Tanzania

Ex-Post Evaluation of Grant Aid Project

"The Project for Water Supply Development around the Metropolitan Area"

External Evaluator: Yumiko Nakamura, Binko International Ltd.

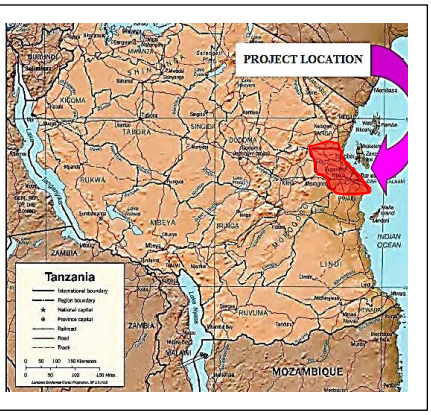
0. Summary

This Project aimed to increase water supply coverage in the Coast Region and Dar es Salaam Peri-Urban. It developed water facilities at the designated sites and formed Water User Associations (WUAs[1] hereafter) to secure sustainable maintenance and operation of water facilities. The objective of the project is highly consistent with Tanzania's national development policy, development needs, as well as the ODA policy that Japan upholds. The population with access to a water supply has only increased to 74% of the target value due to changes in construction plans during the project period and a high non-functioning rate of the hand pump water facilities (Level 1 facilities hereafter). However, the intended effects of this project have been observed as follows: some WUAs in the project locations replaced hand pumps with electric pumps at their own initiative; reduced water-fetching workloads resulting in a revitalization of the local economy in some of the project locations. The efficiency of the project is judged to be fair based on the fact that the project cost was higher than planned considering the decrease of the output, while the project was executed within the planned period. With regard to the operation and maintenance of water facilities, the functioning rate of the Level 1 facilities is 45%, which is lower than the national average of 66%. Also, there is a need for reinforcement and improvement of technical and financial skills of WUAs that play central roles in facility operation and maintenance and support systems by the local governments. However, the functioning rate of the piped water supply facilities (Level 2 facilities hereafter) constructed by the project was 100% at the time of the Ex-post Evaluation Study, and that exceeds the average functioning rate in all of the project targeted areas. Therefore, sustainability of the project effect is judged to be fair.

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

[1] WUA stands for "Water Users Association". In this project, WUAs for the Level 1 facilities were formed at the village level, while WUA for the Level 2 facilities were established at each facility. WUAs for Level 1 facilities in this project were established at the village level because when a WUA is established at each facility, its management tends to be inefficient due to the lack of coherence and coordination among WUAs in the same village (Source: The Basic Design Study Report (2007)).

1. Project Description



Project Location

A piped water facility provided by the project

1.1 Background

The United Republic of Tanzania is located on the east side of Central Africa, bordering Kenya, Uganda, Rwanda, Burundi, Zambia, and Mozambique. Its population is approximately 43 million (in 2009), and the country covers 94,700 square kilometers of land. Most of the land enjoys a savanna climate and rainy seasons are generally observed twice a year from March to May and from November to December. Annual precipitation reaches approximately 1,000 mm.

The Tanzanian government has been engaged in an undertaking to improve the water supply environment in collaboration with international organizations and donor agencies since early 1970s. The National Water Policy developed in 1991 declared universal access to safe and clean water within 400m by 2002. However, the objective was not achieved because intended interventions had not proceeded as planned.

To improve this situation, the government of Tanzania developed "Vision 2025" in 1999 as well as the "National Strategy for Growth and Poverty Reduction" (NSGRP hereafter) in 2000 by which water resource development was positioned as one of seven policy priorities. Further, the "National Water Sector Development Strategy" (NWSDS hereafter) was established in 2002 and set the goals for capacity development of local governments and communities along with universal access to safe and hygienic water within 400m by 2025.

Despites these policy initiatives, the water supply environment had not been improved and thus the population with access to safe water in rural areas was as low as 45% in 2002 as shown in the 2002 National Population Census[2]. The Basic Design Study (BD Study hereafter) indicated the followings reasons for the delayed improvement of water supply coverage: construction of new water facilities did not make progress as planned due to the lack of a development budget; existing water facilities were left abandoned after failure occurred due to

[2] Source: BD Study Report (2007)

their fragile operation and maintenance systems and thus were not functioning; or existing facilities were not able to meet the demand of the water supply from the rapidly increasing population after the expansion of residential areas[3].

Given this background, the government of Tanzania requested grant aid from Japan for the implementation of a development survey, the development of a water supply plan, and the implementation of a feasibility study for priority projects in order to make up for the delay in the construction of water supply facilities in the Coast region and the Dar es Salaam Region. Upon this request, a master plan on the water supply was developed for 278 villages based on the results of the development survey and among which 22 sites of Level 2 facilities were selected as priority projects. Based on the master plan, the government of Tanzania requested additional grant aid from the Japanese government for the construction of Level 2 facilities and the implementation of the Soft Component program to strengthen the capacity of facility operations and maintenance in the two regions.

1.2 Project Outline

The objective of this project is to increase the population that is supplied with water and water supply coverage by construction of water facilities and by developing operation and maintenance mechanisms with public participation in the Coast Region and the Dar es Salaam Region.

E/N Grant Limit/Actual Grant Amount	1,705 million yen/ 1,424 million yen
Exchange of Notes Date	Term 1/2:July 03, 2007 Term 2/2:June 27, 2008
Implementing Agency	Ministry of Water, Community Water Supply Division[4]
Project Completion Date	Term 1/2:March 04, 2009 Term 2/2:Februrary 26, 2010
Main Contractor	Konoike Construction Co., Ltd.
Main Contractor	Earth System Science Co., Ltd.
Basic Design	May, 2006 – September, 2007
Detailed Design	Term 1/2: July, 2007 – December, 2007 Term 2/2: August, 2008 – December, 2008
Related Projects	Technical Assistance by Japan International Cooperation Agency (JICA): -Rural Water Supply and Sanitation Capacity Development Project, Phase I (2007-2010), Phase II (2011-2014) Japan International Cooperation Agency (JICA) -National Rural Water Supply and Sanitation Program, World Bank (2006-2025)

[3] Source: BD Study Report (2007)
[4] Ministry of Water and Irrigation was renamed to Ministry of Water in 2011.

2. Outline of the Evaluation Study

2.1 External Evaluator

Yumiko Nakamura, Binko International Ltd.

2.2 Duration of Evaluation Study

The Ex-Post Evaluation Study was conducted in the following durations:

Duration of the Study: October, 2012-August, 2013

Duration of the Field Study: January 20-Februrary 2, 2013 and June 16-June 22, 2013

2.3 Constraints during the Evaluation Study

35 water facilities were constructed in three districts and four municipalities of Coast and Dar es Salaam Regions. However, due to the time and financial constraints of the field survey, the Ex-Post Evaluation Study was not able to examine the operation and maintenance situation of all water facilities in the project locations.

3. Results of the Evaluation (Overall Rating: C[5])

3.1 Relevance (Rating: ③[6])

3.1.1 Relevance with the Development Plan of Tanzania

The "Poverty Reduction Strategy Paper" (2000) at the time of the BD Study highlighted water resource development as one of the seven priorities for poverty reduction. In addition, the "National Water Policy" in 2002 emphasized the importance of User-Pay-Principle for the operation and maintenance of water facilities in rural areas. Further, NWSDS (2006-2015), which serves as a long term plan for the water supply sector stipulated strategies, including an increase in the quantity of water intake to 25L/capita/day as well as the construction of water facilities within approximately 400m to realize the minimum of 250 people using the facility. Based on the recommendation of the development of a Community-Owned Water Supply Organization (COWSO hereafter) in the NWSDS, community-led activities for operation and maintenance of water facilities have been promoted by the government[7].

