

Republic of the Philippines

Provincial Cities Water Supply Project (Phases III, IV, V)

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Field Survey: November 2008

1. Project Profile and Japan's ODA Loan



Map of the Project sites



Water treatment facilities constructed under the Project (San Jose Del Monte City)

1.1 Background

In 1993, the percentage of population served in the Philippines was 68 percent, with the number of users being about 62 million. The remaining households were forced to use unhygienic water resources located nearby such as community wells, rivers and rain water. Therefore, it was necessary to expand the supply of safe and reliable water in urban areas. Furthermore, while future water demand was expected to increase significantly, the existing water supply facilities were to a large extent in a state of disrepair, and the improvement of water facilities was therefore urgently needed.

In the Philippines, there are three levels of water supply, and each of them is regulated by the municipal code or the local water district law. Level 1 - water supplied by wells or springs in the villages; Level 2 - water supplied by public water faucets; and Level 3 - water supplied through water faucets in individual households. Levels 1 and 2 are under the jurisdiction of municipalities, whereas Level 3 water supply is under the jurisdiction of either Water Districts¹ or municipalities. A Water District is an organization separate from the municipality with responsibilities such as improvement and management of the water supply system in the region, and the setting and collecting of water charges. The Local Water Utilities Administration (LWUA) is a government agency which supports establishment of the

¹ Water Districts are organizations established in 1973 following the Presidential Decree No. 198 (PD 198). The Water Districts supply water at Level 3 in provincial cities with a population of more than 2 million.

Water Districts in rural areas, improvement of water facilities and their administration. The main responsibility of LWUA is the lending of funds to Water Districts. Another responsibility of LWUA is providing operational support to the Water Districts such as managerial and technical guidance. LWUA itself is funded by loans and investments from the government.

Phases III, IV and V of the Provincial Cities Water Supply Project were conducted to improve water supply access in the Philippines by providing support to the Water Districts, LWUA being the executing agency. The selected Water Districts were basically the central cities in each region, where in individual households water was supplied through water faucets. Water supply was not meeting the potential demand due to insufficient water supply and problems in some operating water facilities; expansion of water facilities was needed in order to respond to the significant increase in demand that was expected in the future.

1.2 Objective

The object of this project was to provide safe and high quality water through the expansion and upgrading of the water supply systems in the Water Districts of provincial cities of the Philippines, and thereby improve the wellbeing of local residents.

1.3 Borrower/Executing Agency

Phase III	The Government of the Philippines and LWUA
Phases IV-V	LWUA

1.4 Outline of the Loan Agreement

Loan Amount/Loan Disbursed Amount	Phase III 6,212 million yen / 2,328 million yen Phase IV 6,131 million yen / 1,917 million yen Phase V 7,228 million yen / 4,222 million yen
Exchange of Notes/Loan Agreement	Phase III November 1994 / December 1994 Phase IV July 1995 / August 1995 Phase V March 1997 / March 1997
Terms and Conditions	Phase III Interest rate 3.0%, Repayment period 30 years (Grace period 10 years), General untied Phases IV-V Interest rate 2.5% (2.1% for Consulting Services), Repayment period 30 years (Grace Period 10 years), General untied

Final Disbursement Dates	Phase III April 2003 Phase IV November 2004 Phase V June 2005
Main Contractors	-
Consulting Services	(Phase III) Nippon Jogesuido Sekkei Co., Ltd. (Japan), (Phase IV) Binnie & Partners (Overseas) Ltd (U.K.), (Phase V) BCEOM French Engineering Consultants (France)
Feasibility Study (F/S), etc.	January 1988 - Loan Agreement for Phase I May 1992 - Loan Agreement for Phase II

2. Evaluation Results (Overall Rating: B)

2.1 Relevance (Rating: a)

The importance of supplying safe drinking water throughout the Philippines has consistently been stated in the Medium-Term Philippine Development Plan, since the time of the appraisal to the present. The Medium-Term Philippine Development Plan's (1993-1998) target was water service coverage of 79% in the Philippines on average, 72% in Metro Manila, 71% in urban areas other than Metro Manila and 85% in rural areas. The current Medium-Term Philippine Development Plan (2004-2010) maintains this direction. In order to provide a supply of potable water in the entire Philippines until 2010, it aims at increasing the national average water supply ratio to 92% - 96%, from 80% when the Plan was implemented.

