

Country Name	Project for Sustainable Water Supply, Sanitation and Hygiene Promotion in Zambézia Province
Republic of Mozambique	

I. Project Outline

Background	<p>Zambézia Province was the most populous province in Mozambique; nevertheless, social infrastructure was under developed. The average rate of the access to safe water in Zambézia was 28%, which was largely lower than the national average of 43% (UNDP, 2004). Also the under-five mortality rate in Zambézia was 321 per 1,000 live births. To improve this situation, about 150 deep wells with hand pumps were constructed in the northern part of Zambézia under a Japanese grant aid project, which contributed to provide facilities for safe water in eight target districts. However, it was realized that the capacity enhancement of communities to operate and maintain borehole is necessary to increase sustainable use of safe water. Under this context, sanitation infrastructure, improvement in hygiene practices, and awareness rising should be implemented in the appropriate manner to maximize the effectiveness of health status of the population in target areas.</p>											
Objectives of the Project	<p>This project aims to realize sustainable water use of existing water supply facilities constructed by Japanese Grant Aid, and improve sanitation and hygiene practice in the four target districts of Zambézia Province through the capacity development of provincial and district officers and strengthening the operation and maintenance (O&M) capacity of local communities, thereby, contributing to increase the number of functioning water supply facilities and reduce water borne disease incidence in the target districts. The project objective is set forth as follows.</p>											
	<ol style="list-style-type: none"> Overall Goal: (i) Water borne diseases incidence at target communities in the four districts in Zambézia Province are reduced, (ii) The number of functioning water supply facilities is increased in the four target districts in Zambézia Province. Project Purpose: Sustainable water use of existing water supply facilities and sanitation and hygiene practice are improved in the four target districts. 											
Activities of the project	<ol style="list-style-type: none"> Project site: <ol style="list-style-type: none"> Target district: 4 districts (Mocuba, Ile, Gile, Alto-Molocue) in Zambézia Province Target communities: 20 communities (4 in Mocuba, 6 in Ile, 4 in Gile, 6 in Alto-Molocue) Target school: 15 schools (4 in Mocuba, 3 in Ile, 4 in Gile, 4 in Alto-Molocue) Main activities: Provision of training to provincial and district officers, Participatory Community Education (PEC) animators ^(Note 1), communities and local mechanics on O&M of water supply facilities, hygiene promotion activities, establishment of models of supply chain network of spare parts, and construction of sanitation facilities (latrine) in the target schools. <p>(Note 1) PEC animators (Programa de Educação Comunitária (Program of Community Education)) are employed on contract basis by the provincial governments for capacity building of Water and Sanitation Management Committees, Maintenance Group and hygiene promoters as well as schools regarding O&M of water supply facilities and promotion of hygiene and sanitation education. PEC animators are employed from private companies and local NGOs.</p> Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Mozambique's side</td> </tr> <tr> <td>1) Dispatch of experts: 5 persons</td> <td>1) Counterpart personnel: 39 persons</td> </tr> <tr> <td>2) Acceptance of trainees in Mozambique and Brazil: Total 13 persons (2 in 2008, 2 in 2009, 9 in 2010)</td> <td>2) Land and facilities: project office</td> </tr> <tr> <td>3) Provision of equipment: Vehicle, motorcycle, survey equipment, office equipment</td> <td>3) Local cost: allocation of counterpart personnel, operation and maintenance expense for motorcycle for monitoring activities.</td> </tr> </table> 				Japanese Side	Mozambique's side	1) Dispatch of experts: 5 persons	1) Counterpart personnel: 39 persons	2) Acceptance of trainees in Mozambique and Brazil: Total 13 persons (2 in 2008, 2 in 2009, 9 in 2010)	2) Land and facilities: project office	3) Provision of equipment: Vehicle, motorcycle, survey equipment, office equipment	3) Local cost: allocation of counterpart personnel, operation and maintenance expense for motorcycle for monitoring activities.
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Ex-Ante Evaluation	2006	Project Period	February 2007 – July 2011	Project Cost	(Ex-Ante) 450 million yen (Actual) 382.6 million yen							
Implementing Agency	National Directorate of Water (DNA), Ministry of Public Works and Housing Department of Water and Sanitation (DAS), Provincial Directorate of Public Works and Housing (DPOPH) - Zambézia											
Cooperation Agency in Japan	None											

II. Result of the Evaluation

<Issues to be considered at ex-post evaluation>

Sub-indicators for Project Purpose

- In order to supplement the original indicators of project outputs and project purpose stated in the Project Design Matrix (PDM), the terminal evaluation set sub-indicators and utilized them to assess the achievement of outputs and the project purpose. The sub-indicators utilized in the terminal evaluation were not reflected to the latest PDM (PDM Ver5). Based on the above fact, this ex-post evaluation used the same sub-indicators for examining the achievement of the project purpose in order to supplement the indicators contained in the PDM.