The Ex-Post Evaluation Study also found that the second "National Strategy for Growth and Poverty Reduction (MKUKUTA II)" developed in 2010 highlighted an improvement of living-standard as well as social welfare as contributing factors for growth and poverty reduction. Aiming at the improvement of access to safe and clean water, the MKUKUTA II set the target value of the water supply coverage in rural areas from 58.7% (2009) to 65% (2015) so

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

[6] ③: High, ②: Fair, ①: Low

[7] Dissemination of COWSOs advocated in NWSDS (2005-2015) has been delayed due to revision of law on water supply and hygiene (Source: Results of the Ex-Post Evaluation Study) .

that the water supplied population would increase to 2.2 million. The "Water Sector Development Program" (WSDP hereafter) launched in 2007 continuously emphasized water resource development as a critical issue and set the targets of construction of new water facilities to increase the number of beneficiaries. Although disseminating the idea of COWSOs that was advocated by the NWSDS (2005-2015) had been delayed due to the 2009 modification of the law on water supply and sanitation, the development of water supply facilities has been placed at a high priority as a national project.

Thus, the project that was implemented for the purpose of increasing the population with access to safe drinking water through the development of water supply facilities has been highly relevant to the development policies of Tanzania before and after the project.

3.1.2 Relevance with the Development Needs of Tanzania

At the time of the BD Study, the water supply coverage in the project target areas was 23% and it was lower than the national average of 42%. These two regions had received a number of people who flow into metropolitan areas. Rapid growth of the population in these regions had brought about inappropriate operation and maintenance of water facilities and increased demand for water supply. In such circumstances, serious shortages of water supply or water pollution by household wastewater had become a matter of concern.

The average water supply coverage of the Dar es Salaam and the Coast regions in 2011 was 66.2% and 64.6% respectively. This showed significant improvement compared with the 23% at the time of the BD Study; however, the gap when compared with the water supply coverage of 86% in urban areas is not yet dissolved[8]. Moreover, water supply to the increased population in the Dal es Salaam and the Coast regions where the population growth rate is 4.3% and 2.4%[9] remains one of the pressing issues.

Thus, the development needs for improving the water supply situations in the project targeted pre-urban areas were high.

3.1.3 Relevance with Japan’s ODA Policy

Development needs for basic infrastructure have increased in Tanzania as a result of the high population growth in urban areas. Specifically in the capital city of Dal es Salaam, infrastructure required for proper metropolitan function was not fully developed and therefore basic infrastructure development became an urgent issue. Given this state of affairs, the Japanese government focused on an improvement of living standards by means of infrastructure development in urban areas as one of the five assistance priorities in the "Country Assistance

8 Average water supply coverage in rural areas in general as of 2011 was 56.6% (Source: Water Sector Report, Ministry of Water, 2012).

9 Source: Water Sector Report, Ministry of water, 2012

policies to Tanzania (2002)". Based on the policy, Japan has provided support preferentially toward Basic Human Needs including basic infrastructure development that directly benefits socially vulnerable groups such as local farmers. Further, based on the result of the World Summit on Sustainable Development held in September 2002 and the World Water Forum in March 2003, the water sector was made one of the priority areas in the Third Tokyo International Conference on African Development (TICAD III) held in September 2003.

Thus, this project that aimed to improve the water supply situation in the peri-urban areas is consistent with Japan's ODA Policy.

This Project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy; therefore its relevance is high.

3.2 Effectiveness[10] (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Increase of water supply coverage in the project target villages

In order to validate the effectiveness of the project, the target year of 2015 was changed to 2013 and a new target value of water supplied population (55,637) for 2013 was set at the time of the Ex-Post Evaluation Study[11]. The actual number of people supplied with water in 2013 was then calculated based on the facility functioning status identified during the field survey and was confirmed to be 33,955.

Table1 The number of constructed facilities, their functioning rate and the population newly served with water as a result of this project (2013)

	Planned Value (2005)		Actual Value (2009-2010)		Actual Value (2013)	
Type of water facility	Number of facilities	Intended population with water (2013)	Number of facilities	Population newly served with water	Functioning facilities/ Constructed facilities	Population newly served with water
Level 1	14	3,500	22	5,500	10/22 (45%)	2,500
Level 2	18	52,137	13	31,455	13/13 (100%)	31,455
Total	32	55,637	35	36,955	23/35 (66%)	33,955

Source: Planned Value: BD Study Report (2007), Actual Value (2009-2010): Japan International Cooperation Agency (JICA) provided materials, Actual Value (2013): Results of the Ex-Post Evaluation Study (2013)

The following two factors can be explained as reasons for the decrease in water supplied population. Firstly, the actual number of people with access to a water supply had decreased by 3,000 due to a high non-functioning rate of Level 1 facilities identified during the Ex-Post

[10] Sub-rating for Effectiveness is to be put with consideration of Impact.

[11] In establishing the new target value for 2013, planned population, which is the total population in the target villages, was first calculated based on the population data and population growth data at the time of BD Study and then population with access to water was calculated based on the planned population in 2013.

Evaluation Study (Table 2). Secondly, modification of the construction plans made during the project period became a cause of reduction of water supplied population. According to documents provided by Japan International Cooperation Agency (JICA hereafter), a construction plan was modified right after the commencement of the project because one of the project sites in Kitunda village of Ilala municipality overlapped with a project location of Dar Es Salaam Water Supply And Sewerage Authority (DAWASA). Other than this, water shortages, undesirable water quality, and financial inability to operate and maintain water facilities in other project locations led to the additional revisions in the construction plans, including changes in the number of wells drilled, the type of water facilities, and a reduction of target villages. The reduction in population caused by these changes reached 16,784 as a result (Table2)[12].

Table 2 Increases and Decreases by changes of plan during the project period

Target Area District/ Municipality Village	Planned Facility type (No. of facility)	Facility type after changes (No. of facility)	Reasons	Actual reduction of water supplied population
Kisarawe, Chore	Level 2 (1)	Cancelled	Shortage of water	2,665
Bagamoyo, Kwanduma	Level 1 (4)	Level 1 (1)	Water quality problem	750
Ilala Kitunda	Level 2 (3)	Level 2 (1) Level 1 (6)	Duplication of the project site, Reduction of 1 drilling well	9,461
Ilala, Pugu	Level 2 (1)	Level 1 (3)	Shortage of water	1,912
Kidondoni, Matosa	Level 2 (1)	Level 1 (2)	Shortage of water	1,997
Total				16,785

Source: Results of the Ex-Post Evaluation Study

Of these reductions, 9,461 people in Kitunda village of Ilala municipality had already received water supply service by the DAWASA project. Therefore, the concerned population can be taken out of the project target value and the target value in 2013 can be revised to 46,176 people. As mentioned the above, the actual number of people supplied with water in 2013 was 33,955; thereby, the achievement rate was recalculated as 74%.

(2) Improvement of water quality

According to the social survey conducted during the BD Study, most frequently-used water sources among the people in the project locations were “unprotected shallow wells”, “protected

[12] The number of project target villages had decreased to 21 villages from 22 villages at the time of the BD Study due to the cancelation of a facility construction at Chore village in Kisarawe District (Source: Documents provided by JICA).

shallow wells", and "rivers and streams". 60% of the surveyed 550 households answered that they were "not satisfied" or "not satisfied at all" in terms of the water quality of those water sources. Therefore, securing safe water supply was considered as one of the issues in improving the living environment and health in the said areas.

Given this state of affairs, the project aimed at improving access to safe and stable water among the residents in the project locations by means of construction of water facilities, and set up improvements of water quality as one of the indicators to measure the project outcomes.

According to the results of the water quality analysis carried out after test drillings in the BD Study, every water source met the WHO standard except for one site with a high salt level: Minazi Mikinda (1/2). Results of the questionnaire survey conducted at six Municipality /District Water Engineer Offices and eight WUAs showed that none of them had ever conducted water quality tests based either on the WHO guideline or Tanzania's national drinking water standard after the facilities were constructed. Thus, it is impossible to determine whether those water sources constructed by the project still meet the required water standards.