Further, since a substantial population increase was expected in the target Water Districts, meeting the demand was an important issue to be solved. Water demand forecasts at the time of appraisal based on the estimates of population growth were appropriate, because the population in the target Water Districts at the time of the evaluation was about the same.

For these reasons, implementation of the Project adequately met the country's development policy and development needs both at the time of the appraisal and at the time of the evaluation. Therefore, the relevance of this Project was concluded to be high.

2.2 Efficiency (Rating: b)

Although the project cost was within the planned value, the project period was significantly longer than planned; therefore the evaluation for efficiency is fair.

2.2.1 Output

The outputs of this Project were the improvement and expansion of water supply facilities in the target cities. In the original plan, 23 cities were to be covered; 5 cities during Phase III, 7 cities during Phase IV and 11 cities during Phase V. However, eight Water Districts revised

their plans and therefore were not included in this Project. Most of the withdrawn Water Districts implemented water supply projects using their own funds. As a result, the Project was implemented in 15 cities in total.

In provincial cities, ground water from deep wells disinfected only by chlorination is used as the main water source. In some cities such as Butuan and San Jose Del Monte, water from rivers disinfected through water treatment plants is used as a water source. The Project included the following water supply facilities ranging from water source / intake facilities to water delivery facilities.

Water source/intake facilities	—	Drilling deep wells and infiltration wells, installation of pump stations, etc.
Water treatment facilities	—	Installation of chlorination equipment, construction of water treatment plants
Water transmission facilities	—	Construction of transmission pipelines and installation of pumps, etc.
Water distribution facilities	—	Construction of reservoirs, elevated tanks and distribution pipelines
Water delivery facilities	—	Installation of service connections, water meters and fire hydrants, etc.

However, in the Water Districts where the Project was implemented, changes in the Project design were made in accordance with site conditions. For example, in Cagayan de Oro the sites for deep wells were changed when it was discovered that there was a lack of ground water at the originally planned sites. Similarly in Butuan, the water source was changed from deep wells to the river. Also, in most of the Water Districts there were changes in specifications and length of water pipes. Table 1 below shows a comparison between the actual and the planned outputs of the Project. Table 1 shows a comparison of the number of water sources/intakes and treatment facilities, which are the main water supply facilities constructed by the Project, as well as the length of water pipes extension and replacement. As a result, the targeted volume of water supply was secured in most of the Water Districts.

Table 1. Comparison of original and actual outputs

	Water source/intake and treatment facilities				Water pipes extension and replacement			
	Original		Actual		Original		Actual	
Phase III	Deep well	36	Deep well	14	Transmission pipeline	49km	Transmission pipeline	59km
			Infiltration gallery	1	Distribution pipeline	150km	Distribution pipeline	161km
			Reservoir	4	Replacement of pipes	2km	Replacement of pipes	None

Phase IV	Deep well	32	Deep well	46	Transmission pipeline	56km	Transmission pipeline	37km
	Spring intake structure	5	Reservoir	1	Distribution pipeline	199km	Distribution pipeline	232km
	Pump station for existing well	7	Pump station for existing well	6	Replacement of pipes	72km	Replacement of pipes	None
					Pipes for stock	3km	Pipes for stock	41km
Phase V	Deep well	10	Deep well	17	Transmission pipeline	53km	Transmission pipeline	56km
	Infiltration gallery	1	Infiltration gallery	1	Distribution pipeline	249km	Distribution pipeline	242km
	Water treatment plant	1	Water treatment plant	2	Transmission/distribution pipeline	30km	Transmission/distribution pipeline	37km
	Intake facility	1	Intake facility	1	Transmission/distribution parallel pipeline	9km	Transmission/distribution parallel pipeline	6km

Source: Project Completion Report

2.2.2 Project Period

The actual Project period exceeded the originally planned period significantly. The Project period for Phase III was intended to be 65 months from December 1994 to April 2000, however the actual period was 129 months until August 2005, i.e. 198% of the planned period. Similarly, the Project period for Phase IV was intended to be 63 months from August 1995 to November 2000, whereas the actual period was 122 months until October 2005 (194% of the planned period). Lastly, the Project period for Phase V was intended to be 58 months from March 1997 to January 2002, however the actual period was 125 months until August 2007 (216% of the planned period).

