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| Country Name | The Project for Enhancement of Water Supply Management of Zanzibar Water Authority Project for Enhancement of Water Supply Management of Zanzibar Water Supply Authority Phase 2 |
| United Republic of Tanzania | |

I. Project Outline

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| Background | <p>In the urban area of Zanzibar, the piped water supply service started in the 1920s and groundwater has been used as one of water sources. However, due to the lack of financial resource, those water supply facilities had not been sufficiently maintained, which had led to a shortage of the system's water supply capacity. Under those circumstances, a grant aid project of "Zanzibar Urban Water Supply Development" was implemented from 2006 to 2010, in order to increase the water supply capacity. In addition, JICA conducted a technical cooperation project "Enhancement of Water Supply Management of Zanzibar Water Authority" (the Phase 1 project) from 2008 to 2010, which included the establishment of the fee collection system. The combination of the high leakage from the deteriorated distribution network and the low fee collection ratio had had negative impacts on the operation by the Zanzibar Water Authority (ZAWA). With an aim to improve the quality of service provided by ZAWA, further enhancement of the water supply management by ZAWA was to be conducted.</p> | | | | |
| Objectives of the Project | <p>Through (i) strengthening information management capacity, (ii) strengthening human resource management capacity, (iii) strengthening customer management capacity (iv) strengthening leakage reduction activities and others, the project aimed at strengthening the management capacity of ZAWA, thereby contributing to improvement in water supply services.</p> <p><Phase 1></p> <ol style="list-style-type: none"> Overall Goal: ZAWA'S financial fundamentals necessary for autonomous water supply authority are established. Project Purpose: Water tariff billing and collection system of ZAWA is established to the satisfaction of its customers. <p><Phase 2></p> <ol style="list-style-type: none"> Overall Goal: ZAWA's water supply services are improved. Project Purpose: ZAWA's management capacity through NRW reduction activities is improved. | | | | |
| Activities of the Project | <ol style="list-style-type: none"> Project site: Unguja, Zanzibar Main activities: <ul style="list-style-type: none"> <Phase 1> (i) establishing a customer administration system, (ii) strengthening of capacity of billing, tariff collection and claim handling, and others <Phase 2> (i) strengthening information management capacity, (ii) strengthening human resource management capacity, (iii) strengthening customer management capacity and (iv) strengthening leakage reduction activities Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Japanese Side</p> <p><Phase 1></p> <ol style="list-style-type: none"> Expert: 8 persons Training in Japan: 20 persons Equipment: GPS, Customer management set, GIS software, Account software, Payroll software, Borehole water meter, Water meter, Water supply materials, GIS software, PC & printers, Vehicles motorcycle and others. Local Cost: Local consultant fee, secretary fee, fuel cost for supplied vehicle, communication expense and others. <p><Phase 2></p> <ol style="list-style-type: none"> Experts: 20 persons Training in Japan: 20 persons Training in the third country (Jordan): 3 Equipment: Water supply equipment and office equipment Operating cost: general operating expenses, procurement of equipment, local consultant </td> <td style="width: 50%; vertical-align: top;"> <p>Tanzanian Side</p> <p><Phase 1></p> <ol style="list-style-type: none"> Staff allocated: 10 persons Land and facilities: Office space for the experts, the counters for cashers, the front office, the training yard, bill printers, back-up server, 500 water meters for customers, materials for plumbing, furniture, papers and others <p><Phase 2></p> <ol style="list-style-type: none"> Staff allocated: 97 persons Land and facilities: Project offices Operation cost: Installation cost of water meters, valves and flow meters, and daily allowance for staff members. </td> </tr> </table> | | | <p>Japanese Side</p> <p><Phase 1></p> <ol style="list-style-type: none"> Expert: 8 persons Training in Japan: 20 persons Equipment: GPS, Customer management set, GIS software, Account software, Payroll software, Borehole water meter, Water meter, Water supply materials, GIS software, PC & printers, Vehicles motorcycle and others. Local Cost: Local consultant fee, secretary fee, fuel cost for supplied vehicle, communication expense and others. <p><Phase 2></p> <ol style="list-style-type: none"> Experts: 20 persons Training in Japan: 20 persons Training in the third country (Jordan): 3 Equipment: Water supply equipment and office equipment Operating cost: general operating expenses, procurement of equipment, local consultant | <p>Tanzanian Side</p> <p><Phase 1></p> <ol style="list-style-type: none"> Staff allocated: 10 persons Land and facilities: Office space for the experts, the counters for cashers, the front office, the training yard, bill printers, back-up server, 500 water meters for customers, materials for plumbing, furniture, papers and others <p><Phase 2></p> <ol style="list-style-type: none"> Staff allocated: 97 persons Land and facilities: Project offices Operation cost: Installation cost of water meters, valves and flow meters, and daily allowance for staff members. |
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| Project Period | <p><Phase 1> January 2008-December 2010</p> <p><Phase 2> November 2011-October 2016</p> <p>(Extended period: November 2015-October 2016)</p> | Project Cost | <p><Phase 1></p> <p>(ex-ante) 303million yen</p> <p>(actual) 248 million yen</p> <p><Phase 2></p> <p>(ex-ante) 348 million yen</p> <p>(actual) 624million yen</p> | | |
| Implementing | Zanzibar Water Authority (ZAWA) | | | | |

