Ex post evaluation – Sri Lanka

Sector: Water supply, sanitation, and waste water management (CRS: 14020)
Programm Water Supply Project in Ampara and Nawalapitiya – BMZ-Nr. 1997 65 843* and 1997 65 835*
Project Executing Agency: National Water Supply and Drainage Board (NWSDB)

Ex post evaluation report: 2015

		Project A (Planned)	Project A (Actual)	Project N (Planned)	Project N (Actual)
Investment costs (total)	EUR million	5.50	8.40	8.30	9.50
Counterpart contribution	EUR million	2.40	5.90	2.90	5.40
Funding	EUR million	3.10	2.50	5.40	5.20
of which BMZ budget funds	EUR million	3.10	2.50	4.20	4.20

*) Random sample 2014

Description: The projects contributed to improve living conditions and to reduce waterborne disease risks in the regions of Ampara and Nawalapitiya. The projects financed a water extraction system with pumping stations for bulk water supply in Ampara and a weir/gravity feed system in Nawalapitiya, a water treatment plant appropriate to each area, interim tanks, pumping stations for treated water, water storage basins, a water distribution network, and household connections. In addition, the projects financed the design of waste management for the cities of Ampara and Nawalapitiya as well as preliminary studies of the rainwater drainage system. Each of the two projects had its own appraisal report. Because total costs were relatively low and many system components were similar, the delivery of goods and services was tendered in bulk and given to a consortium so as best to take advantage of synergies. For the same reason it was decided to conduct only one ex-post evaluation mission for both projects and to write only one ex-post evaluation report. Sri Lanka has experienced a long civil war although the project area was not directly affected by it. Nevertheless, project design ensured that all three ethnic groups received project benefits.

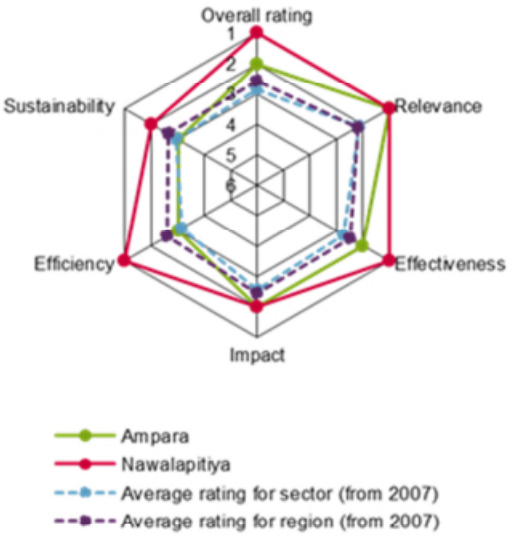
Objectives: The overall goal of the two projects was to contribute to the improvement of living conditions and to reduce waterborne disease risks to public health in the regions of Ampara and Nawalapitiya. The projects' objective was to ensure a sufficient year round supply of drinking water to cover the demand of the inhabitants of both cities.

Target group: The project was designed to serve about 38,000 inhabitants of the two cities (project beneficiaries). For the first time, they received much improved piped access to safe drinking water.

Overall rating: Ampara: 2 and Nawalapitiya: 1

Rationale: Both projects were successful. However, design flaws in the sand filter caused delays in Ampara.

Highlights: All activities have been completed as planned. The water supply systems have been in operation since 2008. The facilities are well maintained, professionally staffed and deliver an uninterrupted supply of good quality water. Overall, the projects built water supply has improved living conditions dramatically in terms of being an amenity and covering a basic need.



Rating according to DAC criteria

Overall rating: Ampara 2 and Nawaiapitiya 1

Relevance

The projects addressed the relevant bottleneck of supplying the population of Ampara and Nawalapitiya with an improved source of potable water. The projects were relevant at the time of appraisal, because water systems were small, outdated, and not in compliance with national standards. The projects are still relevant today given the fact that due to increased urbanization, the Ampara system for example is being extended using JICA funding.

The projects were in line with Sri Lanka's national drinking water policy with the objective to provide an adequate quantity of safe drinking water to the entire population at an affordable cost and in an equitable, efficient, and sustainable manner.

While relevant at appraisal, as of 2014, the BMZ strategy does not focus anymore on Sri Lanka's water sector. Instead, the German government is supporting measures to provide peace education and reintegrate former civil war refugees, establish small and medium-sized enterprises (SMEs), provide vocational training for young people and support administrations in the north and east of the island.