There were several reasons for the excess in project period. In many target cities, acquisition of the right of way was delayed due to difficulties in the negotiations between the land owners and the Water Districts. Also, issuance of the notice to proceed was delayed due to a prolonged procurement process. In addition, since the decision making process in LWUA took considerable time, prompt action to mitigate the causes of the delay were not taken. If such action was taken, the delay would not have been so significant. According to LWUA, countermeasures are now being taken. Currently, rights of way must be obtained when a Water District is planning a water supply project. Also, regarding the notice to proceed, since the prequalification process of contractors has been accelerated since Phase V of the Project, the period of time from the selection of a contractor to the issuance of the notice to proceed has now been reduced. However, in spite of the countermeasures taken by LWUA, the causes of the delay in obtaining rights of way are exacerbated by a vertical administrative system and are still unsolved. For example, the Ministry of Public Works and Roads controls national roads and puts a higher priority on maintenance of the national roads rather than construction of water pipelines (as construction of water pipelines requires the entire surface of roads to be repaved rather than only the shoulders where the construction was carried out), and this obstructs smooth implementation of water supply projects conducted by cities. Other

reasons for the delays during this Project included the changes in specifications for the construction, such as the sites for the water source/intake facilities and the corresponding pipeline construction.

2.2.3 Project Cost

As a whole, the actual Project cost was less than the original plan. The Project cost for Phase III was planned at 8,283 million yen, whereas the actual cost was 2,931 million yen, i.e. 35% of the estimated cost. Similarly, the project cost for Phase IV was planned at 8,175 million yen, however the actual cost was 2,929 million yen (36% of the original plan). Finally, the project cost for Phase V was planned at 9,637 million yen, whereas the actual cost was 6,136 million yen (64% of the estimate). The reductions in cost were mainly due to the following reasons: the construction cost of the withdrawn Water Districts accounted for 37% of the planned cost, a large portion of the total construction cost; most of the water meters included in the original plan of the Project were procured by the Water Districts using their own funds; and the foreign currency exchange rate changed such that the Philippine peso decreased in value against the Japanese yen.



Deep well water source facility



Elevated water tank

2.3 Effectiveness (Rating: a)

The effectiveness of the Project was assessed against its objectives, and the main indicator used for this assessment was the coverage of the water supply service. Except for two Water Districts, the goals were achieved or almost achieved (more than 80% of the goal). Based on our assessment; most of the expected effects could be seen through implementation of this Project. Considering the overall results of the Project, its effectiveness can be assessed as high.

2.3.1 Operation and Effect Indicators

(1) Population Served

In most cities, the targeted population served was achieved. However, in two Water Districts (Masbate and Pinamalayan) where problems in their operation and maintenance were found, the current population served is far below the target.

For Masbate, in addition to the problems in operation and maintenance of the water facilities, the target set for the population served may have been too high because it was 12 times more than the population served at the time of planning. In Pinamalayan, the planned volume of water was not supplied because the water source was infected with iron bacteria² after the start of operation. (The current situation in Masbate and Pinamalayan Water Districts is described in 2.5.2 Operation and Maintenance Status.)

Table 2. Comparison of Targeted and Actual Population Served

(Unit: number of persons)

Water District	Benchmark	Target	Actual	Achievement (%)
Phase III				
	(1993)	(2000)	(2008)	
Butuan	106,413	135,811	217,280	160
Cagayan de Oro	276,960	443,760	456,816	103
Kalibo	21,640	44,830	126,892	283
Phase IV				
	(1995)	(2005)	(2008)	
Bacolod	141,421	292,394	254,602	87
Batangas	91,663	144,106	180,992	126
Masbate	3,422	41,308	24,396	59
Quezon Metro	107,277	193,107	169,970	88
Tarlac	66,666	145,212	189,769	131
Phase V				
	(1995)	(2005)	(2008)	
Candon	No data	4,473	No data ³	-
Santiago	37,880	68,810	No data ⁴	-
Tanay	24,125	43,737	55,540	127
San Jose Del Monte	46,292	247,380	369,434	149
Pinamalayan	12,880	27,080	13,105	48
Metro Roxas	54,910	110,960	134,757	121
Surigao	26,299	75,689	94,497	125

Source: Project Completion Report and the latest monthly data sheets of Water Districts

² Bacteria which oxidize a chemical compound dissolved in the ground water and produce insoluble hydroxide, which then collects as sediment. In Pinamalayan, the jelly of iron bacteria blocked pumps of deep wells; therefore, water supply from deep wells was suspended.