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| Agency | |
| Cooperation Agency in Japan | NJS Consultants Co., Ltd. |

II. Result of the Evaluation

<Constraints on Evaluation>

- Face to face interviews were not conducted due to the COVID-19 pandemic, but information for this ex-post evaluation was collected through emails, telephone interviews and web meetings.

<Special Perspectives Considered in the Ex-Post Evaluation >

- As the Phase 1 and Phase 2 projects share the common goal, the indicators for the Phase 2 project are verified to check the level of achievement of the Project Purpose and the Overall Goal.
- Continuation of the project purpose was analyzed as factors to achieve the Overall Goal.

1 Relevance

<Consistency with the Development Policy of Tanzania at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Tanzania. "Zanzibar Vision 2020", formulated in January 2002, aimed at ensuring access to safe water. In order to do so, specific goals were put in place, such as establishing a management system to supply reliable water at acceptable rates, and establishing a system for billing and collecting water tariff efficiently and effectively for all water users.

<Consistency with the Development Needs of Tanzania at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Tanzania for enhancing water supply management in Zanzibar. As described above ("Background"), the combination of the high leakage from the deteriorated distribution network and the low fee collection ratio had had negative impacts on the operation by ZAWA.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with the Japan's ODA policy to Tanzania. At the time of the Phase 1 project, "Improvement of living environment in urban areas through the development basic infrastructure, including water line" is one of the priority areas in the "Country Assistance Program for the United Republic of Tanzania" (2000). At the time of the Phase 2 project, "Water Supply and Water Resource Management Program" is placed under the "Country Assistance Program for the United Republic of Tanzania (2008)". "Enhancing institutions/organizations and facilities for strengthening water resource management capacity" was targeted.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The indicator 1 was achieved as the zoning plan of distribution network was adopted in the design work of a project supported by the African Development Bank (AfDB) based on the advice of the experts under the project. The indicator 2 was partially achieved, as Annual Business Plan (ABP) was developed and the annual budget was approved based on ABP by the Ministry of Lands, Housing, Water and Energy (MLHWE); however, the budget execution was not materialized due to the lack of actually available fund in the government of Zanzibar as whole.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The effects of the project have continued at the time of ex-post evaluation. As mentioned above, the status of continuation of the project effects at the time of ex-post evaluation were analyzed as the factors affecting the achievement levels of the verifiable indicators of the Overall Goal (such as improvements in the water supply services and the billing and collection in the Model System).

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved.

Water supply services have partially improved (Indicator 1), as the supply hours in the Model system (the number of customers are approximately 9,400 households) has achieved the target while the supply pressure has not reached the target. After the completion of the project, the project supported by AfDB as mentioned above, both of the supply hours and pressure have improved. However, in some areas, old existing pipes have not been replaced. That is why the pressure has not attained the target yet. As a measure to this problem, ZAWA is expecting to start a new loan project with JICA (one of the components is replacement of old pipes). Also, a loan project with the Indian government has been signed and has started.

The billing and collection in the Model System have improved (Indicator 2). However, ZAWA recognized that more improvement is required through introducing new mode of payment like mobile/bank payment for the customer conveniences. ZAWA has taken some measures. First, ZAWA has finalized the integration with some local banks like CRDB Bank Plc; however, currently ZAWA has been waiting for approval of MLHWE for ZAWA to open bank account to the private bank operators. Also, ZAWA has started using mobile payment which is called "Zantel easy pesa" (officially launched on 25th September, 2020).

The outputs of the Phase 2 project have continued after the project completion. During the project implementation, the Phase 2 project enhanced the capacity for information management. Based on the improved management information system (MIS), the five-year plan as well as ABP have been prepared and the necessary budget based on these plans have been approved by MLHWE in the government. Following the capacity development for human resources under the project, ZAWA revised organization structure and staff allocation, and since 2013, ZAWA received the new salary scheme. After the capacity development for customer management under the project, ZAWA updated the database and "SBM2 (Smart Billing Manager Two)", and also enabled the third parties' (mobile payment service providers) to integrate their system into ZAWA's database and SBM2 in a compatible manner and new recruitment for continuing supporting the customer management activities. The project enhanced the capacity to plan and implement leakage reduction during the project implementation, and ZAWA transferred the knowledge and standard procedure to the AfDB-supported project as stated above and to the other ZAWA daily practices.

