

Bolivia: Sewage Disposal El Alto

Ex-post evaluation

OECD Sector	Water supply and sewage disposal for poor people	
BMZ project number	1990 65 319	
Project-executing agency	Servicio Autónomo Municipal de Agua Potable y Alcantarillado (SAMAPA) Since August 1997 the private company Aguas del Illimani S.A. under a concession contract	
Consultant	GITEC Consult / Consulting Engineer Salzgitter / CONNAL	
Year of evaluation	2002	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	Q 1/1992	Q 4/1992
Period of implementation	4 years	6 years
Investment costs	EUR 15.7 million	EUR 17.3 million
Counterpart contribution	EUR 3.9 million	EUR 5.6 million
Financing, of which FC funds	EUR 11.8 million	EUR 11.8 million
Other institutions/donors involved	None	None
Performance rating	2	
• Significance / relevance	2	
• Effectiveness	3	
• Efficiency	2	

Brief Description, Overall Objective and Project Purposes with Indicators

The overall objective of the project is to reduce the health risk to the inhabitants of El Alto, a city bordering on the west of the capital of La Paz, and to improve the environmental situation in the city area and of the river system of the Rio Seco all the way to Titicaca Lake by way of measures via which the project purpose of hygienic and ecologically safe centralized collection and treatment of city sewage is to be ensured. To achieve these goals 47 km were added to the main and subsidiary collectors, the tertiary networks were extended by 112 km, a pond treatment plant and an administrative building were built and machinery and replacement parts were supplied. The achievement of the project purposes was to be assessed by applying the following indicators:

1. Connection rate of the population (435,000) living in the area served by the sewage disposal system in 1998 (three years after begin of operation) at least 48%.

2. Discharge values of the central pond treatment plant of 50 mg/l BSB₅ (24-hour composite sample) after begin of operation and 1998.

The total project costs amounted to EUR 17.3 million, of which EUR 11.8 million were fully financed through FC funds.

The project-executing agency was initially the municipal utility SAMAPA. In August 1997 the responsibility was transferred to the private company Aguas del Illimani S.A., which had won the concession for water supply and sewage disposal for La Paz and El Alto following an international invitation to tender.

Project conception / Major Deviations from the original Project Planning and their main Causes

The planned project measures were adjusted to changing conditions and carried out expertly with considerable delays. The transfer of the project responsibility to the private operator AISA did not have any influence on the project concept and implementation since the work was partially completed at the time of the transfer. Also, thanks to the high degree of continuity of the personnel in the department of the executing agency in charge of the implementation there were no losses due to friction.

The objectives defined during the project appraisal and the basic project concept remained unchanged. When the individual components were planned, significant changes were introduced during the project implementation that led to a greater expansion of the primary and secondary networks. Some of the tertiary networks and house connections planned to be financed were taken over by the concessionaire AISA, who was involved in the project since August 1997. The corresponding obligations to expand were set forth in the concession contract.

Unforeseeable difficulties with the acquisition of the land were an important factor leading to the overall delay of 3 ½ years (begin of operation April 1999 instead of October 1995). Additional reasons for the delay were complicated tender procedures by the assigned agencies and later changes in the technical planning. The cost increases caused by the delays were not foreseeable and were beyond the control of the German side. KfW acted correctly when it tied the payment of the financial contribution to substantiation of availability of the land for the treatment plant.

At the time of the project appraisal the total cost was estimated at EUR 14.2 million based on realistic standard prices. Of this amount, EUR 11.8 million were planned to stem from a financial contribution by Germany and EUR 2.4 million were to be contributed by the partner country.

After completion of all measures at the end of 1999 the actual investment costs amounted to EUR 17.3 million including the residual funds of KEUR 90 not utilized until 2001. The contribution in the form of FC funds remained the same and Bolivia's contribution increased accordingly. As regards the 293,000 inhabitants currently connected to the sewage pond treatment plant for whom around 45% of the total investment costs had to be raised, the investment per capita was EUR 58.80, thus falling in the lower range for comparable projects.

Key Results of the Impact Analysis and Performance Rating

The quality of the performance of all of the construction measures is good, and most of the minimal quality deficiencies have since been corrected. The operator ensures the proper operation of all facilities in a competent manner. The sewage infrastructure established under

the project meets the requirement of a connection rate of 48% of the population of El Alto. Furthermore, it has sufficient capacity for additional sewage zones.

The planning for the pond treatment plant was technically correct, but although the discharge values improved this year, their annual average still does not comply with the values that were contractually agreed. The problem with the discharge of untreated and highly polluted industrial sewage needs to be solved in the medium term. Also, more extensive test series to optimize the treatment process are required. These are currently being conducted by the operator.

Overall the general conditions for project success have improved significantly as a result of the concession for water supply awarded to AISA. The connection rate for the population has risen substantially in the last four years. All inhabitants of La Paz and El Alto in the concession area are being supplied with drinking water. The connection rate for sewage disposal was increased considerably. In a nation-wide comparison, AISA was found to charge the lowest tariffs and in the past years was the sole Bolivian water supply and sewage disposal company to generate substantial operative surpluses. These improvements would hardly have been possible under the management of the previous, public-sector executing agency SAMAPA and are clearly the result of the concession being awarded to a private operator and to the goals for expansion set forth in the concession contract.