³ Data could not be acquired by the evaluator because monthly data sheets were not submitted from the Water Districts to LWUA.

⁴ Data were not acquired by the evaluator due to deficiency in the information reported in the monthly data sheets.

(2) Water Supply Capacity

In most cities, the resulting water supply capacity exceeded or was close to the targeted capacity, and the target of the water supply capacity was achieved overall. In Pinamalayan however, the achievement of water supply capacity was far below the target due to the effects of iron bacteria stated earlier.

Table 3 Comparison of Targeted and Actual Water Supply Capacity

Unit: l/s (liters per second)

Water District	Target	Actual	Achievement (%)
Phase III			
Butuan	442	331	75
Cagayan de Oro	750	886	118
Kalibo	122	145	119
Phase IV			
Bacolod	595	* 472	79
Batangas	240	240	100
Masbate	154	129	84
Quezon Metro	151	160	106
Tarlac	315	310	98
Phase V			
Candon	No data	30	-
Santiago	52	111	213
Tanay	89	109	122
San Jose Del Monte	347	347	100
Pinamalayan	53	24	45
Metro Roxas	347	347	100
Surigao	208	208	100

Source: Project Completion Report and the latest monthly data sheets of Water Districts

Note: These figures include the water supply capacity of deep wells which were not in operation due to the Cease and Desist Order (CDO).

2.3.2 Financial Internal Rate of Return (FIRR)

In this evaluation, the evaluators made trial calculations of the FIRR for three Water Districts (Cagayan de Oro, Quezon Metro and San Jose Del Monte). Calculations were made under the assumption that revenue from project facilities could be estimated based on the proportion of their capacity to total water supply. Regarding maintenance costs, it was assumed that 10% of revenue would be used for general maintenance of the facilities, without considering any cost for extensive rehabilitation. The project life was set at 25 years.

The FIRRs of these three Water Districts as estimated at the time of the appraisal were 11%, 5% and 21% in Cagayan de Oro, Quezon Metro and San Jose Del Monte, respectively. FIRRs calculated using the actual figures at ex-post evaluation were 16%, 8% and 16%,

respectively. While the assumptions in these calculations were not identical to the ones at appraisal, the resulting FIRR exceeded the planned FIRR in two Water Districts. Also, although the actual FIRR of San Jose Del Monte was below the targeted FIRR, it was still considered high in comparison to other Water Districts.

2.3.3 Qualitative Aspects

(1) Improvement of safety of water supply

This evaluation included a beneficiary survey conducted in the three Water Districts of Cagayan de Oro, Tarlac and Metro Roxas. One Water District was selected for each phase of the Project. During the survey, surveyors visited a total of 120 households to interview the beneficiaries. The households were selected randomly in the Project areas (the newly serviced area in Cagayan de Oro and the existing service area where the volume of water supply was increased in Tarlac and Metro Roxas). Questions for this survey fell into three categories: 1) safety and utilization of water supply, 2) improvements in health as a result of improved service, and 3) reduction of work to obtain water from other sources.

The results of the survey indicated that, in general, users recognized the water supply to be safe. About 70% of respondents replied that they used the supplied water for drinking, and more than half drank the water with confidence in its safety. In addition, almost all respondents replied that a sufficient volume of water is supplied, and about 70% replied that the price for water services was affordable.

The survey results also revealed that the perceived safety of the water supply by users is influenced by circumstances in their respective cities. For example, in cities where residents are highly dependent on the water supply for drinking, people perceived the water to be very safe. By comparison, in the suburbs of Metro Manila such as Tarlac, where residents prefer drinking bottled water over tap water, people perceived the safety of the water supply to be lower. According to LWUA, it will be necessary to promote the safety of the water supply in those areas in order to increase its usage.

Bacteriological and chlorination tests are conducted in the Water Districts in accordance with the Philippine National Standard for Drinking Water set by the Philippines' Department of Health. According to monthly data sheets submitted by the target Water Districts to LWUA, almost all the results of water quality tests met safety standards. Except for the case of iron bacteria in the Pinamalayan Water District, no negative issues were



Figure 3 Examination of water quality in a Water District

observed regarding the quality of water supply.

