Costa Rica: Urban Water Supply and Sanitation

Ex-post evaluation

OECD sector	14 030: Water supply and sewage disposal for poor people	
BMZ project ID	1987 66 446 (Investment in fixed assets) 1987 70,448 (Complementary measure)	
Project-executing agency	Instituto Costarricense de Acueductos y Alcantarillados (AyA)	
Consultant	GITEC Consult/BEL Ingenieria	
Year of ex-post evaluation	**2003**	
	Project appraisal (scheduled)	**Ex-post evaluation (actual)**
Start of implementation	Q I 1998	Q I 1994
Period of implementation	3.5 years	7 years
Investment costs	EUR 8.03 million	EUR 8.22 million
Counterpart contribution	EUR 2.44 million	EUR 2.63 million
Financing, of which Financial Cooperation (FC) funds	EUR 5.59 million	EUR 5.59 million
Performance rating	3	
• Significance/relevance	2	
• Effectiveness	3	
• Efficiency	4	

Brief Description, Overall Objective and Project Purposes with Indicators

The objective of the open programme was to meet the basic need for hygienically safe drinking water through new and rehabilitated water supply facilities, to improve the sanitary conditions by making available sanitary disposal facilities and improving the hygiene behaviour of the population through awareness measures. This was to bring about an improvement in the health situation of the population living in small villages of the provinces of Limón, Guanacaste and Puntarenas by reducing the incidence of water-induced diseases and deaths (overall objective).

46 individual water supply projects were implemented in 115 villages under the programme, reaching approximately 49,000 inhabitants. This raised the water supply rate to approximately 95%. In 13 projects sanitation measures were additionally put into place. The total cost of the project was EUR 8.28 million, of which EUR 5.59 million was covered by an FC loan and EUR 0.03 million was used to finance a complementary measure.

Target indicators are

a) the number of beneficiaries and degree of increase in the rate of water supply/faeces disposal at the programme locations

b) increase of water consumption to reasonable quantities per-capita, that is, at least to cover the basic need

c) hygienic safety of the drinking water

d) improvement of the population's hygiene behaviour

e) acceptance of the WS/FD installations by the population

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

The programme was implemented by AyA in force account work with the participation of the users. These have made contributions of their own in the form of money or manpower as a precondition for connection to the corresponding system. Most of the projects involved new civil works, only in two systems were water meters installed and water pipelines renewed on the basis of existing infrastructure. The systems are usually composed of a spring intake or a ground water intake with electrically operated submersible motor pumps.

The financing of sanitary measures which was originally planned for all locations at the time of appraisal was applied only in 13 systems because further measures were no longer considered necessary because of the already relatively high degree of existing faeces disposal.

Initially the Ministry of Health (MinSalud) was scheduled to conduct hygiene awareness measures at the programme locations under an agreement with the project-executing agency AyA. As the Ministry of Health in the past years has increasingly developed into a regulatory and supervisory institution and thus has been performing primarily political and hardly any operative functions, these measures were not carried out. The population's hygiene awareness, however, is relatively high in any case, partly as a result of regular education at school, so that the non-execution of the awareness measures and had no influence on the success of the programme. Additional case-by-case support would have been appropriate only in the area of faeces disposal and, in part, also in the area of spent water disposal.

The complementary measure was not yet scheduled at the time of project appraisal and was not filled with specific content. The respective funds were partly used to finance the consulting services for implementation. These also included visits of AyA staff to other Latin American institutions that had already gathered experience with similar programmes.

Various technical and administrative circumstances caused delays both in programme preparation and implementation. The consulting assignment and, hence, project implementation began five years later (1994) than scheduled at the time of project appraisal. Four years after the start of implementation (end of 1997) 30 of the systems were in operation after all, two years later (1999) another 12, so that the implementation periods of the individual projects can be regarded as still acceptable.