On the other hand, 94 of 95 facility-using households answered in the beneficiary survey that they were satisfied with the taste and the smell of the water, and more than 80% of them showed their satisfaction toward the color of the water[13]. The level of satisfaction by facility type is shown in figures 1 and 2. Moreover, no problem with the smell, the color, or the taste of the water was identified in the facility condition survey conducted during this study.

Thus, it is impossible to determine whether the water quality at the project locations still met the WHO or the national standards. However, taking into account of the fact that the level of satisfaction with water among the residents after facility construction has increased in comparison with that of the BD Study, water quality at the project locations can be judged as being improved.

[13] The beneficiary survey targeted 108 households in 16 villages in three districts and three municipalities among 20 project targeted villages of four districts and three municipalities in two regions considering their access condition and survey schedule.

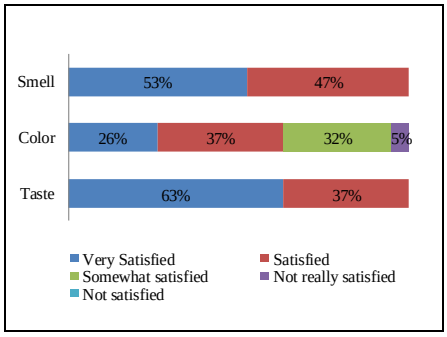

Figure 1 Evaluation by the residents on the smell, the color, and the taste of the water（Level 1）

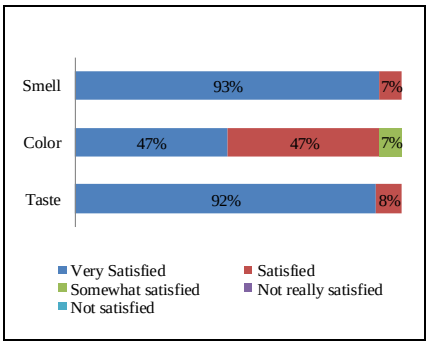

Figure 2 Evaluation by the residents on the smell, the color, and the taste of the water（Level 2）

Source: The beneficiary survey results

(3) Increase in the units of water demand

Units of water demand per person per day were expected to be increased from 20L/capita/day to 25L/capita/day after the construction of water facilities. The beneficiary survey found that of the surveyed 108 households, 94 households including 19 Level 1 facility-using households and 75 Level 2 facility-using households used the water facilities constructed by the project. Units of water in demand from these 19 Level 1 facility-using households increased to 40L/capita/day, while that of the 75 Level 2 facility-using households increased to 33L/capita/day. It is therefore confirmed that the target value of 25L/capita/day set in the BD Study was achieved by the project implementation.

(4) Reduction of the distance to water sources

According to the data obtained during the BD Study (2007), the time required for fetching water to and from the water sources was 30 minutes on average in cases of short distance, while it took more than 2 hours in cases of long distance. Given the fact that people are able to walk 50m per minute, it is calculated that the distance to and from water sources was approximately 1,500m to 6,000m[14]. In order to reduce the water-fetching workload, the project set the construction target as follows: Level 1 facilities were to be constructed "within 400m from residential area as much as possible", and Level 2 facilities were to be installed "approximately within 400m".

The beneficiary survey found that the time required for fetching water among the 94 facility-using households before the construction of the water facility was: 5 to 120 minutes round trip, 55 minutes on average, in the prospective project locations for Level 1 facilities; and 5 to 90 minutes, 37 minutes on average, for Level 2 facilities. When converted to distance, it was 1,375m and 925m on average, respectively. In contrast, the time required for fetching water

[14] Source: BD Study Report (2007)

after the facilities were constructed became 5 to 45 minutes, 29 minutes on average, in the villages with Level 1 facilities, and 5 to 40 minutes, 27 minutes on average, in the villages equipped with Level 2 facilities. It shows that time required for fetching water has decreased approximately by half or by 1/4. The distance to the facility from the residential area was therefore calculated as 725m for Level 1 facilities and 675m for Level 2 facilities, which exceeded the target distance of 400m by 70% to 80%.

Thus, the distance to the water sources has been reduced by the construction of the water facilities; however, the target of constructing facilities "approximately within 400m"or "within 400m from residential area as much as possible" was achieved partially in the project locations.

3.2.2 Qualitative Effects

The project implemented the Soft Component program along with facility construction to pursue the establishment of an operation and maintenance system with participation of the local people, and thereby to develop ownership among the residents in the project locations.

The Ex-Post Evaluation Study found that while the financial management capacity has room for improvement, a water tariff was collected by the surveyed 8 WUAs, most of them held meetings with residents, and 90% of the residents cleaned the facilities voluntarily. Further, at the Level 1 facility sites such as Pugu Station and Kitunda Muzinga, hand pumps were replaced with a pump powered by a solar system or by an electric system at their own expense. Thus, the development of ownership among the residents was observed in some of the WUAs.

3.3 Impact

3.3.1 Intended Impacts

(1) Increased opportunities for women's social advancement and the creation of new jobs as well as increased time spent in study

More than 90% of the surveyed 108 households answered women over 20 years old were responsible for fetching water. This indicates that the situation remained the same as before; fetching water was still a woman's job at the time of Ex-Post Evaluation Study (Table 3).

Table 3 Person in charge of water-fetching (2005 and 2013)

Gender/Age	2005		2013	
	Household	%	Household	%
Women (Over age-20)	96	89%	92	85%
Men (Over-20)	12	11%	18	17%
Girls (Under age-19)	7	6%	12	11%
Boys (Under age-19)	10	9%	12	11%
Others	4	4%	4	4%

Source: The beneficiary survey results

As already mentioned in the “3.2 Effectiveness (4) Reduction of distance to water sources”, the Study confirmed that the time required for fetching water had been reduced by more than 10 minutes on average among the 94 facility-using households. Moreover, most of them; 93 households, answered that "water-fetching workloads had been reduced after the construction of the water facility" and that "the time for housekeeping work as well as the time with kids had increased" (Figure 3).

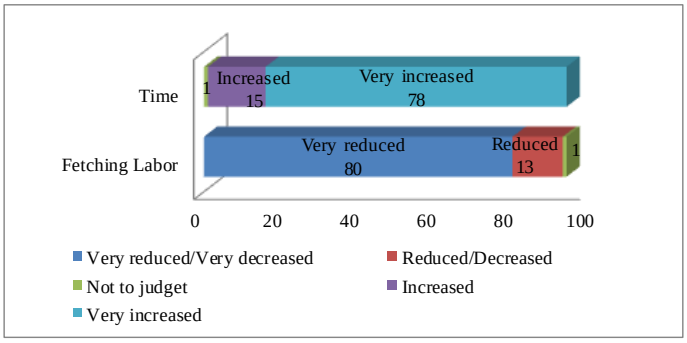

Figure 3 Additional time and Water-fetching Workload (n=94)

Source: The beneficiary survey results

93 households showed recognition of increased opportunities to effectively utilize time for additional activities and among which only 12 households (13%) answered that surplus time was used for income generating activities and farming. However, 11 households out of these 12 answered that "household income had increased through participation in income generating activities" and therefore it can be judged that the project brought about an economical effect in the said households. Further, according to the information acquired from the surveyed 8 WUAs, economic activities such as farming, production and sale of bricks, and livestock breeding became active after the construction of the water facilities.

Thus, the construction of the water facilities contributed to the activation of the local economy in some of the project locations, yet women’s social advancement and the creation of new jobs expected by the implementation of the project were not fully recognized.

With regard to “increased time spent in study among children”, another indicator of the project impact, most of the surveyed households (91 households) responded that the school attendance rate had increased. However, the school attendance rate in the project target areas was 61%, which was not so high, and no baseline data for the project locations at the time of planning was available. Thus, it is impossible to determine whether the project contributed to

increased time in study among children.

