Philippines

Rural Water Supply Project (IV)

Report Date: July, 2002
Field Survey: July, 2001

1. Project Profile and Japan's ODA Loan

Location Map of the Project

Level I System (Deep Well)

1.1. Background

At the end of 1987, the water supply coverage rate was only 63% in the Philippines (53% in rural areas), and approximately 19.6 million people did not receive public water supply services.

The Government of the Philippines (GOP) established the Rural Water Supply and Sanitation Master Plan in 1982 in order to provide a safe and reliable water supply system to most households in the country. Under this master plan, 10 foreign-assisted projects, including RWS I, RWS II and RWS III projects financed by Japan's ODA Loan, were carried out in the1970s-1980s. However, need was still evident, and in 1987 the GOP revised the master plan for the years 1988-2000. This master plan outlined a program for increasing the water supply coverage rate for the entire country from 63% to 79% by 1992.

In March 1989, the GOP enacted Republic Act 6716 (the Accelerated Water Supply Program), the objective of which is to provide an adequate water supply system in rural areas, and thereby improve living conditions. Republic Act 6716 set a goal of constructing or rehabilitating a total of 100,000 Level I (point source) systems[1], which would provide at least one water supply system in each rural community, or "barangay.[2]"

This project, the Rural Water Supply IV Project (hereafter refer to as RWS IV), was a part of Republic Act

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[1] In the Philippines, water supply facilities are classified into three groups:
Level I (Point Source): A Level I system comprises a protected well or a developed spring with an outlet, but without a distribution system. This type of system is generally suited to rural areas, where the houses are scattered. A Level I facility normally serves 15 to 25 households, and its range must not extend more than 250 meters from the farthest user. The yield or discharge is generally 40 to 150 liters per minute.
Level II (Communal Faucet System or Standposts): A Level II system comprises a source, a reservoir, a piped distribution network and communal faucets, which are located at not more than 25 meters from the farthest house. This system is designed to deliver about 40-80 liters of water per capita per day to an average of 100 households, with one faucet per 4 to 6 households. This layout is generally suited to rural and urban fringe areas, where houses are clustered densely and justify insertion of a simple piped system.
Level III (Waterworks System or Individual House Connections): A Level III system comprises a source, a reservoir, a piped distribution network and household taps. This system is generally suited for densely populated urban areas.

[2] A barangay is the smallest unit of a community in the Philippines. A barangay normally consists of 50~100 households.

6716, and involved the construction and rehabilitation of a total of 17,500 Level I facilities in the areas of Visayas and Mindanao, where the water supply was particularly poor.

1.2. Objective

To improve the living conditions of people in the areas of Visayas and Mindanao by providing an adequate supply of safe, potable water.

1.3. Project Scope

The project consisted of the following components:

1. Construction and rehabilitation of 17,500 Level I systems, which entails the construction of 6,500 shallow wells and 8,500 deep wells; development of 500 springs; and rehabilitation of 2,000 deep wells
2. Construction of 17 workshop buildings
3. Consulting services for support of implementation agency and construction supervision

1.4. Borrower/Executing Agency

The Government of the Republic of the Philippines/ Department of Public Works and Highways (DPWH)

1.5. Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	5,080 million Yen/3,176 million Yen
Exchange of Notes/Loan Agreement	October 1989/February 1990
Terms and Conditions Interest Rate Repayment Period (Grace Period) Procurement	 2.7% 30 Years (10 Years) General Untied Loan (Partially Untied for Consulting Services)
Final Disbursement Date	May 1995

2. Results and Evaluation

2.1. Relevance

The GOP placed emphasis on developing a water supply system and implemented 10 foreign-assisted projects in the 1980s. However, the gap in living standards between urban and rural areas was still wide at the end of that decade. Under the circumstances, the GOP enacted Republic Act 6716 in order to promote rural water supply projects, and thereby improve public sanitation, and raise the living standards of people living in rural areas. RWS IV followed RWS projects I~III and, as a part of Republic Act 6716, was consistent with the government policy. Furthermore, the project intended to meet the essential needs of people living in the project area, a rural area where living conditions were particularly poor.

