

Country Name	The Project for the Groundwater Development in Lilongwe Westt
Malawi	

## I. Project Outline

Project Cost	E/N Grant Limit: 964 million yen 1 <sup>st</sup> term: 306 million yen 2 <sup>nd</sup> term: 371 million yen 3 <sup>rd</sup> term: 287 million yen	Contract Amount: 731 million yen 1 <sup>st</sup> term: 259.8 million yen 2 <sup>nd</sup> term: 257.5 million yen 3 <sup>rd</sup> term: 213.8 million yen
E/N Date	1 <sup>st</sup> term: August, 2005, 2 <sup>nd</sup> term: July, 2006, 3 <sup>rd</sup> term: July, 2007	
Completion Date	March, 2009	
Implementing Agency	Water Resources Department, The Ministry of Water Development (current name: Water Resources Department, The Ministry of Irrigation and Water Development)	
Related Studies	Basic Design Study: October, 2004 - June, 2005	
Contracted Agencies	Consultant(s)	Japan Engineering Consultants Co., Ltd. (all terms) (current name: Eight-Japan Engineering Consultants Inc.)
	Contractor(s)	The Consortium of Urban TONE and Sojitz Corporation (1 <sup>st</sup> term) Urban TONE (2 <sup>nd</sup> term), KOKEN BORING MACHINE CO., LTD. (3 <sup>rd</sup> term)
	Supplier(s)	The Consortium of Urban TONE and Sojitz Corporation (1 <sup>st</sup> term) Urban TONE (2 <sup>nd</sup> term), KOKEN BORING MACHINE CO., LTD. (3 <sup>rd</sup> term)
Related Projects	[Japan's Cooperation] -The Project for Development of Groundwater in Lilongwe-Dedza (1 <sup>st</sup> and 2 <sup>nd</sup> terms) (Grant Aid Project, 2001-2002) [Other Donors' Cooperation] -none	
.Background	In April 2002, under the Malawi Poverty Reduction Strategy (MPRS), the government decided to increase ratio of access to safe water from 65.6% (in 2001) to 84% (by 2005) as the target in the water supply and sanitation sector. As of 2004, the ratio of water supply in rural areas was estimated to be about 75%, and dissemination of water supply facilities in rural areas, where boreholes are the principal means of water supply, was particularly delayed and was causing regional differences in the ratio of water supply due to the limited boring equipment and technologies, especially in the areas that were difficult to access with hard hydrological and geographical conditions. The area of Lilongwe West, i.e. TA Kalolo and TA Khongoni, had been evaluated as the area of the worst water supply conditions and it was an urgent task to improve water supply facilities in the area.	
Project Objectives	Outcome To improve the ratio of safe water supply by i) constructing 296 deep boreholes in 234 villages in TA Kalolo and TA Khongoni in Lilongwe District, ii) establishing WPCs to operate, maintain and manage these boreholes and iii) conducting educational activities for residents.	
	Outputs Japanese side -Procurement of relevant equipment for borehole drilling (drilling rigs, high pressure air compressors, borehole development equipment, pumping test equipment, cargo trucks, pick-up type light vehicles, geo-electric survey equipment, etc.) - Procurement of relevant equipment for research and monitoring (three motorcycles, GPS, etc.) -Construction of 296 deep boreholes -Soft Component: establishment of system for educational activities for residents by local administrations, establishment of Water Point Committees (WPCs) by residents, training of area mechanics  Malawian side -obtainment and preparation of grounds for construction base and deep boreholes - preparation of access roads from base to construction sites to transport construction equipment - construction of drain pit	

## II. Result of the Evaluation

Summary of the Evaluation
<p>Lilongwe West in Malawi (TA Kalolo, TA Khongoni) had been evaluated as the area of the worst water supply conditions and it was an urgent task to improve water supply facilities in the area.</p> <p>This project has largely achieved i) increase in the number of deep borehole facilities in TA Kalolo and TA Khongoni, ii) improvement of the ratio of water supply in the area, and iii) establishment of WPCs. The number of users and the frequency of use of deep boreholes established by this project are quite high. According to the results of hearing with residents, consumption of water of good quality was improved by transferring from traditional hand-dug shallow (open) boreholes to deep boreholes, and residents' awareness in terms of hygiene has risen. In addition, it was recognized that positive impacts were generated, for instance, reduction in the ratio of suffering diseases caused by water, i.e. diarrhea, cholera, as well as reduction in water drawing labor. As for sustainability, some problems have been observed in terms of structural, technical</p>

and financial aspects due to i) shortage of personnel/staff at the Ministry of Irrigation and Water Development, ii) insufficient skills and knowledge of part of WPC staff, iii) insufficient budget of the Ministry, and so forth. For relevance, this project has been highly relevant with Malawi's development policy, development needs as well as Japan's ODA policy at the time of both ex-ante and ex-post evaluation. For efficiency, both the project cost and the project period were within the plan.