(2) Reducing the cost of water tariffs

The beneficiary survey found that the water tariff per 20L was: between 50 Tsh and 100 Tsh for the Level 1 facilities, and between 30 Tsh to 100 Tsh for the Level 2 facilities. It shows that there was no WUA that achieved the target value for 2015 of reducing the water tariff to 20Tsh-24Tsh. On the other hand, given the average inflation rate of 7.7%[15] in Tanzania since 1999, it is unlikely that the water tariff will decline from the current rate. Therefore, it can be judged that achievement of a desired value is difficult.

(3) Decline of infant mortality rate and reduction of medical expenses from water-related diseases

While the national average of the infant mortality rate was 68 / 1,000 in 2004, the rate in the Coast region was 105/ 1,000 and in the Dal es Salaam region it was 102 / 1,000, which was eighth and tenth highest among the 21 regions in the mainland[16]. According to data from the Demographic Health Survey in 2010, the national average of the infant mortality rate declined to 51/1,000; however, an improvement after the project implementation could not be identified as baseline data at the time of the BD Study was not available both on the infant mortality rate and on the water-related disease infection rate in the project locations[17].

With regard to a reduction of medical expenses, more than 80% of the respondents were not aware of its reduction and only nine households out of the 93 households answered that medical expenses had been reduced after the construction of water facilities. Thus, it can be judged that the intended effect of the project to reduce medical expenses spent on water-related diseases was limited.

3.3.2 Other Impacts

(1) Impacts on the natural environment

As a result of questionnaire survey at the community water supply department at the Ministry of Water as well as at the District / Municipality Water Engineer Offices, neither positive nor negative impacts on the natural environment were observed.

(2) Land Acquisition and Resettlement

There was neither land acquisition nor resettlement involved in this project.

[15] Source: National Bureau of Statistics
[16] Source: BD Study Report (2007)
[17] In the beneficiary survey, only seven households out of 94 facility-using households responded that infant mortality rate had declined.

(3) Unintended Positive/Negative Impacts

No other positive or negative indirect effects were observed.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Efficiency (Rating:②)

3.4.1 Project Outputs

(1) Construction of water facilities

The project provided 22 Level 1 facilities and 13 Level 2 facilities in the 22 target villages.

Table 4: The number of facilities constructed in the project
(Comparison between planned and actual numbers)

(Unit: location)

FY	2005	2009/ 2010	Difference	Changes
Type of water facility	Planned	Actual	Difference in the number	
Level 1 facility	14	22	+8	• Terminated (-3 facilities) • Changed from level 2 (+11)
Level 2 facility	18	13	-5	• Terminated (-5)
Total	32	35	+3	

Source: Planned Value: The BD Study Report (2007), Actual Value: Documents provided by JICA

A comparison between the actual and planned numbers of facilities constructed in the project shows that the Level 1 facilities increased by eight and the Level 2 facilities decreased by five. The main reasons for the changes in the numbers and termination of constructions include undesirable water quality, water shortages, and the preexistence of water facilities at the prospective construction sites (see 3.2 Effectiveness and 3.2.1 Quantitative Effects). The preexistence of water facilities was investigated through prior communication and coordination with the DAWASAs so that there were no overlaps in facility construction. However, the changes that were made based on the undesirable water quality and volume were unavoidable as it was hard to identify them in the electrical sounding survey before drilling.

(1) Soft Component Program

The project introduced the Soft Component Program in addition to constructing water facilities, and as a result, WUAs were established in all of the 20 target villages. With regard to registering WUAs, local governments had been given authority to handle registration and

administration since 2009 when the act on water supply and sanitation was amended. However, the study found that the corporate registration of WUAs had been delayed nationally as local governments had not fully developed the systems. According to the interviews with District/Municipality Water Engineer Offices, corporate registration of all 20 WUAs in the target areas will not be completed until 2015[18].

On the other hand, the District Water and Sanitation Teams (DWST hereafter) (the current Council Water and Sanitation Team: CWST), which were considered to be essential for improving community support systems by local governments, were created in all the seven Districts/Municipalities through the Soft Component Programprogram as per the original plan[19].

3.4.2 Project Inputs

3.4.2.1 Project Cost

With regard to the cost incurred to Japan with this project, the EN grant limit was 1,705 million yen (3.4 million yen for Level 1 facilities and 65 million yen for Level 2 facilities), yet the actual grant amount was 1,424 million yen (593 million yen for Term 1/2 and 831 million yen for Term 2/2), which was lower than initially planned (83% of the planned amount).

However, when the changes in the number of constructed facilities were calculated in terms of changes in costs based on the estimated unit price for one facility (3.1 million yen for Level 1 facilities and 65 million yen for Level 2 facilities), the cost required to construct eight Level 1 facilities was 24 million yen and the cost avoided by reducing Level 2 facilities was 325 million yen. Therefore, the project cost was reduced by 301 million yen as a result of the changes in the number of constructed facilities[20]. This amount is 7% higher than the difference between the E/N grant limit and the actual grant amount of 281 million yen. Thus, although the project cost was lower than initially planned, it did not correspond to the outputs as they were reduced as a result of switching from Level 2 to Level 1 after drilling due to water quality and volume problems[21].

Tanzania planned to spend 4.89 million yen on developing village access roads as part of the cost of the "Rural Water and Sanitation Project" in the budget of the Community Water Supply Division[22]. However, interviews with the Water Ministry, District/Municipality Water Engineer

[18] Water Engineer Offices in Kibaha and Kisarawe Districts and Temeke Municipality are currently screening the documents submitted by WUAs. The registration is expected to be completed between February and March 2013 (Source: Field survey results).

[19] DWST was recently renamed to be CWST (Source: Involved agency in Japan).

[20] It was calculated based on the costs of Term 1 and 2 combined that were estimated at the DD. The cost included 77,264,000 yen for Level 1 facility construction and 853,473,000 yen for Level 2 facility construction. The former was divided by 25 prospective sites and the latter was divided by 13 prospective sites to yield the unit price.

[21] Exchange gains were not validated due to lack of relevant information.

[22] Source: The BD Study Report (2007)

Offices and local residents showed that there was no record of spending that amount (on developing village access roads) in the "Rural Water and Sanitation Project" budget. There was no record of residents actually developing roads during facility construction, either.

3.4.2.2 Project Period

The project was planned to be 32.5 months long. It actually took 31 months (95% of the planned duration) and was shorter than the original plan.

Although the project period was within the plan, the project cost was exceeded; therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

The water facilities provided by the project are maintained by WUAs based on the User-Pay-Principle. Agencies involved in supporting those community organizations are the (1) Community Water Supply Division (former Rural Water Supply Division) of the Ministry of Water, (2) Regional Water and Sanitation Team (hereafter RWST), and (3) CWST and Water Engineer Office including the District/Municipality Water Engineer (hereafter DWE) (Figure 4). There is no major organizational change in the framework for maintenance as shown in Figure 4. The Rural Water Supply Bureau of the Ministry of Water was actually renamed as the Community Water Supply Division and the regional water engineer that used to be a regional agency of the Ministry of Water is now a part of the regional government, following the decentralization trend. In addition, DWSTs that were formed under local governments (District/Municipality) were recently renamed as CWST. The team has not been active so far as described in the following sections. Administrative support is being provided to communities by District/Municipality Water Engineer Offices to complement the CWST activities[23].

