

Brazil: Basic Sanitation Ceará I

Ex-post evaluation

OECD sector	14030 / Water supply and sewage disposal for poor people	
BMZ project number	1986 65 093 1986 70 283 A&F 194 141	
Project-executing agency	Companhia de Aguas e Esgoto do Ceará (CAGECE)	
Consultant	Kittelberger / Luso Consult	
Year of evaluation	2002	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	I/1987	IV/1991
Period of implementation	4 years	5.5 years
Investment costs	EUR 9.5 million	EUR 11.3 million
Counterpart contribution	EUR 1.3 million	EUR 2.2 million
Financing, of which Financial Cooperation funds	EUR 8.1 million	EUR 9.0 million
Other institutions/donors involved	None	None
Performance rating	2	
• Significance / relevance	1	
• Effectiveness	2	
• Efficiency	3	

Brief Description, Overall Objective and Project Purposes with Indicators

The project aimed at improving basic sanitation for the population in the northern region of the Brazilian state of Ceará. In the framework of an open programme measures were financed to establish and improve water supply systems and waste water disposal installations and to strengthen regional operating and maintenance capacities as well as complementary sensitization and hygiene measures in smaller villages. To ensure the sustainability of the systems an operating and maintenance concept was developed, which aims in particular at combining user groups to form a special-purpose association. The total cost including the complementary measure amount to approx. EUR 11.25 million, EUR 9.0 million of which was financed from FC. The costs of the training measure amounted to roughly EUR 1.33 million and was financed completely from FC funds.

The purpose of the programme was the improvement of water supply and waste water disposal in the programme region (Sobral), which was intended to contribute to improving the health situation (overall objective). The achievement of the programme purpose is to be measured by the following indicators:

- the connection rate in the fields of water supply and waste water disposal in the programme region increases by about 10%;
- water consumption is between 60 and 150 l/c_d for household connections and 30 to 60 l/c_d for standpipes;
- the supplied water meets the quality requirements for potable water;
- the water supply and waste water disposal facilities are accepted by the target group and
- the hygiene behaviour of the population has improved.

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

As a result of modifications in the project design and price increases due to the revaluation of the national currency in 1994 the scope of the programme was reduced. Altogether, 43 water supply systems for approx. 50,400 inhabitants were built in 45 villages as well as central and decentral waste water and faeces disposal facilities for about 38,700 inhabitants in 44 villages. Expansion measures in the area of water distribution were implemented in seven other villages to supply a total of 600 inhabitants with water. Due to changes in the types of supply facilities (the installation of standpipes was abandoned in favour of house connections), the mostly sparsely built-up areas on the village fringes, the frequent lack of in-house sanitary facilities or toilet houses and the often difficult topographic and soil conditions far more types of disposal facilities were employed than assumed at the time of the project appraisal. At the request of the population dry latrines were not installed.

Key Results of the Impact Analysis and Performance Rating

The objective of improving the level of water supply and sanitation was reached (50% for water supply and 21 % for sanitation) in the Sobral programme region. However, this is not exclusively due to the project, which actually provided water supply and sanitation for fewer inhabitants than originally planned. At approx. 60 l/c_d water consumption from house connections at the programme locations was in the lower range of the defined target level, but is still adequate. Water supply from standpipes is not relevant under the programme since only six standpipes were installed, three of which have already been replaced by central systems. Apart from one system, the quality of the water provided is sufficient. The installations as well as the payment of water charges have been well accepted by the target group. The acceptance of sewage charges is comparatively low. In the course of the installation of the systems and the education campaigns conducted under the complementary measure the hygiene behaviour of the population was improved and the cases of improper use of the sewage disposal systems, which had initially occurred frequently, were reduced. The decline in water-induced diseases and infant mortality is an indication of the improved hygiene behaviour. Overall, the programme purposes and objectives were achieved.

