Internal Ex-Post Evaluation for Grant Aid Project

conducted by Djibouti Office: April 2018

| Country Name | **The Project for Rural Water Supply in Southern Djibouti** |
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| Republic of Djibouti | |

**I. Project Outline**

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| Background | In Djibouti, under environment vulnerable to climate change, people mainly use groundwater as a source of drinking water, and the coverage ratio of safe water of the urban areas reached 92%. However, it was still 54% in rural areas (2006) due to the harsh natural environment. In agriculture, irrigation and cultivation were carried out by utilizing the groundwater source of relatively shallow aquifer (depth of about 10 m). People living in rural areas were forced to spend a great deal of time and effort to secure water, which led to the further poverty. | | | |
| Objectives of the Project | To increase the population of people who can access safe water and its rate (water supply rate), the population that can obtain water for domestic use and for livelihood improvement by constructing water supply facilities including wells in the Al-Sabie, Dikil and Alta provinces in the southern part of Djibouti, and providing materials/equipment for well construction/water exploration and maintenance | | | |
| Contents of the Project | 1. Project Site: 13 villages in Dikhil, Ali-Sabie, Arta prefectures (Construction of water supply facilities in eight villages including four villages with facilities for drinking water and four villages with facilities only for daily use. Procurement of just equipment and materials for five villages*1）<br>2. Japanese side:<br>(1) Installation of pumps and construction of solar power water supply facilities for eight villages*2 (Drilling works were carried out during the preparatory survey by JICA). Drilling works were carried out under this project at three villages (Zinamale, Sek Sabir and Afka Arraba) because of declining quality of water i.e. iron briquettes and declining capacity of pump.<br>(2) Procurement of materials/equipment for well construction/water resource exploration (for 17 wells*1), vehicles, vehicles for well maintenance works, equipment for water, well maintenance and groundwater exploration<br>* 1 In the beginning, construction of 20 wells in 20 villages by Djibouti side was planned by using the procurement of equipment and materials, but it was changed to 17 wells at the time of detailed design. At the time of the ex-post evaluation, it was found that the construction by the Djibouti side was limited to five villages as described later (Refer to II. Result of the Evaluation, 2 Effectiveness/Impact)..<br>* 2 At the time of planning, nine sites were planed, however, the National Office for Water and Sanitation of Djibouti requested the Water Department, Ministry of Agriculture, Livestock and Fisheries in charge of Water Resources (MAEM-RH) to use the site of Hamboucta to be used for drinking water supply to one of the five local cities, named Ali-Sabieh, and the Government of Djibouti decided to exclude the Hamboucta site from the project.<br>(3) Consulting service and technical assistance (soft component): Detailed design, construction supervision, establishment of water management committees, capacity development of staff on groundwater exploration and maintenance<br>3. Djibouti side:<br>・Maintenance of drilled wells until the start of the construction of water supply facilities<br>・Ensuring the appropriate use and maintenance of procured equipment and materials, and constructed facilities developed by the project<br>・Installation of net fence for the facilities for security. | | | |
| Project Period | E/N Date | March 28, 2011 | Completion Date | January 16, 2014 |
| | G/A Date | March 28, 2011 | | |
| Project Cost | E/N Grant Limit / G/A Grant Limit: ： 489 million yen, Actual Grant Amount: 487 million yen | | | |
| Executing Agency | The Water Department, Ministry of Agriculture, Livestock and Fisheries in charge of Water Resources (MAEM-RH) | | | |
| Contracted Agencies | Main Contractor(s): Tone Engineering Corporation<br>Main Consultant(s): ORIENTAL CONSULTANTS Co.,Ltd. | | | |

**II. Result of the Evaluation**

< Special Perspectives Considered in the Ex-Post Evaluation >

- In this ex-post evaluation, effectiveness of the project was verified by expected project effects of increases in population with safe water and coverage of water supply by facilities constructed or rehabilitated by using the equipment procured by the project. Also, sustainability of the project effects was assessed by not only operation and maintenance of the equipment procured by the project but also operation and maintenance of the water supply facilities constructed by using the equipment procured by the project.
- Under this ex-post evaluation, (1) prevention of water-borne diseases, (2) increase in job opportunities for women and children as a result of decrease in time required for water fetching, (3) increase in opportunities for education for women and children as a result of decrease in time required for water fetching, and (4) improvement in livelihood through agriculture and livestock raising are evaluated as Impacts.