2.4 Impacts

(1) Improvement of sanitary conditions by safe water supply

In most of the target cities, instances of diarrhea are currently below or on par with the national average, even in cities where instances were previously above the national average (0.91% in 2002 and 0.64% in 2007). Therefore, expansion of water supply facilities is considered to have contributed to improvement of the users' sanitary conditions (Table 4).

Also, about half of the respondents of the beneficiary survey replied that sanitary conditions improved as a result of a safe water supply. It was also found that in Water Districts where residents were highly dependent on the water supplied for drinking, there was a higher tendency of acknowledging the importance in sanitary conditions.

Table 4 Improvement in occurrences of diarrhea in cities that had previously exceeded the national average

Water Districts	Rate of diarrhea	
	2002	2007
Phase III		
Cagayan de Oro	0.93%	0.10%
Phase IV		
Quezon Metro	1.58%	0.68%
Tarlac	2.8%	0.76%
Phase V		
Candon	1.11%	1.05%
San Jose Del Monte	1.80%	0.56%
Surigao	0.90%	0.52%

Source: National Health Status Statistics (Department of Health)

(2) Reduction of cost and time for drawing water from nearby water resources

As part of the beneficiary survey, interviews were also conducted on the theme of "women in development". According to survey results, more than half of respondents suggested that the task of drawing water from nearby water resources had been reduced. However, no notable reduction was seen in the work required for women to draw water. The survey revealed that drawing water had not been a burden for the users because in most of the areas where this survey was conducted, the Project's aim was to increase the volume of the water supply in areas where water faucets were already available.

In three of the Water Districts where the beneficiary survey was conducted, almost all respondents recognized an improvement in their lives through improvement of the water

supply system. Therefore, it can be generalized that the users are satisfied with the results of the Project.

2.5 Sustainability (Rating: b)

The sustainability of the Project was evaluated with a focus on the organizational, technical, and financial aspects of LWUA (the executing agency) and each of the Water Districts. While no major problems were identified in most Water Districts, problems were found with financial sustainability and the operation and maintenance of water supply facilities in some of the Water Districts; therefore the sustainability of this Project is considered to be fair.

2.5.1 Executing Agency

2.5.1.1 Operation and maintenance system

(1) LWUA's system of Water District supervision

1) The role of LWUA in Project implementation

LWUA is an institution that provides lending and technical support to the Water Districts. When LWUA lends funds for a water supply project to a Water District, it will also supervise the project. Once construction of the water supply facility is complete, the Water District operates the facility and repays the loan to LWUA⁵.

Under Phase III of the Project, the Government of the Philippines was the borrower of the Japanese ODA loan. A sub-loan was made to LWUA, which then made second sub-loans to the water districts for water supply projects. Under Phases IV and V, LWUA became the borrower of the Japanese ODA loan (the government of the Philippines as guarantor) and lent funds for water supply projects to the Water Districts. Should a Water District default in its repayment, LWUA either assigns a temporary supervisor or appoints members to the Water District Board of Directors until the Water District recovers from the financial difficulty.

2) Monitoring of the Water Districts by LWUA

LWUA's, regional management advisors visit water districts on a regular basis to monitor the operations of the Water Districts, including financial and technical aspects. In addition, submission of monthly data sheets from Water Districts to LWUA are made mandatory. According to the evaluators' observation however, LWUA's collection of data, including the collection of monthly data sheets, was insufficient. This situation should be resolved in the

⁵ The future role of LWUA was reviewed by the Executive Order No. 279 (EO 279), the government ordinance for instituting reforms in financing policies for the water supply and sewerage sector and the rationalization of LWUA's organizational structure. EO279 states that in order to secure safe and sustainable water services for residents in rural areas, there is an urgent need to promote financial self-sustainability of the Water Districts. Therefore, LWUA now implements a new financing program (Efficiency Improvement Program: EIP) which focuses on Water Districts that are not self-sustainable.

future.

(2) Operation and maintenance organization of the Water Districts

In each Water District there is an Administrative Department and an Operational/Technical Department. The Administrative Departments manage the organizational and financial aspects and are in charge of other administrative matters such as the collection of water supply fees. The Operational/Technical departments are in charge of the operation and maintenance of water supply facilities. In Water Districts where the number of personnel was reported as insufficient at the time of the Project's completion, increase in staff was observed in most cases at the time of the evaluation. Therefore, no significant problems were identified.

