

Bolivia: Water Supply Rehabilitation Oruro

Ex post evaluation

OECD sector	14030/Basic drinking water supply and basic sanitation	
BMZ project ID	1988 66 352	
Project executing agency	CORDEOR; Prefectura del Departamento de Oruro	
Consultant	Syndicate of consulting engineers Salzgitter, PCA Ingenieros Consultores	
Year of ex-post evaluation report	2010	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	Q 1 1989	Q 3 1989
Period of implementation	36 months	91 months
Investment costs	EUR 4.96 million	EUR 5.57 million
Counterpart contribution	EUR 1.14 million	EUR 0.71 million
Financing, of which Financial Cooperation (FC) funds	EUR 3.82 million	EUR 4.86 million
Other institutions/donors involved	GTZ	GTZ
Performance rating	3	
• Relevance	2	
• Effectiveness	2	
• Efficiency	3	
• Overarching developmental impacts	3	
• Sustainability	3	

Brief description, overall objective and project objectives with indicators

The objective of the project was to ensure an adequate and continuous supply of clean drinking water to the town of Oruro by 2002 and with that make a contribution to reducing health hazards for the urban population. The improved distribution of water and the reduction of technical losses in particular aimed at ensuring continuous supply to the inhabitants of the central and southern districts and reducing health hazards for the low-income population on the town's hillside zones. For this purpose, the project comprised the extension of the main distribution grid, the rehabilitation of two catchments and a pumping station, the rehabilitation and extension of distribution grids and the installation of service connections and water meters. The measure implemented in cooperation with Technical Cooperation (GTZ) also provided the executing agency with full support in all the main operating sectors.

The project objective was to ensure by 2002 the continuous supply of an adequate volume of water to meet basic needs and hygienic standards for the whole urban area - with a household connection rate of about 90% and a water meter installation rate of

60%. At project appraisal (1988), the following indicators were stipulated for measuring project objective achievement.

- The whole urban area is continuously supplied with drinking water (24 hours/day).
- Water quality meets national standards that comply with WHO standards.
- The amount of water consumed keeps within the forecast range (39,727 m³/day).
- The household connection rate has increased to 85% (1992) and 90% resp. (2002).
- The meter installation rate has increased to 45% (1992) and 60% resp. (2002).

The overall objectives of the project were i) to make a contribution to reducing health hazards and ii) improving the conditions of life for the population, particularly in peri-urban areas.

Project design/major deviations from original planning and main causes

For the most part, the project conforms with the design in the appraisal report of 1988. For the rehabilitation and extension of the water supply system, the following components were carried out:

- Extension and rehabilitation of the existing JKW pumping station
- Derusting and restoration of the corrosion protection coating on the Agua de Castilla and Chapicollo catchments, replacement of the faulty pipe installation and fitting of control and regulating valves
- Supply and laying of 5.2 km DN 350 pressure line made of ductile cast iron
- Supply and laying of 56.3 km of distribution pipes, installation of 529 slides, 7 vent valves, 9 hydrants and 7 bulk water meters
- Supply and installation of 5,368 service connections
- Supply and installation of 9,500 household water meters

The planned public taps (23) were not installed because proper operation could not be ensured and there had been a substantial decline in acceptance by the population.

The project measures substantially improved water supply in Oruro. The replacement of faulty pipes reduced water losses to 23% in the town centre. The percentage of mains connections was increased from 73% (1988) to almost 100%. The subdivision of the grid into separate supply and pressure zones and the installation of bulk water meters improved the control of consumer flows and volumes in the individual districts. As an outcome, the project therefore established a distribution system over the whole urban area enabling longer supply times with equal access to drinking water (via service connections).

Problems, however, include the very high water losses in the whole system, which are also commercial, but primarily technical due to the supply line from the Challapampita wellfield. The rehabilitation or replacement of this supply line was the object of the 2nd project phase, which due to failure to meet the requirement of the sewage disposal project (transfer of the sewage disposal system to the regional water service - SeLA) was not, however, carried out (with Financial Cooperation funds reallocated accordingly). Accounting for this, we consider the measures conducted to be adequate. Besides loss reduction, however, considerable investments would have had to be made in extending the production plants to raise available water supply to meet adequate demand.

Considering the technical deficits (e.g. insufficient water supply, dilapidated supply line) which SeLA cannot remedy on its own for lack of available finance for the requisite

investments, operations are carried out at a high technical standard. We see technical risks, however, to sustainable water supply to meet adequate demand (see above).

Key results of impact analysis and performance rating

No quantifiable, direct, macroeconomic benefit can be attributed to the project. Its main impacts lie in reducing water-transmitted illnesses and improving the conditions of life of the population, particularly in peri-urban areas of Oruro.

About 65% of the inhabitants of Oruro can be classified as poor, many of whom living in peri-urban areas. Thanks to the project, service quality was also improved for the residents in the poorer districts. A rough analysis of ability to pay reveals considerable additional scope in all income groups for needed tariff increases. Surveys carried out as part of the ex-post evaluation in 3 peri-urban areas indicate a high acceptance of water supply on the part of the target group. This acts an incentive on willingness to pay, which is also reflected in high collection efficiency. The project’s poverty relevance is evident from its focus on the poorer population in the hillside zones of the central and southern districts.

The project had no direct effect on participation and good governance.

Due to shorter travel times, the lower risk of illness (less frequent cases of water-transmitted illnesses) and the smaller workload for women caring for sick family members, the project was able to contribute to gender equality.

With the installation of water meters for existing and new service connections, the project contributed to the economical use of water. The risk cited at appraisal of subsurface washout and the resultant destruction of the roadbed in the town centre posed no discernible problem at ex-post evaluation.

