were lowered in February 2017. However, two public faucets were used at the time of ex-post evaluation, compared with zero public faucets at the time of inspection. These might have served to meet the needs of new settlers after the water fee revision. (Source: Inspection report)

Although one well was not in use due to insufficient water supply, and one generator was not operational because it required maintenance, most of the water supply facilities were properly utilized and functioning. In contrast, the public faucets remained partially in operation in all small towns due to lack of water supply except for Teferi Kela. However, currently operational public faucets are functioning without problems.

In light of the above, regarding institutional/organizational aspects of operation and maintenance, communication between organizations improved, and necessary measures were taken in terms of technical and accounting aspects, although there is a recognized shortage of skilled staff members. Monitoring was generally performed, but results were seldom recorded, so the organizational aspect of operation and maintenance is somewhat vulnerable. In technical terms, the small towns address necessary maintenance and repairs adequately, but some delays in repair are found when support requests have been made to the upper organizations. Financially, most of the small towns maintained a surplus except for occasional lack of funds during the year. As for the water supply facilities' operation status, most public faucets were only partially in operation, due to insufficient water supply, low pressure, and the early spread of private household faucets in one small town. Therefore, there are some facilities which are not utilized with the same reasons. Based on the above, there are some problems with the organizational, technical, and financial aspects of operation and maintenance, and the sustainability of this project's effects is considered as fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was aimed at providing safe water by constructing and renovating water supply facilities in 10 small towns, thereby improving access to safe water for local communities in SNNPR of Ethiopia.

This project was consistent with the Ethiopia's development plan goal to improve water supply rates in rural areas and the nation overall by developing water resources and improving water supply facilities, and the development need was high. The objective was also consistent with Japan's ODA policy. Project relevance is high for all these reasons. Although some plans have still not been achieved by the Ethiopian side, the project's efficiency is considered high: both the project cost and the period were within those planned; and the water facilities were

constructed as planned, with reasonable design changes. The target water supply amount was achieved to certain extent, and positive impacts included decreased water collection time for residents and increased study time for children. However, there were some negative impacts on land acquisition matters. Therefore, the project effectiveness and impacts are fair. In terms of operation and maintenance (O&M), several weaknesses exist, such as insufficient staff numbers and management of monitoring records. However, the necessary accounting and technical work was accomplished at each organization. Although some small towns were confronted with a lack of finances within a year, most of the small towns' overall annual finances remain in surplus. Consequently, the sustainability of the project's effects is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Because some small towns are not connected to commercial electric power, it is recommended to encourage commercial electric power agencies to connect to these small towns, if necessary, after confirming their situations. Although staffing targets were mostly achieved, and the actual work was done appropriately, the WMOs reported a shortage of skilled staff members, and related training was not systematically provided after this project ended. Therefore, it is recommended to consider the implementation of technical and accounting training for the WWOs and the WMOs in small towns in the near future. In addition, because some small towns are facing difficulty in paying for repairs, it is suggested requesting these costs be covered by upper organizations or that they receive additional budget allocations so the WB can cover the costs. As for the shortage of personnel with operation and maintenance skills, it is recommended to encourage mutual support structures within the small towns themselves, not just in the form of support from upper organizations. Regarding the ongoing dispute with the landowner of the public faucet in one small town, it is expected to check on the current situation with the land administration department and urge the parties to come to a resolution. Also, it is suggested pulling up the pump, using heavy machinery, if necessary, to examine whether its pumping ability is reduced due to clogging or any other reasons. It is also recommended to encourage the two small towns that do not conduct water inspections to utilize the WB's water inspection laboratory.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Set feasible goals for soft component programs for the grant aid project and strengthen cooperation with related projects

It is considered as difficult to aim at improving operation and maintenance skills for this project, which was conducted in as many as 10 small towns with many other organizations, as the basic purpose of a soft component program for a grant aid project is to utilize the constructed facilities appropriately. In addition, operation and maintenance capacity was expected to improve via the cooperation with EWTI, which was established by a related project. However, the extent of the cooperation was limited to the fact that one former EWTI staff member served as a training lecturer. Thus, the expected synergetic effects have been limited. Therefore, it is recommended to set realistically feasible goals for a soft component program. If further capacity improvement is expected through synergistic effects with related projects, it is necessary not only to invite instructors, but also to strengthen the cooperation system through activities such as continuing the training implementation. In addition, operation and maintenance training should, to the extent possible, be of sufficient length and provide more practical instruction for participants about inspection, maintenance, and repairs by actually using the newly constructed facilities. It is also important to support the improvement of operation and maintenance skills by incorporating the formulation of continuous training system and annual training plans into the soft component program. This will facilitate the continuous provision of training after the project ends.