2.5.1.2 Technical capacity of Operation and Maintenance

The technical capacity for operating water supply facilities was improved through the following training programs provided by LWUA and the Water Districts' in-house programs:

- Training programs provided by the Water Resource Research and Training Department (WRRTD) of LWUA. LWUA headquarters and regional training centers carried out training programs, which included financial and policy-making programs for the management of the Water Districts as well as technical programs for the operation and maintenance of water supply facilities. In 2008 a total of 55 programs took place; 67 programs are planned for 2009. Compared to the in-house programs of the Water Districts, these programs cover general and common items related to the water supply business. At the time of the evaluation, there were seven regional training centers in the entire country. Training programs generally took place in large Water Districts such as Baguio, Cagayan de Oro, Zamboanga, Cebu, San Pablo, Davao and Metro Roxas.
- In-house programs of the Water Districts. These programs dealt with specific items regarding the operation and maintenance of water supply facilities and focused primarily on troubleshooting.

At the time of the evaluation, a relationship was observed between the scale of the Water Districts and their technical capabilities. Thus, the level of technical capability of large Water Districts tended to be comparatively high, while that of small Water Districts in rural areas tended to be lower.

One component of the Project was the repair of a building and training equipment at the LWUA training center in the headquarters, which began operations in November 2008. According to the person in charge of the training program, only about four operational

training programs using the training equipment are assumed to take place per year, although the space will be also used for managerial seminars. Since participation in these programs is burdensome in terms of cost and time for the Water Districts located far from Manila, utilization of the LWUA training center remains relatively low.

2.5.1.3 Financial status

(1) Financial sustainability of LWUA

Although LWUA recorded net losses in 2003 and 2004 due to a large foreign currency exchange loss when it applied new accounting standards⁶, its financial status has been stable since then, as shown in Table 5.

Table 5. Financial status of LWUA

(Unit: million pesos)

Year	Revenue	Net income	Equity ratio	Net cash flow
2006	1,919	449	26.00%	548
2007	1,883	123	31.39%	-217
2008*	1,971	368	33.19%	888

Source: Annual report of LWUA

Note: 2008 figures are from the unaudited financial report

(2) Financial sustainability of the Water Districts

Among the target Water Districts, the following issues concerning financial sustainability were identified in Masbate, Santiago and Pinamalayan.

1) Financial status

As a result of an analysis of the latest financial information, it was found that the profitability of Masbate and Santiago Water Districts are low. In addition, the latest LWUA creditworthiness evaluation indicated that Masbate and Santiago Water Districts were given a low credit rating. Possible reasons for this financial weakness include their comparatively high operational and administrative costs as well as a high non-revenue water rate. Also, Pinamalayan has a considerably low water charge collection ratio. As for the other Water Districts, no significant issues were found in their profitability and financial stability.

2) Repayment of the loans

A significant amount of the loans distributed by LWUA is overdue in Masbate, Santiago and Pinamalayan Water Districts, and all of them are facing problems with their financial condition.

Table 6. Water Districts with overdue loans

⁶ In accordance with the Statement of Financial Statement Standards (SFAS) No.8A, LWUA expensed all foreign exchange differences from 2003 through 2004.

(As of December 2008, Unit: million pesos)

Water District	Loans balance	Overdue amount	Overdue loans percentage
Phase IV			
Masbate	187	70	37.7%
Phase V			
Santiago	544	42	7.9%
San Jose Del Monte	637	3	0.5%
Pinamalayan	64	36	55.8%

Source) LWUA

2.5.2 Operation and maintenance status

Among the target Water Districts, problems in operation and maintenance were found in the four Water Districts listed below. Each Water District has implemented countermeasures to mitigate these problems.

- Butuan** The capacity of the infiltration gallery was reduced during heavy rains. Water District personnel regularly clean the infiltration gallery to solve the problem.
- Bacolod** The City Mayor of Bacolod issued a Cease and Desist Order (CDO) against the Water District from operating its two pumping stations at deep wells because the volume of water of nearby residential wells was reduced. The CDO was lifted after the Water District agreed to limit the operating hours of these two pumping stations.
- Masbate** The Water Districts had high shares of non-revenue water and high maintenance costs caused by deterioration of some transmission and distribution pipelines. Also, two wells were unusable. The Water Districts embarked on a metering program and purchased new pumps and motors for pumping stations.
- Pinamalayan** The presence of iron bacteria was found after the operation of water facilities started. Although the Water District installed an additional chlorination facility, the problem was still not resolved. The Water District will receive grant funds of 15 million pesos for development of a new water source from a river.

