

East Timor: Reconstruction Aid (Water Supply)

Ex-post evaluation

OECD sector	14020/Water supply and sanitation – large systems	
BMZ Project number	2000 65 987	
Project executing agency	Former: Serviço de Aguas e Saneamento, Present: Departamento Nacional de Agua e Saneamento	
Consultant	Cooperation project with GTZ	
Year of ex-post evaluation	2006	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	3/2000	3/2000
Period of implementation	22 months	40 months
Investment costs	EUR 0.61 million	EUR 0.61 million
Counterpart contribution	Not quantified	Not quantified
Finance, of which FC funds	EUR 0.61 million	EUR 0.61 million
Other institutions/donors involved		
Performance rating	3	
• Significance/Relevance	3	
• Effectiveness	3	
• Efficiency	4	

Brief Description, Overall Objective, Project Objective with Indicators

Carried out as a cooperation project with GTZ, the programme comprised the delivery of pipes, fittings, building and other materials as well as local consultancy services (detailed planning and building supervision) for the repair and extension of public water supply systems in Viqueque (capital of the district of the same name) and Laga (Baucau District). The programme objective was the self-reliant and sustainable operation of the repaired and extended water supply systems by the municipalities (indicators: restoration of the regulated water supply by June 2002 and autonomous operation of the systems as of December 2002). Besides supporting the country in reconstructing infrastructure destroyed during hostilities in the war of independence, the programme was to make a sustainable contribution to improving the satisfaction of the population's basic needs (overall objective), which is seen as a prerequisite for independent civilian life in the new state of East Timor. The target group of the programme were about 7,000 inhabitants in the rural localities Viqueque and Laga. Average household size amounted to 4.6 persons in the rural regions.

Project Design/Major Deviations from Original Project Planning and Main Causes

Although interventions had been scheduled in 4 rural localities at appraisal, some could not meet the preconditions for a regulated water supply so the FC measures were concentrated in the course of implementation on restoring and extending the water supply systems in Laga and the district capital Viqueque. Both locations obtain water from sources at a higher altitude. The water is of good quality so treatment is not required. However, there were dangers of contamination at project appraisal due to the population living near the sources in the programme locations. In the runup and parallel to the building measures, GTZ made local user groups aware of their own construction contributions and of the need to pay charges in the operating phase. Additional activities by GTZ comprised setting up local operator organisations, training measures in operation, management and finance as well as campaigns to improve hygiene and sanitary habits in combination with grants for installing about 120 latrines in Viqueque.

Under the FC programme the following measures were implemented in Laga: improvement and protection of the spring capture against pollution, repair of the town supply pipeline built in 1992, construction of four pipe bridges to reduce the risk of damage through landslides, extension of the distribution grid and improvement of supply to residents through new service connections and taps as well as the installation of water meters for five distribution zones. Laga's water supply system, however, still suffers from technical deficits which could not be remedied in the rehabilitation measure for lack of adequate FC funds. The water supply pipeline, for example, runs through extremely adverse terrain on almost inaccessible steep slopes, because there was no economically viable alternative route. Despite their unsatisfactory condition, existing distribution and connection pipelines and the available containers had to be integrated into the system as they could not be fully overhauled for lack of sufficient finance. As a result, the whole system is difficult to operate and susceptible to damage, water theft and leaks (see below).

In the larger town of Viqueque (approx. 7,000 inhabitants) the measures concentrated mainly on restoring and substantially extending the distribution grid, which was also divided into five user zones. The very capacious spring capture and supply line had already been extended earlier and had not been fully utilised so far. In addition, the existing reservoirs were rehabilitated and new service connections and taps installed with water meters. The quality of the building measures was higher than the usual local standard. Unlike the one in Laga, the supply system is currently in a satisfactory technical condition.

Owing to the relatively small FC funds and the difficult national economic and sectoral framework due to the conflict (At project start, half of all Timoreans had been displaced, sectoral responsibility lay in the hands of the UN interim administration, part of the water supply systems had been destroyed and the hostilities also continued after 1999.), it was unrealistic to expect sustainable impacts, which is why the set of objectives must be gauged as far too ambitious. For the most part, the FC measures aimed at restoring a regulated water supply, also integrating system components provisionally built by other relief organisations in emergency measures for the stopgap supply of the population and refugees until sustainable capacities and systems could be established. Taking these considerations into account, the plan of implementation was appropriate and carried out in keeping with needs, despite the deficiencies cited above.