The Medium-Term Philippine Development Plan for 1999-2004 also addresses the need for safe water in rural areas. It sets targets, defined by the number of people served (4.39 million people are slated for service coverage in rural areas), increasing incrementally over a five-year period. The project objective is still relevant.

2.2. Efficiency

2.2.1 *Project Scope*

A total of 17,500 Level I systems were originally slated for construction and rehabilitation at the time of appraisal, whereas 17,556 Level I systems were developed under the project. There was also a modification in the number of target provinces. While the project originally targeted 40 provinces, it was implemented in only 33 provinces[3]. The main reason for this modification was that the ADB[4]-assisted Second Island Provinces Rural Water Supply Sector Project was approved and implemented during the same period, and, accordingly, seven island provinces[5] that were originally under the scope of RWS IV, were covered under the ADB-assisted project. This modification helped augment implementation efficiency.

The number of workshop buildings increased from 17 to 47, due to the establishment of new District Engineering Offices[6](DEOs) within DPWH. The workshop buildings served as the storage and repair shop for drilling equipment and tools during the project implementation. Nearly all of the new DEOs needed workshop buildings for repairing and replacing worn-out equipment, so the additional 30 workshop buildings were indispensable to facilitate the implementation.

2.2.2 *Implementation Schedule*

Originally, the entire undertaking was scheduled for a period of 32 months, but this was extended to 59 months, because of delays in the procurement and delivery of materials. During implementation, the performance of some equipment was poor, requiring repairs or replacement. Certain parts, such as bearings, were also continuously wearing out. Some of the barangays were located in remote areas, making it difficult to deliver materials or to replace worn-out machine. In order to overcome the delays, the implementation agency took various actions, including procurement of additional equipment, vehicles and spare parts, and construction

[3] Even though the target number of provinces was reduced, the original number of 17,500 Level I systems was not changed. The targeted barangays where Level I systems were constructed were flexibly selected by the local government units (LGUs) during the project implementation.

[4] ADB: Asian Development Bank

[5] Those 7 island provinces were Negros Occidental, Negros Oriental, Siquijor, Surigao Del Norte, Basilan, Sulu and Tawi-tawi.

[6] A DEO is the smallest unit of the DPWH office, which was responsible for actual implementation of the project within each district. A total of 41 new DEOs were established during the project implementation.

of additional workshop buildings.

In addition, unforeseen or fortuitous events such as typhoons, earthquakes and discovery of high iron content in water caused delays.

2.2.3 *Project Cost*

The actual project cost was 4,306 million Yen, approximately 36% less than the original estimate of 6,773 million Yen. This cost under-run was attributable to a significant reduction in procurement costs, which originally was estimated at 3,153 million Yen, and was contained to 2,142 million Yen, representing a reduction of approximately 32%. Competitive bidding enabled the executing agency to procure materials at much lower prices. Depreciation of the Peso (from 1 Peso=6.2 Yen [1989] to 3.7 Yen [1995]) also contributed to the reduction in the project cost.

2.3. Effectiveness

2.3.1 *Served Population and Water Supply Rate in the Project Area*

The civil work of RWS IV started in January 1991 and was completed in December 1995. As shown in Table 1, the served population increased by 4,380,000 people between 1990 and 1995[7], raising the water supply rate from 56% to 71% in the area.

Table 1 Water Supply Rate in Visayas and Mindanao, 1990 and 1995

	1990	1995
Rural Population (thousand)	17,552	19,918
Served Population* (thousand)	9,783	14,163
Water Supply Rate (%)	56	71

Source: DPWH

* Population served by Level I system

The project aimed to improve services for 427,500 households (2,565 thousand people) in Visayas and Mindanao by constructing and rehabilitating 17,500 Level I systems. Under the project, 17,556 systems were constructed or rehabilitated (15,560 Level I systems constructed and 1,996 systems rehabilitated). It is, thus, calculated that upon the project completion, roughly 428,900 households (2,573,000 people) directly benefited from the project by gaining access to Level I systems[8]. Therefore, it can be estimated that the project initially contributed to approximately 59% of the entire newly served population, covering 2.5 million people in the area.