1 Relevance

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

This project has been highly consistent with development policy of Djibouti at the both times of ex-ante evaluation and the ex-post evaluation. At the time of ex-ante evaluation, “the National Initiative for Social Development” (Initiative Nationale pour le Développement Social; INDS) prioritized “universal access to basic social welfare and human resource development” and “promotion of environmental protection and harmonized and equal regional development” under four pillars of INDS. Based on INDS, MAEM-RH implemented “the

National Programme for Food Security" (Programme National de Sécurité Alimentaire; PNSA). Under PNSA, MAEM-RH prepared a national program to rehabilitate/construct wells. This program aimed at constructing deep wells where the access to water supply was limited, and ensuring all population have access to safe drinking water. At the time of ex-post evaluation, "the Vision 2035" (2013-2035), the succeeding policy of INDS lists "promotion of economy focusing on the mobility, competency and variety of the private sector" as one of its five pillars, and states that access to the safe drinking water is an important infrastructure for the economic growth. Also, "the Strategy for Economic Acceleration and Employment Promotion" (SCAPE) (2015-2019), the succeeding program of PNSA, states the importance of access of the safe drinking water to sustain the economic growth under the first pillar of the program "Economic growth, the role of mobility of the public sector and its competence".

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

The project has been also highly relevant with development needs of Djibouti for water supply. At the time of ex-ante evaluation, compared to the national water supply rate of 92%, water supply rate in rural areas was only 54% (2006). At the time of ex-post evaluation, accurate data is not available as no census was conducted since 2009, however, "the Joint Monitoring Programme for Water Supply and Sanitation" (WHO/UNICEF) (2015) estimated the water supply coverage of 90% for urban areas and 65% for rural areas. Thus, the demand for the construction of water supply facilities is still high in the target prefectures.

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

The project was also consistent with Japan's ODA policy at the time of ex-ante evaluation. An economic cooperation study mission was dispatched in April 2009 which confirmed "water" was one of the priority areas[1].

<Evaluation Result>

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

2 Effectiveness/Impact

<Effectiveness>

The project partially achieved its objective, "To increase the population of people who can access safe water and its rate (water supply rate), the population that can obtain water for domestic use and for livelihood improvement". Some improvement was observed for population who has access to safe water and water supply rate (Indicators 1-1 and 1-2). On the other hand, the effect was limited with respect to the increase in population that can obtain water for domestic use and livelihood improvement (indicators 2 and 3).

The water supply facilities developed by this project in eight sites have operated well[2]. According to officials of the Water Department and committee members of each water management committee, which is organized by the residents as water users at each site, sufficient volume of drinking water is secured by each drinking water supply facility, in particular, and there is no problem with quality of drinking water. Equipment and materials for well drilling by the Djibouti side is also in operation, and five water supply facilities have been under development at the time of ex-post evaluation. Originally, it was planned to develop water facilities at 17 sites by using the equipment procured under the project and the project procured 1,496 meter pipes for 17 wells. However, according to the interview with the Water Department, those pipes were utilized for construction of wells of 300 meters in depth in five villages where water supply was urgently needed. Therefore, the planned construction of water facilities for the remaining 12 villages were not be able to be carried out. The remaining facilities to be constructed are planned to be implemented as soon as the necessary equipment is procured. The Water Department calls for development partners to support procurement of equipment/materials.