1 Relevance

<Consistency with Development Policy of Mozambican Government at the time of ex-ante evaluation and the project completion>

This project was consistent with Mozambique's development policy "to improve the average water supply ration" as set forth in the

policy documents including the Action Plan for the Reduction of Absolute Poverty II (2006-2009), the National Water Policy (2007), and the Strategic Plan of Rural Water Supply and Sanitation (PRONASAR) (2006-2015).

<Consistency with Development Needs of Mozambique at the time of ex-ante evaluation and the project completion>

This project met the development needs of Mozambique to improve health status as well as to improve the accessibility of safe water and to decrease the child mortality rate of population in communities in the country.

<Consistency with Japan's ODA Policy for Mozambique at the time of ex-ante evaluation>

The project was consistent with Japan's ODA Policy for Mozambique at the time of 2006 addressing the development of social sector (basic human needs and basic infrastructure) including education, health and medical, water supply and hygiene, and road and bridge as one of the priority areas.

<Evaluation Results>

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

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of project completion>

The project purpose was achieved by the project completion. The key indicators such as (i) the percentage of households using potable water sources for drinking water, (ii) the percentage of households practicing appropriate hand washing, (iii) the percentage of households using sanitary latrine and (iv) the percentage of people practicing hand washing with running water after defecation achieved or mostly their respective target values in the four target districts by the project completion (see the table below for detailed information). For example, the percentage of households using potable water sources for drinking water increased in the four districts and mostly achieved the target values in 2011. In the entire four districts, the percentage of households practicing appropriate hand washing increased from 5.5% in 2007 to 48.0% in 2011, and the percentage of households using sanitary latrine increased from 31.3% in 2007 to 60.6% in 2011. Regarding the percentage of the target communities in which households use potable water sources for drinking water, the target was achieved in the four target districts. One of the reasons why some communities did not use potable water sources for drinking was that a distance from home to the water source of the project facilities was longer than the distance from home to the alternative water sources nearby such as river or hand dug wells.

<Continuation Status of the Project Effect at the time of ex-post evaluation>

The five key indicators for project purpose have shown the constant improvement in the target four districts after project completion. For example, in the entire target four districts in 2013, 60% of the households practiced appropriate hand washing and 70% of the households used sanitary latrine. Focusing on 20 target communities in the four districts, more than 80% of the target communities confirmed that households use potable water sources for drinking water in their communities in 2013. In addition, the percentage of people practicing hand washing with running water after defecation reached more than 90% in 2013 in the four target districts. The main reason for the above positive results is that the campaign for community awareness on hygiene good practices including PEC activities has been implemented continuously under PRONASAR.

<Status of Achievement of the Overall Goal at the time of ex-post evaluation>

The overall goal has been achieved. The percentage of people affected by diarrheal diseases in all four target districts reduced from 17.1% in 2007 to 6.0% in 2013 and reached the target values in all the four target districts by 2013. The number of functional water supply facilities has increased significantly as result of PRONASAR and projects of other donors such as African Development Bank (AFDB) despite the problem of acquisition of spare parts. As the percentage of functional water supply facilities increased by 29-45 percent point between 2008 and 2014 in each target district, it was confirmed that 88% of water supply facilities are operational in the entire target four districts in 2014, which met the target value. However, there is a small number of obsolete water facility equipment corresponding to 1 to 3% of the total number of facilities due to their lifetime. On the other hand, it was found that there was some limitation of the local residents' knowledge regarding safe measures to avoid water contamination in their house. Although the hygiene education was included in the PEC activities, most of the households still did not adequately cover their water containers to avoid contamination by flies, dust and other particles or microbes, and also they did not have appropriate latrine cover or in some cases there was no cover at all. Natural disasters such as flood and the condition of existing primary healthcare services in the target districts have not affected the realization of the overall goal.