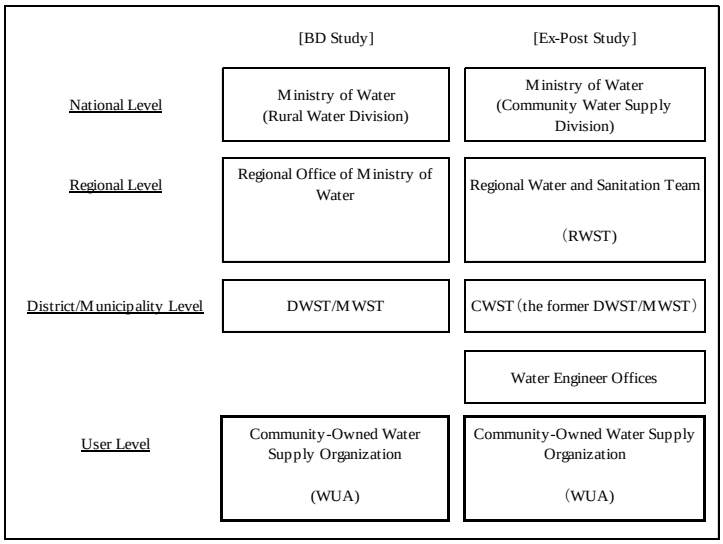

Figure 4: Systems for Water Facility Maintenance (comparison between the BD Study and the Ex-Post Evaluation Study)
(The figure was created by the evaluator).

[23] With regard to the administrative services by local municipalities, the systems based on the conventional

(1) Community Water Supply Division of the Ministry of Water

The Community Water Supply Division is responsible for the rural water supply in the Ministry of Water. The Division is expected to plan and implement projects for water facility development, as well as to provide technical assistance and monitoring of the activities performed by municipalities. Their roles were largely unchanged even after the implementation of the project.

The Division had 91 engineers and 352 technicians under a director at the time of the BD Study. However, in 2009 there were only one director, three deputy directors, 28 engineers, one architect, and ten technicians[24]. Although 45 staff members were allocated in 2013, the number had decreased to a total of 16 including a director, two deputy directors, eight engineers and five technicians at the time of this study. The reasons for the decrease include retirement, severance and temporary leave to obtain an academic degree[25].

The number of staff decreased to half of what it had been at the beginning of the year due to severance and other reasons although no problems were identified in either the Ministry of Water's *Water Sector Status Report* (2012) or this study. Thus, the staff allocation is hardly at a sufficient level to carry out necessary responsibilities.

(2) RWST

The roles of RWSTs were not changed before or after the project. Their roles remained to be providing local governments with instructions and support for water facility maintenance. However, it was hard to determine the relevance of the staffing level required for water facility maintenance because detailed information on current staffing and the activities of RWSTs were unavailable.

(3) Local government

1) CWST

CWSTs were founded within local governments in an attempt to reinforce the administrative services that had traditionally been provided by District/Municipality Water Engineer Offices and to practice a comprehensive approach in developing the rural water supply and sanitation subsector. The team consists of DWEs, a planning officer of local government, a health officer, and a community development officer. The team was originally expected to play a central role

District/Municipality Water Supply Engineer Office framework are now shifting to the monitoring systems governed by CWST, therefore concrete information was not available on personnel and financial conditions.

[24] Source: Interviews with directors of the Community Water Supply Divisions.

[25] The reduction includes 6 retirements, 14 severances and transfers, 5 deaths and a temporary leave to obtain an academic degree (Source: Interviews with deputy directors of Community Water Supply Division).

in supporting communities by performing regular monitoring and follow-ups on operation and maintenance by local communities and facilitating communication and partnership among stakeholders[26].

CWSTs continue to play a central role in maintenance at the time of this study. The questionnaire survey conducted in six districts and municipalities identified the existence of CWSTs with an allocation of six staff members on average. However, CWSTs are composed of members who are senior officials with multiple responsibilities and officials from different divisions. Therefore some CWSTs cannot spare time for the intended activities in the plan and their activities are limited to quarterly meetings while others are effectively inactive. Thus, the field study concluded that CWSTs did not satisfy their expected functions and roles. The questionnaire survey conducted among Water Engineer Offices found that there was room for reinforcement and improvement of CWSTs' activities as some offices were concerned that CWSTs were losing their substance[27].

2) Water Supply Engineer Office[28]

Before CWSTs were established, DWEs and technicians were directly responsible for water supply projects and services. CWSTs were expected to change their roles to be more planning, supervising and monitoring oriented[29]. However, as previously mentioned, CWSTs are composed of members who are leading other organizations and are not fully functioning as working teams that are actually able to visit communities regularly and perform monitoring. On the other hand, DWEs and technicians at the Water Supply Engineer Office were taking initiative in community-based monitoring of facility maintenance at the time of the Ex-Post Evaluation Study.

District/Municipality Water Supply Engineer Offices allocate a few technicians and administrative staff under DWEs. The study found that the six target offices allocated one or two engineers and one to nine technicians. The staffing level varies at each District/Municipality while two out of the six target offices had fewer staff members than the number found at the beginning of the project. High turnover seems to contribute to this chronic staff shortage in rural areas as it is pointed out in the Ministry of Water's *Water Sector Status Report* (2012).

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[26] Source: The BD Study Report (2007), Documents provided by JICA, and the Ex-Ante Evaluation Study Report for the Rural Water Supply and Sanitation Capacity Development Project in Tanzania (2007)

[27] The Ministry of Water's Water Sector Status Report (2012) also identifies staff shortages in local government as one of the problems in implementing WSDPs.

[28] The Water Supply Engineer Office is founded within local governments. CWST, on the other hand, is a council with DWE as the chair (Source: The BD Study Report (2007) and the Ex-Ante Evaluation Study Report for the Rural Water Supply and Sanitation Capacity Development Project in Tanzania (2007)).

[29] Source: The Ex-Ante Evaluation Study Report for the Rural Water Supply and Sanitation Capacity Development Project in Tanzania (2007)

Table 5: Technical staff allocation (Comparison with the BD Study) (Unit: person)

	2007			2013			Change
District/Municipality	Engineer	Technician	Total	Engineer	Technician	Total	
Kidondoni Municipality	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Illala Municipality	1	13	14	N.A.	N.A.	N.A.	N.A.
Temeke Municipality	2	11	13	14		14	＋
Kiwarawe District	2	14	16	1	9	10	－
Kibaha District	N.A.	N.A.	N.A.	2	1	3	N.A.
Bagamoyo District	1	8	9	2	3	5	－

Source: The Ex-Ante Evaluation Study Report for the Rural Water Supply and Sanitation Capacity Development Project in Tanzania (2007), the results of the questionnaire survey at the time of the Ex-Post Evaluation Study

(2) WUA

The plan specified the major roles of WUAs to be performing operation, maintenance and repairs on facilities as well as setting and collecting the water tariff. The Ex-Post evaluation Study found that WUAs continued to play the same roles. At the time of this study, 16 out of 20 WUAs (80%) were actively engaged in the activities including four of the seven WUAs (57%) in charge of Level 1 facilities and 12 of the 13 WUAs (92%) in charge of Level 2 facilities[30]. In those active WUAs, all of the facility-using households are WUA members as originally planned. The eight WUAs that responded to the questionnaire survey elected officials by accepting candidates (4WUAs, 50%) or by voting (3WUAs, 38%) and allocated eight officials on average at the time of the Ex-Post Evaluation Study[31].

Therefore, among the active WUAs, the staff allocation is at a sufficient level to maintain water facilities as intended in the plan.

3.5.2 Technical Aspects of Operation and Maintenance

(1) Community Water Supply Division of the Ministry of Water and RWST

In pursuing maintenance of the facilities provided by the project, the Community Water Supply Division of the Ministry of Water and RWSTs are expected to have the capacity to provide Districts and Municipalities with monitoring training as well as actually monitor their activities at the time of the Ex-Post Evaluation Study. According to the results of the interviews with the Ministry, training was given to Districts and Municipalities for a few days when implementing the WSDP. The Ex-Post Evaluation Study also found that such training was continuously, though not regularly, given to Districts and Municipalities. In the training sessions,

[30] Source: Results of field studies and telephone interviews conducted during the Ex-Post Evaluation Study.
[31] Officials are appointed by a village chief in the other WUA (Source: Results of the questionnaire survey of WUAs).

trainees learn how to utilize the maintenance manuals and are encouraged to perform monitoring so that they can identify problems at an early stage. On the other hand, the Division ensures the progress of the project by contacting DWEs by phone or email, and organizing an annual meeting to provide opportunities for involved agencies to discuss issues on water facility operation and maintenance[32].

