

Country Name	The Project for Groundwater Development in Mwanza and Neno
Republic of Malawi	

I. Project Outline

Background	In Malawi, the access rate to safe water was estimated to be 72% (as of 2006), and it was targeted to increase the rate to 80% by 2011 in Malawi Growth and Development Strategy (MGDS) (2006/07-2010/11). However, 'Joint Sector Review 2008' reports that 30% of water supply facilities in rural areas was dysfunctional and under this scenario the realistic estimation of access rates was 65% in urban and 46% in rural areas respectively in 2008, whereby rural water supply remained an important challenge. In particular, the access rate to safe water was lower than the national average in the project targeted areas, Mwanza and Neno Districts (41.6%), at the time of ex-ante evaluation (2010).			
Objectives of the Project	The project aimed to improve the access rate to safe and stable water in Mwanza and Neno Districts by constructing water supply facilities and procuring necessary equipment, thereby contributing to improvement of living environment and/or conditions of local residents in these districts.			
Contents of the Project	<ol style="list-style-type: none"> 1. Project Site: Mwanza and Neno Districts (120 boreholes in 120 villages) 2. Japanese side: (1) Provision of grant necessary for construction of boreholes, installation of hand pumps, and procurement of equipment (vehicles for operation and maintenance (O&M) and Global Positioning System (GPS)), (2) Technical Assistance (soft component of Grant Aid) 3. Malawian side: Preparation of borehole drilling sites, access routes for works, fences and drainage, land preparation for field office, warehouses and stock yard, lending of machinery owned by Ministry of Agriculture, Irrigation and Water Development (MOAIWD), and securing project personnel and budget etc. 			
Project Period	E/N Date	January 26, 2011	Completion Date	July 25, 2013 (completion of construction works)
	G/A Date	January 26, 2011		
Project Cost	E/N Grant Limit / G/A Grant Limit: 426 million yen, Actual Grant Amount: 300 million yen			
Executing Agency	Ministry of Agriculture, Irrigation and Water Development (MOAIWD) ¹			
Contracted Agencies	Main Contractor: Okuyama Boring Co., Ltd. Main Consultant: CTI Engineering International Co., Ltd.			

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

- [Target Year for Evaluation] In ex-ante evaluation sheet, it is stated that the target year for evaluation is 2015, which is three years after project completion (The project was planned to be completed in February 2013). However, construction of boreholes under the project was completed in July 2013. Thus, in ex-post evaluation, the target year should be changed to 2016 (three years after completion of construction works).
- [Target Figure of Indicator 2] Target figure of Indicator 2 is calculated using the population data in 2015 which was estimated based on the population in 2010 (According to the calculation in Preparatory Survey Report, the annual population growth rate used is 3.487% in Mwanza and 3.8% in Neno). As the target year is changed to 2016 as stated above, the target figure of Indicator 2 should be recalculated based on the population in 2016 which is estimated using these growth rates, which becomes 45.6% in 2016.

1 Relevance

<Consistency with the Development Policy of Malawi at the Time of Ex-Ante and Ex-Post Evaluation>

This project has been consistent with Malawi's development policy, as improving the access rate to safe water in rural areas is aimed in policy documents such as "Malawi Growth and Development Strategy (MGDS) (2006/07-2010/11)", "National Water Policy (2005)", "National Water Policy second edition (2007)", "National Sanitation Policy (2008)" and "MGDS III (2017/18-2021/22) (draft)"² at the time of both ex-ante and ex-post evaluations.

<Consistency with the Development Needs of Malawi at the Time of Ex-Ante and Ex-Post Evaluation>

At the time of ex-ante evaluation, the target areas of the project had existing boreholes in communities. However, due to a large increase of population and far distances between communities and boreholes, other traditional water sources such as small streams, spring water and dug wells were also used as their primary water sources without any treatment; therefore, water quality was problematic for people's health. At the time of ex-post evaluation, according to the District Water Development Offices (WDOs) in Mwanza and Neno Districts, while the target access rates to safe water in these districts are 100% and 90% the current access rates are 83% and 45%, respectively. Thus, both districts still have pressing needs for construction of boreholes.

