

**Peru: Sewage Disposal in the City of Chiclayo /  
Drinking Water and Sanitary Programme Peru - PROAGUA**

### Ex-post evaluation

<b>OECD Sector</b>	Social infrastructure	
<b>BMZ project number</b>	FC: 1993 65 917 TC: 2001.2094.9	
<b>Project-executing agency</b>	EPSEL (Entidad Prestadora de Servicios de Daneamiento de Lambayeque S.A.)	
<b>Consultant</b>	GKW / Saniplan	
<b>Year of evaluation</b>	<b>2002</b>	
	<b>Project appraisal (planned)</b>	<b>Ex-post evaluation (actual)</b>
<b>Start of implementation</b>	Q 3 1994	Q 3 1995
<b>Period of implementation</b>	46 months	46 months
<b>Investment costs</b>	EUR 22 (+3.6) million	EUR 25.6 million
<b>Counterpart contribution</b>	EUR 6.5 million	EUR 10.2 million
<b>Financing, of which FC funds</b>	70%	60%
<b>Other institutions/donors involved</b>	GTZ	GTZ
<b>Performance rating</b>	2	
• <b>Significance / relevance</b>	2	
• <b>Effectiveness</b>	2	
• <b>Efficiency</b>	3	

### Brief Description, Overall Objective and Project Purposes with Indicators

The project, carried out jointly by KfW and GTZ, was to improve the sewage disposal (collection and treatment) in the city of Chiclayo and thus contribute to reducing the health risks to the urban population and to those living in the neighboring coastal region. Especially the poor population in the northern sections of the city (overall 13 so-called pueblos jóvenes [PJ] with 50,000 inhabitants) was the target group of the project. The FC component mainly comprised the collection and diversion of the sewage out of the northern parts of the city as well as the treatment of this sewage at three recently constructed lake treatment plants outside the city limits. The TC component comprised the institutional promotion of the project-executing agency EPSEL for the purpose of supporting EPSEL in eliminating the basic weaknesses determined during project preparation. In this way the foundation for efficient and sustainable project operation and developmental effectiveness was to be laid.

The target system of the cooperative project was defined as follows:

Overall objective:

**Reduction of the health risk for the residents of Chiclayo, farmers and farm workers as well as other inhabitants of the San José region and the coastal region between Pimentel and San José.**

Project Purposes

FC component: Expansion of the sewage collection area; reduction in the sewage-induced burden on the irrigation cultures, the marine fauna and flora and the beaches.

Indicators:

3 years after conclusion of the construction measures:

- **the sewage of at least 10,000 new system connections is registered and that of at least 40,000 connections is discharged into the lake treatment plants;**
- the discharge values of the lake treatment plants of 60 mg/l BSB<sub>5</sub> in the 24-hour composite sample are only exceeded in exceptional cases.

TC component: The utilities supported under the PROAGUA programme (including EPSEL) render efficient water supply/sewage disposal services and meet the needs of the population.

Indicators:

- The companies finance running expenses and investments out of their revenues;
- The actual costs per power unit are falling.

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

FC component:

There were major deviations in the technical concept compared with the concept design during the project appraisal primarily at the treatment plant sites. Instead of treating the sewage mainly at the site in San José as originally planned, a total of four treatment sites (Pampa de Perros, San José, Pimentel and Chacupe) were planned, of which only the first three plus the corresponding main canals could be built due to financial constraints. The results achieved either match (treatment) or exceed (rate of connections) the targets stated in the project appraisal.

TC component:

Most TC measures were carried out as planned with the exception of the consulting services for the commercial department of EPSEL. Due to political influence, primarily on staffing and tariff

policy, the success of the TC consulting services for this department was questionable, so that GTZ withdrew from this area.

### Key Results of the Impact Analysis and Performance Rating

Measured by the indicators, the objectives of the FC component have been achieved. Apart from the financial performance of EPSEL there is a sustainability risk connected with the financing for needed investments in expansion, which has not been secured.

Measured by the TC project indicators, however, the purpose of the TC project can only be considered as partially achieved:

- (a) In the years 1997-1999 there was a temporary improvement in the financial situation of EPSEL, which was initially reflected in positive operating results. In 2000, however, there was a financial collapse – at least temporarily – since, in addition to a rising interest burden, the company also suffered a substantial drop in revenues. This led to a negative result for the year of approx. NS 5 million (> EUR 1.53 million). Thus, although the running expenses were covered, necessary investments could only be financed out of the cash flow to a very limited degree.
- (b) The actual project-related costs per m<sup>3</sup> of drinking water produced and charged increased from NS 0.53 and NS 0.78, respectively, in 1997 to their current level of NS 0.70 and NS 1.14 (see 6.02).

The reasons for this can be found in part in the performance of the consulting services in the commercial field, which was ultimately not successful owing to the political interventions mentioned above. Much more decisive, though, was the fact that the company was already indebted when the project began and incurred further debts during the project term, and that its lack of autonomy hindered the implementation of the measures required to increase revenues. Apart from tariff increases, additional investments are needed to this end, such as the purchase and installation of house water meters or the rehabilitation of the water nets. Furthermore, the treatment capacities are not being exploited as optimally as they could be (around 70%), which, in light of the simultaneously high water losses of 40%, has a negative effect on cost coverage. Moreover, from a methodical point of view, it can be said in retrospect that the target system was not formulated adequately since important and also very positive aspects of the TC services are not registered by the TC indicators (e.g. improvements in the organisational/institutional area of EPSEL, sensitization of the target group, quality control). Consequently, from a purely formal perspective the assessment of the achievement of the goals is too negative.