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

### 1 Relevance

This project has been highly relevant with Malawi's development policy "development of irrigations and water resources" as set in "Malawi Poverty Reduction Strategy Paper (2002)" and "The Malawi Growth and Development Strategy II (2011-2016)", development needs "improvement of water supply facilities in Lilongwe West where the ratio of water supply is the lowest in the country" as well as Japan's ODA policy "improvement of health level" and "development of economic infrastructures" at the time of both ex-ante and ex-post evaluation. Therefore, relevance of this project is high.

### 2 Effectiveness/Impact

This project has largely achieved its objectives of i) increase in the number of deep borehole facilities, ii) improvement of the ratio of water supply and iii) establishment of WPCs as planned. The number of water supply facilities with deep boreholes increased by 2.5 times from 202 (before the project: 2002) to 498 (after the project: 2009) with the establishment of new deep boreholes by the project. Accordingly, the ratio of water supply was significantly improved from 23% to 49%. In addition, WPCs for water supply facilities were established in all 296 villages where deep boreholes were constructed. The number of users and the frequency of use of deep boreholes established by this project are quite high, because many of these boreholes are the only and single water supply facility in target villages (refer to the number of users per deep borehole and the amount of water supply per person in the below table). Although it was reported that water quality was deteriorated in the rainy season in the villages where shallow (open) boreholes were used before the project, the situation was improved after the project. Water quality of deep boreholes is not regularly monitored; however, according to hearing with the implementing agency and residents (15 residents including members of WPCs), no problem has been reported with regard to water quality so far. The project conducted educational activities for residents as a soft component, and access to hygienic water has become easier by establishment of deep boreholes. As a consequence, residents in target areas can use water for cleaning, washing clothes/hands, etc. besides drinking purpose and their awareness in terms of hygiene has risen. The results of hearing with residents proved that the project generated positive impacts such as reduction of ratio of receiving diseases caused by water, i.e. diarrhea, cholera, as well as reduction of water drawing labor after the project. The project did not make any negative impact in terms of the natural environment, and acquisition of land was properly conducted according to internal law of Malawi and no resettlement was needed.

Therefore, effectiveness/impact of this project is high.

#### Quantitative effects

Indicator (unit)	baseline value (2005)	target value (2009)	actual value (target year: 2009)	actual value (2012)
<b>Indicator 1</b> number of deep borehole facilities in target areas	202	498 (existing: 202, new: 296)	498	existing: N.A. new: 296
<b>Indicator 2</b> ratio of water supply in target areas (deep boreholes) (%)	23	49	49	N.A.
<b>Indicator 3</b> number of WPCs in target areas	—	296	296	296
<b>Reference</b> number of users per deep borehole	—	100~500	N.A.	200~700 (result of sample survey at the stage of ex-post evaluation)
<b>Reference</b> amount of water supply per person (little/person/borehole)	—	15	N.A.	approximately 75 (result of sample survey at the stage of project completion study in 2011)

Source: Water Resources Department, Ministry of Irrigation and Water Development, ex-post evaluation conducted in 2012, etc.

Note 1: target areas: TA Kalolo in Lilongwe District, Central Region: 116 villages and TA Khongoni in Lilongwe District, Central Region: 118 villages

### 3 Efficiency

The outputs of the project were produced as planned, and both the project cost and the project period were within the plan (ratio against the plan: 75%, 100%). Therefore, efficiency of this project is high.