Thus, the Community Water Supply Division largely retains the capacity required for facility maintenance.

(2) Local government

1) CWST

CWSTs were expected to plan, supervise, and coordinate the facility operation and maintenance activities led by communities in cooperation with DWEs. CWSTs are composed of staff members with interdisciplinary backgrounds who are often at the top of different sectors and thus considered to have extensive knowledge and experience in various fields. Some of the Districts/Municipalities that were interviewed in this study organized Minor CWSTs[33] under CWST with ten technical workers to supervise community-led activities on behalf of CWSTs. However, as described above (see "3.5.1 Institutional Aspects of Operation and Maintenance" of "Sustainability"), there are increasing concerns among Water Supply Engineer Offices that CWSTs were not functioning and losing their substance as organizations, and hence individual knowledge and expertise are not fully incorporated in the actual implementation, operation and maintenance of water facilities.

Building capacity to implement and operate rural water supply projects has been one of the priorities of development programs in Tanzania. In support of the country's development efforts, the Japan International Cooperation Agency (JICA) implemented the Rural Water Supply and Sanitation Capacity Development Project (RUWASA-CAD, Phase 1), which is a technical assistance project for public agencies governing rural water supply projects including CWSTs, from 2007 to 2010 along with this project. Phase 1 was a three-year project for municipal employees from the Ministry of Water, DWSTs and Basin Water Offices and aimed to enhance their capacity to implement water supply projects and maintain water facilities. Phase 2 was launched in 2011 to improve and spread the training package developed during Phase 1 throughout the country with a view to further reinforce and improve CWSTs' functions.

[32] The vice minister of the Minister of State and related officials of the Ministry of Water at Regions, Districts, Municipalities are involved in the annual meeting (Source: The results of the interview with the Community Water Supply Division of the Ministry of Water).

[33] Bagamoyo District organizes the Minor CWST. This Minor CWST takes initiative in performing monthly checkups in the District (Source: The results of the interview with concerned Divisions).

2) Water Supply Engineer Office

Most of the six target District/Municipality Water Supply Engineer Offices monitor WUAs' activities on a regular or an irregular basis (Table 6)[34]. They normally respond to WUAs' requests for support within a few days to three weeks though there is some variation among the Water Supply Engineer Offices. The interviews with them showed that they understood the importance of regular monitoring of communities and providing technical assistance. However, many of them provide support irregularly or only upon request due to their financial condition, availability of transportation, and the number of water facilities in their jurisdiction. Thus, the study revealed that reinforcing administrative support remained a priority[35].

In the questionnaire surveys conducted among the six District/Municipality Water Supply Offices, five of them reported they changed parts or repaired facilities for WUAs on a regularly or irregular basis as described in Table 6. The surveys of WUAs also confirmed that technical assistance was provided to communities as two of the three sites that had defects in the past six months (all in Illala District) were repaired by their respective Water Supply Engineer Offices.

Table 6: Current status of activities at District/Municipality Water Supply Engineer Offices

	Training for WUA		Monitoring of WUA activities*a		Technical assistance	
	Regular	Irregular	Regular	Irregular	Regular	Irregular
Kibaha District	-	●	-	●	-	●
Kidondoni District	-	-	-	●	-	-
Illala Municipality	●	-	-	●	●	-
Kisarawe District	-	-	●	-	●	-
Temeke Municipality	-	-	●	-	-	●
Bagamoyo District	-	-	-	-	●	-

(Note) *a: based on the actual monitoring record

Source: The beneficiary survey results

(3) WUA

WUAs were required to have maintenance and repairing skills to operate and maintain water facilities, financial skills, and leadership and communication skills to put together residents' opinions when this project was originally planned. Among the eight WUAs where the survey was conducted, three WUAs in Pugu Station, Kitunda-Kivule, and Msongora villages experienced a breakdown of their water facilities (broken chains) in the past six months[36]. One

[34] Although no monitoring was conducted at WUAs, Bagamoyo District, one of the targets in this study invited village chiefs once every three months to hold a Standing Committee in the District and discussed problems with facility functionality and maintenance (Source: Results of the interviews with DWEs).

[35] Source: The results of the interviews with District/Municipality Water Supply Engineer Offices

[36] The survey targeted eight WUAs including three that managed Level 1 facilities and five that managed Level 2 facilities. The WUA in Pugu Station manages Level 1 facilities. The WUAs in Kitunda-Kivule and Msongora manage Level 2 facilities.

case in Pugu Station required actual repair and the local Water Supply Engineer Office performed repairs on behalf of the local communities that could not handle the situation by themselves due to lack of technical skills[37]. In addition, among the seven WUAs that were functioning at the time of the Ex-Post Evaluation Study, only 50% of the Level 1 facilities (6/12) managed by the three WUAs were functioning[38]. This also leads to the observation that the technical capacity of the WUA-led facility maintenance systems is not sufficient yet and therefore requires further reinforcement and improvement in the future.

With regard to facility maintenance and inspection, the questionnaire survey conducted among WUAs and local residents found that seven out of the eight target WUAs performed regular facility inspections[39], and organized maintenance activities with residents' participation including cleaning and mowing around the facilities (Table 7). Furthermore, seven WUAs said they developed their association's regulations during or after the project, and most of the eight WUAs held regular conferences. Seven of them (88%) actually hold regular meetings with local residents as well[40].

Table 7: Participatory maintenance activities (n=94)

	The number of response			The percentage of response		
	Total	Level 1	Level 2	Total	Level 1	Level 2
Cleaning	86	16	70	91%	84%	93%
Mowing	86	16	70	91%	84%	93%
Keeping cattle away	46	13	33	49%	68%	44%
Other	5	1	4	5%	5%	5%

Source: Results of the questionnaire survey conducted among WUAs

On the other hand, judging from the fact that all the targeted WUAs introduced either metered or fixed-rate collection systems, systems for collecting a water tariff from residents have been established in the project locations[41]. However only one WUA reported that the collection rate was high, three WUAs answered that the rate was 50 to 80%, and the other three said that the rate was low. Thus, the financial capacity is not at a sufficient level. While four WUAs of the eight target WUAs provide financial reports to residents, none of the WUAs had

[37] Other problems included troubles related to fuel shortages and did not require repairing.

[38] The number of functioning facilities are as follows: 3/6 in Msimbu village in Kiwarawe District, 1/3 in Kitunda Mzinga village in Illala Municipality, and 2/3 in Pugu Station in Illala Municipality (Source: The results of the interviews with WUAs and DWEs).

[39] Frequency of the inspection varies: daily at two WUAs (25%), once a week at four WUAs (50%), and once a months at a WUA (13%) (Source: The results of the questionnaire survey of WUAs).

[40] Frequency of the regular conference varies: monthly (1), every two months (1), every three months (1), every six months (1) and every year (1). Meetings with residents are held: every month (2), every three months (3), twice a year (1) and once a year (1).

[41] All WUAs set it at 50Tsh/20L regardless of pump types. Four out of the six WUAs managing Level 2 facilities also set a separate range at 1,500-2,500Tsh/1,000L.

any financial records including cashbooks and their financial management was not transparent. In an interview, a WUA that managed Level 1 facilities said that hand pumps frequently broke down and their reserve was not enough to cover the cost of repairs. In that case, they had to collect additional fees from each household but it was difficult and time-consuming.

Based on the above, WUAs need to reinforce and improve their repairing skills for Level 1 facilities as well as financial capacity including collecting the water tariff and managing and utilizing their reserve although they have leadership and communication skills to put together residents' opinions.

