Ex-Post Monitoring of Completed ODA Loan Project

Colombia

Aguablanca Water Supply and Sewage Project

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Pegasus Engineering Corporation

1. Project Description

Location of the Project Site

Overview of the sewage treatment plant

1.1 Project Objective

The objective of this project is to promote the supply of drinking water and the treatment of household and industrial wastewater by developing water and sewage facilities in the city of Cali, thereby contributing to the improvement of the living and sanitary environments of the residents and prevent the contamination of the Cauca River.

1.2 Outline of the Loan Agreement

Approved Amount / Disbursed Amount	18,285 million yen / 182,85 million yen
Loan Agreement Signing Date / Final Disbursement Date	May 1986 / May 2002
Ex-post Evaluation	Fiscal year 2004
Executing Agency	Empresas Municipales de Cali (EMCALI)
Main Contractor	Construcciones Civiles S.A. conciviles (Colombia), Construtra Norberto (Colombia), Degremont Colombia S.A. (Columbia), Degremont Argentina S.A, Mitsubishi Corporation (Japan), etc.
Main Consultant	Nihon Suido Consultants Co., Ltd. (Japan), Tokyo Engineering Consultants Co., Ltd. (Japan), Gandini And Orozco Engineers (Colombia), Ingesam LTDA (Colombia) / Inesco LTDA (Colombia)

1.3 Background of Ex-post Monitoring

At the time of the project appraisal conducted in 1984, the population of the city of Cali had increased dramatically, entailing a rapid surge in the number of incoming low-income laborers, particularly to the Aguablanca region, located in the southeastern Cali. However, the development of infrastructure for basic public service had not kept pace with the rapid population growth. About 70% of the residents in the Aguablanca region had no access to water supply and sewage services. Moreover, because the region consists mainly of depressed land along the Cauca River, sewage flooded the streets during the rainy season, creating extremely unsanitary conditions. Thus, the municipal water supply and sewage systems were upgraded under the project.

During the ex-post evaluation, however, it was observed that many residents illegally discharged domestic wastewater into storm water drains. Consequently, the sewage pipes were clogged by garbage, causing black water to overflow from the pipes. It was noted that the daily average volume of wastewater treated was lower than planned. In the meantime, there remains room to improve the Cauca River water quality, when compared to the standards in Japan. Likewise, with respect to the technical capacity of Empresas Municipales de Cali (hereinafter referred to as EMCALI), many areas remained to be improved, including operation manuals for the sewage system. The evaluator thus made various recommendations to the municipal government, concerning reinforcement of control over illegal connections to storm water drains, improvement of the garbage collection system, promotion of educational activities, and strengthening of the operation and maintenance capabilities of the sewage facilities.

Therefore, due to uncertainties concerning effectiveness and sustainability, this project was selected for ex-post monitoring and reviewed under each criterion with the findings from the field survey and other research activities with a final conclusion being drawn.

2. Outline of the Monitoring Study

2.1 Duration

Duration of the Study: March 2011 - January 2012

Duration of the Field Study: June 12-22, 2011

2.2 Constraints during the Monitoring Study

Beneficiary surveys were not conducted in the monitoring study. Instead, the impact of the project was confirmed partly by interviewing randomly selected local residents.

3. Monitoring Results

3.1 Effectiveness

3.1.1 Quantitative Effect (Water Supply)

After the ex-post evaluation, the operation and impact indicator values had almost reached the expected level. In particular, the average facility utilization ratio of the purification plant improved exponentially.