The target group of the project are the inhabitants of 45 rural villages in the northern region of Ceará. Ceará is one of the poorest Brazilian states. Average per-capita income in 2001 was BRL 3,000 per annum (Brazilian Real; equals approx. USD 1,250 at the 2001 exchange rate). 52% of households in Ceará have a monthly income of less than two minimum wages (< BRL 400 or USD 167), which means roughly 1 USD per capita per day. The target group consists of a rural population, who earn only small incomes as subsistence farmers, day labourers or small manufacturers and tradesmen. State subsidies in the form of farm worker pensions or grants for school children and needy mothers play an important role. A farm labourer earns BRL 6 a day (USD 2.5) when employed. The monthly household income of the target group is roughly BRL 150 to 250 (USD 63 – 104). Thus, the project has direct relevance for poverty alleviation.

Until recently, little attention was paid in Brazil or in Ceará to sustainable operating models in rural areas. In this context the model (which was developed in the course of the project) of the regional special-purpose association SISAR (Sistema Integral de Saneamento Rural), which increasingly receives attention also beyond the programme level, is becoming more and more important. Due to the positive experience made with the FC supported special-purpose association in Sobral CAGECE has set up further such associations. At the time of the on-site final evaluation of the 45 programme locations 25 user groups were organized with the SISAR-Sobral association, one system was operated by CAGECE, one system by a municipally-owned company and the other 18 systems by user groups without back up support.

Most of the indicators for the achievement of the programme purpose (connection rate, consumption, water quality, improvement in the hygiene behaviour) were met and the capacities installed were used intensively. Acceptance of the water supply and water tariffs is high. The acceptance of the tariffs for sewage disposal is lower. SISAR was able to implement a low flat-rate tariff, but in the systems operated by user groups no sewerage tariff is charged. Due to defective design and workmanship the operation and maintenance of the central sewage disposal systems is hampered and, thus, cost intensive. The quality of the treated sewage is measured only at irregular intervals, e.g. when obvious problems have occurred. Overall, the project's **effectiveness is satisfactory (partial evaluation: rating 2)**.

The sanitary situation of the target group has improved noticeably and the effects on health were reached. It is mainly the poor sections of the population in rural areas that benefit from the effects. The establishment of a special-purpose association in Sobral strengthens the organisational capacity of individual user groups. Moreover, it makes an important contribution to solving the sustainability problem in the area of water supply and sewage disposal systems in rural areas. Evidence for the replicability of this operating model in the field of rural basic sanitation is provided by the fact that the Brazilian federal authorities have already started tentatively to introduce this model in other regions and that it meets with increasing attention in other federal states. Overall, the developmental **significance** and **relevance** of the project are **good (partial evaluation: rating 1)**.

SISAR-Sobral's operating costs and depreciations on own assets are covered by tariff income. Thus, SISAR is in the position to finance replacements investments and smaller expansions from its revenues. Except for the systems operated by two user groups, fees are charged and operating costs are covered at all locations. However, this statement must be qualified by saying that in many cases there is no such proper maintenance and repair as practiced by SISAR. Measuring of consumption is high (SISAR 100%, in general approx. 92%). Collection efficiency is high at SISAR (95%) and lower at the user groups (about 70%). Specific investment costs are higher than expected at the project appraisal but are still in the usual range of projects

regarding basic sanitation in rural areas. Overall, the technical and financial sustainability of the systems operated by SISAR is given. In the event of systems operated by user groups the sustainability depends very much on the degree of organisation and the competence regarding administrative and technical operation, with both represented in varying degrees. In the field of water supply the production and allocation efficiency is rated as high, however, in the field of sewage disposal it is noticeably lower, which is the result of operating problems or, as the case may be, insufficient sewage disposal tariffs. Overall, the project's **efficiency is adequate (partial evaluation: rating 3)**.

After weighing the above mentioned criteria for the development-policy evaluation of project success, we classify the project **overall as having a satisfactory degree of developmental effectiveness (rating 2)**.

General Conclusions applicable to other Projects

The participatory model of the special-purpose association, which was developed in the context of the project, offers a suitable approach to ensure the sustainability of measures in the field of basic sanitation in rural areas. The approach also helps to strengthen the organisational and self-help competence of the target group. When replicating the model of the special-purpose association, aspects that are important for success should be taken into account. These are intensive participation of the user groups, tariffs that cover operating costs, independence of the association's business activities from political influence, tariff structure and qualification requirements for the staff.

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 assignment during the final evaluation to one of the various levels of success described below in more detail 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 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.