<Other Impacts at the time of Ex-post Evaluation>

There has been no negative impact on the natural environment. No land acquisition and resettlement occurred.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

| Aim | Indicators | Results | | | | | | | | | | | | | | | | | | | | |
|--|--|---|----------|----------|--------|------|------|------|--|------------------------|----|----|----|----|----|--|-------------------------|----|----|----|----|----|
| (Project Purpose) ZAWA's management capacity through NRW reduction activities is improved. | Indicator 1: ZAWA's NRW reduction project, in collaboration with JICA Technical Cooperation, is commenced. | Status of the Achievement: Achieved (continued) (Project Completion) The zoning plan of distribution network was adopted in the design work of the AfDB project based on the advice of the experts under the project. (Ex-post Evaluation) Verified under the Overall Goal. | | | | | | | | | | | | | | | | | | | | |
| | Indicator 2: ZAWA's ABP with annual planned budgets is allocated with due consideration of overriding priority for ZAWA's utility operation. | Status of the Achievement: Partially achieved (continued) (Project Completion) ABP was developed and annual budget was prepared based on it; however, the budget execution was hampered by the lack of fund. (Ex-post Evaluation) Verified under the Overall Goal. | | | | | | | | | | | | | | | | | | | | |
| (Overall Goal) ZAWA's water supply services are improved. | Indicator 1: Water supply services in the Model System are improved in terms of supply hours and water pressure as follows. · Supply hours (average): 8 hrs/day (baseline) 12 hrs/day (target) · Supply pressures (minimum at No.8): 2 mH2O (baseline) 7 mH2O (target) | (Ex-post Evaluation) Partially achieved | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th></th> <th>Baseline</th> <th>Target</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Supply hours (hrs/day)</td> <td>8</td> <td>12</td> <td>8</td> <td>8</td> <td>12</td> <td>12+</td> </tr> <tr> <td>Supply pressures (mH2O)</td> <td>2</td> <td>7</td> <td>2</td> <td>2</td> <td>5</td> <td>5</td> </tr> </tbody> </table> | | Baseline | Target | 2016 | 2017 | 2018 | 2019 | Supply hours (hrs/day) | 8 | 12 | 8 | 8 | 12 | 12+ | Supply pressures (mH2O) | 2 | 7 | 2 | 2 | 5 |
| | | Baseline | Target | 2016 | 2017 | 2018 | 2019 | | | | | | | | | | | | | | | |
| | Supply hours (hrs/day) | 8 | 12 | 8 | 8 | 12 | 12+ | | | | | | | | | | | | | | | |
| Supply pressures (mH2O) | 2 | 7 | 2 | 2 | 5 | 5 | | | | | | | | | | | | | | | | |
| Indicator 2. The billing and collection in the Model System are improved as follows. · Ratio of collected/ billed customers: 16 % (baseline) 80 % (target) · Ratio of collected / billed amount: 13 % (baseline) 90 % (target) | (Ex-post Evaluation) Achieved | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th></th> <th>Baseline</th> <th>Target</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Ratio of collected/ billed customers (%)</td> <td>16</td> <td>80</td> <td>50</td> <td>60</td> <td>65</td> <td>70</td> </tr> <tr> <td>Ratio of collected / billed amount (%)</td> <td>13</td> <td>90</td> <td>60</td> <td>70</td> <td>80</td> <td>85</td> </tr> </tbody> </table> | | Baseline | Target | 2016 | 2017 | 2018 | 2019 | Ratio of collected/ billed customers (%) | 16 | 80 | 50 | 60 | 65 | 70 | Ratio of collected / billed amount (%) | 13 | 90 | 60 | 70 | 80 | 85 |
| | Baseline | Target | 2016 | 2017 | 2018 | 2019 | | | | | | | | | | | | | | | | |
| Ratio of collected/ billed customers (%) | 16 | 80 | 50 | 60 | 65 | 70 | | | | | | | | | | | | | | | | |
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Source : ZAWA

3 Efficiency

The project cost exceeded the plan (the ratio against the plan: 134%) and the project period slightly exceeded the plan (the ratio against the plan: 114%). The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

There has been policy support for the project effects to continue, including Water Policy and Water Act (2004-2006 to the time of ex-post evaluation) for the water sector directive and legislation. The "Vision 2050" (expected to be effective from 2021) shares the same objective of access to the safe water as the current Vision 2020.

