Internal Ex-Post Evaluation for Grant Aid Project

conducted by Paraguay Office: January 2015

Country Name	The Project of Development for Grand Water in Rural Areas
Republic of Paraguay	

I. Project Outline

Background	In Paraguay, there were about 5,000 villages with population of less than 10,000 where approximately 3.6 million people inhabited in 2007. Out of those small villages, about 2,000 villages had water supply facilities delivering water supply services to around 1.83 million people. However, the rest of 3,000 villages with 1.77 million inhabitants (49.2%) were not supplied safe water in 2007. Under those situations, the government of Paraguay prioritized improvement of water supply in rural areas and implemented water supply and sanitation projects with donors' supports. Although constructions of water supply facilities with deep wells as water source in around 1,200 villages were planned, the National Service of Environmental Sanitation (SENASA: Servicio Nacioncal de Saneamiento Ambiental), the implementing agency, was compelled to outsource well drilling with high cost to private operators since the drilling equipment owned by SENASA was malfunctioning due to aging and breakdown. On the other hand, reduction of construction cost for water supply facilities for the poor areas were a keen issue while the construction costs needed to be covered by subsidy from the government of Paraguay and the Water and Sanitation Committees (Juntas)' burden. Therefore, support for procurement of necessary equipment and materials for drilling of wells were requested by the government of Paraguay in order to implement development of water resources by SENASA for rural areas facing chronicle water shortage.				
Objectives of the Project	The project covers procurement of drilling equipment, construction materials for wells for the 25 prioritized villages and provision of technical supports, and the government of Paraguay implements construction of deep wells and water supply facilities[1] and covers the construction costs. By those inputs and activities, the Project aims at realization of safe and stable drinking water supply through procurement of drilling and hydrological survey equipment for SENASA and construction of water supply facilities by SENASA in 330 villages of the 12 eastern provinces in Paraguay in 7 years.				
Outputs of the Project	1. Project Site: 330 villages in the 12 eastern provinces including Concepción, San Pedro, Cordillera, Guairá, Caaguazú, Caazapá, Itapúa, Misiones, Paraguarí, Alto Paraná, Central Canindeyú 2. Japanese side Procurement of drilling equipment (track-based well drills, vehicle-based air compressors), drilling support equipment (vehicle-based wash/pumping test machines, vehicle-based repair workshop, long heavy load truck), hydrological and geological survey equipment (electrical exploration machines, well logging equipment and well camera), well construction materials (submersible motor pumps (220V/50Hz), submersible motor pumps (380V/50Hz), PVC casing for wells, PVC screen for wells) and technical supports (guiding operation and maintenance of equipment above) 3. Paraguayan side: Drilling of deep wells and construction of water supply facilities, origanizing Juntas in the target villages				
Ex-Ante Evaluation	2008	E/N Date	January 20, 2009	Completion Date	March 2, 2011
Project Cost	E/N Grant Limit: : 864 million yen, Contract Amount: 864 million yen				
Implementing Agency	SENASA (Servicio Nacional de Saneamiento Ambiental, Ministerio de Salud Pública y Bienestar Social)				
Contracted Agencies	Kyowa Engineering Consultants Co., Ltd., Sirius Corporation				

II. Result of the Evaluation

1 Relevance

This project has been highly consistent with Paraguay's development policy to reduce population without water supply under the policies such as "Poverty and Inequality Reduction Plan (2004)", "National Development Plan (2014-2018), and development needs to supply safe drinking water in rural areas at the time of both ex-ante and ex-post evaluation. It was also consistent with Japan's ODA policy prioritizing poverty reduction at the time of ex-ante evaluation. Therefore, relevance of this project is high.

2 Effectiveness/Impact

For "The number of deep well which SENASA can construct annually", which is the output indicator proposed at the time of Basic Design Study, was partially achieved by the project. The actual number for year 2011 (the target year) was 31 wells (41 wells including failed wells[2]) which accounted for about 60% of the target value (50 wells/year). The actual performance of SENASA in deep well development excluding failed wells were 54 wells in 2012, 46 wells in 2013 and 18 wells in 2014 (as of July).

[1] In general, rural water supply projects are composed of construction of wells for water source, elevated water tank for water supply to each household, water supply pipes and so on.

[2] As a result of drilling, a case with sufficient water volume is considered as "successful drilling", a case with setting casing for successful drilling is considered as "a successful well", and a case with failure is considered as "a failed well". A facility with submersible water pump which is utilized by the villagers for their water source is considered as "a water supply facility".