In summary, we assess the developmental efficacy of the project as follows:

Relevance: The project was of high development-policy relevance, as it aimed at improving water supply in an area with a high incidence of poverty and is therefore in retrospect fully in keeping with the sectoral priorities of the Bolivian Government. Good cooperation in major areas with other donors and development cooperation institutions (GTZ) as well as local sectoral actors generated considerable synergies and resulted in the effective integration of the project in local institutions. The project was suitable for making a contribution to attaining MDGs 4 and 7. Its results chain is logically sound and there was a realistic chance of achieving the anticipated results with the measures. We therefore gauge the relevance of the project as good (Subrating 2).

Effectiveness: The indicators for measuring project objective achievement defined at appraisal have been largely met, accounting for the standard of objectives adapted to the FC measure, as the following table shows:

Indicators at project appraisal (to be met in 2002)	Assessment at ex-post evaluation (2009)
1) Continuous supply of the whole urban area (24 hrs a day)	The indicator has been met for the whole service area of SeLA to 50% (average duration of supply: 11.8 h/day). <u>Note:</u> The indicator chosen at appraisal does not correspond with the project scope and is therefore overambitious.

	Accounting for 24 h/day supply in the town centre and the supply of the population in the southern district for 6 instead of 2 h/day, the indicator has just been met.
2) Water quality meets national standards that comply with WHO standards	The indicator has been met for the complete service area of SeLA to 100%.
3) The amount of water consumed keeps to the forecast range (39,727 m ³ /day).	<u>Note:</u> The indicator has been adapted in line with the usual indicator for specific per capita consumption: Specific consumption of service connections amounts to at least 80 lcd (115 lcd had been planned at appraisal). With an estimated specific consumption of approx. 34-40 lcd, this indicator has not been met.
4) The household connection rate has increased to 85% (1992) and 90% resp. (2002).	The household connection rate is 98.6%, which cannot be fully ascribed to the project. The indicator has been met for the whole service area of SeLA by more than 100%.
5) The meter installation rate has increased to 45% (1992) and 60% resp. (2002).	The meter installation rate is 68% (in the whole service area) and/or 99.6% (project area). The indicator has been met by more than 100%. <u>Note:</u> This indicator reflects a result not the project objective.

We therefore assess the effectiveness of the project as good (Subrating 2).

Efficiency: Measured in terms of specific investment costs, the objectives were achieved at reasonable fund outlay, although the consultant costs are relatively high for an urban water supply project. The production efficiency indicators are very good, except for total water losses. *Production efficiency* is therefore assessed as satisfactory overall. Accounting for collection efficiency, the criterion of *allocative efficiency* has been met in satisfactory measure with a dynamic cost recovery rate of 78% (full cost recovery)¹ or 127% (operating cost recovery). The efficiency of the project is assessed as satisfactory overall (Subrating 3).

Overarching developmental impacts: The health statistics reviewed at ex-post evaluation for Oruro (2003) indicate better relevant figures than the national average, but still record a high percentage of diarrhoea. The project can be expected to have had beneficial effects on health, but these are likely to be offset by the persistent defects in sewage disposal and the risks posed by intermittent supply and the faulty Challapampita supply line (danger of discharging contaminated groundwater and surface water).

Of positive note, the target group is well organised and water/hygiene is well established as an issue due to the dedicated work of the community associations, as also evident in the high acceptance of improved water supply by the target group. The overarching developmental impacts are therefore assessed as satisfactory overall (Subrating 3).

¹ Operating cost recovery amounts to 117% (accounting for collection efficiency).

Sustainability: In terms of water quality, collection efficiency, meter installation rate and metered rates as well as the maintenance of existing water supply facilities, we come to a positive assessment of project sustainability. In the medium and long term, however, considerable investments will be needed to raise water supply (extension of production plants) to meet growing demand. In the short term, there is an urgent need to renew the Challapampita supply line to raise the amount of available water through loss reduction. There is therefore a risk that the supply level achieved cannot be maintained in the medium and long term, which is why sustainability is assessed as satisfactory (Subrating 3).

Summary, provisional, overall assessment: Considering the above subratings, the developmental efficacy of the project is only rated as satisfactory (Subrating: 3), despite good executing agency performance and the high degree of objective achievement.

Notes on the methods used to evaluate project success (project rating)

Projects are evaluated on a six-point scale, the criteria being relevance, effectiveness (outcome), “overarching developmental impact” and efficiency. The ratings are also used to arrive at a final assessment of a project’s overall developmental efficacy. The scale is as follows:

- 1 Very good rating that clearly exceeds expectations
- 2 Good rating fully in line with expectations and without any significant shortcomings
- 3 Satisfactory rating – project falls short of expectations but the positive results dominate
- 4 Unsatisfactory rating – significantly below expectations, with negative results dominating despite discernible positive results
- 5 Clearly inadequate rating – despite some positive partial results the negative results clearly dominate
- 6 The project has no positive results or the situation has actually deteriorated

A rating of 1 to 3 is a positive assessment and indicates a successful project while a rating of 4 to 6 is a negative assessment and indicates a project which has no sufficiently positive results.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability)

The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected.)

Sustainability level 3 (satisfactory sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability)

The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and an improvement is very unlikely. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The overall rating on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. A rating of 1 to 3 indicates a “successful” project while a rating of 4 to 6 indicates an “unsuccessful” project. In using (with a project-specific weighting) the five key factors to form an overall rating, it should be noted that a project can generally only be considered developmentally “successful” if the achievement of the project objective (“effectiveness”), the impact on the overall objective (“overarching developmental impact”) and the sustainability are considered at least “satisfactory” (rating 3).