<Other Positive and Negative Impacts>

The project has contributed in dissemination of PEC activities to other areas. After the project completion, PEC activities have been carried out in all districts of the Zambézia Province using the knowledge and experiences of this project as well as experiences of other donors' projects¹. No negative impact on natural environment was observed and no land acquisition and resettlement of local residents occurred by the project.

<Evaluation Results>

Both the project purpose and overall goal were achieved and a positive impact was observed. Therefore, effectiveness/Impact of the project is high.

Achievement of project purpose and overall goal

Aim	Indicators	Results					
(Project Purpose) Sustainable water use of existing water supply facilities and sanitation and hygiene practice are improved in the four target district.	(Indicator 1) The percentage of households using potable water sources for drinking water increases from 45.0% and 27.5% in Mocuba and Ile respectively to 80%, and from 39.2% and 47.5% in Alto Molocue and Gile respectively to 70%	<u>Status of achievement: mostly achieved</u> (Terminal evaluation/Ex-post evaluation) (Unit: %)					
		Target district	Target (2011)	2007	2011	2012	2013
		All	N.A.	38.5	N.A.	N.A.	N.A.
		Mocuba	80	45.0	75.0	89.4	83.5
		Ile	80	27.5	50.0	67.0	75.0

¹ For example, a program called PEC-Zonal program was launched under PRONASAR-AFDB which aimed to cover 70 communities for each district. The activities of this program focused on raising awareness to the local communities in order to improve their operation and maintenance of water sources as well as their hygiene conditions.

	in both of rainy and dry seasons by 2011.	<table border="1"> <tr> <td>Alto Molocue</td> <td>70</td> <td>39.2</td> <td>78.0</td> <td>80.0</td> <td>90.0</td> </tr> <tr> <td>Gile</td> <td>70</td> <td>47.5</td> <td>68.0</td> <td>76.0</td> <td>83.0</td> </tr> </table>	Alto Molocue	70	39.2	78.0	80.0	90.0	Gile	70	47.5	68.0	76.0	83.0																														
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	(Indicator 2) The percentage of households practicing appropriate hand washing increases from 3.8% and 2.5% in Mocuba and Ile respectively to 40%, and from 12.5% and 1.3% in Alto Molocue and Gile respectively to 30% by 2011.	<p>Status of achievement: achieved (Terminal evaluation/Ex-post evaluation) (Unit: %)</p> <table border="1"> <thead> <tr> <th>Target district</th> <th>Target (2011)</th> <th>2007</th> <th>2011</th> <th>2012</th> <th>2013</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>N.A.</td> <td>5.5</td> <td>48.0</td> <td>53.0</td> <td>60.0</td> </tr> <tr> <td>Mocuba</td> <td>40</td> <td>3.8</td> <td>43.0</td> <td>48.5</td> <td>55.0</td> </tr> <tr> <td>Ile</td> <td>40</td> <td>2.5</td> <td>52.0</td> <td>59.7</td> <td>62.0</td> </tr> <tr> <td>Alto Molocue</td> <td>30</td> <td>12.5</td> <td>41.3</td> <td>50.0</td> <td>57.1</td> </tr> <tr> <td>Gile</td> <td>30</td> <td>1.3</td> <td>58.0</td> <td>60.0</td> <td>66.2</td> </tr> </tbody> </table>	Target district	Target (2011)	2007	2011	2012	2013	All	N.A.	5.5	48.0	53.0	60.0	Mocuba	40	3.8	43.0	48.5	55.0	Ile	40	2.5	52.0	59.7	62.0	Alto Molocue	30	12.5	41.3	50.0	57.1	Gile	30	1.3	58.0	60.0	66.2						
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	(Indicator 3) The percentage of households using sanitary latrine increases by 25 points in each target communities in Mocuba, Ile by 2009 and Alto Molocue and Gile by 2011.	<p>Status of achievement: achieved (Terminal evaluation/Ex-post evaluation) (Unit: %)</p> <table border="1"> <thead> <tr> <th>Target district</th> <th>Target</th> <th>2007</th> <th>2011</th> <th>2012</th> <th>2013</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>N.A.</td> <td>31.3</td> <td>60.6</td> <td>66.5</td> <td>70.0</td> </tr> <tr> <td>Mocuba</td> <td>52.5 (2009)</td> <td>27.5</td> <td>43.0</td> <td>57.0</td> <td>66.9</td> </tr> <tr> <td>Ile</td> <td>49.2 (2009)</td> <td>24.2</td> <td>46.0</td> <td>49.4</td> <td>50.0</td> </tr> <tr> <td>Alto Molocue</td> <td>69.1 (2011)</td> <td>44.1</td> <td>84.7</td> <td>93.0</td> <td>95.0</td> </tr> <tr> <td>Gile</td> <td>51.3 (2011)</td> <td>26.3</td> <td>71.0</td> <td>71.0</td> <td>75.0</td> </tr> </tbody> </table>	Target district	Target	2007	2011	2012	2013	All	N.A.	31.3	60.6	66.5	70.0	Mocuba	52.5 (2009)	27.5	43.0	57.0	66.9	Ile	49.2 (2009)	24.2	46.0	49.4	50.0	Alto Molocue	69.1 (2011)	44.1	84.7	93.0	95.0	Gile	51.3 (2011)	26.3	71.0	71.0	75.0						
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Source: Terminal evaluation report, interview with counterparts.