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

According to the assistance policy dialogue in June 2009, social development was stated as one of priority areas of assistance to Malawi, in which water resource development was included³. Thus, the project was consistent with Japan's ODA policy.

<Evaluation Result>

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

2 Effectiveness/Impact

<Effectiveness>

The project has achieved its objectives, "to improve the access rate to safe and stable water in Mwanza and Neno Districts". Actual figures of the number of population with access to safe and stable water in both districts (Indicator 1) have largely exceeded target figures

¹ The executing agency was originally Ministry of Irrigation and Water Development (MoIWD), which was reorganized to Ministry of Agriculture, Irrigation and Water Development in 2011, then to Ministry of Water Development and Irrigation in 2012, and then to Ministry of Agriculture, Irrigation and Water Development in 2014.

² MGDS III (2017/18-2021/22) (draft) is being finalized. It is expected to be published in early 2018.

³ Source: ODA Country Data Book (2009)

since the project completion. While the population increase has largely contributed to this achievement, according to interviews with 7 Village Health Water Committees (VHWCs) and 18 Water Point Committees (WPCs)⁴ in 25 water points (boreholes constructed under the project) (12 in Mwanza and 13 in Neno) visited for ex-post evaluation, the distance from beneficiaries' households to the nearest water points has been reduced to an average of 300 m against the target of within 500 m set in ex-ante evaluation, and the actual water supply volume per capita at the time of ex-post evaluation is 60 litter/person/day against the target of 27 litter/person/day in these 25 water points. Actual figures of the proportion of population with access to safe and stable water (the access rate to safe and stable water) in both districts (Indicator 2) have also largely exceeded target figures since the project completion. However, it should be noted that there are also boreholes in these areas that were constructed by NGOs such as World Vision and other governments, which would have also contributed to the achievement of the targets (according to 7 VHWCs and 18 WPCs interviewed, the percentage of households using the boreholes constructed under the JICA project in these 25 water points is 72% on average).

As for the qualitative effects, effects of the soft component of the project have been well produced but partially continued. In both districts VHWCs and WPCs were established in all of the 120 villages through the soft component (59 in Mwanza and 61 in Neno). However, technical assistance services for O&M activities provided by District WDOs including extension workers, which were improved through the soft component, have not been provided to all the VHWCs and WPCs sufficiently, due to the inadequate financial resources of District WDOs. According to District WDOs, only 45 (20 in Mwanza and 25 in Neno) out of 120 VHWCs and WPCs in total have received technical assistance on O&M from District WDOs.

<Impact>

Regarding the consciousness on public health and sanitation among village people, it has been improved through the soft component in the project area. The interview survey confirmed that 330 households in 25 water points, where interviews were conducted, utilize at least two sanitation facilities including pit latrine, refuse pit and dish racks, which shows the improvement on the consciousness on public health and sanitation. In addition, time required to fetch water, particularly among women and children, has been reduced in 21 water points among these 25 water points after project completion (on average, hours to fetch water have been reduced from 3.76 hours to 1.07 hours in these villages), owing to availability of boreholes constructed under the project.

Regarding the number of population who are infected with water-borne diseases in Mwanza and Neno Districts, comparing data before the project implementation (2010) with after the project completion (2016), the number of its population has been reduced in both districts. According to the villagers interviewed, the number has been reduced due to the availability of safe drinking water from boreholes constructed under the project and it improved sanitation.

Regarding other impacts, no negative impact on natural environment has been observed under the project. According to the interviews with villagers in 25 water points, one household in Mwanza District was affected by resettlement, which was required due to construction of a borehole. The affected household was resettled to another area within the same village with no compensation, as they agreed with the benefits of the project. In addition, according to interviews with villagers, approximately 240 women in 25 water points have been engaged in income generating activities and able to earn more cash due to reduction of the labor of fetching water. There were also comments from villagers that study hours of their children have also increased due to the same reason.