(1) Operation and Effect Indicators

The situation of supplying potable water in the city of Cali, as shown by the indicators, is as follows:

Table 1 Water Supply in Cali

Indicators (unit)	Planned	Actual			
	1990	1997	2000	Ex-post evaluation (2004)	2010
Water-supplied population (person)	1,550,000	2,000,000	-	2,200,000	2,240,000
Water service coverage (%)	92	100	98	96	100
Average water supply volume (m^3/day)	600,000	568,011	545,083	612,350	634,962
Water supply volume per capita (l/day)	-	285	-	279	283
Plant installed capacity (m^3/day)	-	570,000		570,000	780,000
Average facility utilization ratio (%)	-	71	-	57	78
Unaccounted-for water rate (%)	30	30		39	47

Fig. 1 Population supplied with water

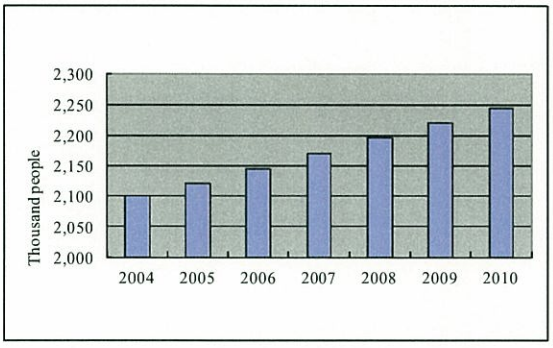
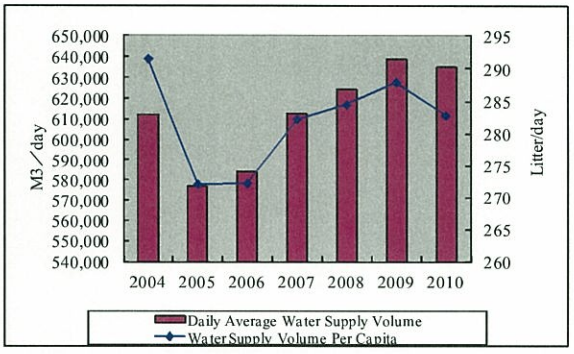


Fig. 2 Water Supply Volume



Source: Created by the evaluator based on the response to the questionnaire from EMCALI.

At the time of the ex-post evaluation in 2004, the service coverage was about 96%, and had risen to 100% at the time of the monitoring study in 2010. According to EMCALI, this is because the number of service connections in the poverty area increased. Similarly, the population of Cali needing domestic water connections reached 2.24 million in 2010 as opposed to the planned 1.55 million.

In the project, the estimated daily average volume of water supply was 600,000 m^3, whereas

the actual water supply volume in 2010 was 634,962 m^3/day. Notwithstanding major interannual fluctuations in the water supply volume, a 21% growth was recorded in the last 24 years from 1986, when construction commenced, to 2010, when the construction was completed. This is because the facility utilization rate improved as mentioned below.

Meanwhile, although the water supply volume per capita was 356 l/day in 1987, it declined to 285 l/day in 1997, 279 l/day in 2004 and 283 l/day in 2010 respectively. According to the ex-post evaluation report, this drop was the result of (1) elevated water rates, (2) the sluggish economy in Cali, and (3) educational activities related to water conservation promoted by the executing agency.

At the Puerto Mallarino Purification Plant, the installed capacity prior to the project implementation was 285,000 m^3/day and the facility utilization percentage was nearly 100%, namely full capacity. Since the capacity doubled to 570,000 m^3/day, the utilization rate accordingly remained at 57%. Recent growth in the population and water demand raised the utilization rate to 78% in 2010.