3 Efficiency

Both the project cost and project period were within the plan (85% and 100%), and activities of the project were also completed. Therefore, efficiency of the project is high.

4 Sustainability

<Policy Aspect>

The Government of Mozambique has continued to support the sustainable use of all water supply facilities and improving the hygiene and sanitation under PRONASAR together with the assistant of AFDB.

<Institutional Aspect>

(1) O&M of water supply facilities

Three parties such as district government, community and local mechanics are responsible for O&M of water supply facilities. District Services of Planning Infrastructure (SDPI) of the target four districts is in charge of monitoring and maintenance of water supply facilities by local mechanics. Each community is responsible for minor repair and replacement of consumable items of water supply facilities. In addition, the local mechanics support the community for repair of water supply facilities including arrangement of spare parts. The number of district government officers who engage in monitoring of O&M of water supply facilities (Mocuba: 4, Ile: 2, Alto Molocue: 6, Gile: 2) is limited in order to cover the huge extension of the province and the large number of communities in the target area. At community level, Water and Sanitation Management Committees and Maintenance Group were established at target 20 communities for maintenance of the facilities. They are in charge of regular cleaning, instructing users to respect the rule, collection of contribution for maintenance, bookkeeping, holding regular meeting with the users, sharing information about maintenance funds, etc. The number of local mechanics is sufficient at all communities as there are 10-12 mechanics at each district.

(2) Sensitization of hygiene and sanitation practices

Regarding the sensitization of hygiene and sanitation practices, the works are conducted by PEC animators who are employed by Department of Water and Sanitation, Provincial Directorate of Public Works and Housing (DAS/DPOPH) of Zambézia Province, and SDPI of the target four districts monitors the sensitization activities implemented by PEC animators. The sensitization activities are mostly about hygiene practices such as appropriate use of toilets and hand wash. The frequency of activities depends on the availability of the allocated budget. At the time of ex-post evaluation, PEC animators have been employed continuously by the provincial government.

(3) Supply chain network of spare parts

The project established the model of supply chain networks and identified local mechanics to whom technical training was provided. In this model, the stocks of spare parts were to be stored at each of the maintenance group, local mechanic and district government office. However, the above supply chain network did not work as expected because the salesmen who committed to supply the spare parts stopped the spare parts business due to its low profitability and embraced more profitable items. This resulted in difficulties in procurement of spare parts to be imported from neighboring countries. With respect to this issue, the district governments together with the central government and development partners including JICA have been studying the best mechanism to establish a spare part supply chain in referring to the good practice in other countries. Currently, JICA has been implementing a technical cooperation project for “Promoting Sustainability in Rural Water Supply, Hygiene and Sanitation in Niassa Province (PROSUAS) (2013-2017)”. In this project, the structure of spare parts supply chain is proposed, in which donors and cooperation partners are responsible for the acquisition/supply of spare parts stock to the central government, instead of the local mechanics and salesman who prioritize profits. This new mechanism is expected to mitigate the issue of securing supply of the spare parts.