The achievement level of "construction of facilities to safely and stably supply drinking water in 330 villages in the 12 eastern provinces by water source development through drilling wells[3]", which was the project objective by 2018, was limited: 53 water supply facilities constructed as of Ex-Post Evaluation (July 2014). Since the project objectives was planned to be achieved during 7 years from 2011, 155 water supply facilities may need to be constructed by the time of ex-post evaluation after 3.5 years from 2011. Namely, the current achievement can be about 30% of the target value[4]. In addition, construction of water supply facility by the Paraguayan side using the construction materials provided by the project was completed in only one village out of the 25 prioritized villages in 2011. Even in July 2014, there were only 3 villages with the completed water supply facility. The fact indicates around 10% of achievement against the target value. In the rest of 22 villages, drilling of deep wells and setting of casing were implemented. However, the necessary funds to be covered by the villagers for construction of water supply facility were not ensured as planned. The drilled wells without setting submersible water pumps have not been utilized as water source due to the lack of fund for construction of water supply facilities. Since the procedures for the construction of water supply facilities[5] had not been taken as planned at the time of planning after the change of government, the well drillings had been implemented without explanation for villagers about users' payment for the construction cost. Most of the villages have been expecting supports from provinces, municipalities and SENASA.

In terms of improvement of technical skills of SENASA, it was confirmed that SENASA enabled deep well construction by themselves through improvement of skills and techniques for hydrological and geological surveys as well as well drillings which SENASA had outsourced such construction works before the project. As mentioned above, the actual number of deep wells constructed by SENASA mostly achieved the target value of 50 wells/year. In addition, the success rate (= the number of successful wells/the total number of drillings) has been improving year by year.

Furthermore, in the 3 villages where the constructions of water supply facilities using the materials procured by the project were completed, the operation hours of the water supply facilities have been 6-8 hours/day. The constructed water supply facilities contributed to reduction of load of water fetching at streams[6]. Also, the villagers of the 3 villages, who were interviewed by the field visits for the ex-post evaluation, did not mention incidence of water-borne diseases despite of no availability of statistical data on water quality and water-borne diseases.

Therefore, effectiveness/impact of this project is low.

Quantitative Effects

Indicator	Target Value (Target Year)	Data collected	Year 2007 (before the project) Actual value	Year 2011 (target year) Actual value	Year 2012 Actual value	Year 2013 Actual value	Year 2014 (Ex-post Evaluation) Actual value	Total Actual Value
Indicator 1: Number of deep wells which SENASA can construct	50 wells/year (2011)	Number of drillings (a)	1 drilling/year	41 drillings	69 drillings	55 drillings	19 drillings (60 drillings to be planned)	184 drillings
		Number of drillings with success out of (a) (b)	-	31 drillings	54 drillings	46 drillings	18 drillings	149 drillings
Supplemental indicator 1[7] : Number of water supply facilities constructed in the 12 target provinces	330 villages (2011-2018)	Number of water supply facilities constructed out of (b) (Note 1)	0	6	11	16	20	53
Supplemental indicator 2: Number of deep wells in the prioritized villages in the 1st year	25 villages (2011)	Number of water supply facilities constructed in the 25 prioritized villages (Note 2)	0	1	1	1	-	3

[3] The target number for construction of water supply facilities is 330 by the plan to construct one water supply facility in one village.

[4] Referring to BD p2-5, Table 2.2.1, the planned number of water facility for 3.5 year (from 1st to half of 4th year) is 155.

1st. year	2nd. year	3rd. year	4th. year	5th. year	6th. year	7th. year	Total
25	53	52	50	50	50	50	330

[5] The Basic Design Study Report mentioned selection criteria of villages, including electrification, consent for construction among the villagers, and so on.

[6] According to SENASA, the planned water supply volume of the constructed water supply facilities using the materials procured by the project was 2,000-30,000 litters/hour against the water consumption/household (5 family members)/day was 500 litters in average. The actual water supply volume at the time of ex-post evaluation was 5,000-7,000 litters.

[7] For this ex-post evaluation, as quantitative indicators, which verify the achievement status of effectiveness, supplemental indicators were added to the indicator 1, which was set at the Basic Design. The supplemental indicators were set to evaluate the level of achievement of the project objectives by 2018 and planned output in the 1st year, which were planned to be implemented by the Paraguay side. Considering these information, the evaluation judgment was made. The term of "Supplemental indicator" is used to supplement the indicator 1.

Source: SENASA
Note1: Data collected by the interviews with person in charge in SENASA.
Note 2: Data confirmed by the site visits for this ex-post evaluation.
Note 3: The success rate of deep well drillings were 75.6% in 2011 (31 out of 41), 78.2% in 2012 (54 out of 69), 83.6% in 2013 (46 out of 55) and 94.7% as of July 2014 (18 out of 19).

3 Efficiency

Since procurement of well drilling equipment, procurement of materials for construction of water supply facilities in the 25 prioritized villages and technical support were implemented as planned and the contract price was low, the project cost was considerably below the plan (ratio against the plan: 60%) and project period was also within the plan (ratio against the plan: 85%). Therefore, efficiency of this project is high.