As the programme is a considerable strain for AyA (repairs and services to the ASADAs) that is not offset by revenues, the channelling of the FC funds as a loan at transfer conditions (contrary to the grant that was planned at the time of project appraisal) has to be judged critically.

Key Results of the Impact Analysis and Performance Rating

The systems are being operated by user committees (ASADAs) appointed from the local village population. It is planned that the project-executing agency AyA (national water supply institution) supports the ASADAs and thereby safeguards the operation. To this end AyA offers seminars as well as technical and administrative support at the request of the ASADAs. However, the support and advice rendered by AyA to the ASADAs is insufficient, particularly in the administrative area.

Thus far the systems have been operating smoothly, disruptions are eliminated on short notice. With the exception of major repairs and a minor expansion measures carried out by AyA on request, the installations are maintained and repaired by the ASADAs at their own expense. However, there is no systematic preventive maintenance done on the systems.

Average consumption per household at the locations visited, to the extent consumption was registered, was approximately 23 m^3. Assuming an average household size of six persons,

consumption is often higher than the 120 l/cd expected at the time of project appraisal and thus higher than the basic need.

The financial and administrative situation of some of the ASADAs is inadequate. In some systems, some documents and books were not available or were not kept consistently so that only a limited analysis of the financial, earnings and assets situation can be done. There is no systematic planning and management of revenues and expenditure, nor of the maintenance expenditure and investment to be made. The accounting in the largest system, Gutierrez Braun, in turn, is performed comparatively well and with professionalism. This suggests that the size of the system permits greater professionalization.

The tariffs set by the national regulating body ARESEP in March 2002 favour connections with high consumption while families consuming only their basic need are charged more than before. For this and other reasons most of the ASADAs continue to charge the tariffs that applied before they were reset by ARESEP. However, neither the old nor the new tariffs are reasonably suited to promote behaviour that conserves water. The tariffs collected remain entirely with the ASADAs.

The payment capacities of the users do not represent a problem. Their willingness to pay, in turn, is limited. Tariff increases are or would be hard to enforce in most systems because the users see no need for paying more than would be directly necessary for maintaining operation. However, we expect their willingness to pay to increase noticeably in the event that operation was at risk because of financial constraints.

No accurate statements can be made on the degree of cost recovery because of the unclear data situation. On the basis of a random sample taken, we do not expect full cost recovery to be achieved by any system but believe that some of them will be quite capable of covering the expenses required by operation, including the services provided by AyA. Furthermore, on a multi-year average most systems at least cover the running costs from tariffs and generate a minor profit. On the other hand, because some systems do not set up any reserves for large-scale repairs or replacement investments there is a risk to sustainability.

Measured by the indicators, the achievement of the programme goals breaks down as shown:

a) Around 49,000 people are currently being supplied. The rate of water supply coverage has increased in the programme locations from almost zero to approximately 95%. The rate of hygienically safe faeces disposal is around 90%, which is due in part to the programme. The expectations held with regard to the rate of coverage at the time of programme appraisal therefore have been fulfilled.

b) Water consumption is around 130 litres per capita per day for all systems, more than the 120 l/cd planned at programme appraisal. There is no question that supply quantities are sufficient; rather, consumption is much higher than needed to cover basic needs.

c) The water is analyzed regularly by AyA and is of drinking water quality. There are no signs of contamination. Since all systems have been or will be equipped with chlorination plants any residual risk may be further reduced for the future.

d) The hygiene situation at the programme locations is generally good. Almost all houses visited during the final inspection possess sanitary installations (toilet, washing basin, shower, sink), most of which were in a clean state. During the conversations and observations made the people appeared to know and follow rules of cleanliness. Even before programme implementation the most pressing problem apparently was not the population's lack of knowledge but the lack of drinking water supply. In some specific cases there do remain deficits in the area of sewage disposal. Some users have inadequate knowledge about the maintenance of cesspools, particularly about when and how they are to be emptied. Moreover, particularly the poorer users often do not have adequate faeces disposal. Particularly in areas with frequent floods, unhygienic faeces disposal constitutes a health risk for these people. Still, this objective can generally be considered attained.

e) Acceptance of the systems by the population is high. The rate of coverage for household connections is usually significantly above 90%, and the inhabitants have made contributions of their own in the form of payments or manual labour in the course of the implementation of the projects and pay fees for connections installed later. During the conversations the users emphasised their satisfaction with the systems and the resulting improvement in their standard of living.