Fig. 3 Facility Utilization Rate of the Puerto Mallarino Purification Plant

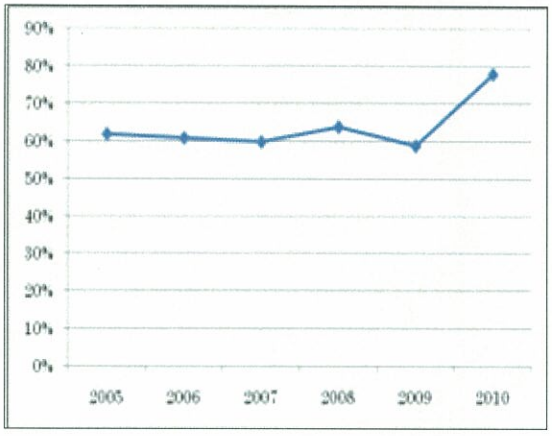
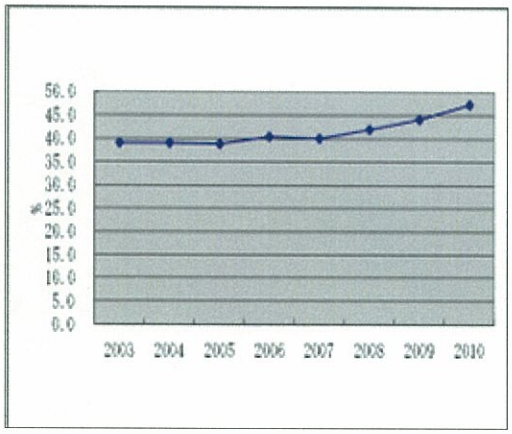


Fig. 4 Unaccounted-for Water Rate



Source: Created by the evaluator based on the response to the questionnaire from EMCALI.

The percentage of unaccounted-for water was 30%, meeting exactly the planned level, in 1997 (when the construction was actually completed). In subsequent years, however, it worsened to 39% in 2004 and 47% in 2010. The factors behind this increase include increased water leakage due to a lack of maintenance work on the deteriorated water supply network and meters, because of EMCALI's financial problems, and more and more illegal connections. In response, EMCALI, the executing agency of the project, has implemented wide-ranging countermeasures: upgrading or installing main pipes and water meters, implementing a management program, controlling illegal connections (the project area is home to many immigrants from the Pacific region), taking measures against water leakage by reducing water pressure, outsourcing water pipe repair and replacement work to the private sector, organizing a local water conservation organization, and water pipe disconnection or compulsory

collection for houses not paying due bills for at least two months. The ultimate goal of the agency is to lower the percentage of unaccounted-for water to below 30%, as initially planned.

The compulsory collection combined with the increased installation and replacement of water meters (212,238 in 2010) have helped improve the accuracy of the local water fee collection system, hence increasing the total collected amount.

Table 2 History of Total Water Fees Collected (million pesos)

Year	2004	2005	2006	2007	2008	2009	2010
Collected amount	114,391	113,611	128,010	186,477	207,798	220,763	203,130

Source: Response to the questionnaire from EMCALI

(2) Results of Re-calculations of the Financial Internal Rates of Return (FIRR) for the Water Supply

The financial internal rate of return (FIRR) at the time of project appraisal was 16.4%, by considering the construction, operation and maintenance costs as expenses, the revenue from the water supply service as a result of implementing the project as a benefit, and the project life as 45 years. When the FIRR was recalculated during the ex-post evaluation using the same assumptions, the value turned out to be 19.3%. In this monitoring study, it was recalculated using the same assumptions and determined as 18.3%.

The percentage derived by the monitoring study was lower than that of the ex-post evaluation because the rate of uncounted-for water jumped from 39% in 2004 to 47% in 2010.

3.1.2 Sewage System

After the ex-post evaluation, the project's effectiveness reached close to the planned level and the wastewater treatment volume also reached the project goal. However, in spite that the plant complies with the designed quality, the project does not currently comply with the discharge regulations.

(1) Results from Operation and Effect Indicators

The efficiency of the sewage plant operations has improved since the ex-post evaluation, as exemplified by an increase in the volume of wastewater treated at the plant, which was pointed out during the ex-post evaluation.

Moreover, the number of illegal connections to the storm drains has been decreasing, mainly thanks to tougher sanctions for offenders with the prevention of contamination of the Cauca River in mind, proving that the measures taken by the city have been effective.