Thus, with the TC support EPSEL has developed into a company whose organization, management and personnel enable it to fulfill its tasks efficiently.

The objectives of the project were achieved with the limitations described. Thus, in principle the project's **effectiveness** is established. Against the backdrop of the basically positive prospects of participation in the company by the private sector, in spite of the difficulties currently noted with regard to the needed expansion of the system and the lack of autonomy we consider the sustainability risk to be low (partial evaluation: rating 2).

The project clearly improved the quality of life, especially for poorer parts of the population, the hygienic conditions in residential areas of Chiclayo and the environmental situation of the surrounding area and thus achieved the overall developmental objective. From today's point of view as well the project concept was more or less adequate to solve the problem. The changes at the project-executing agency are clearly noticeable, and the developmental effect is

established in the form of a generally improved offer of services. Thus, its development-policy **relevance** and **significance** are principally given. They are impaired, however, by the relatively high percentage of the population not connected to the sewage disposal system. Yet a higher connection rate was not possible owing to the limited FC funds. As a result, the noted deficiency is not to be attributed to the cooperative project (partial evaluation: rating 2).

Measured in terms of the specific investment costs, the funds were used appropriately to achieve the objectives. Another indication of efficient project implementation is that local resources were exploited to a high degree, particularly in connection with PROAGUA. This was accomplished both by contracting local experts and also by mobilizing the personnel of the project-executing agency. Not only the experts sent in but also local experts intervened at several sites. On the one hand, this reduced the consulting costs in Chiclayo and, on the other hand, it encouraged the exchange of information and experience between the utilities receiving advice under the PROAGUA programme and also the creation of multiplier effects. All project sites profited from the consulting on the level of the sector institutions; this also applies to the introduction of the topic of private-sector participation. Yet some of the TC funds could not be spent optimally due to staff rotation. In principle, the project's **production efficiency** is thus established. On the contrary, the criterion of **allocation efficiency** was not met owing to the current lack of full cost coverage, the low collection rate and the strained liquidity situation of the company. Since EPSEL is actively attempting to improve the tariff collection rate, since additional tariff increases will be introduced shortly that have already been approved by the sector regulatory agency SUNASS and since the ability of the population to pay for the service leaves enough room for further tariff increases, we assume that, in the foreseeable future, the company will reach a tariff level and a collection rate that guarantee full cost coverage and ease the financial situation (partial evaluation: rating 3).

After considering the given effectiveness and significance, the ongoing reforms of the sectoral conditions and the continuing risks, overall we rate the project's **developmental effectiveness** as still **satisfactory** (rating 2). One decisive factor for this positive rating is the willingness of the competent agencies to spur on private-sector participation in Chiclayo's water supply/sewage disposal sector. This step has already been taken in the field of sewage disposal, serving as a good example for all of Peru.

### **General Conclusions applicable to all Projects**

The connection rates to water supply and sewage disposal systems in Chiclayo are low (62% and 56%, respectively). This affects the fast-growing poor population in peri-urban areas most of all. As in principle this problem also applies to other large cities in Peru, when future DC projects are planned in this sector, the possibility of financing specific poverty-oriented projects/programmes that include adjusted technologies and implementation and operator models ("proyectos condominiales") needs to be examined. In so doing, the experiences gathered during the pilot project (World Bank/PROAGUA in Chiclayo) should be drawn in.

By and large, FC and TC complemented each other well in this project. The improvements in the internal organization, the procedures and processes of the project-executing agency supported the implementation and operation of the FC measures. Key complementary TC activities included quality control of the sewage, instruction and training of personnel and the realization of studies on topics important for the initial operation of the lake treatment plants as well as sanitary education of the population concerned. The FC support made it possible to provide the required infrastructure in the sewage sector and heightened the role of German development support overall. There is still room for improvement, however. Coordination of both components beginning in the planning stage and continuing on a regular basis could reduce losses due to friction and encourage more efficient, target-oriented cooperation. A cooperation

agreement in which the expectations and obligations of both sides are made transparent would surely inspire better planning and more timely accomplishment of the complementary activities.

An assessment of the FC/TC cooperation should not be limited to cooperation under the cooperative project Chiclayo; rather, it should regard it as part of a broader approach to FC/TC cooperation in Peru's residential water management sector. After all, the real synergy effects of the cooperation stem from the strategic approach and the importance of DC from one sole source. An FC/TC approach that is coordinated in terms of timing and content as described in the concept that was designed jointly by KfW and GTZ for this project to optimize cooperation offers the opportunity to combine the complementary advantages of both instruments in an ideal manner. The work at several sites, the joint selection of sites, the preparation of FC measures through TC, the promotion of the effectiveness of the TC consulting services via corresponding FC investments, and the support for the implementation and operation of the FC measures via TC consulting as well as the joint consulting services rendered to the sector institutions on the macrolevel assure DC a prominent role in this sector. Not until these conditions are given can German DC actually achieve any degree of significance and relevance. In other cases involving FC/TC cooperation as well these strategic dimensions should be developed (further) and serve as a foundation for other possible cooperative projects.

The joint implementation of the ex-post evaluation by KfW and GTZ is seen as a positive factor by both sides and should be considered in future ex-post evaluations of cooperative projects. For this purpose KfW and GTZ were to draw up criteria for the selection of appropriate cooperative projects and design a common approach. In so doing it is important to have people who are not involved with the project carry out the ex-post evaluation.

## 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.