Important ecological effects do not arise until all the domestic sewage from El Alto is treated at treatment plants and the existing industrial companies have installed and begin operating preliminary treatment facilities. At present there are no effective measures for protection and monitoring; some could be carried out on assignment by the regulatory agency as it monitors the fulfillment of the concession contract. The ecological risks after project completion are low. The project contributed to direct poverty reduction.

The target group accepts having a centralized sewage disposal system, in particular in the more densely populated areas, and is in most cases willing to pay a small fee for the service rendered. No impacts on the cultural identity of the target group are known.

Usually the women are responsible for hygiene in the home and thus benefit from hygienic sewage disposal.

Environmentally compatible sewage disposal tends to improve hygiene in the home and thus has a positive influence on the development of the population's health situation. Due to a lack of availability of statistical data from hospitals concerning water-induced illnesses, no substantiation can be provided, however. No impacts on the income situation of either the population as a whole or the poorer strata can be noted. In view of the extremely low monthly bills of USD 1.90/month on average, it can be assumed that the customers have sufficient ability to pay. The average monthly household income in El Alto is USD 134.

The project had negative effects on the new inhabitants who moved to the area after the treatment plant took up operation and are living directly next to it. They are disturbed by unpleasant odors from the anaerobic ponds.

The significantly higher efficiency of the executing agency following the privatization lays a very favourable foundation for the project's sustainability. The main risk to sustainability involves a further delay in the tariff increase agreed in the concession contract that is, in light of full cost coverage, objectively necessary.

In summary the following conclusions pertaining to the project's developmental effectiveness may be drawn:

The aim of augmenting the connection rate was exceeded, but the target of adhering to the limit for the discharge values has not yet been reached in spite of intensive efforts for optimization on the part of the executing agency. Overall we classify the project's effectiveness as adequate (partial evaluation: rating 3).

The overall developmental objective of improving the health situation is considered achieved, but the overall objective of improving the environmental situation has only been reached with some cutbacks in certain cases. Overall we evaluate the project according to the criterion of relevance/significance as satisfactory (partial evaluation: rating 2).

In view of the low specific investment costs and the highly efficient operation by the private concessionaire the production efficiency is assessed as being high. The preconditions for the allocation efficiency are, in principle, met by the stipulations on tariff adjustments in the concession contract. However, political risks remain in connection with the implementation of the contractual stipulations. Therefore, we classify the programme's efficiency overall as satisfactory (partial evaluation: rating 2).

In general we deem the project to have a satisfactory degree of developmental effectiveness (rating 2).

General Conclusions applicable to all Projects

Centralized sewage disposal is the appropriate solution for metropolitan agglomerations, also in poorer regions. The technology can be learned and the local producers and construction companies are in a position to produce appropriate materials and to carry out the implementation work with sufficient quality.

The privatization of the water supply of La Paz and El Alto is a milestone among Bolivia's extensive privatization programmes. By awarding the concession to an international consortium enormous increases in efficiency were achieved, and the supply situation for the population could be noticeably improved.

An essential prerequisite for sustainable success of private water supply is competent and technically correct monitoring and controlling by an independent regulatory agency. At least in terms of the organization structure the stage for this was set by the establishment of the regulatory agency SISAB. The current delays in the tariff adjustment provided for in the contract indicate, however, that there are considerable risks in the political area to sustainable, successful cooperation with the private sector.

The sectoral conditions for PSP in Bolivia's water sector have worsened significantly in the last two years. The unrest in Cochabamba and the current procrastination with respect to the tariff adjustment in La Paz and El Alto are indications of the substantial political risks facing foreign investors in the water sector and are detrimental to Bolivia's image as an attractive place to invest. The amendments to the law on water and sanitation that were introduced in the year 2000 considerably reduced the sector's attractiveness to foreign investors.

Despite the fact that the concession award in La Paz/El Alto has had good results thus far, there are few chances that this type of project can be repeated in Bolivia – irrespective of the worsened overall conditions. Projects of this kind tend to require a certain minimum size so that the substantial efforts connected with awarding a concession after a preceding international tender pay off. As a result, in Bolivia it was primarily the largest cities that came into question. Of these, in La Paz the water supply is already under concession, Cochabamba will probably remain out of the question for the time being due to its unlucky history, and the water supply in Santa Cruz is in the hands of the comparably efficient co-operative SAGUAPAC.

Legend

Developmentally successful: Ratings 1 to 3

rating 1 Very high or high degree of developmental effectiveness

rating 2 Satisfactory degree of developmental effectiveness

rating 3 Overall sufficient degree of developmental effectiveness

Developmental failures: Ratings 4 to 6

rating 4 Overall, no longer sufficient degree of developmental effectiveness

rating 5 Clearly insufficient degree of developmental effectiveness

rating 6 The project is a total failure

Criteria for the Evaluation of Project Success

The evaluation of a project's "developmental effectiveness" and its classification into one of the various levels of success described in more detail below during the final evaluation concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being employed/incurred to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project concept)?
- To the extent that undesired (**side**) **effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group is able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms or to carry on with the project activities on its own and generate positive results after the financial, organizational and/or technical support has come to an end.