2.3.2 *Utilization Rate of Level I System*

With the issuance of NEDA Board Resolution No. 4 in 1994, the responsibility for developing and monitoring water supply facilities was transferred from DPWH to the local government units (LGUs). However, LGUs have not yet established a monitoring system to identify the current condition of each Level I systems, and it was impossible to obtain current utilization rate of the facilities constructed or rehabilitated under the project.

An interview survey was conducted for this evaluation in 110 barangays of 11 municipalities in the

[7] The number here represents the population of Visayas and Mindanao, excluding the population in urban areas.

[8] A Level I system normally serves around 15 to 25 households. In this case, the basis of calculation was taken from the appraisal data; 24.43 households/Level I system and 6 persons/household.

Province of Cebu[9] in 2001 to examine the achievements and impacts of RWS IV. A total of 107 respondents[10] were interviewed, and 75% of the respondents said that the Level I systems constructed or rehabilitated under RWS IV were operational, while 25% said that they were not operational because of malfunctions in the wells and poor water quality.

Japan International Cooperation Agency (JICA) also conducted a survey on the current condition of Level I systems between 1998 and 2000 in 18 provinces in Visayas and Mindanao, which were covered by RWS IV[11]. The survey produced similar results to the above interview survey. According to the JICA survey, in the 18 provinces there were a total of 66,301 public Level I systems, of which 49,835 were considered safe, functioning sources. The overall utilization rate of the public Level I systems was approximately 75%, though the utilization rate in each province varies from 45% to 95%. Most of the unsafe, or non-functioning Level I systems were shallow wells and open dug wells. These facilities were normally located near potential pollution sources, such as unsealed toilets and stagnant drainage trenches, and hence were easily affected.

Water quality is one of the crucial factors affecting the utilization rate of Level I systems. Currently, the provincial health offices (PHOs) in each province are monitoring the water quality of Level I systems. Table 2 shows the results of monitoring activities conducted by the PHO of Cebu Province between 1995 and 2001.

Table 2 Bacteria Content in Level I Systems, 1995~2001

Year	Number of Level I Systems	Number of Samples Examined	Number of Positive Results	Rate of Bacteria Content (%)
1995	4,121	406	339	83
1996	4,079	682	498	73
1997	4,495	753	443	59
1998	4,365	711	428	60
1999	4,555	1,124	689	61
2000	4,355	935	755	81
2001	4,296	949	715	75

Source: PHO of Cebu Province

On average, 70% of the water samples tested showed positive for contamination, indicating that the majority of examined Level I systems were not potable. Low water quality is likely the cause of non-operation of Level I systems, especially in urban areas, which are more subject to the contamination, although the PHOs do chlorinate contaminated water as soon as the water tests positive.

Since there is no available data for each Level I system constructed or rehabilitated under RWS IV, the current utilization rate of all such systems is difficult to evaluate. Based on JICA's survey and the interview survey, however, it can be assumed that, on the whole, around 70% of the Level I systems of the project are currently utilized.

The utilization rate of the Level I systems in the 33 provinces has not been monitored since the completion of the project, and consequently there is a compelling and immediate need for implementing a monitoring system. Also, it is important to examine the water quality issue in reviewing the level I systems constructed under RWS IV.

2.4. Impact

Expected consequences of the project include improvement of public sanitation (prevention of water-borne diseases) and effective utilization of the work force as a result of the reduction in time needed to

[9] Since the project sites were scattered all over Visayas and Mindano, Cebu Province was selected as a representative province in terms of economy and industry.

[10] For the survey, the barangay captain or another barangay official was interviewed since it was assumed that these representatives would know more about the history and background of the Level I systems constructed and rehabilitated under RWS IV project.