The underlying results chain was plausible in that the projects intended to provide inhabitants of both cities with a demand-covering year round supply of drinking water in order to contribute to improving living conditions and reduce waterborne disease risks to public health. Increased waste water and sewerage were to be dealt with through an engineering study to be implemented by the local government and funded by other donors. Multiple donors have been working in the project area, ensuring that the area was covered with piped water and waste water treatment.

Twenty six years of civil war (1983 - 2009) took a major toll on Sri Lanka's population. The north of Ampara was affected by the civil war at the start of the project, but Ampara city, where the project area was located, was not. During implementation, military camps and settlements at the reservoir's shore have contaminated the water resource. Nawalapitiya has not been affected by the civil war, but during implementation both cities were separated by fighting and communication was difficult. Therefore, the design of especially the Ampara project should have taken the ongoing civil war into account by conducting a detailed do no harm analysis, something that could not be found in project documents.

Relevance rating: Ampara and Nawalapitiya 1

Effectiveness

The project objective as defined at appraisal was to ensure a sufficient year round supply of drinking water to cover a sufficiently high demand of the inhabitants of Ampara and Nawalapitiya.

Project indicators as defined at appraisal have been surpassed. The two projects supplied about 62,700 people in Nawalapitiya and Ampara with piped drinking water and improved wells compared to the target of 38,000 people.

Table 1 – Indicator for Nawalapitiya

Project objective-indicators	Unit	Appraisal status 1998	Plan	Actual status 2011
Percent of inhabitants supplied with a max. of 140 lpcd for house connections and 45 lpcd for tap connections	% of inhabitants	30	60	>60%

On average, Nawalapitiya households consume 500 liters daily or 15 meters3 per month. As of May 2014 there were 4425 households connected to the system: This represents a population of 19,028 using the current census multiplier for family size. The supply has been continuous: according to the plant manager in recent memory there have been no system-wide interruptions of service. Water can be classed as hygienic with residual chlorine at the treatment plant at 1.2 mg/liter (lower when measured at the household tap).

The project objective had been to supply the population of Ampara (which was about 43,700 inhabitants as of 2012) with a year-round, sufficient supply of hygienic drinking water. Project activities include the extension of the water supply system together with a program to reduce non-revenue water. Activities also included rehabilitating two water towers and the connection of more households to the water system. In addition, the project financed the construction and equipment of a repair shop for a better operation and maintenance of project-financed intake, treatment and distribution facilities.

Table 2 – Indicator for Ampara

Project objective-indicators	Unit	Appraisal status 1998	Plan	Actual status 2011
Number of people supplied with a max. of 140 lpcd for house connections and 45 lpcd for tab connections	Inhabitants	about 17.000, discontinuously supplied	22.000	> 30.000

In Nawalapitiya, the facilities deliver an uninterrupted supply of good quality water. Although the project objective was to supply the total population of Nawalapitiya year round with a sufficient amount, it only proved possible to provide service to 95 %. The remaining 5 % lived at elevations too high to be served by the FC-financed system at what the local National Water Supply and Drainage Board (NWSDB) branch considered to be a reasonable cost. We therefore rate the effectiveness for Ampara as being "good" while being "very good" for Nawalapitiya.

Effectiveness rating: Ampara: 2 and Nawalapitiya: 1

Efficiency

The project was efficient in that the delivery of goods and services had been tendered in bulk for both cities. Many system components were similar, and it made therefore sense to take advantage of synergies to lower costs. In Ampara, however, construction problems at the treatment plant delayed implementation by two years, making this project less efficient.

Non-revenue water has been dropping in both project cities due to a shift from PVC pipe to PE (polyvinylchloride to polyethylene). The life cycle cost of PE pipe in water systems is often significantly less than other pipe materials and the way in which pipes are joined is complex - which discourages free-riding. Heat fusion joining (which your average water thief does not know how to do) in PE pipes eliminates leakage. NWSDB has found that switching to PE has reduced total system operating costs. Another advantage is that PE pipe will not support biological growth.

PVC or ductile iron employ gasket materials that age over time and thus have the potential for leaks. As a result of this, the “allowable water leakage” for PE pipe is zero as compared to the water leakage rates of 10 % or greater typically associated with these other piping products.

Project operation and maintenance costs are sustainable in Nawalapitiya. Average monthly maintenance costs have been on the order of SLR 2.1 million, while revenues are about SLR 3 million and cover recurrent costs easily. Non-revenue water averages 16 % of monthly production. Collection efficiency amounts to 90 percent in Nawalapitiya.