As census has not been conducted since 2009, it is difficult to obtain actual population with access to safe water. On the other hand, according to the interviews with officials of the Water Department and committee members of the water management committees in the four target sites, there were no declines in the number of water users there. Therefore, the fact might indicate that the population with access water increases as originally planned.

On the other hand, although there is an increase in the population with easy access to water for daily use and for improving living standards by development of the water supply facilities under this project, the number of target sites to construct the water supply facilities changed to five wells of 300 meter class from the original plan of 17 wells of 150 meter class. When the required pipes were estimated, the water supply facility development plan of MAEM-RH was referred in which 150 meter class wells are major part. However, five wells of 300 meter class in villages where the water supply was urgently needed were constructed under the project in the end. It is a decision based on the necessity of the Djibouti side, and although the procured pipe was effectively used, the effect has been limited in terms of achieving targets of increase in the benefited population.

Implementation of the soft-component improved the maintenance capacity of the executing agency for underground water development and management. After implementing the soft-component, the Water Department became able to select excavation sites independently by using the electric exploration device and analysis software. Likewise, the Water Department staffs became capable to plan the casing using the physical logging equipment and analysis software.

<Impact>

According to water users (committee members of a water management committee) in Mindil (one of the target villages), after the wells were constructed by this project, the water-borne diseases ceased due to the fact that the residents no longer uses wells several kilometers away[3]. According to the water management committees (the four sites), representatives of water users, and the MAEM-RH personnel, even though they did not know the concrete data, there was a reduction in the number of hours for fetching water as a result of this project as they did not have to go to wells approximately 5 km away from their community.

As another impact, according to interviews with the water management committees, because of the reduction in the time for fetching water, children became able to spend more time for study in all the four sites, and women have more time to support their children's learning. Also, the water management committees, the representatives of residents reported that because people were able to get enough water, the agricultural population increased, leading to improvements in health and income by selling cultivated products in their farms, and increase in the number of livestock.

[1] Source: ODA Databook 2010

[2] In Saballou, which is one of the four sites of drinking facilities, after the completion of the facility, the solar panel was changed to diesel power generation so as to pump the water at this facility to another site. The diesel generation was also used for water supply in Saballou. It was confirmed that the solar generator and submersible pump, which are no longer used in Saballou, are being used at another site (Koussour Koussour).

[3] There were no reports of water-borne diseases in the other 3 sites from the beginning.

Furthermore, the introduction of the water management committee by this project has also influenced other projects funded by other donors as a good practice[4].

Negative impact on the natural environment by this project has not been observed and land acquisition has not occurred either.

<Evaluation Result>

In light of the above, a certain effect of the project has been observed in terms of improving access to drinking water. Various positive impacts have been also observed. However, clear data was not obtained and the number of people benefiting from the construction of wells and water supply facilities by Djibouti side was limited. Therefore, the effectiveness/impact of the project is fair.

Quantitative Effects

| Indicators | Baseline 2009 Baseline year | Target 2017 | Actual Year of completion 2014 | Actual Target year 2017 |
|---|---|---|---|---|
| Indicator 1-1 (Drinking water): Population that uses water supply facility for drinking in the target areas (three prefectures in the south) | 80,101*1 | 86,410*2 | 85,735*3 | 85,735 |
| Indicator 1-2 (Drinking water): Water supply ratio (%) in the target areas (three prefectures in the south) | 56.3 (estimated value) | 68.0 | 64.6% | 67.5% |
| Indicator 2: Population that uses water supply facility for domestic use and for livelihood improvement *4 | - | 3,169 | 3,170 | 3,170 |
| Indicator 3: Population with access to water for drinking, domestic use and livelihood improvement by the construction of water supply facilities by the Djibouti side | - | 16,000*5 | 0 | 4,000*6 |

Source : JICA internal documents, questionnaires and interviews with the Water Department, interviews with water management committees (Approximately 3 committee members at each of 4 sites)

* 1 The total population of the three southern prefectures in the 2009 census was 142,192. The water supply population was calculated by multiplying the estimated water supply rate of 54% in the survey conducted by the World Bank and the Ministry of Agriculture in 2006 to the estimated population of 148,335 in 2006. Following to the calculation at the time of ex-ante evaluation, the actual figure of indicator 1-2 is a ratio of an estimated population of the target villages relative to an estimated population of the three prefectures in the south (annual growth rate: -1.4%).