<Technical Aspect>

The government officers of the three target districts such as Ile, Alto Molocue, and Gile districts visit the target communities once a month for monitoring of O&M of water supply facilities and hygiene promotion activities, but Mocuba district discontinued the monitoring activities by the time of ex-post evaluation. Due to limited number of staff and shortage of means of transportation, the monitoring activities have not been conducted in appropriate timing, and sometimes the governments of the target districts are unable to make an effective intervention to solve the problem of the local communities. The members of Water and Sanitation Management Committee and Maintenance Group maintain the sufficient knowledge and skills for minor repair of water supply facilities by mutual learning among members. While the knowledge and skills of the local mechanics are insufficient due to the fact that the training sessions that they initially attend only taught how to fix the most common and frequent damages and did not include the subjects on how to encounter more complex and new types of damages. The promotion of hygiene and education activities in the target schools are being done through the creation of hygiene groups which include students of 3rd, 4th and 5th grades. Several training program have been provided for the government offices as well as Water and Sanitation Management Committee members and local mechanics to maintain and upgrade the knowledge and technical skills for monitoring and O&M of water supply facilities. The manuals for water sources maintenance prepared by the project are being utilized.

<Financial Aspect>

Although no quantitative data for the annual budget of district and provincial government was available, it was confirmed that there is no sufficient budget for monitoring and maintenance of water supply facilities provided by the government except the budget for PEC activities. This resulted in the shortage of government staff and transport, etc. Though local communities have established a stable revenue source from annual user fee (average of annual user fee of 20 communities: MZN 2,602/year²) and utilized it for minor repair of the facilities, they still face difficulties in procurement of spare parts due to non-functional supply chain network. Regarding the shortage of government budget, the Government of Mozambique is requesting the financial support to the development partners.

<Evaluation Results>

Some problems have been observed in institutional and technical aspects and major problems were identified in financial aspect. Therefore, sustainability of the project is low.

5 Summary of the Evaluation

This project has achieved the project purpose and overall goal. The five indicators for project purpose either achieved or mostly achieved their respective target values in the four target districts by project completion. After the project completion, the above five key indicators have shown the constant improvement mainly because the campaign for community awareness on good hygienic practices including PEC activities has been implemented continuously. The percentage of people affected by diarrheal diseases in the target communities decreased to 4.7-9.3% and reached the target value of 10% in all four target districts by 2013. The number of functional water supply facilities has increased significantly and 88% of water supply facilities were operational in 2014 as a result of PRONASAR and other donors' projects. The project has contributed on dissemination of PEC activities to other areas.

Regarding sustainability, there are some problems in institutional, technical and financial aspects due to shortage of district government staff, malfunction of supply chain networks of spare parts, insufficient technical capacity of local mechanics, and shortage of budget.

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

² 1 Mozambique Metical (MZN) = JPY 2.363 (As of March 2016).

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to undertake the following measures in order to ensure the sustainability of the project:
 - a) As there is a need to increase the number of monitoring visits to the communities to avoid the reduction on their performance, it is necessary to allocate sufficient budget to the Zambézia Provinces and the target districts for the monitoring and O&M of the water supply facilities including the cost for employment of PEC animators and transport cost as well as to increase the number of the government staff who are in charge of the above monitoring activities.
 - b) As there is a need to upgrade the technical capacity of local mechanics, it is necessary to implement periodical trainings for the local mechanics which should include the subjects on how to encounter more complex and new types of damages of water supply facilities.
 - c) It is recommended to introduce the best mechanism to establish a spare parts supply chain in referring to the good practice in other countries in collaboration with the district governments and development partners. In this respect, it is expected to exchange the information with the on-going JICA technical cooperation project PROSUAS and learn their experiences and outcomes regarding development of new spare parts supply chain mechanism proposed by the project.

Lessons learned for JICA

- Given the limitation of the district governments to conduct frequent monitoring activities due to the lack of human and financial resources, it is recommended that JICA discuss with the counterparts and define a suitable monitoring approach at the beginning of the project to avoid the abandonment of good practices by the community members.
- It was identified that the establishment of payment sheets for water source maintenance proved an efficient method to record the most frequent breakdown and statistic data in this project. Apart from that, other practices are already in use in many different communities. Therefore, at the beginning of similar projects, it is proposed that JICA discuss with the counterparts a standard model of an efficient monitoring sheet to facilitate data collection on incidences of malfunctions and conditions of water sources.



Water supply facility provided by the Japanese grant aid project in Vacha Community, Alto Molocue



Water and Sanitation Management Committee members (on the right) in Macuelia Community, Ile district



Hygiene group and the Director of Nampevo Primary School in Ile district