Ampara water supply scheme provides water to several villages and small towns that actually pay their water bills to a different (non-project) NWSDB office. This leads to (what could be a misleading) impression that Ampara operates at a loss while the other region has what amounts to windfall profits. A more in-

formative accounting system would more carefully credit revenues to those entities that incur the cost of water production.

Allocation efficiency can be considered as high because the whole population living in the project area was supplied with safe drinking water which increased wellbeing and productivity, especially for women and children.

This evaluation rates efficiency for Ampara as “satisfactory” as opposed to Nawalapitiya’s efficiency being rated as “very good”. Unfortunately, the project in Ampara experienced delays due to design errors which led to failures in the filtering system that took two years to repair. In addition, its accounting and billing system could be improved.

Efficiency rating: Ampara: 3 and Nawalapitiya: 1

Impact

The overarching developmental objective of the projects was to contribute to improved living conditions and to reduce waterborne health risks in the regions of Ampara and Nawalapitiya.

The achievement of the objectives related to the overarching goal can be summarized as follows:

The project built water supply has improved living conditions dramatically in terms of being an amenity and it covers a basic human need.

One of the underlying justifications behind Financial Cooperation support of clean water is that it has a health impact. Data for diarrhea/dysentery (requiring intervention at a clinic) was available for the Nawalapitiya municipal area and the results show that such water-borne diseases are no longer a serious problem. Data for the last four years in Ministry of Health records indicated only 11 cases of such disease, with the two most recent years showing one case each year.

Ministry of Health data was available for Ampara City which has 100 % piped water coverage. This can be compared with districts that are partially provided with piped water and districts that rely entirely on wells or small local schemes up to this point. The results show no significant difference as the number of cases of disease is again quite small. This is very different to the civil war situation at project appraisal where according to the appraisal document the local consultant conducted research and found above average numbers of diarrhea among the local population negatively affected by the civil war in the project area.

In addition, the project engineers prepared feasibility studies related to waste water and solid waste disposal for Ampara and Nawalapitiya and handed them over to the respective local authorities. The proposals were integrated in urban development plans. As of 2014, Ampara has sewerage systems whereby the Urban Councils are responsible to collect and treat sewerage in a waste water treatment plant. In the rural area of Nawalapitiya, waste water drains into the drainage system along road sides, something which is acceptable given that Nawalapitiya is situated in a rural area in the mountains.

We rate the overarching development impact for Ampara and Nawalapitiya as being “good”, due to a time lag in the operation and maintenance of the system in Ampara and thus in reaping project benefits and the unresolved waste water treatment in Nawalapitiya.

Impact rating: Ampara: 2 and Nawalapitiya: 2

Sustainability

As noted above, the project operation and maintenance costs are sustainable in Nawalapitiya, easily covering operating costs, and might also be in Ampara, given better accounting.

In the densely populated coastal towns near Ampara, septic systems are often installed too close to drinking water wells, with contamination common. More importantly, the water intake is increasingly subject to urban runoff (as the city expands) and the increased use of agricultural chemicals in the watershed can be observed in the overproduction of algae. So raw water quality and drinking water scarcity issues are quite severe between Ampara City (which was not impacted by the 2004 tsunami) and the coast (which was). One recent technological breakthrough has been the acquisition of an ultrasonic generator. This unimpressive-looking floating grey plastic rectangle causes existing algae to explode (interrupting their repro-

ductive process), with the result that the intake water remains visibly clear and the removal of repeated intake clogs is a thing of the past.

Deterioration of available raw water requires much more expensive improvements to the treatment process including chemical treatment. In Nawalapitiya, raw water was still pristine at the time of the evaluation mission though informants expressed concern that future up-stream development might cause deterioration in raw water quality. In Ampara, even though treated water is reportedly still safe, the quality of the raw water has continually deteriorated in recent years, according to the engineering consultants responsible for the civil works. They note (in documents found in the project files) that the result is that today's values do not match those anticipated at appraisal. In other words, the drinking water is not as pristine as anticipated. Settlements and military camps at the reservoir's shore are discharging sewage into the water. Only by deviating and treating these discharges can sustainable raw water quality and the necessary conditions for raw water treatment be attained. Unless the NWSDB takes measures to protect both catchment areas from pollution, settlements, and deforestation can the quality of the raw water be guaranteed.

Sustainability rating: Ampara: 3 and Nawalapitiya: 2

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).