* 2 The target value of the increment is the population of 5 villages (6,309 people) where wells producing safe drinking water are secured and water supply facilities for drinking water are built.

* 3 The actual value is the estimated value of the population of 4 villages calculated at the time of the ex-ante evaluation (5,634 people).

* 4 The estimated population of the four villages where water supply facilities for domestic use and livelihood improvement are built.

*5 This figure is a population of 20 villages where the Djibouti side was expected to construct water supply facilities by using equipment procured under the project (calculated based on the average population of villages in the target area), and therefore, the figure does not reflect the changes in the number of villages (changed to 17 villages) made at the time of detailed design.

*6 The estimated value based on the average population of villages in the target area (average population of 800 multiplied by annual growth rate of -1.4%)

## 3 Efficiency

Although the project cost was as planned (ratio against the plan: 100%), the project period exceeded the plan (ratio against the plan: 144%) because the technical design change occurred such as re-drilling of wells (including changes of pipes to PVC) as measures to the declining quality of water i.e. iron briquettes and declining capacity of pump. Regarding the outputs, nine sites were planned for construction of water supply facilities at the time of planning. However, the National Office for Water and Sanitation of Djibouti requested the Water Department to use the well of Hamboucta for water supply to Ali-Sabieh, through transmission of the water utilizing a diesel power generator, and the Government of Djibouti decided to exclude the Hamboucta site from the project.

Therefore, efficiency is fair.

## 4 Sustainability

<Institutional Aspect>

The Water Department of MAEM-RH is responsible for Operation and maintenance (O&M) of the facilities and equipment developed/procured under this project, and daily maintenance of the water supply facilities is carried out by the water management committee established at each site.

The organizational structure of the Water Department is unchanged from the time of the ex-ante evaluation. Within the Water Department, the water resources section for water resource survey, the engineering and construction section for well construction and maintenance, the water decentralization management support section for establishment and guidance of the water management committee which is the resident's organization, and the sanitary section for sanitary policy exist. Thus, the Water Department can maintain and manage water supply facilities, and instruct the water management committee, and therefore, the organizational structure is appropriate. In addition, the number of personnel of the Water Department is 100 at the time of ex-post evaluation, and the Water Department is working to strengthen its function by increasing the number of personnel from the time of the ex-ante evaluation (79).

At each site, the water management committee has continued its activities such as appointment of committee members, holding of regular meetings, cleaning, basic maintenance, collection of fees, etc. It does not necessarily conduct all the intended activities; however, it was observed that it works well in line with the custom of the community.

[4] The way the project established institutional set up through a time-consuming step and consensus building is referred. Training by developing teaching materials with many pictures and photographs, etc. are also referred.

A system in which support personnel of the Water Department respond when large scale failures is functioning.

<Technical Aspect>

As human resources that have undergone technology transfer with soft component remain in the Water Department, the technical capabilities are maintained. Regarding maintenance and repair of the water supply facilities, although large-scale repair has not occurred up to now, proper technical response is available when inquiries are received from the water management committee via the prefectural support branch. Also, the Water Department uses manuals. The water management committees are able to repair simple troubles.

<Financial Aspect>

Although the budget of the Water Department increases every year, the amount is limited, and it is difficult for the Water Department to conduct excavation work and well maintenance which are necessary when the system failures happen or the pump capacity decreases by its budget alone. However, MAEM-RH absorbs new technologies and idea by working with international organizations. Water management committees secure expenses necessary for day-to-day O&M such as purchasing spare parts with the water usage fee collected and repairing simple breakdowns.