3.5.3 Financial Aspects of Operation and Maintenance

(1) Community Water Supply Division of the Ministry of Water

The Community Water Supply Division of the Ministry of Water budgeted 34,508 million Tsh (2006/2007) annually for this project at the time of planning. They spent 8,925.5 million Tsh (26%) on expanding and repairing existing facilities. The budget was reduced once in fiscal 2010 but increased again in 2011 to an amount larger than the 2009 budget (see Table 8). Budget lines for maintaining existing facilities are "expansion and repair of rural water supply facilities" and "support for local government," and the former represents about 20% of the total budget every year and the latter represents about 10% of the total budget every year though it is on the increase. Thus, the budget for maintaining existing facilities has been stable since 2008. However, concrete information was not available during the Ex-Post Evaluation Study to clarify the number and types of the facilities that were expanded or repaired and thus detailed maintenance activities remained to be largely unknown. Therefore, it is impossible to determine whether the budget allocated to the Ministry of Water was enough to maintain existing water facilities.

Table 8: Annual budget of the Community Water Supply Division of the Ministry of Water

(unit: million Tsh)

Item	06/07	07/08	08/09	09/10	10/11	11/12
Total budget (A)	34,506	66,239	86,752	120,073	105,202	137,521
Budget for facility maintenance						
Expansion and repairing of rural water supply facilities	8,925	26,904	7,926	36,325	18,560	21,175
Support for local government	795	15,044	3,399	14,044	14,452	20,585
Subtotal (B)	9,720	41,948	11,325	50,369	33,012	41,760
Ratio of the maintenance cost in the total budget (%) (B/A)	28%	63%	13%	42%	31%	30%

Source: Results of the questionnaire survey of the Community Water Supply Division of the Ministry of Water

(2) Local government

1) CWST

The Ex-Post Evaluation Study conducted questionnaire survey of the Community Water Supply Division of the Ministry of Water and six District/Municipality Water Supply Engineer Offices. However, the survey did not provide sufficient information on CWSTs' financial conditions and other related matters. Therefore, it is impossible to determine whether their budget was enough to implement the activities assigned to them.

2) Water Supply Engineer Office

The budgets of the three Districts and one Municipality Water Supply Engineer Offices that responded to the questionnaire survey had been fluctuating for the last several years. The budget amounts vary significantly depending on the District/Municipality as seen the fact that Bagamoyo District has the largest budget of 762 million Tsh for 2011/2012 while Kisarawe District has 319 million Tsh (Table 9). Some of the six target offices secure their budget for repairing existing facilities though the overall ratio of the budget for maintenance is as low as 1% with the exception of Kidondoni Municipality. This situation indicates that development and activities are largely underfunded.

On the other hand, budget execution by the Water Supply Engineer Offices has not been desirable and the year 2011/2012 generated a 200 to 500 million Tsh balance. Such a large balance is presumably caused by underdevelopment of budget related information management systems and a lack of ability to plan, manage, and execute the budget.

Table 9: Annual budget and income/expenditure at District/Municipality Water Supply Engineer Offices

(Unit: million Tsh)

District/Municipality	Item	2009/2010	2010/2011	2011/2012
Kibaha District	Income	532	606	559
	Rural Water Supply and Sanitation Project	459	482	341
	Repairing existing facilities	3	5	5
	Expenditure	395	393	102
	Balance	137	213	457
Kisarawe District	Income	397	428	319
	Rural Water Supply and Sanitation Project	NA	NA	NA
	Repairing existing facilities	NA	NA	NA
	Expenditure	103	113	126
	Balance	294	315	193
Bagamoyo District	Income	485	195	752
	Rural Water Supply and Sanitation Project	NA	NA	NA
	Repairing existing facilities	1	N/A	N/A
	Expenditure	297	122	245
	Balance	188	73	507
Kidondoni Municipality	Income	540	478	624
	Rural Water Supply and Sanitation Project	70	80	91
	Repairing existing facilities	301	119	NA
	Expenditure	358	451	425
	Balance	182	27	199

Source: Results of the questionnaire survey of the District/Municipality Water Supply Engineer Offices

(3) WUA

The interviews with WUAs found that the eight WUAs managing functioning facilities introduced either metered or fixed-rate system to collect a water tariff from facility-using households[42]. The collected money is saved in WUA bank accounts (4/8 WUAs, 50%), in accountants' residence (3/8 WUAs, 38%), and other (1/8 WUA, 13%). The amount of the reserve varied at the time of the Ex-Post Evaluation Study: three WUAs had 20,000 to 30,000 Tsh (about 10,000 to 15,000 yen) and two WUAs had over 50,000 Tsh (about 25,000 yen)[43] (Table 10). The BD Study estimated the annual cost of maintaining facilities and concluded about 50 USD/month was required to maintain a Level 1 facility, and 1,700 USD to 3,000 USD/month to maintain a Level 2 facility[44]. On the other hand, only one WUA that manages the Level 1 facilities had the minimum necessary amount of saving required for maintenance[45].

[42] According to the results of the beneficiary survey, four WUAs collect the water tariff every month. Two WUAs collect the tariff every time users take the water. Two WUAs do not set a certain day but collect the tariff randomly.

[43] Based on the exchange rate as of July 2013 at 1 yen = 0.05 Tsh. 90% of the 94/100 facility-using households pay for the water and most of them (83/85) feel the current rate is "reasonable" (Source: The beneficiary survey results). Among the WUAs that manage Level 1 facilities, the WUA in Kitunda Mzinga, Illala Municipality had less than 50,000 Tsh in their saving had two major defects in the past. Their savings might have decreased partially because they had to spend a significant portion on repairs.

[44] The BD Study estimated the costs of maintaining facilities including wages for superintendents and commissions for accountants. The cost was USD 566.6 (595,000 Tsh/year) for a Level 1 facility and USD 20,000-40,000/year for a Level 2 facility. The maintenance costs of Level 2 facilities vary depending on the facility (Source: The BD Study Report, 2007).

[45] Concrete analysis of WUAs' financial capacity requires not only the amount of reserve but also the payment

Thus, most of the eight surveyed WUAs do not have the financial capacity to pursue maintenance work.

Table 10: Amount of reserve (by facility type)

Saving	Level 1	Ratio	Level 2	Ratio
Under 50,000 Tsh (about 2,500 yen)	1 WUA	33%	-	-
50,000- 99,999 Tash (about 2,500- 5,000 yen)	-	-	-	-
100,000-19,999 Tsh (about 5,000-10,000 yen)	-	-	-	-
200,000-299,999 Tsh (about 10,000-15,000 yen)	-	-	3 WUA	67%
300,000-399,999 Tsh (about 15,000-50,000 yen)	-	-	-	-
400,000-499,999 Tsh (about 20,000-25,000 yen)	-	-	-	-
Over 500,000 Tsh (about 25,000 yen)	1 WUA	33%	1 WUA	17%
Unknown	1 WUA	33%	1 WUA	17%
Total	3 WUA		5 WUA	

Source: Results of the questionnaire survey of WUAs

3.5.4 Current Status of Operation and Maintenance

The nonfunctioning rate of the level 1 facilities constructed in this project was 55% (12/22 facilities), which was higher than the 33.9% of the national average of Tanzania[46] as well as the 36% of the Sub-Saharan average[47]. The high nonfunctioning rate of the Level 1 facilities is explained by the following reasons.

(1) Dysfunctional WUA and lack of organizing capacity

In this project, 22 Level 1 facilities were constructed in seven villages and a total of seven WUAs were created to manage them. Among them, four villages did not have WUA and six of the ten facilities in the villages were not functioning[48]. On the other hand, half of the 12 facilities are not functioning in the other three villages with active WUAs. Thus, the high nonfunctioning rate of the Level 1 facilities provided by this project can be attributed not only to the absence of WUAs but also to the lack of organizing capacity at the existing WUAs.