[11] "The Study on the Provincial Water Supply, Sewerage and Sanitation Sector Plan in the Republic of the Philippines" 2000, JICA

fetch water from the source. However, it was rather difficult to evaluate these impacts as a whole. Here, the results of the interview survey conducted in 110 barangays in the Province of Cebu are shown as a reference for the impact of the project.

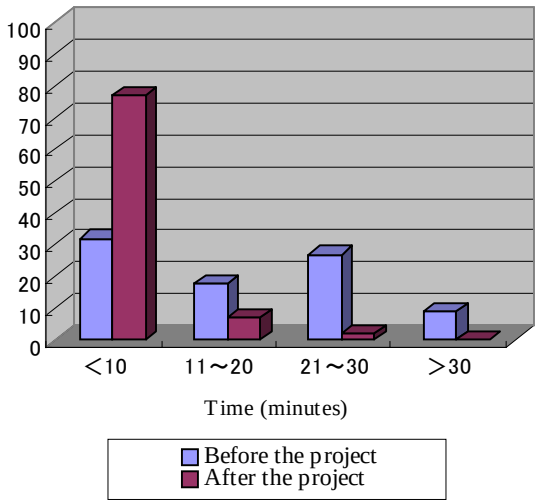

Figure 1 Average time taken to carry water from the Level I system to each household

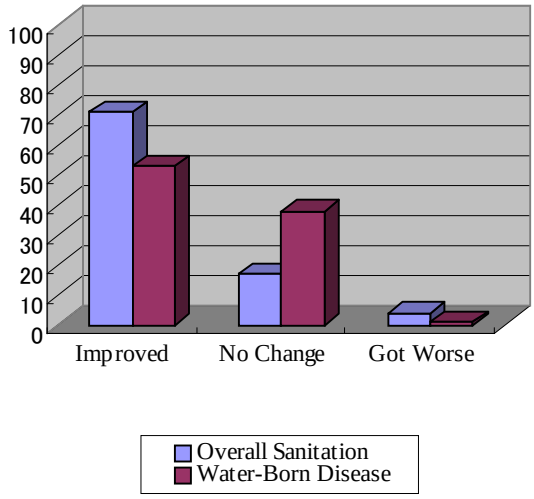

Figure 2 Impact on overall sanitation and water-borne disease

As shown in Figure 1, the average time needed to fetch water was reduced significantly. 77% of the respondents (representing 82 barangays[12]) said that after the project it became possible to fetch water from point to point in less than 10 minutes. According to the aforementioned survey, 84% of the respondents affirmed that the project contributed to the reduction of women's working time. 53% observed that the number of residents affected by water-borne diseases had decreased, and 71% said that overall sanitation in the barangay had improved after the project (Figure 2).

Overall, 62% of the respondents were either satisfied or very satisfied with the project. The main reasons for the satisfaction were the improvement of water quality, and availability and accessibility of water. On the other hand, 38% of the respondents answered either ''less satisfied'' or ''not satisfied'' with the project because the water was not potable (59%) or the facilities were malfunctioning (41%).

There has been no negative environmental impact reported so far.

2.5. Sustainability

In rural area, the operation, maintenance, management and improvement of a public water supply system are responsibilities discharged by the users through the Barangay Waterworks and Sanitation Association (BWSA[13]). Development of such an organization is, therefore, a major determining factor in the success (or failure) of the operation and maintenance of a water supply system.

2.5.1 BWSA

The formation of BWSAs was primarily the responsibility of the District Engineering Office (DEO) under DPWH. During project implementation, DEOs provided assistance in the formation of BWSAs, including training programs for operation and maintenance (O&M) along with O&M manuals written both in English and Tagalog.

[12] Each respondent described the general condition of the barangay that she or he represented.
[13] Local residents (beneficiaries) make up the membership of each. The BWSA collects water fees from its members and appropriates funds for the operation and maintenance of the facilities.