**Table：Budget of the Water Department** (Unit: million FDJ)

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| Budget of the Water Department, MAEM-RH | 57 | 57 | 57 |

We estimate the budget of the water Department around 57 Millions Francs Djibouti per year. This budget is not enough to operate and maintain all borehole of the republic of Djibouti.

<Current Status of Operation and Maintenance>

The water supply facilities constructed/procured equipment are in good condition. Although maintenance activities by the Water Department are limited, at the time of ex-post evaluation, the Water Department is introducing this project as a good practice to other donors to apply this project nationally. For example, the Water Department plans to implement a project with UNICEF to strengthen the institutional capacity of communities on water management.

The spare parts are packed in one section in the site surrounded by the high walls. The Water Department manages inventory using management slips.

<Evaluation Result>

In light of the above, there are no problems in terms of the institutional and technical aspects, however, problems have been observed in terms of the financial aspect of the executing agency, as budget of the Water Department is limited for repair and update of facilities which were deteriorated. Therefore, the sustainability of the project effect is fair.

5 Summary of the Evaluation

The project partially achieved its objective, "To increase the population of people who can access safe water and its rate (water supply rate), the population that can obtain water for domestic use and for livelihood improvement", as a certain effect have been observed. Positive impacts such as a decrease in water-borne diseases, an increase in learning time accompanying a decrease in water withdrawal time, and the start of agriculture using water were also observed. However, the population benefiting from the construction of wells and water supply facilities by Djibouti side was limited. As to the sustainability, problems have been observed in terms of the financial aspect as the executing agency's budget is limited. Regarding efficiency, the project period exceeded the plan.

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

**III. Recommendations & Lessons Learned**

Recommendations to Executing Agency:

- The Water Department is recommended to increase the budget so that the well excavation work, well maintenance, hydraulic geological survey etc. can be carried out by its own. At the same time, it is recommended to consult with development partners to support new projects so that the budget shortage is complimented.

Lessons Learned for JICA:

- In addition to the construction of water supply facilities, this project had a component for providing well drilling equipment to be conducted by Djibouti side. The project procured pipes for 17 sites (1,496 m), however, the Water Department utilized them for wells of 300 meter in depth in five villages where water supply was urgently needed. Therefore, ex-post evaluation, the number of villages that benefited was five only while 17 villages were expected at the time of ex-ante evaluation. In the project which provides equipment and materials, it was necessary to gather information such as area selection, depth of well, schedule of implementation, etc. at the time of project planning and to share the contents of discussions between the two countries. If only the materials of the assumed number of facilities were delivered to the destination and the purpose of use was unclear, it should be taken into consideration that the judgment would be based on necessity or urgency.
- In this project, re-drilling of wells at three sites were conducted to respond the issues such as declining quality of water, i.e. iron briquettes and declining pump capacity and as a result, the project period exceeded the plan. In a case that drilling works are carried out as a part of a preparatory survey, it is necessary to discuss and confirm selecting casing pipes which are resistant to corrosion and measures in case of declining pump capacity at the time of the preparatory survey, as it is expected that the wells will not be used for some time until the start of a construction project.
- This project, in cooperation with the Water Department, established water management committees through three steps (elder meeting in the first day, community meeting in the second day, and establishment of a water management committee in the third day). The project conducted awareness activities on water management by preparing printing materials in the local language and performing a song for water management committees at various events. Further, the project invited all members of committees for a joint establishment ceremony at Dikhil, and thus the project tried to enhance solidarity and nurture a sense of competition. As a result, JICA's approach of establishment and operation of water management committees was successful while it was not at other donors'

approach. The Water Department plans to refer this project as a good practice for future introduction of water management committees.

Afka Arraba water supply facility

Sek Sabir water supply facility