#### 4 Sustainability

Deep borehole facilities established by this project are independently maintained and managed by WPCs consisting of resident representatives, and Water Resources Department of Ministry of Irrigation and Water Development and its branch offices (water development offices of zones and districts) are responsible for i) monitoring of each committee's activities and operation of deep boreholes, ii) provision of technical advices for each committee and iii) dealing with serious damages that are difficult to be repaired by the committees. Deep borehole construction fund, which is under the Ministry of Irrigation and Water Development, is in charge of maintaining and managing major boring equipment procured by this project, except pickup trucks. So far all of 296 deep borehole facilities established by the project are in operation. Regarding structural aspect, although WPCs were established in all 296 villages where deep boreholes were newly constructed, shortage of personnel is serious, for instance, vacancy rate of the Ministry of Irrigation and Water Development is high at 48% and only four district staff are responsible for managing 400 deep boreholes in the district, which is attributed to unsmooth assignment of personnel and insufficient budget for personnel expenses following reorganization of the Ministry. As for technical aspect, members of the committees participated in technical training courses at the time of establishment of deep boreholes and have been coping with daily cleaning and exchanging consumables of these boreholes without major problems till now. However, transfer of skills and knowledge is not sufficient when members change, and some problems were observed in case of breakdowns and damages of boreholes in a certain village. Therefore, it is necessary to retrain the members. In addition, functions of eight area mechanics trained by this project are not fully utilized (causes of this are referred in "Lessons learned for JICA" in "III Recommendations and Lessons Learned" below). The Ministry of Irrigation and Water Development has certain level of technical capacity; however, it has never had experiences of repairing/fixing boreholes since no major damages have been generated so far. With respect to financial aspect, while committees collect maintenance and management fee from residents and save it for future repair expenses, the Ministry of Irrigation and Water Development does not regularly monitor activities of each committee and operations of deep boreholes, due to insufficient budget. In addition, the Ministry does not prepare/save any budget necessary in case of serious borehole damages.

The project has some problems in structural, technical and financial aspects of the executing agency. Therefore, sustainability of this project is fair.

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing agency

- Considering the current allocation of personnel and budget, the Ministry of Irrigation and Water Development and its regional and district branches, namely the implementing agencies of the project, do not have enough capacity to deal with serious damages of boreholes requiring large amount of cost. In the future, it is necessary to properly allocate personnel and budget. At that time, the role of District Council should be defined according to the decentralisation policy of Malawi government. (It is considered difficult to drastically improve the situation since the Ministry generally has insufficient budget. One of the reasons why the ministry does not obtain enough budget is that coordination with the Ministry of Finance and the Ministry of Economic Development Plan, which are in charge of budget allocation, is not smoothly conducted, and in reality, these ministries are not fully aware of the importance to allocate personnel and budget for the Ministry of Irrigation and Water Development. Thus, it is considered that budget allocation for the Ministry of Irrigation and Water Development could be enhanced to some extent by improving coordination among relevant ministries. Although relatively large amount of expenses is spent for meeting cost, travel expenses and daily allowance for high-level bureaucrats, it is considered possible to cut back part of such expenditures and to improve the current situation of shortage of personnel expenses through efficient budget spending.)
- As "the necessity of retraining accompanied by the changes of members of WPCs" is discussed in above "4 Sustainability" in "II. Result of the Evaluation", it is considered necessary to establish a system in which skills and knowledge are fully transferred to new members. In facilitating such process, branch offices of the Ministry of Irrigation and Water Development at the district level are supposed to play a particularly large role. It should be noted that JICA is currently implementing "the Project for Enhancement of Operation and Maintenance for Rural Water Supply" (technical cooperation) in Mchinji District, which is a pilot district. In cooperation with the district, JICA has been trying to strengthen functions of water management committee and preparing manuals concerning maintenance and management. It is desirable to utilize the outcome of the above-mentioned project.

#### Lessons learned for JICA

- At the stage of the ex-post evaluation, it is confirmed that all the deep boreholes are in operation and there is no major problem in daily maintenance and management. However, the institutional system of the Ministry of Irrigation and Water Development is considered weak in dealing with serious damages of boreholes that may happen in the future. It is considered that problems caused by such weakness of relevant agencies can often be brought out not only in Malawi but in other countries. To overcome the problems, it is expected that educational activities be carried out at the stage of formulating the project and that area mechanics be fully utilized (however, even in the project, utilization of area mechanics is insufficient because i) importance of functions of area mechanics is not fully understood by residents, ii) there are some cases in which residents do not understand why contract fee is necessary when area mechanics repair boreholes and iii) there are many cases in which area mechanics cannot repair boreholes even with their presence, since it is difficult to procure spare parts. Therefore, there is a room for improvement regarding above-mentioned issues.) Utilization of such local resources as well as private agencies is considered to be more and more important in the future. (Above-mentioned technical cooperation project being implemented in Mchinji District attempts to promote the utilization of area mechanics and outcome of the project is planned to be extended nationwide by the Ministry of Irrigation and Water Development.)



Borehole (Nkhwambala)



Borehole (Nabuzi)



Borehole (Dzuluwanda II)