Among the above Water Districts, the situation is serious especially in Masbate and Pinamalayan, because, as mentioned above, the population served is far less than planned. Countermeasures are under continuous consideration in these Water Districts.

3. Conclusion, Lessons Learned and Recommendations

3.1 Conclusion

Although the Project period exceeded the original plan significantly, and problems were found in the sustainability in some Water Districts, the project outcomes were achieved in most Water Districts. Based on the above analysis, the Project is evaluated to be satisfactory.

3.2 Lessons Learned

There were periodical meetings attended by JICA (formerly JBIC) and LWUA before and during implementation of the Project to discuss countermeasures to cope with the causes of delays in the Project implementation. However, in spite of these discussions, all three phases of the Project were significantly delayed, because the long decision making process in LWUA contributed to a disruption in the execution of the countermeasures. In addition, another possible cause of delay during the planning stage of the Project was that sufficient examination was not made of implementation issues such as delayed acquisition of rights of way or the ability of the Executing Agency to manage these issues. Therefore, in implementation of future projects, it is recommended that, in order to prepare much more workable project plans, the organizational capacity of the Executing Agency as well as the specific conditions surrounding the implementation of the project are thoroughly examined.

3.3 Recommendations

In its support to the Water Districts, LWUA should rigidly collect information on the Water Districts and, utilizing this information, should provide appropriate services to them in order to strengthen their capabilities in operation and maintenance. In particular, technical support to small Water Districts in rural areas needs to be further implemented, because the technical capability of these Water Districts is comparatively low in general.

Comparison of the planned and the actual scope

Item	Plan		Actual	
① Output	Water source/intake and treatment facilities	Water pipes extension and replacement	Water source/intake and treatment facilities	Water pipe extension and replacement
Phase III	Deep wells 36	Transmission pipeline 49km Distribution pipeline 150km Replacement of pipes 2km	Deep wells 14 Infiltration gallery 1 Reservoir 4	Transmission pipeline 59km Distribution pipeline 161km Replacement of pipes None
Phase IV	Deep wells 32 Spring intake structure 5 Pump stations for existing wells 7	Transmission pipeline 56km Distribution pipeline 199km Replacement of pipes 72km Pipes for stock 3km	Deep wells 46 Reservoir 1 Pump stations for existing wells 6	Transmission pipeline 37km Distribution pipeline 232km Replacement of pipes None Pipes for stock 41km
Phase V	Deep wells 10 Infiltration gallery 1 Water treatment Plant 1 Intake facility 1	Transmission pipeline 53km Distribution pipeline 249km Transmission/distribution pipeline 30km Transmission/distribution parallel pipeline 9km	Deep wells 17 Infiltration gallery 1 Water treatment Plant 2 Intake facility 1	Transmission pipeline 56km Distribution pipeline 242km Transmission/distribution pipeline 37km Transmission/distribution parallel pipeline 6km
② Period				
Phase III	December 1994 to April 2000		December 1994 to August 2005	
Phase IV	August 1995 to November 2000		August 1995 to October 2005	
Phase V	March 1997 to January 2002		March 1997 to August 2007	
③ Cost				
Phase III				
Foreign currency	4,612 million yen		2,328 million yen	
Local currency	3,671 million yen		603 million yen	
Total (Japanese ODA loan)	8,283 million yen		2,931 million yen	
Exchange rate	6,212 million yen		2,328 million yen	
	1 peso = 4.2 yen (as of December 1994)		1 peso = 2.8 yen (average of the period from December 1994 to August 2005)	
Phase IV				
Foreign currency	4,577 million yen		1,917 million yen	
Local currency	3,598 million yen		1,012 million yen	

Total (Japanese ODA loan)	8,175 million yen 6,131 million yen	2,929 million yen 1,917 million yen
Exchange rate	1 peso = 3.7 yen (as of August 1995)	1 peso = 2.7 yen (average of the period from August 1995 to October 2005)
Phase V		
Foreign currency	5,798 million yen	4,222 million yen
Local currency	3,840 million yen	1,914 million yen
Total	9,637 million yen	6,136 million yen
(Japanese ODA loan amount)	7,228 million yen	4,222 million yen
Exchange rate	1 peso = 4.8 yen (as of March 1997)	1 peso = 2.5 yen (average for the period from March 1997 to August 2007)