Table 3 Number of Illegal Connections

Year	2004	2005	2006	2007	2008	2009	2010
Number of illegal connections	232	195	158	133	118	97	77

Table 4 Operational Status of the Sewage Treatment Facility

Indicator (unit)	Actual			
	1997	2000	2005	2010
Average daily wastewater treatment volume (m^3/day)	228,960	228,960	198,720(04)	475,200
Facility utilization ratio (%)	35	35(03)	31(04)	67
BOD[1] inflow (mg/l)	-	211(03)	198(04/1)	178
BOD discharge (mg/l)	-	150	133(04/1)	104
BOD removal rate (%)	-	-	30	41
TSS[2] inflow (mg/l)	-	-	171	171
TSS discharge (mg/l)	-	-	72	58
TSS removal rate (%)	-	-	58	66

Source: Response to the questionnaire from EMCALI

Note: Numbers in parentheses show years.

Improvement of the garbage collection system, with the aim of reducing the amount of garbage thrown into sewage pipes, has boosted increases in the daily average volume of wastewater treated (475,200 m^3/day) and the facility utilization rate (67 %.)

In 1985, the sewage pipe network in Cali covered approximately 70% of the population. Since then, the installation of additional sewage pipes to meet rising demand has been steadily implemented, reaching 97% coverage in 2004 and finally 100% in 2010.

While the daily average volume of wastewater treated was originally planned as 475,200 m^3, the actual figures were 228,960 m^3 in 2003, 198,720 m^3 in 2004 and 475,200 m^3 in 2010 respectively, representing achievement ratios of 48, 42 and 100% of the planned goal, respectively. The facility

[1] Biochemical Oxygen Demand (BOD) is an index that indicates the level of turbidity in river water, etc. due to organic matter. It represents the amount of oxygen consumed when organic matter in the water is oxidized by microorganisms during a fixed period at a fixed temperature. The higher the numerical figure, the greater the amount of organic matter and the greater the contamination.

[2] Total Suspended Solids (TSS) refers to the amount of substances floating in the water. The TSS concentration is tested by passing a certain amount of the water through filter paper, drying the paper, and weighing the dried paper. The higher the figure, the more polluted the water.

utilization percentage was recorded as 35% in 2003, 31% in 2004 and 67% in 2010 respectively.

According to EMCALI, the reasons for the increase in the average daily volume of wastewater treated and the facility utilization rate were the reduction in the number of illegal connections to storm water drains, in place of sewer pipes, and the subsequent reduction in the outflow of sewerage from the sewage pipes to storm drains as a result of clogging caused by garbage dumped by residents.

The BOD concentration of wastewater entering the treatment plant is higher than initially estimated, meaning the facility has not met the planned level for the BOD of treated water to be discharged. However, the drop in the BOD level reached 74 mg/l (2010), exceeding the expected level, which demonstrates that the plant is operating properly.

Similarly, since the TSS concentration in wastewater that flows into the treatment plant is high, although the plant complies with designed quality removals for which it was build, the concentration at the time of discharge has not met the planned level. However, the actual drop in the TSS concentration was 113 mg/l in 2010, higher than the planned level.

The Cauca Valley Corporation (CVC), the entity in charge of the environmental administration of the Cauca River; specifies the removal ratios of BOD and TSS as 50%. The BOD values have not attained the required level.

Table 5 BOD and TSS Concentrations at the Sewage Treatment Plant

Item	Planned (at appraisal)		2003		2004		2010	
	BOD	TSS	BOD	TSS	BOD	TSS	BOD	TSS
Intake (mg/ℓ)	121	130	211	176	198	171	178	171
Discharge (mg/ℓ)	79	52	150	84	133	72	104	58
Removal rate (%)	35	60	29	52	30	58	41	66

Source: EMCALI

Note 1: Intake and discharge amounts for BOD and TSS are annual averages.

(2) Results of Re-Calculations of the Financial Internal Rates of Return (IRR) for the Sewage System

The financial internal rate of return (FIRR), calculated at the time of appraisal, was negative, considering the construction, operation and maintenance costs as expenses, revenue from the sewage service provided by the project as a benefit, and the project life as 45 years.

When the FIRR was recalculated during the ex-post evaluation using the same assumptions, it was 7.3%. The result of recalculation during the monitoring study was 11.8%.