<Evaluation Result>

In light of the above, the effect of the project has been observed mostly as planned. Therefore, the effectiveness/impact of the project is high.

Quantitative Effects

Indicators	Baseline 2010 Baseline Year	Target 2016 3 Years after Completion	Actual 2014 1 Year after Completion	Actual 2015 2 Years after Completion	Actual 2016 3 Years after Completion
Indicator 1: The number of population with access to safe and stable water in Mwanza and Neno	80,087	108,787	124,014	143,598	162,147
Of which Mwanza	42,445	N/A	69,477	78,115	86,320
Of which Neno	37,642	N/A	54,537	65,483	75,827
(For reference) Total population in Mwanza and Neno	192,435	238,564	234,721	255,311	271,743
Of which Mwanza	94,891	116,557	96,497	98,880	104,000
Of which Neno	97,544	122,007	138,224	156,431	167,743
Indicator 2: The proportion of population with access to safe and stable water in Mwanza and Neno (%)	41.6	45.6	52.8	56.2	59.7

Source: Ex-Ante Evaluation Sheet, Preparatory Survey Report, and questionnaire survey to District WDOs in Mwanza and Neno

Note: Actual results are cumulative numbers.

⁴ Village Health Water Committees (VHWCs) are community organizations responsible for operation and maintenance (O&M) of water supply facilities. In addition, in villages where there are more than two water points, a Water Point Committee (WPC) is established at each water point for O&M of the facilities. In the site survey for this ex-post evaluation, interviews were conducted with 7 VHWCs and 18 WPCs that have the direct O&M responsibility of 25 water points (boreholes).

Expected Impact

[The number of population who are infected with water-borne diseases in Mwanza and Neno Districts]

	Before the project (2010)	After the project (2016)
The number of people infected with cholera in Mwanza	5	0
The number of people infected with typhoid in Mwanza	65	6
The number of people infected with dysentery in Mwanza	34	18
The number of people infected with infant diarrhea in Mwanza	677	483
The number of people infected with cholera in Neno	2	0
The number of people infected with typhoid in Neno	58	21
The number of people infected with dysentery in Neno	27	11
The number of people infected with infant diarrhea in Neno	640	470

Source: District Health Office (Mwanza) and District Council (Neno)

3 Efficiency

The outputs of the project were produced mostly as planned⁵. While the project cost was within the plan, the project period exceeded the plan (ratio against plan: 70%, 129%, respectively). The main reason was the high ratio of unsuccessful boreholes. Therefore, the efficiency of the project is fair.

4 Sustainability

<Institutional Aspect>

[Executing Agency Level] (Central level) The Ministry of Agriculture, Irrigation and Water Development (MOAIWD) is responsible for overall monitoring of water supply projects in the country and providing technical guidance for regional and district staff on O&M management. According to the Deputy Director for the Department of Water Supply in MOAIWD, while the necessary number of staff in the Department is 15, the current number of staff is nine and insufficient to provide technical supports for regional and district staff properly, as the government of Malawi has restricted new recruitment due to lack of financial resources. (Regional level) WDO in Southern Region is responsible for monitoring of water supply projects in the region and providing district staff with technical guidance on O&M management. According to the Regional WDO, while the expected number of technical staff is 13, only three staffs are assigned. Therefore, it is difficult for the Regional WDO to provide District WDOs with technical support properly due to the lack of manpower. (District level) District WDOs in Mwanza and Neno Districts are responsible for monitoring of water supply projects in the districts, providing VHWCs and WPCs with technical guidance on O&M of water supply facilities and conducting repair of major breakdowns of the facilities. According to District WDOs, while the expected number of technical staff is eleven and seven in Mwanza and Neno respectively, only three staffs each are assigned. The lack of manpower slightly affects their operation such as monitoring of water supply projects in these districts and providing technical guidance for VHWCs and WPCs on O&M management. Within District WDOs, there are extension workers who provide technical guidance to train area mechanics (AMs) and hand pump caretakers of VHWCs and WPCs. The number of extension workers is almost the same before and after project implementation (there are three extension workers each in both districts at the time of ex-post evaluation). AMs are local technicians responsible for extending maintenance services to VHWCs and WPCs based on the agreement made between them. The number of AMs has increased by one in Mwanza and nine in Neno since the time of ex-ante evaluation. The number of extension workers and AMs are still not sufficient to provide technical guidance and assistance to VHWCs and WPCs properly. Nonetheless, the mechanism of providing technical support from the central level (MOAIWD) to the community level (VHWCs and WPCs) is in place, though not sufficient.

