Guatemala: Rural Water Supply and Sanitation Programmes I, II and III

Ex-post evaluation

OECD sector	14030 / Water supply and sewage disposal for poor people	
BMZ project ID	Progr. I: 1987 65 190 Progr. II: 1993 65 016 Progr. III: 1993 65 024	
Project-executing agency	Unidad Ejecutora del Programa de Acueductos Rurales (UNEPAR) des Instituto de Fomento Municipal (INFOM)	
Consultant	Programme I: Kittelberger Consult Programmes II and III: GKW Consult-CECONSA	
Year of ex-post evaluation	**2005**	
	Project appraisal (planned)	**Ex-post evaluation (actual)**
Start of implementation	Progr. I: 3rd quarter 1987 Progr. II: 2nd quarter 1994 Progr. III: 2nd quarter 1994	Progr. I: 2nd quarter 1989 Progr. II: 1st quarter 1995 Progr. III: 1st quarter 1995
Period of implementation	Progr. I: 4 years Progr. II: 4 years Progr. III: 4 years	Progr. I: 6.5 years Progr. II: 5 years Progr. III: 6 years
Investment costs	Progr. I: EUR 7.77 million Progr. II:EUR 13.86 million Progr. III: EUR 8.64 million	Progr. I: EUR 8.29 million Progr. II:EUR 11.96 million Progr. III: EUR 7.74 million
Counterpart contribution	Progr. I: EUR 2.25 million Progr. II: EUR 6.19 million Progr. III: EUR 3.53 million	Progr. I: EUR 2.84 million Progr. II: EUR 4.37 million Progr. III:EUR 2.65 million
Financing, of which Financial Cooperation (FC) funds	Progr. I: EUR 5.44 million Progr. II: EUR 7.67 million Progr. III:EUR 5.11 million	Progr. I: EUR 5.44 million Progr. II: EUR 7.67 million Progr. III:EUR 5.11 million
Other institutions/donors involved	none	none
Performance (overall rating)	3	
Significance / relevance (sub-rating)	2	
Effectiveness (sub-rating)	3	
Efficiency (sub-rating)	4	

Brief Description, Overall Objective and Programme Objectives with Indicators

The open programmes followed the objectives of meeting the basic need for safe drinking water through new and rehabilitated water supply installations, by improving sanitary conditions through the installation of latrines and infiltration wells, by improving the population's hygiene behaviour with the aid of hygiene education campaigns, through sustained use of the installations and the lasting impact of hygiene education, as well as by reducing the amount of time spent by women on fetching water in the western provinces (programmes I and II) and in the eastern provinces (programme III) of Guatemala. Common to all programmes was their objective of reducing the health hazards to the population living

in the programme locations from water borne diseases. At least in Programme I a reduction of water-borne fatalities was explicitly sought.

The investment measure comprised 165 individual water supply projects, of which 59 were implemented in programme I, 68 in programme II and 46 in programme III. The projects reached around 209,000 inhabitants. Additional sanitation measures were implemented in all programme locations (installation of individual latrines, and programmes II and III also included percolation systems for domestic sewage).

Target indicators are:

a) The number of beneficiaries and the increase of water supply and faeces disposal rates in 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
f) significant reduction in time spent by the women in the programme communities on fetching water

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

- Programme I currently supplies around 109,080 people, Programme II around 66,588 people and Programme III around 33,253 people. These figures are around 34% below the original target. Some programme locations that did not meet the selection criteria were not included, and difficult geological conditions caused higher investment costs for individual systems, all of which were factors that contributed to this low figure. As the implementation of the measures was reasonable despite the higher cost, the lower number of users reached by the programmes can also be considered reasonable.

- The connection rate in the programme locations increased from less than 40% to around 80% in programme I, 69% in programme II and 84% in programme III, over-achieving the targets set for programmes 1 and 3 and falling slightly short of the Programme II target.

- Per-capita water consumption cannot be determined with accuracy as most systems are not equipped with domestic water meters. Consumption in programme locations with water meters is between 80 and 250 litres per capita per day, and the average is around 160 litres per capita per day, much higher than the target of 60-90 l/c/d established at project appraisal and above the maximum set by the BMZ sector strategy. Even in locations without water meters water quantities are more than sufficient as most houses have washbasins and showers (some even have water closets), which leads to a consumption that is much higher than needed to meet basic needs. The target indicator was reached, but as the water is being squandered in some areas, resulting in water shortages particularly in the summer months, this can have negative implications for the operation, which is not fully cost-covering.