The figure derived by the ex-post evaluation was greater than expected, since the sewer fees, i.e. the benefit increased from 754 peso/m^3 (2004) to 1,437 peso/m^3.

As shown above, the efficiency of both the water supply and sewage systems rose after the ex-post evaluation, along with a surge in the main operation and effect indicators...

3.1.2 Qualitative Effects

(1) Water supply

The interview with EMCALI revealed that, by educating consumers on the re-use of water, utilization of rain water, and installation of water conservation plumbing fixtures, residents have become more aware of water conservation.

Also, according to a survey on randomly-selected poor families, heightened awareness of water saving has led to more households making use of rain water in order to reduce their monthly water bills.

(2) Sewage system

The project improved the sanitary conditions for local residents, reducing sewage flooding of the streets during the rainy seasons (March to May and September to November).

In order to improve the garbage collection system to eliminate garbage thrown into the sewage pipes, the garbage collection system was privatized in 2008 (EMAS S.A., etc.) EMAS S.A was also contracted to manage an awareness-raising campaign for residents, working together with the community association. The garbage collection customer satisfaction survey, sponsored and financed by a private entity, obtained a favorable satisfactory score, 4.1 of a maximum 5.0 points.

3.2 Impact

3.2.1 Improvement of the Living and Sanitary Environments for the Residents

According to the survey[3], the living and sanitary environments for the residents had improved, compared with the pre-project conditions, in terms of shorter water-drawing time and fewer water-borne illness.

Also, according to data provided by the Cali Public Health Bureau, the mortality rate related to water-borne diseases (babies under 1 and infants under 5 years old) showed a continual decline.

The mortality rate of infants aged under one year in Cali caused by water-borne illnesses such as diarrhea dropped from 5 (1986) per thousand births to 0.3 (2003) and 0.2 (2010) per thousand births. The child mortality rate (under 5 years of age) also declined from 1.5 (1986) to 0.07 (2003) and 0.05 (2010) per thousand births. According to the Cali Public Health Bureau, these improvements are attributed to the implementation of the project.

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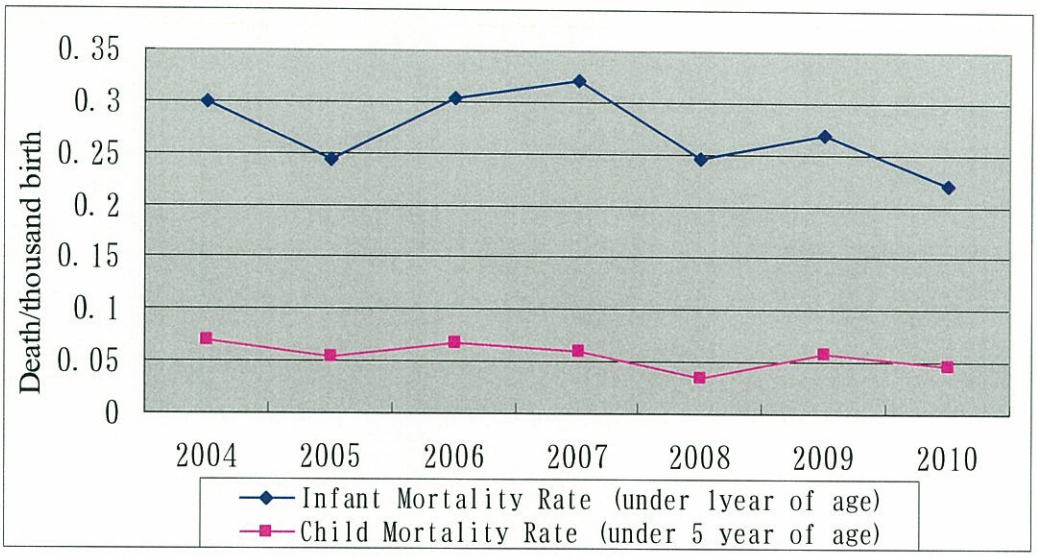
[3] Interviews were conducted with randomly selected residents in the project area. The number of interviewees was limited due to poor security conditions in the region.