Nevertheless, according to an investigation[14] on the status of BWSAs conducted in 40 barangays in the 28 provinces of Visayas and Mindanao during project implementation, only 30% of bangarays organized BWSAs. Of that number, only 17.5% were functioning. Consequently, the majority of the barangays (70%) did not form any organizational structure. As a result, non-payment of dues by their members, and lack of their technical and financial capability to maintain the facilities were commonly observed.

One of the reasons that the organizing of BWSAs was weak during project implementation was that, with limited time and human resources, DEOs had to prioritize constructing Level I systems and had little time left for assisting in the formation of BWSAs. Moreover, follow-up activities to strengthen the Association has not realized since the project completion.

The JICA Survey mentioned earlier also reported that only a few BWSAs in the 18 provinces of Visayas and Mindanao were organized.

2.5.2 Local Government Units

In the absence of BWSAs, the responsibility for the operation and maintenance of the water facilities rests with the barangay. Sometimes the Barangay Councils (community leaders) try to settle the problems, and villagers make donations to repair the facility, as problems arise. In most of the barangays, however, no water charge payment is collected, and accordingly, there are no funds for the repair of the facilities. Barangays rely on the Local Government Units (LGUs) for financial and technical assistance. However, LGUs generally lack sufficient funds and technical capacity. Although the issuance of NEDA Board Resolution No. 4 in 1994 mandated that LGUs play a larger role in planning and implementing water supply and sanitation (WATSAN) projects, including assisting barangays in O&M, the institutional capacity of LGUs is limited, and a system to support O&M by barangays has not yet been established.

Consequently, a number of malfunctioning facilities constructed under the project have been abandoned. For instance, the interview survey mentioned earlier shows that in case of malfunctioning facilities, 53% of the barangays needed technical assistance to make repairs, 38% of which took no corrective action in that regard. Given the current condition of the O&M system, the utilization rate is expected to decrease in the near future. There is a definite need for the immediate reestablishment or reinforcement of the O&M organizations.

3. Lesson Learned

Regionally dispersed projects particularly require careful attention to develop self-sustaining capacity at both community and institutional level. It is essential that users participate in project planning process, being fully informed of the cost and benefits of the project, including their responsibilities and of limitations of the system, which allows communities to make rational decisions whether they accept the project. This process should not be neglected, since it plays a significant role in helping develop user's sense of ownership. Building institutional capacity, on the part of local governments, to support the users associations is also necessary.

4. Recommendations

The strengthening of the institutional capacity of LGUs is indispensable for the proper organization of BWSAs. The Government, specifically the Department of Interior and Local Government (DILG), should provide training programs to LGUs in order to improve the quality of its human resources. In the meantime, the LGUs should seek means to provide long-range training programs for BWSAs, by cooperating with DILG and NGOs.

[14] An investigation was conducted by consulting agencies that supported implementation of this project. They conducted a questionnaire survey in 1994 to measure the status of BWSAs.

Comparison of Original and Actual Scope

Items/Activities	Original Scope	Actual Scope
I. Project Scope		
A. Construction of wells		
1. Shallow wells	6,500 wells	6,556 wells
2. Deep wells	8,500 wells	8,397 wells
B. Development of springs	500 springs	607 springs
C. Rehabilitation of wells	2,000 wells	1,996 wells
Total	**17,500 Level I systems**	**17,556 Level I systems**
D. Construction of Workshop Buildings	17 Buildings	47 Buildings
E. Procurement of equipment	Various	Various
F. Consulting service		
1. International	53 M/M	72.5 M/M
2. Domestic	190 M/M	226 M/M
II. Implementation Schedule		
A. Preliminary and detailed engineering	Oct. 1989 – June 1992	Jan. 1991 – June 1994
B. Formation of BWSA	Jan. 1990 – June 1992	Jan. 1991 – Dec. 1995
C. Procurement and delivery of materials	Jan. 1990 – June 1991	July 1990 – May 1995
D. Construction and installation of systems	Apr. 1990 – Dec. 1992	Jan. 1991 – Dec. 1995
E. Consulting services	July 1990 – Dec. 1992	Feb. 1992 – Apr. 1995
F. Turn-over of the systems to the respective beneficiaries	July 1990 – Jun. 1992	July 1991 – Feb. 1996
G. Training	Oct. 1990 – Dec. 1991	Sep. 1992 – Dec. 1993
H. Completion of construction	Dec. 1992	May 1996
III. Project Cost		
Foreign Currency	3,389 mil. Yen	2,362 mil. Yen
Local Currency	546 mil. Peso	452 mil. Peso
Total	6,773 mil. Yen	4,306 mil. Yen
ODA Loan Portion	5,080 mil. Yen	3,176 mil. Yen
Exchange Rate	1 Peso = ¥ 6.2 (February, 1989)	1 Peso = ¥4.3 (Weighted Average during 1990 and 1995)