< Institutional/Organizational Aspect>

ZAWA, responsible for the water services in Zanzibar, has been an independent public entity since August 2006. ZAWA has restructured the organizational structure to improve and consolidate Non-Revenue Water (NRW) reduction activities. ZAWA has split Department of Finance and Administration into two Departments of Finance and Planning, and Human Resources and Administration. It also has established a new unit of District office coordinator who will be a chief of all district offices. This restructuring has improved the efficiency and reduced the ambiguity, according to ZAWA.

The number of staff has been insufficient, as ZAWA has had a big number of unskilled staff but few skilled staff. ZAWA requested the central government to fill such vacancies, and MLHWE in the government agreed and gave permission to proceed. However, the Ministry of Finance and Planning (MOFP) could not allocate the sufficient budget due to a lack of a solid fiscal capacity and it hindered ZAWA from proceeding with this plan for recruitment.

<Technical Aspect>

ZAWA has sustained the skills and knowledge acquired by introducing relevant courses in the training system of ZAWA Training Center and other training especially senior staff and particularly on aspects of NRW, through on the job training. However, the number of skilled staff has been limited as described above.

The manuals, guidelines and materials developed under the project such as Design Manuals, Operation and Maintenance manual, Leakage Control Manual, Manual on Water Rates and Related Practices Customer Services Charter, Reduction of Illegal Water, Guideline for Disconnection Works, Bill Delivery Strategy, Awareness and Education strategy, Annual business plan, Water Demand Management Policy and strategy etc. have been used in designs for new schemes eg. Systemization and zoning of distribution networks, tariff setting as well as reference materials for other water related activities.

<Financial Aspect>

Tariff has not yet covered the cost. Unmetered tariff existed and percentage of water meter coverage have been only 20%. So, water users who paid volumetric tariff were only 20%, the rest paid fixed rate without considering the consumption volume. Although ZAWA has received subsidies from the government of Zanzibar, ZAWA has also incurred losses.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational, technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose at the project completion, as NRW reduction project was commenced based on the advices under the project, and ZAWA's annual business plan with budget was prepared, though the budget execution was hampered. The Overall Goal was achieved, since the water supply services, as well as the billing and collection have improved. As for the sustainability, slight problems have been observed in terms of the institutional/organizational, technical and financial aspects; however, there has been no problem on the policy aspect. As for the efficiency, both the project cost and project period exceeded the plan. Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Considering the limited number of skilled staff, ZAWA and the Ministry of Lands, Housing, Water and Energy (MLHWE), which supervises ZAWA and has the authority to request the approval from Ministry of Finance and Planning for ZAWA's use of governmental fund/budget, must set aside budget for the capacity building and staff recruitment in order to improve proper management of the projects and eliminating leakages in the distribution pipes to their customers, utilizing the knowledge and experience obtained through the technical cooperation project.
- ZAWA needs to assign timely supervision of water supply to improve customer management and reduce NRW. In particular, ZAWA should make efforts for expanding metering coverage even outside the Model System of the project and for shifting the tariff system from fixed-rate tariff to volumetric tariff. In this regard, ZAWA should call on MLHWE and Zanzibar Utilities Regulatory Authority (ZURA) to undertake necessary amendments of policy, act, and regulations pertaining to the water tariff, whenever it is necessary.

Lessons Learned for JICA

- Regarding the effectiveness, it is observed that water supply services have partially improved mainly because most of the pipes were very old and had leakage, which needed to be replaced. However, in some areas, old existing pipes have not been replaced which led to the lack of safe and sustainable water supply and then to less collection water tariff. In order to reach the intended project objectives and for ZAWA to improve water supply system, technical cooperation should have been formulated in conjunction with the improvement of physical facilities through financial support (either Grants or ODA Loans) under the overall design of the cooperation programme". However, this project was commenced 2 years later than the completion of the Grant Aid projects, leading less synergetic effect between the two modalities. Taking this into consideration, JICA has strategized its operations for water supply sector in Zanzibar in a more programmatic manner, where a ODA Loan project and a technical cooperation project complement to one another are currently underway in the formulation stage.
- When JICA formulates a new technical cooperation project with an aim of reducing NRW including leakage in the place where worn-out existing system is dominantly laid, it would be highly effective to consider loan or grant project in parallel with it. A financial support needs to include financing for the replacement of deteriorated distribution network to create a synergy with NRW reduction technologies, frameworks and better customer management (e.g. tariff collection) to be introduced by the technical cooperation project.



Manifold showing the water meters installed for house connection for ten households introduced by the phase 2 project (At Makadara area)



The water meter connected to single household; old style used by the phase 1 project (At Makadara area)