- Only in a few systems (around 15% of the programme locations visited) is the water being regularly tested for quality; similarly, chlorine disinfection is being carried out at only some locations. The main reason for this is the high cost of chlorine tablets and laboratory analysis. In the locations that perform quality controls the water meets the standards of the Guatemalan authorities, as stated by the user committees. The other committees have reported no evidence of water contamination. According to the users, the incidence of diarrhoea in the programme locations has dropped sharply since the water systems went into operation, so that the health situation in the programme areas can be expected to have improved.

- The hygiene situation at the programme locations is generally good. Almost all houses visited during the final inspection possess sanitary installations (latrine, washbasin/sink, sometimes a shower), most of which were in a clean condition. These facilities are usually installed in the yard or garden, and some of them in the house. The conversations held and observations made gave the impression that the population knows and observes the rules of hygiene and that personal and domestic hygiene has improved significantly.

- Acceptance of the systems by the population is high. In the programme locations visited, around 90% of the water supply systems were functioning and being properly operated and maintained. The latrines were generally in good condition and were being regularly used. Around 50% of the cesspits were no longer in use (mostly owing to difficult geological conditions with low water absorption; around 27% were functioning in part and only 23% were fully functional. Consequently, grey water is usually being discharged untreated into the garden or a nearby river. The cesspits (around 21% of the investment cost) must be considered largely a failure. During the conversations the users generally emphasised their satisfaction with the water supply systems and the resulting improvement in their standard of living. The clear failure to achieve the indicator for the cesspits, however, has not led to any serious environmental or health hazards owing to the inoffensive nature of the grey water.

- Only a few programme locations possess an alternative water supply directly within the villages. Before the water supply systems went into operation, women and children had to fetch water from nearby springs or rivers, which was said to have taken them from two hours to an entire day. In 22 of the 26 villages visited (around 85%), user committee representatives interviewed confirmed that the installation of the water supply systems has significantly shortened the time it takes to obtain water.

Programme Design / Major Deviations from the original Programme Planning and their main Causes

The programme was implemented by the community development institute INFOM-UNEPAR 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 were new constructions, while existing water supply systems were rehabilitated and expanded in 51 locations. The systems are usually composed of a spring intake or a ground water intake with electrically operated submersible motor pumps.

As part of the technical assistance to the personnel, hygiene education campaigns and instruction of the water committees were carried out in all programmes. This enabled the water committees to administer, operate and maintain the systems; the villagers were familiarised with hygiene issues, including the use of water and latrines, and the programme-executing agency was enabled to competently implement all programme components.

As not all the villages considered for inclusion at programme appraisal met the selection criteria, the number of programme locations and, owing to geological and geographical conditions, the type of activities implemented there changed in the course of the detailed planning.

Key Results of the Impact Analysis and Performance Rating

The target group's health situation has improved. According to the population, the incidence of diarrhoea and other water-induced diseases has declined. By improving the water supply and sanitation the programmes have contributed to this outcome in a significant manner. The

standard of living of most inhabitants has improved substantially as a result of the water supply. Thus, most households possess wash basins, latrines and, in some cases, showers.

At the time of programme appraisal it was expected that the programmes would increase the attractiveness of the programme locations and thereby reduce the rural exodus. What is crucial to people staying in the programme villages, however, is their employment opportunities. In some programme locations there have been migratory movements as the people considered other places to offer an altogether more promising future.

Before the programme was implemented the population frequently obtained their water from traditional sources such as rivers and springs. It was mostly the women who were in charge of the physically demanding task of fetching water, which is now being supplied by the systems. Prior to the programme the women also used to wash their families' clothes in the rivers. The programmes succeeded in making life easier for the women.

Negative environmental impacts from improper grey water disposal are negligible. As the water quantities discharged without treatment are minor in comparison with the programme area the environmental impact is limited. Faeces are commonly disposed of properly in latrines. Particularly in the dry season, some water sources cannot supply sufficient quantities as a result of the frequently high consumption. In some cases this can have limited impacts on the micro-climate in the surroundings of the source, but they are being considered acceptable.