Main Results of the Impact Analysis and Performance Assessment

Development of parameters since appraisal

Compared with project appraisal, the sectoral framework (particularly the coverage index for the population) has not basically changed. The main tasks since independence in 1999 consisted on the one hand in establishing a completely new executive setup (formerly: Serviço de Agua e Saneamento (SAS), today: Departamento Nacional de Agua e Saneamento, DNAS), which took over responsibility for the sector from the UN interim administration (UNTAET), and on the other hand in repairing or replacing the infrastructure which had been damaged or looted in the course of the war of independence. The project was geared to the latter as sector policy could not be implemented under the circumstances prevailing at the time. Only about 30% of the population in East Timor currently have access to clean water, as little as 24% of households in rural areas. There is practically no adequate wastewater and sewage disposal in the regions outside the capital Dili (coverage index: 13%). Water-induced illnesses (particularly diarrhea) are still very common. The largest part of the existing water supply and wastewater disposal infrastructure was built under Indonesian government rule and is generally in poor condition due to quality defects in design and construction, damages during the unrest and insufficient and irregular maintenance. Legislation was passed in 2004 on collecting water charges, but actual collection has not taken place except for commercial users in the capital Dili due to administrative and personnel bottlenecks in the executing institution.

Government revenue and the fiscal-policy scope for sustainable national development have increased considerably in recent years due to earnings from crude oil and gas extraction, which shot up from about US\$ 13 million in fiscal year 2001/02 to US\$ 350 million in 2005/06. Income from oil and gas extraction are channelled into a state petroleum equalisation fund which is subject to strict control by parliament and is expected to guarantee steady and sustainable future income for the national budget, regardless of temporary production and price fluctuations. Despite the unexpectedly high petroleum revenue to date, the government has adopted an expenditure policy geared to stability and long-term goals. Exceeding public expenditure by US\$ 220 million (altogether US\$ 130 million), revenue from oil and gas production for the fiscal year just ended, 2005/06, has enabled the government to build up substantial reserves. This also affords larger financial leeway for the water/waste water sector, raising the budget from some US\$ 2.3 million in fiscal year 2004/05 by 60% to about US\$ 3.7 million in fiscal year 2005/2006, with additional spending largely earmarked for investments (construction and extension of water supply and wastewater disposal systems). On the other hand, the actual implementation of higher investment budgets is hampered by the poor planning and executive capabilities of the executing institution, which lacks specialist staff. Despite the unexpectedly high oil and gas reserves, East Timor still numbers among the poorest countries worldwide, with a per-capita income of US\$ 405. About 44% of the rural population of East Timor live below the poverty line.

Renewed political unrest shook the country in March-May 2006, forcing the prime minister to resign. To stem the violent riots, particularly in the capital Dili, UN peace-keeping forces had to be redeployed. Due to the unrest, about 100,000 people have left their homes (approx. 10% of the population), most living in refugee camps around Dili, while the rural regions (also including the programme locations) have been less affected by the refugee crisis.

Water system operation

Viqueque: The water system in the district capital is run by the national water authority DNAS. As part of TC, DNAS personnel were supported and trained in technology, operation and management. Via a co-management board, the users of the five distribution zones, represented by so-called zone managers, are involved in operation, maintenance and decision-making in their zone. This system was also set up under the TC measures. Measured against the general conditions in the country, overall water supply functions satisfactorily in Viqueque. Most of the inhabitants have access to clean drinking water at sufficient pressure for at least most of the day, with one zone able to receive continuous supply. There is a spare-parts depot for smaller-scale repairs. When spare parts are missing, however, partial supply stoppages lasting 2-3 days can occur as the DNAS branch office in Viqueque lacks financial autonomy and needs permission for every expenditure item from the DNAS head office in Dili. Though on a much smaller scale than in Laga, illegal connections have been made to the distribution grid that cannot be prosecuted properly for lack of legislation to date. Water losses amount to 41%.

Operating costs amounted to US\$ 11,512 in 2005 and only approx. 13% were recovered through flat-rate meter charges on service connections. The revenue from charges is paid directly to the finance ministry in Dili.