Independent Evaluator's Opinion on Rural Water Supply Project IV

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1. Relevance

The Rural Water Supply Project (RWS IV) is relevant from the perspectives of the target group and the development policy of the Philippines both at the time of the project's appraisal and at present.

Like the previous development plan, *the Philippine Medium Term Development Plan for 2001-2004* has included the provision of safe, potable water to 90% of its population as one of its priorities for year 2004. For majority of the household, especially those in the rural areas of Visayas and Mindanao, access to potable water remains a priority.

Although the project scope has been changed, the project remained relevant both to the target group and the development priorities of the recipient country. It still meets the overall project objectives.

2. Efficiency.

The project is efficient in terms of total cost vs. number of systems constructed or rehabilitated (originally, the total cost was 6,773 million Yen for 17,500 Level systems but actual cost was 36% lesser – 4,306 million Yen covering 17,556 systems). It was not efficient in terms target completion time – as planned, project duration is supposed to be 32 months but it was extended to 59 months.

3. Effectiveness.

The effectiveness of the project is indicated by:

a. 17,556 Level I systems were constructed and rehabilitated as against 17,500 programmed;
b. Roughly 428,900 households gained access to Level I system, surpassing the original target of 427,500 households; and,
c. More systems, 75% of those surveyed, were operational while 25% are either not functioning or delivering poor water quality (70% of samples taken were contaminated).

4. Impact

The project has generated direct-preliminary impacts. As reported, the average time used to fetch water from the source (level 1) to each household has been lessened, reducing women's time for fetching water. Time saved could be used for economic and social activities.

Notable impacts of the project are the decrease in the incidence of water-borne disease and improved sanitation of the recipient barangays

In the short run the project goal has been achieved. In the long run, however, generating and sustaining lasting impact is threatened by the poor organization and functionality of Barangay Waterworks and Sanitation Association, the village-based organization which is tasked to operate and maintain the system.

5. Sustainability.

Sustainability is threatened by the fact that only 30% of the barangays surveyed have organized Barangay Waterworks and Sanitation Associations (BWSAs), the organization primary tasked to

operate, maintain, manage and improve the system. Moreover, only 17.5% of the BSWAs organized are functioning. Consequently, dues of members are not collected thus the financial capacity of the organization to maintain the system has been adversely affected.

Lessons Learned.

Some lessons learned from the project include,

(a) Beyond rhetoric, a genuine donor coordination is needed to avoid project overlaps that could cause project re-programming and delays (overlap with the ADB's Second Island Provinces Rural Water Supply Sector Project resulted into project modification and delay);

(b) Authentic competitive bidding helps reduce project cost;

(c) To be relevant, efficient and effective is challenging but to create impact and make the project sustainable is more difficult;

(d) Institution building is a key to project sustainability; and.

(e) A systematic evaluation of project relevance, effectiveness, efficiency, impact, sustainability and equity should be in place as early as the project planning stage.

Recommendations.

(a) Build the capability of BWSAs to manage and maintain the project;

(b) Mobilize the local government unit or a non-governmental organization to assist the BWSAs operate and maintain the system; and,

(c) Share with the Local Planning and Development Office the responsibility to monitor and evaluate the project.