It is plausible to assume that the health situation of the target group has improved. According to the population and employees of a health centre, the uninterrupted supply of clean drinking water has led to a decline in the incidence of diarrhoea and other water-induced diseases.

By focusing on rural regions in the three most underdeveloped provinces of the country the programme has reached mainly poor people. Most users make a living with irregular income they earn as farm hands, which is far below the Costa Rican average.

In a summarized assessment of all impacts and risks described we have arrived at the following rating of the project's developmental effectiveness:

- All project objectives were formally reached to a reasonable extent, with a water consumption that is far above the quantity required to cover basic needs. Even if sanitary measures were carried out in fewer locations than planned, the rate of faeces disposal in the programme regions is still reasonably high. The population's hygiene behaviour is appropriate although education campaigns were not carried out. There is a risk to the sustainability of the drinking water supply, however, because many systems are capable of covering only the running costs at best while no preventive maintenance is being done and the AyA's organisational support for the ASADAs is insufficient. We therefore rate the effectiveness as sufficient (sub-rating: Rating 3).
- The inhabitants of the programme locations had no appropriate drinking water supply prior to programme implementation and were exposed to a health hazard that has been largely eliminated by the programme. With the high connection rate of approximately 95% the programme has a broad impact in the villages. The absence of hygiene education measures and sanitation measures had little or no effect on the achievement of the overall objective. Only for the inhabitants who are not properly equipped with latrines is there still a certain health risk. Thus, the overall objective has been achieved but its sustainability is still at risk because of the unsatisfactory cost recovery achieved by the water supply systems. Therefore, we classify the significance / relevance of the programme as satisfactory (sub-rating: 2).

- The systems do not achieve full cost recovery and cover only some of the costs incurred in operation. Water consumption, however, is still higher than the 120 l/cd planned at project appraisal. The tariff system offers no incentives for conserving water and tends to put families who consume only their minimum needs at a disadvantage. Considering the deteriorating financial situation of the AyA, the need for state subsidies to finance large-scale repairs and replacement investments is rising. This results in a risk to sustainability even though it can be assumed that the users' willingness and ability to pay can generally be assured in the future as well. The per-capita investment costs of the water supply

systems are reasonable but the per-capita investment costs of the sanitation measures could not be ascertained. Considering the very high consumption, low and inappropriate tariffs as well as the inadequate cost recovery, we rate the efficiency of the programme altogether as inadequate (sub-rating: 4).

After weighing its effectiveness, relevance/significance, efficiency and the sustainability risks mentioned above we rate the project overall as having adequate developmental effectiveness (rating 3).

General Conclusions applicable to other Projects

Given the good operational situation in the larger system Gutierrez Braun we recommend to analyze whether there is a connection between the size of the system and the professionalism with which it is operated and the cost situation. If this is confirmed we recommend forming large systems in similar projects (particularly in Phase II) that consist of several municipalities if possible and to take this into account in the selection of programme locations.

Since further investments in the rural water sector are being planned, and considering the need for systematic support of the ASADAs in commercial and technical issues and the user's ability to pay, the AyA should examine to what extent it could charge the ASADAs for its services and to what extent additional systematic services could not only improve operations but also achieve potential cost savings.

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 slightly insufficient 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 during the final evaluation into one of the various levels of success described in more detail below concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness)**?
- Does the project generate sufficient **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 conception)?
- 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 are 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 their own and generate positive results after the financial, organizational and/or technical support has come to an end.