[Community Level] VHWCs and WPCs are responsible for O&M (periodical inspection and simple repair) of water supply facilities, collection of water charges and communication with their higher organizations (VHWCs communicate with District WDOs and WPCs communicate with VHWCs) for requesting repair of the facilities and provision of spare parts etc. The site survey for ex-post evaluation to 7 VHWCs and 18 WPCs confirmed that the number of committee members is generally sufficient with an average of nine members per committee, which include a chairman, vice chairman, accountant, secretary and hand pump caretakers etc. These VHWCs and WPCs explained that there is a good coordination among committee members and all the duties required by committees are performed adequately.

<Technical Aspect>

[Executing Agency Level]. Most of the project counterparts (C/Ps) still work at MOAIWD, WDO in Southern Region and District WDOs in Mwanza and Neno Districts at the time of ex-post evaluation. Staffs of the Department of Water Supply in MOAIWD and WDO in Southern Region were trained under JICA's technical cooperation project, "the Project for Enhancement of Operation and Maintenance for Rural Water Supply (2011-2015)", and their skill level is sufficient to monitor water supply projects and provide technical guidance on O&M management. The skill level of staff of District WDOs including extension workers and AMs is also sufficient, as they received trainings on management of VHWCs and WPCs and O&M of water supply facilities under the project, and have been technically able to deal with problems faced by VHWCs and WPCs including major repairs of boreholes. In addition, a Water Resources Advisor, who has been dispatched by JICA since 2016, has supported all District Water Development Officers in the country with refresher training courses to maintain their O&M management skills. According to MOAIWD and District WDOs, the training manual and manual for water and sanitation etc. prepared under the soft component are still utilized.

[Community Level] According to the interviews with 7 VHWCs and 18 WPCs, the skill level of these VHWCs and WPCs is generally sufficient to conduct minor repairs of hand pump boreholes and to collect water charges. However, monitoring of O&M situations in project targeted 120 villages and provision of trainings to VHWCs and WPCs are not sufficiently conducted by District WDOs due to lack of budget.

⁵ Changes in major planned outputs: (1) one target village was changed to another village (as a new borehole was constructed by UNICEF), (2) The grouping within project targeted villages was changed (as changes were observed in terms of population, beneficiaries' needs and existence of new boreholes etc.) and (3) the structure of infiltration inlet was changed to fit with slope ground etc.

<Financial Aspect>

[Executing Agency Level] Revenue and expenditure of District WDO in Mwanza are shown in the right. Those of WDO in Neno are unavailable. The amount of revenues of WDOs in these districts is not sufficient to provide all VHWCs and WPCs with technical supports, due to the limited budget allocation from the central government. Thus, monitoring and trainings for VHWCs and WPCs are not conducted sufficiently as stated above, and major repairs of boreholes cannot be conducted promptly in some villages, in which case VHWCs and WPCs collect contributions from community members and call extension workers and/or AMs for repair. However, District WDOs plan to utilize other financial resources such as financial assistance from NGOs working in the areas for trainings for VHWCs and WPCs.