(2) Lack of financial capacity of WUA

While WUAs collect a water tariff from residents, many sites do not achieve high collection rates. The money is saved in WUA accounts or accountants' residence after collecting, but they do not make financial statements. Thus the usage and balance of the collected money are not

situation of wages and fees in the past (flow). However as previously described, all of the target WUAs had no financial record including cash book and evaluation based on the past financial records was impossible.

[46] Source: Water Sector Status Report (2012, Ministry of Water)

[47] Source: Rural Water Supply Network

[48] An elementary school was operating and maintaining facilities on behalf of a WUA at one of the four functioning sites (Source: The results of the on-site survey).

managed adequately. The study found that Level 1 facilities were likely to have more defects including broken chains because residents use them frequently. If WUA cannot afford the repair cost with their reserve, they have to collect money every time the facility breaks down so that they can pay for repairs. However, lack of understanding among residents about the importance of maintenance prevents prompt collection and results in the delay of the overall repairing process. It is quite possible that WUAs' financial problems affected their responses to defects.

(3) Lack of partnership between WUA and local government

Five of the eight surveyed WUAs (63 %) report problems to District/Municipalities. However, only one of the three WUAs that manage Level 1 facilities reports to local governments. It indicates that notification, reporting and consultation are not fully exercised. Likewise, local governments were not completely engaged in monitoring facility sites through patrolling and providing technical assistance because CWSTs were not functioning and losing their substance, and Water Supply Engineer Offices were not ready to respond. Thus, the lack of partnership between WUAs and local governments could have delayed the identification of problems and caused delayed reaction with proper solutions to defects.

On a related note, pump accessories were broken but left unrepaired for a long time in some of the nonfunctioning facilities in a target village because there were a few other water facilities provided by other donors in the neighborhood[49]. This problem was identified in only one of the seven villages where Level 1 facilities were constructed and it is hardly considered a factor to affect the maintenance of Level 1 facilities while the existence of alternative water sources could be one of the causes of prolonged downtime of facilities.

On the other hand, all of the Level 2 facilities were functioning (100% functioning rate), substantially exceeding the past functioning rates in the two target Regions (Coast Region: 35%, Dar Es Salaam Region: 77%). Such high functioning rate can be explained by the following reasons.

(1) Durability of the facility

The facilities are only five years old; therefore defects are unlikely to appear.

(2) Familiarizing facility maintenance and inspection

Contractors gave instructions on using generators and pump control boxes and consultants gave instructions on the maintenance of piping in the control house, distribution tanks, duct lines and flow meters when they completed and delivered Level 2 facilities. The Ex-Post

[49] It is Minazimikinda village (1/2) in Kibaha District (Source: The results of the interview with DWEs).

Evaluation Study found that four of the five WUAs (80%) that were interviewed continued to use the instruction manuals given with the facility delivery. At two of the eleven Level 2 facilities where the facility condition survey was conducted pumps were locked and fences were built around the sites. Such proper maintenance and inspection practices based on instruction manuals contributed to preventing troubles and allowed desirable operational conditions[50].

In summary, although problems were identified in local governments' support systems, the financial conditions of the Community Water Supply Division of the Ministry of Water, local governments and WUAs, and maintenance conditions of Level 1 facilities, active involvement of residents in their maintenance activities was observed at some sites as seen in the example of replacing hand pumps with electric pumps at the expense of residents[51] in addition to the fact that Level 2 facilities are functioning well. Judging from this, sustainability of the effect manifested in the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This Project aimed to increase water supply coverage in the Coast Region and Dar es Salaam Peri-Urban. It developed water facilities at the designated sites and formed WUAs to secure sustainable maintenance and operation of water facilities. The objective of the project is highly consistent with Tanzania's national development policy, development needs, as well as the ODA policy that Japan upholds. The population with access to a water supply has only increased to 74% of the target value due to changes in construction plans during the project period and a high non-functioning rate of the Level 1 facilities. However, the intended effects of this project have been observed as follows: some WUAs in the project locations replaced hand pumps with electric pumps at their own initiative; reduced water-fetching workloads resulting in a revitalization of the local economy in some of the project locations. The efficiency of the project is judged to be fair based on the fact that the project cost was higher than planned considering the decrease of the output while the project was executed within the planned period. With regard to the operation and maintenance of water facilities, the functioning rate of the Level 1 facilities is 45%, which is lower than the national average of 66%. Also, there is a need for reinforcement and improvement of technical and financial skills of WUAs that play central roles in facility operation and maintenance and support systems by the local governments. However, the functioning rate of the Level 2 facilities constructed by the project was 100% at the time of the Ex-post Evaluation Study, and that exceeds the average functioning rate in all of

[50] The rate of utilizing instruction manuals among the WUAs managing level 1 facilities is 33% (1/3 WUAs).

[51] Kitunda-Kivule village and Pugu Station No.1 village in Illala Municipality switched from hand pumps to electric pumps (Source: The results of the interviews with WUAs and DWEs).

the project targeted areas. Therefore, sustainability of the project effect is judged to be fair.

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

4.2. Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Reinforcing organizing capacity at WUAs

The functioning rate of Level 2 facilities was 100%, which is higher than the 35% of the Coast Region and the 77% of the Dar Es Salaam Region. On the other hand, the functioning rate of Level 1 facilities was 45%, which is much lower than the national average of 66%. Based on the User-Pay-Principle under the policy of the Tanzanian government, the facilities developed in this project were expected to be operated and maintained by local residents in the project locations where the facilities were constructed. However, in reality some facilities were not functioning because they were not maintained properly due to a lack of repairing and mending skills and the financial capacity of the WUAs. Reinforcing the organizing capacity of the WUAs that maintain multiple facilities in each village is thus essential to pursue repairing duties on nonfunctioning facilities and to keep up the operation of functioning facilities. Actual solutions to this are: to ① encourage allocation of technical staff at WUAs, ② provide technical training to them, ③ instruct executives and accountants of WUAs on financial management methods, and ④ organize awareness-raising activities for communities on the issues such as water and health and sanitation and health.

(2) Reinforcing organizing capacity at local governments

WUAs are responsible for reporting regularly on their facilities operation to local governments in addition to performing routine operation and maintenance of the facilities. On the other hand, CWSTs and local governments were expected to check on the operational status of water facilities in their jurisdictional Districts and Municipalities based on the reports of the local communities, to provide assistance to communities when they cannot handle repairing by themselves, and to monitor WUAs activities. However, officials in CWSTs usually have multiple responsibilities in different departments while supervising monitoring of rural water supply facilities in local governments. As a result, many of them cannot spare enough time for the monitoring activities. District/Municipality Water Supply Engineer Offices are, on the other hand, providing technical training and operational instructions by visiting local communities under such conditions. However, their activities are greatly affected by the staffing levels, the financial situation of the offices, the availability of transportation, and the number of jurisdictional areas and water facilities; therefore regular monitoring is not necessarily ensured.

Thus, revitalizing CWSTs is essential for improving the operation of the water facilities

provided by the project and for maintaining and increasing the water supplied population as intended in the project. In order to do so, it is necessary to: ① clarify the roles and positions of CWSTs and Water Supply Engineer Offices, and ② reinforce and improve their capacity for implementing activities based on their responsibilities.

4.2.2 Recommendations to JICA

No recommendations.

4.3 Lessons Learned

(1) Ensuring coordination of projects among implementing agencies

The BD Study examined if other organizations were planning to start aid programs in the project target areas and ensured in advance that there were no existing projects in the prospective sites. However, it turned out that there were projects sponsored by other agencies after this water supply project was launched. As a result, construction plans had to be changed and the intended water supply coverage was reduced. Also, some water facilities provided by the project were broken and left unrepaired at the sites where there were alternative water sources. The availability of alternative water sources could thus prolong downtime. Therefore, it is necessary to request implementing agencies to research preexistence of water facilities and other organizations' construction plans in the project target area as well as to ensure thorough coordination with other projects.