Laga: In line with the provisions of the East Timor government, the operation and maintenance of water supply systems outside the district capitals are delegated to organisationally and financially independent user groups, which, however, receive technical support from the DNAS branch offices. A local user group (operator) was founded to run the water supply system in Laga and supported with intensive training and advisory measures by GTZ until the end of 2004. The operator still faces quite large difficulties, however, some of which it cannot cope with: The orderly running of the water supply system is impaired by technical deficiencies that could not be fully remedied for lack of FC funds. Damage was also caused to the above-ground pipelines after operation start through illegal tapping, fallen trees, rockfall or landslides. Some water meters and the guy ropes of the pipe bridges were also removed and the spring capture became overgrown. Besides pipe leakages, the grid water losses are due to illegal tapping and come to about 75%. The supply for the different zones is very unbalanced due to inappropriate direct connections to the water supply line and insufficient container capacity. One zone with prosperous and influential consumers receives a highly disproportionate share. Despite intensive educational measures, water is wasted or used for irrigation, as in part evidenced by the high specific water consumption of 177 l/cd. As a result, supply to the other zones is irregular, although this need not be the case. Till now, proposals to rationalise operation and improve distribution over the zones have not been implemented, because those responsible ignore the operator. In the lower sections of the supply pipeline and distribution zones, the high water pressure causes pipe bursts that are partly repaired by the operator with makeshift methods and unsuitable means (rubber bands from car tyres). The operator has no depot for spare parts and has to rely on DNAS or other donors to supply them when the need arises.

Although no metered water tariffs have been charged so far, simply a low, flat-rate water meter charge, the payment discipline of the influential consumers in particular is poor. According to the figures, monthly income from the water meter charge only amounts to up to US\$ 80, which is remitted directly to the municipal budget. No information is available on operating costs in Laga

but we may assume that income falls far short of breakeven, as partly evidenced by the recurrent service interruptions that last several days. Probably for historical reasons also, there is little self-reliance, autonomy and public spirit in Laga. Altogether, operations there are unprofessional and presently unsustainable.

Objectives achievement

The FC project was conceived as an emergency aid programme aimed at restoring regulated water supply in the localities concerned and autonomous operation of the facilities by the municipalities.

As defined, the project objective (autonomous and sustainable operation of the repaired and extended water supply systems) was in keeping with that of a normal project, not that of an emergency measure, and considering the limited funds and the very selective, rudimentary list of measures it was unrealistic to expect the programme to achieve it. When defining the project objective indicators, however, the usual standards for residential water management projects were not applied (e.g. raising the percentage of mains connections, specific volumes of water consumed, adequate water quality, etc.) and very unspecific indicators were stipulated - restoration of a regulated water supply and operation of the water supply systems by the population by 2002. In view of the limitations cited, we regard the more modest objective level as appropriate. The overall objective was to meet basic needs as a prerequisite for independent civilian life in East Timor.

As of completion of the extension and rehabilitation measure, approx. 4,600 people or about 70% of the population in Viqueque are supplied with clean drinking water via some 600 service connections and taps. Average per capita consumption in Viqueque in 2005 amounted to 67 l/cd. In Laga, about 2,200 inhabitants have access to clean drinking water via 185 service connections and 12 public taps. The town of Laga is home to approx. 15,000 inhabitants, but has a scattered settlement pattern. No figures are available on the total population in the middle of the town, where measures were concentrated, so no verifiable statements can be made about the coverage index, either. At 177 l/cd, per capita consumption in Laga is three times higher than in Viqueque.

The one-year delay in meeting the building deadlines set in the project objective had already been anticipated in the project appraisal report and is not considered as decisive for programme objective achievement as the time-consuming consultative processes and the participation of the population in the public works is more important for ownership of the individual measures. In Viqueque, where there is a sufficient percentage of mains connections with adequate overall water consumption, water quality is safe and water supply is assured for several hours a day or in part without interruption, the programme objective can rate as having been met, particularly considering the generally inimical sectoral framework, whereas the programme objective in Laga has not been achieved in our estimation in view of the constructional deficits of the water supply system, the wastage of water and the diverse problems with operation (see above), even accounting for the emergency relief function of the project.