Revenue and Expenditure of WDO in Mwanza

(Unit: Malawi Kwacha)

	2014	2015	2016
Revenue			
Budget allocation from the central government	3,708,992	4,642,036	5,795,301
Expenditure			
Actual cost of extension workers	576,000	630,000	720,000
Actual cost of AMs	296,800	158,500	240,000
Actual cost of major repairs of water supply facilities	252,850	394,700	416,200
Other (utilities, stationeries, consumables, building and vehicle maintenance etc.)	2,583,342	3,458,836	4,419,101
Total Expenditure	3,708,992	4,642,036	5,795,301

Source: WDO in Mwanza

[Community Level] Among 25 water points visited, 21 committees (11 in Mwanza and 10 in Neno) collect water charges for O&M of hand pump boreholes, and the amount of water charges collected per household per month ranges from 100 to 300 Malawi Kwacha. According to 21 committees, the collected amount of water charges is generally sufficient to conduct O&M of hand pump boreholes.

Source: WDO in Mwanza

<Current Status of Operation and Maintenance>

[Executing Agency Level] Maintenance of vehicles for O&M procured under the project has been required due to bad road conditions, however, maintenance of these vehicles has currently been not conducted as scheduled and spare parts for them have not been procured appropriately due to lack of budget in WDOs in both districts. As a result, these vehicles were out of order in both districts at the time of ex-post evaluation. WDO in Mwanza has consulted a Japanese auto dealer in the country to repair the vehicle. WDO in Neno has been aiming to identify a technician to fix the problem.

[Community Level] All the hand pump boreholes in the 25 water points visited for the site survey are well maintained and functional. However, in some water points, it was observed that some spare parts were damaged or lost due to inappropriate storage. Extension workers and AMs advise VHWCs and WPCs to store spare parts properly and keep records on the number of stocks.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional and financial aspects of the executing agency. Therefore, the sustainability of the project effect is fair.

5 Summary of the Evaluation

The project achieved its objective of improving the access rate to safe and stable water in Mwanza and Neno Districts, as the number of population with access to safe and stable water in both districts have largely exceeded target figures. The expected impact of improving living environment and/or conditions of local residents in these districts have also been obtained, as the number of population who are infected with water-borne diseases has been reduced, and many women have been engaged in income generating activities and able to earn more cash due to the reduction of the labor of fetching water in both districts. Regarding the sustainability, the number of staffs is insufficient at MOAIWD, WDO in Southern Region and District WDOs in Mwanza and Neno Districts, and the amount of revenues of WDOs in both districts is not sufficient to provide technical supports for all VHWCs and WPCs, while there is no major problem in the technical aspect. As for the efficiency, the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations to Executing Agency:

- Technical assistance on O&M activities including monitoring of O&M situations and trainings to VHWCs and WPCs have not been sufficiently conducted by District WDOs due to the lack of budget, as stated above. Development partners other than governmental agencies such as NGOs should be utilized in providing trainings to VHWCs and WPCs on O&M of water supply facilities and the importance of sanitation, so that all VHWCs and WPCs can have sufficient trainings.

Lessons Learned for JICA:

- When a similar type of project is to be implemented in Malawi, all the community organizations responsible for O&M in project sites need to be trained by the use of soft component, in order to ensure sustainability of project effects, as executing agencies in the country face difficulties to secure budget for such trainings.
- In this project, the high ratio of unsuccessful boreholes caused the project period to exceed the plan. There was a gap between the ratio of successful boreholes calculated from a geophysical exploration and its actual figure. The contractors with lump-sum contracts, therefore, needed to continue drilling boreholes until they reached the contracted number, which caused the extension of the construction period. As a lesson learnt, it is necessary to draw more probable ratio of successful boreholes at the time of basic design and to consider adopting performance based payment contract instead of lump-sum contract when it becomes evident that the target area have a harsh condition during project implementation. It is also essential to consider risks which might affect the project period such as the uncertain identified ratio of successful boreholes and the seasonal difficulty to access to the target area at the project planning stage.



Fetching water at Kaligwenjere Water Point



A lady in Kaligwenjere WPC engaged in income generating activity due to reduction of the labor of fetching water



Procured spare parts for their borehole in Silota WPC



Source of drinking water before project (on left) and after project (on right) in Donda Water Point