Fig. 5 Infant and Child Mortality Rates Due to Water-borne Illnesses



Source: Cali Public Health Bureau

3.2.2 Prevention of Contamination in the Cauca River

Table 6 below shows water quality data for the Cauca River from 2002 to 2010.

Table 6 Water Quality of the Cauca River

Parameter	Water quality of the Cauca River				Water quality standard set forth by Cauca Valley Corporation
	2002	2003	2004	2010	Law number 0686 of 2006
pH	7.10	6.97	6.66	7.01	5.0 - 9.0
BOD (mg/ℓ)	8.80	4.23	3.33	3.32	3.5 mg /ℓ or lower
TSS (mg/ℓ)	172.0	84.0	115.7	59.0	30mg /ℓ or lower
DO[4] (mg/ℓ)	0.60	2.17	2.14	1.45	1.2 mg /ℓ or higher

Source: Cauca Valley Corporation (CVC)

Note 1: The tested area is located 49 km downstream of the Cali sewage treatment plant. Also, the data collected are from spot checks and do not represent annual averages.

As the local standards set forth by the Cauca Valley Corporation (CVC) are not met, the water quality of the Cauca River is still considered polluted. One of the main causes of the pollution is its natural connection with the rivers urban closer to Cali, as Jamundi, Candelaria. Yumbo and others.

[4] Dissolved oxygen (DO) is one index of water quality, which indicates the amount of oxygen dissolved in water. The lower the figure for DO is, the worse the water quality.

Other causes include the discharge of contaminated water from industrial and agricultural zones.

In order to attain the CVC standards (the removal ratios of BOD and TSS should both be no less than 50%, as a standard for discharging treated water from wastewater treatment plants), EMCALI plans to construct a secondary treatment facility. In accordance with the agreement with the central government and under CONPES No. 3624, construction of this facility will finish in 2016. A loan from the Colombian central government will be appropriated for the total cost of 110 million U.S. dollars for the construction by securing a moratorium on this repayment. 1.8 million dollars has already been allocated for basic design activities, and the design task to be contracted to a private company, is slated for 2012 and 2013.

3.2.3 Relocation and Land Acquisition

Rehabilitation of the storm water pond provided by the Inter-American Development Bank (IDB) was suspended, based on challenges faced in complying with the local environmental restrictions related to the disposal of dredged soil and sand and also relocating families having illegally occupied the area around the pond.

Although the municipality does not reubicate the illegal people living around the wetlands of Charco Azul and Pondaje, the hydraulic recovering of Charco Azul being done in 2012 (now is about 80-90%) and Pondaje is waiting for the resources to do the job. Its capacity will be 800,000m^3. Damage caused by flooding, averaging 3 times in the year during the rainy season, for roughly 15 hours and constantly affecting the area of Aguablanca, will be controlled and mitigated by these reservoirs.

3.2.4 Other Impacts

The number of illegal connections into storm drains decreased, mainly due to awareness-raising campaigns among residents, as recommended by the ex-post evaluation.

3.3 Sustainability

3.3.1 Structural Aspects of Operation and Maintenance

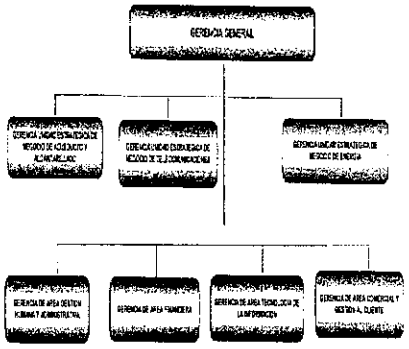
EMCALI, the executing agency, is an independent public company responsible for overseeing the construction, operation, and maintenance of the facilities involved in the water supply and sewage, energy, and telephone services in the city of Cali and surrounding cities. The operation and maintenance of the facilities provided by the project are undertaken by the Water Facilities Division, which has 564 staff members, and the Sewer Facilities Division, which has 253 staff members, both of which are part of the Water and Sewer Bureau of EMCALI. The monitoring study found no problem in the structure and manpower of these operation and maintenance organizations after the ex-post evaluation.