4 Sustainability

The facilities and equipment procured by the project has been maintained by SENASA, the implementing agency. As for institutional aspect, there was no change in responsibility of SENASA to construct water supply facilities in rural areas and to maintain construction equipment including the ones procured by the project. The maintenance of the wells and water supply facilities in the rural areas have been implemented by Juntas established in each village under the technical and monitoring support of SENASA . 11 staff, including engineers and assistant/driver are deployed for the Drilling Unit of the Department of Water Resource, which is responsible for drilling of wells. The unit can set up 3 teams for construction of water supply facilities. 3 staff are deployed for the Hydrological and Geological Survey Unit. In addition, for the Department of General Sanitation responsible for activities of public awareness to organize Junta, 9 staff are deployed at the head office and a few staff each at 14 branch offices. Currently, the necessary number of staff has been deployed for maintenance of the equipment procured by the project. No information about future institutional arrangement is available since there is a move of merger of SENASA. This change of arrangement needs to be carefully monitored. However, layoff of staff is not planned at the time of ex-post evaluation. In the 3 villages where the water supply facilities constructed by using the materials procured by the project, Juntas have taken responsibility to maintain the facilities. In technical aspect, the engineers of the relevant units are very experienced and the engineers trained by the project have continuously worked for SENASA. Operation and maintenance manuals for the equipment procured by the project have been utilized. In addition, trainings on maintenance of drilling machines have been delivered; therefore, it is considered that necessary skill and knowledge are acquired by concerned staff members. As for financial aspect, t the change of government affected the budget of SENASA in 2012 &2013, continuous implementation of drilling wells, maintenance of equipment and ensured manpower indicated that the minimum of budget have been secured under the difficult situation and it is expected that the same size of budget will be sustained. On the other hand, although villagers as beneficiaries need to pay for a part of construction cost for water supply facility, difficulty to collect villagers' share induced delay of the construction and no water supply service started in 22 villages. Therefore, SENASA made efforts to mobilize public financial supports to cover the villagers' share, such as poverty reduction program by the government or donors' funds from 2013, and it would be mobilized in 2014. (It should be monitored whether those funds will be utilized.) For 3 villages, the necessary funds for operation and maintenance of the water supply facilities constructed by using the materials procured by the project have been ensured by Junta of the 3 villages. Also, those water supply facilities have been appropriately operated and supplying water to the villagers so far. Among the materials procured by the project, the submersible water pumps which are not set in the prioritized remaining villages have been stored in storage of SENASA. SENASA has been considering procurement of spare parts since some of the equipment necessary to change the parts. Most of the equipment have been adequately maintained and repaired and been usable. In the light above, it is need to carefully monitor future prospects of the institutional and financial aspects and there are slight concerns about status of the procured equipment.

Therefore, the sustainability of this project effect is fair

5 Summary of the Evaluation

The relevance and efficiency of the project are high and the sustainability of this project effect is fair. On the other hand, in terms of the effectiveness/impact of the project, the output indicator of 50 deep well construction per year was not achieved and the project objective by 2018 of the Paraguayan government to construct water supply facilities in 330 villages have been delayed. In particular, the constructions of water supply facilities were limited to 3 villages among the 25 prioritized villages. although some positive impacts, such as improvement of the success rate for well drilling by efficient implementation based on hydrological and geological information collected by the equipment procured by the project, reduction of burden for water fetching in villages by the construction of water supply facilities, are observed. In light of the above, since the low achievement of the target values show problems on project effects, this project is evaluated to be not satisfactory.

III. Recommendations & Lessons Learned

Recommendations to the Implementing Agency

The rural water supply projects through implementation of drilling wells by SENASA require beneficiaries to pay a part of construction cost for water supply facilities. However, at the ex-post evaluation, well drillings have been implemented in many villages without understandings and consents of the villagers for the beneficiaries' financial responsibilities. It may be one of the reasons to induce the considerable delays of constructions of water supply facilities. For implementation of the planned projects, sufficient discussions and consensus building under participation of villagers as beneficiaries are required. In addition, in the case that the beneficiaries have financial difficulties, it is important to make efforts to utilize other financial resources as currently doing. Also, efforts to urge concerned parties to change the system of beneficiaries' share for the construction cost for water supply facility can be worthy of consideration.

Lessons Learned for JICA

By this project, the expected project effects were constrained by the considerable delay of constructions of water supply

facilities since the villagers did not pay for the construction cost though deep well drillings by the implementing agency were implemented mostly as planned by effectively using the equipment procured by the project. At the time of the Basic Design Study, the users' charge system was recognized and the construction plan based on the system was considered and confirmed. However, the political factors constrained implementation of the construction as planned and caused the delays. The situation was occurred in the process of project implementation after the implementing agency procured the equipment and it was figured out by the continuous follow-ups by JICA. Therefore, it is essential for JICA to continuously request the implementing agency to realize the project effects by following up the implementation of the project after the procurement. This measure has been already taken by JICA but this ex-post evaluation reconfirm the importance of this measure be taken continuously.

Ñuahi Village, Achay Municipality, Paraguarí Province

(One of the 25 prioritized villages)

Completed deep well drilling and water supply facilities

Yvaroty, La Colmena Municipality, Paraguarí Province

(One of the 25 prioritized villages)

Construction of deep well: drilling of well and setting of casing

(not setting of submersible motor pump)