By focusing on rural regions in very underdeveloped provinces of the country the programmes have reached mainly poor people. Most users earn irregular income as farm hands on a level which is far below the Guatemalan average. The population has participated actively in implementing the project through contributions in the form of money and labour (self-help). Since the systems have been completed the people have been operating them on their own responsibility through the user committees. Thus, the project has contributed to direct poverty reduction.

On the basis of the combined assessment of all impacts and risks described, we arrive at the following rating for all three programmes:

All project objectives were formally achieved to a reasonable extent, over-achieved or slightly under-achieved only in part. Consumption, however, goes far beyond the minimum need. Even if grey water is not being eliminated as planned owing to the insufficient absorptive capacity of the ground the sanitary situation in the programme villages is nevertheless mostly unproblematic. The population's hygiene behaviour is appropriate as a result of the awareness campaigns. We therefore rate the **effectiveness** as sufficient (sub-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 significantly reduced by the programmes. Since the systems went into operation the target group's health situation has improved noticeably. The inhabitants not connected (on average between 15% and 30% of the villages), however, still have to rely on the use of surface water and thus remain exposed to health hazards. For the inhabitants not adequately equipped with cesspits (around 50% of the target group) there is still a slightly increased health hazard. Altogether, however, the programmes succeeded in making a significant contribution to the overall objective. Therefore, we rate the **significance / relevance** of the programmes as satisfactory (sub-rating: **2**).

The investment cost per inhabitant is still acceptable (production efficiency). The bad investment in the cesspits (21% of the investment cost), the excessive per-capita consumption and the high administrative costs for the executing agency had a negative effect on production efficiency, however. Allocation efficiency is altogether unsatisfactory owing to insufficient cost recovery in connection with the high supply standard and water wastage. Overall, we therefore rate the programmes' **efficiency** as slightly insufficient (sub-rating: **4**).

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

Conclusions and Recommendations

- In rural water supply projects the budget for consulting services in the area of social promotion and the implementation of suitable measures to support the executing agency staff are of great importance in order to enhance sustainability and should be scheduled in a reasonable volume.

- In projects in which it can be anticipated that new water supply systems can lead to excessive consumption and water shortage, hygiene education campaigns should be conducted to advise prospective users early on the proper use of water.

- In most open programmes it is not possible to predetermine the size of the target group in the programme appraisal report as it does not include detailed planning, so that it would be more appropriate to indicate a corridor for the target group to be reached.

- The appraisal of such a programme is often based on the assumption that the water supply systems will make the programme locations more attractive and so discourage residents from migrating. It has become clear, however, that a water supply system is only a secondary factor for the attractiveness of programme locations. Other factors such as employment opportunities and prospects for the future may be regarded as more important, so migration tendencies may still be observed.

- In decentralised water supply projects that are to be operated by user committees it should generally be examined in what way and where it might be appropriate to set up a permanent institution that could reliably advise and support the user groups during the operating phase. Such structures should be set up, supported and strengthened as part of the project concept.

Assessment criteria

Developmentally successful: Ratings 1 to 3	
Rating 1	Very high or high degree of developmental efficacy
Rating 2	Satisfactory developmental efficacy
Rating 3	Overall sufficient degree of developmental efficacy
Developmental failures: Ratings 4 to 6	
Rating 4	Overall slightly insufficient degree of developmental efficacy
Rating 5	Clearly insufficient degree of developmental efficacy
Rating 6	The programme is a total failure

Criteria for the evaluation of programme success

The evaluation of the “developmental efficacy” of a programme and its classification during the ex-post evaluation under one of the various levels of success described in more detail above concentrate on the following fundamental questions:

- Have the **programme objectives** been achieved to a sufficient degree (programme **effectiveness**)?
- Does the programme generate sufficient **significant developmental effects** (programme **relevance** and **significance** measured in terms of the achievement of the overall

developmental 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 **appropriate** with a view to achieving the objectives and how can the programme's microeconomic and macroeconomic impact be measured (**efficiency** of the programme design)?
- To the extent that undesired **(side) effects** occur, can these be tolerated?

We do not treat **sustainability**, a key aspect to consider when a programme is evaluated, as a separate evaluation category, but rather as an element common to all four fundamental questions on programme success. A programme is sustainable if the programme-executing agency and/or the target group are able to continue to use the programme 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 independently and generate positive results after the financial, organisational and/or technical support has come to an end.