Microeconomic, socio-economic, sociocultural and ecological assessment

Most of the overheads for operation and upkeep of the rural and urban water supply systems

have so far been financed from the current national budget. Considering the copious petroleum revenue, financing operational and maintenance costs from the government budget should in theory no longer pose a constraint on the sustainable operation of the water supply systems in future. On the other hand, the plan is to introduce metered, cost-effective water charges in the medium term. The main constraint is the shortage of personnel in the water authority. The government is faced with the dilemma of either deploying its limited human resources for the urgently needed improvement of water supply infrastructure through replacement or extension investments or to set up an efficient collection system. A consideration here is that the population can only be expected to be willing to pay water charges if the quality of water supply meets certain minimum standards, which is still far from the case in some rural localities and towns. The basic professional know-how imparted by GTZ and other organisations in training measures has not been put sufficiently into practice. On the other hand, when assessing the results of the project account must be taken of the specific situation in the young state of East Timor, which had to start from scratch at practically all levels and has had to undergo an arduous nation-building process since independence. The concern at the beginning of the programme under review was to cope with an emergency or crisis situation that can only culminate in sustainable development after a certain time. This was compounded by the massive migration of former Indonesian specialists, which seriously impaired state institutions. Moreover, experience gained in recent years has shown that the population has little inclination after decades of outside influence and paternalism from Indonesia (development from above) to engage in participatory processes and shoulder responsibility.

In Viqueque in particular, the impacts of the project on women have been positive thanks to the larger percentage of mains connections and less time spent on fetching water. Part of the poor population, who generally make up 50% in the rural regions of East Timor, now benefit from the social infrastructure set up, so the project has had a direct impact on poverty. The population participated in project planning and in construction with work against payment but they only managed to take on a very limited degree of autonomy and responsibility. Environmental protection and resource conservation were not an important primary or secondary objective of the programme and no notable environmental impacts were recorded.

Summarizing, we assess the project impacts as follows:

- In view of the extensive technical, organisational and financial problems and the wasteful use of water, also for irrigation, the programme objective was not achieved in Laga, even accounting for the difficult framework conditions in the country and lesser expectations as compared with usual supply standards. On the other hand, considering the special circumstances and the very low project volume as well, the programme must be considered to have achieved its objective in Viqueque. Although no tariffs are yet levied to cover operating costs, subsidies for operating and maintenance costs from the government budget appear to be assured and hence longer-term operation at the present level. Weighing up the individual results measured against the shares of investment costs incurred at the two sites (Laga: 1/3 and Viqueque: 2/3) and the proportionate target group outreach (Laga: also 1/3 and Viqueque: 2/3), we judge the effectiveness of the project to be sufficient (Subrating 3).
- Water supply has improved compared with the situation at the outset in Laga, but owing

to the wasteful water consumption by influential villagers a part of the population is put at a disadvantage and continues to receive very sporadic water supply. Supply to the population in Viqueque in contrast is distinctly better than in the other district capitals. The programme did not aim at health impacts and in view of the high danger of drinking water contamination in the distribution grid (dirt entering the dilapidated grid) it is unlikely to have had any beneficial effect on the population. There has been tangible success in achieving the overall objective of improving the satisfaction of basic needs in Viqueque, however, which is why we also assess the relevance and significance of the project measured against the narrower definition of the overall objective as sufficient (Subrating: 3).

- Averaging EUR 93, the specific investment costs per inhabitant in both water supply systems are reasonable overall. The prime costs of water supply could not be ascertained for lack of records. The income in both water supply systems from flat-rate user fees is very low and only covers a very small part of static operating costs. Due to illegal water tapping and flat-rate water charges, water consumption in Laga is wasteful (> 120 l/cd), which is unacceptable given the cost-ineffective tariffs. At 41% and 75% resp., water losses are disproportionately high. Altogether, we assess efficiency as insufficient (Subrating: 4).

Considering the above subaspects and accounting for the emergency aid function that subordinated the commercial performance of the operators and operating cost recovery and precluded an extensive rehabilitation of the dilapidated systems for loss reduction, the developmental efficacy of the project is gauged as sufficient overall (Rating: 3).

General Conclusions

Selective emergency aid measures are appropriate for the speedy repair of supply system failures due to crises. To cope with direct emergency needs, it may also be warranted and necessary to waive sectoral development criteria (such as operating cost recovery) in the short term. Nevertheless, during the implementation of the emergency measure, other measures must also be introduced to support the transition from emergency relief to sustainable system operation. This could be carried out as a second project phase under the usual development criteria, for example. If no further German commitment is planned in the sector, an attempt should at least be made to place the transition towards sustainability in the hands of donors that are engaged in the sector over the longer term.

Legend

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 project is a total failure

Criteria for the Evaluation of Project Success

The evaluation of the "developmental efficacy" of a project and its classification during the ex-post 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 **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, organisational and/or technical support has come to an end.