SCADA (Supervisory Control and Data Acquisition) was created to monitor the water level of

the Cauca River, which made it possible to formulate a comprehensive flood control plan.

A portion of the pipes in stock were saved as a result of outsourcing regular replacement and repair activities to the private sector (Litofon S.A.). Some of the staff at the wastewater treatment plant were dispatched by the private personnel dispatch firm EAT (Empresa Asociativa de Trabajo).

Fig. 6 EMCALI Organizational Chart



Source: EMCALI website

3.3.2 Technical Aspects of Operation and Maintenance

According to an EMCALI staff member, the yen-loan-funded facilities are better in terms of performance and durability, and hence operation and maintenance, compared with other facilities funded by the IDB loan.

The technology used for operating and maintaining the plant, particularly the equipment used for monitoring the river water, complies with international standards commensurate with the CVC standards.

The qualification and training systems and the availability and distribution of manuals are sufficient for proper training, performed with the technical assistance of equipment suppliers, Germany and others. It was concluded, based on the fact that the wastewater treatment volume remained at around the target level envisioned in the project, that the functions of the screw pump, the sedimentation basin and the sludge condenser pond, among others, were no longer problematic, although these were identified as technically unsatisfactory in the ex-post evaluation.

Improvements in the O&M technical skills include proper equipment operations necessary for the water supply and sewage services by offering training under an agreement with the labor union, implementing a scheme to grant promotion every couple of years, acquiring ISO 9001(2010), and other qualification systems.

Photograph 1 Water Quality Monitoring Equipment at the Wastewater Treatment Plant

Photograph 2 Water Supply Pump (funded by the yen loan)

3.3.3 Financial Aspects of Operation and Maintenance

Due to the deterioration of EMCALI's financial standing, its administration and supervision rights were transferred from the Cali municipal government to the Colombian central government in April 2000. Currently, EMCALI's management is being restructured under the close supervision of the central government.

The communication area is not profitable but the energy and water supply are producing good returns and profit. Therefore, the company is conducting a program of restructuring these services to improve their financial situation. Financial data dedicated to the water supply and sewage services was not available at the time of monitoring. Incidentally, EMCALI is prioritizing the repayment of loans from commercial banks and Japan International Cooperation Agency (JICA).

EMCALI's capital-adequacy ratio decreased from 47% in 2002 to 39% in 2004. It recovered to 47% in 2010, which improved the profitability of the corporation.

Table 7 Main Financial Data of EMCALI (unit: 1,000 Colombian pesos)

Item	2008	2009	2010
Gross assets	5,039,376,244	5,168,336,286	5,139,993,830
Current assets	786,084,415	801,046,146	782,562,323
Current liabilities	436,359,732	453,676,001	446,071,805
Capital	2,371,268,985	2,461,168,863	2,405,012,509
Net revenue	1,339,718,467	1,409,920,382	1,413,325,194

Net profit	△ 37,425,081*	74,857,197	47,828,673
Return on equity (ROE) (%)	-	0.30	0.19
Net income to net revenue (%)	-	5.31	3.38
Turnover ratio of total liabilities and net worth	0.56	0.57	0.59
Current ratio (%)	180.28	176.82	175.34
Equity ratio (%)	47.05	47.62	46.80

Source: EMCALI

Note*): A large-scale capital investment was made in 2008.

Table 8 below shows the operation and maintenance expenses incurred by the wastewater treatment plant. EMCALI is financing the cost of minimal replacements and repairs needed for proper operation and maintenance.

Table 8 Operation and Maintenance Expenses (unit: Million pesos)

Year	2003	2004	2005	2006	2007	2008	2009	2010
Operation and Maintenance expenses	10,908	10,908	11,374	13,048	13,703	15,946	8,488	11,135

Source: EMCALI

3.3.4 Current Status of Operation and Maintenance

EMCALI is focusing on strengthening the operation and management capacities concerning the sewage facilities, and it plans to do so by developing qualification and training programs.

An observation on the current conditions of the plant and the sewer pipe network found that they were properly repaired, replaced and expanded, except the control system at the Aguablanca pumping station located in a poverty area in poor O&M conditions. This control device is scheduled to be replaced in 2012, as currently only 30% of its pumping capacity (176,000 m^3/day) is used.

The city of Cali continues its efforts to reduce and eventually eliminate the illegal connections to the storm drains by residents, while continuing to improve garbage collection service by four private companies, including EMAS.

On-site observation of the current operation and maintenance conditions at the wastewater treatment plant and the sewer pipe network confirmed that the facilities were managed properly. All facilities are working properly except the above-mentioned pumping station. The reduction in illegal connections to the storm drainage system, combined with the development of awareness-raising campaigns in relation to garbage collection, has yielded positive results: a higher facility utilization rate

and an increased volume of treated wastewater.

In this way, the technical capabilities of EMCALI to provide the water supply and sewer services have improved through the application of manuals and other efforts. Also, with respect to the current organizational structure and financial aspects, the corporate restructuring phase is in progress under the central government's initiative, resulting in better water and sewage service performance to date. The monitoring study confirmed that the reduction of illegal connections to the storm drain system, improvements to the garbage collection system, and the awareness-raising campaigns and strengthening of the operation and management capabilities were appropriately addressed, as noted in the ex-post evaluation.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

As recommended by the ex-post evaluator, the reduction of illegal connections into the storm drains and the resident's awareness-raising campaigns for garbage collection have been implemented and carried forward. Also, the illegal disposal of garbage into the Cauca River decreased; mainly due to the improvement of the garbage collection system now entrusted to the private sector. These activities performed by the executing agency and/or other organizations led to an increase in the volume of sewage captured and treated.

The monitoring study also confirmed that the operation, management, replacement and repair of the facilities were properly performed, except the previously-mentioned pumping station.

4.2 Recommendations

EMCALI, as the executing agency, has taken various measures to counter the worsening rate of uncounted-for water every year, but the result has not yet been recorded. Targeting 30%, as initially planned, the effect of these measures should be verified and revised as necessary.

4.3 Lessons learned

Nil.

End

Comparison of Original and Actual Scope

Item	Planned	Actual Performance
1. Output Water Portion (JBIC portion is (a),(b), and (d)) (a) Expansion of Puerto Mallarino Purification Plant (b) Eastern Water Mains (c) Water Supply Reservoir (d) Water Pipes Sewer Portion (JBIC portion is (i) and (j)) (e) Stormwater Drains (f) Stormwater Management Pond (for stormwater drainage) (g) Stormwater Drainage Pump Station (h) Sewer Pipes (i) Aguablanca Pump Station (for sewage) (j) Sewage Treatment Plant ※(c), (d), (e), (f), and (h) were funded by the Inter-American Development Bank (IDB); (a),(d), and (g) were by Italy's export-import bank	 285,120 m^3/day 11 km 16,000 m^3 36 km 10 km 781,000 m^3 12 m^3/second 12 km 372,000 m^3/day 181,000 m^3/day	 As planned As planned 30,000 m^3 168 km As planned Suspended As planned As planned 176,256 m^3/day 656,640 m^3/day Additions: Chemical Infusion Facility; Deodorization Facility
2. Project Period	May 1986-May 1992 (73 months)	May 1986-December 2002 (200 months)
3. Project Cost (Japan's ODA loan portion only) Foreign Currency Local Currency Total Exchange Rate	12,800 million yen 8,555 million yen (3,719 million Columbian pesos) 18,285 million yen 1 Columbian peso = 2.3 yen (as of January 1985)	13,693 million yen 4,592 million yen (30,613 million Columbian pesos) 18,285 million yen 1 Columbian peso = 0.15 yen (simple average of 1987 to 2002)