KfW Development Bank

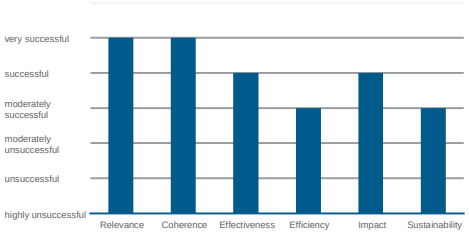
Ex-post evaluation
Water supply and waste water disposal in Serbian medium-sized cities I and II, Serbia

Title	Water supply and waste water disposal in Serbian medium-sized cities I and II		
Sector and CRS code	Basic water supply and basic sanitation, CRS code 14030		
Project number	2006 65 059 (Inv., I.1), 2006 70 166 (CM to I.1), 2007 65 792 (Inv., I.2), 2020 96 485 (promotional loan), 2008 70 196 (CM to I.2), 2008 66 301 (Inv., II.1), 2009 65 822 (interest rate reduction, II.2), 2009 70 046		
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project-executing agency	Republic of Serbia represented by the Ministry of Finance / Ministry of Construction, Transport and Infrastructure (MCTI)		
Project volume/ Financing instrument	*Phase I Inv. EUR 51.7 million (grants + promotional loans), CM EUR 3.0 million (grants) | Phase II Inv. EUR 27.0 million (grant + interest rate reduction), CM EUR 1.5 million (grant)*		
Project duration	*05/2007 – 12/2014 (Phase I) | 04/2010 – 02/2020 (Phase II)*		
Year of report	2023	**Year of random**	2017

Objectives and project outline

The programme objective was to ensure a reliable, clean water supply for the citizens of the participating cities at cost-covering and socially acceptable prices (outcome). As a result, the programmes were intended to contribute to improving living conditions in the participating Serbian medium-sized cities (impact). Phase 1 mainly financed immediate measures. The investments in Phase 2 were linked to the successful implementation of administrative and operational measures. Among other things, priority investments were made in the rehabilitation and optimisation as well as the expansion of the water supply systems.

Overall rating:
successful



Key findings

Thanks to the investments and advice on operational management and evaluation, the projects are on the way to cost-covering operational management. They thus contribute to ensuring the sustainable water supply of the population in the programme area and make a significant contribution to improving living conditions. The projects demonstrated development effectiveness, but there are also limitations in the sustainable operation of water suppliers, especially in view of the high rate of unaccounted for water at some locations. The projects have been rated “successful” for the following reasons:

- The most important factor for the very successful rating for relevance lies in the specific consideration of the needs of water suppliers and the successful performance-oriented approach in combination with technical support in an initial qualification phase.
- The introduction of a benchmark system and the exchange of knowledge were highly valued by the executing agency, which is also the reason for the very successful coherence of the projects.
- Effectiveness is successful as the continuity of water supply is now ensured, the fee collection is >85% and the fees are cost covering.
- Despite the introduction of operating and maintenance concepts and explicit support for water loss reduction, the values for unaccounted for water were between 39% and 54% for nine out of a total of 13 municipalities (2021). The strategy could not be sustainably anchored, so the sustainability of the projects has also been assessed as moderately successful due to the high loss rates.

Conclusions

- The introduction of performance indicators ensured that public water suppliers took urgently needed structural measures.
- The transparent exchange via the benchmark system promoted champions and horizontal learning. In addition, the interplay between the supporting complementary measures and the performance-based approach (PBA) has been successful, and the experience gained can be transferred to similar regions.
- With a cash flow-based analysis for the tariff adjustment, the project was able to support the partner in the adjustment of the statutory tariff guideline.

Rating according to DAC criteria

Overall rating: Rating 2 (both projects)

Ratings:

Relevance	1 (both projects)
Coherence	1 (both projects)
Effectiveness	2 (both projects)
Efficiency	3 (both projects)
Overarching developmental impact	2 (both projects)
Sustainability	3 (both projects)

General conditions and classification of the projects

The programme objective was to ensure a reliable and safe water supply for the citizens of the participating cities at cost-covering and socially acceptable prices (outcome). The programme was intended to contribute to improving living conditions in the participating Serbian medium-sized cities (impact). This was an open FC programme in eight selected Serbian medium-sized cities (> 50,000 inhabitants). It was designed with two phases of implementation: In Phase I.1, minor immediate measures were financed, such as the supply and installation of water meters, procurement of equipment and measuring instruments for leak detection and replacement of transport and distribution pipelines in the water supply systems to reduce leakage losses. The investments in Phase I.2 were linked to the successful implementation of administrative and operational measures (so-called performance-based approach – PBA) and consisted mainly of investments in the water supply network. Phase II had a similar structure (first immediate measures, then further investments in the water supply network and selectively in waste water disposal systems).

The complementary measure (CM) essentially contributed to improving the economic sustainability of the individual water utilities. As part of the CM, the respective utilities were individually analysed, and corresponding optimisation measures identified. A benchmark system was introduced to illustrate the economic and operational situation of the individual water utilities. In addition, the participating water utilities were networked with each other and there was a technical exchange between the individual utilities.

The target group was the residents of the communities participating in the programmes who benefited directly or indirectly from the programme measures (around 500,000 people for Programme I and 400,000 people for Programme II).

in EUR million	Phase I.1 (planned)	Phase I.1 (actual)	Phase I.1 CM (planned)	Phase I.1 CM (actual)	Phase I.2 (planned)	Phase I.2 (actual)	Phase I.2 CM (planned)	Phase I.2 CM (actual)
Investment costs (total)	9.8	8.8	1.8	1.8	18.8	47.9	1.3	1.2
Counterpart contribution	1.6	1.3	0.0	0.0	0.0	0.7	0.0	0.0
Funding	8.3	7.5	1.8	1.8	18.8	47.2*	1.3	1.2
of which BMZ budget funds	8.3	7.5	1.8	1.8	8.8	19.2	1.3	1.2

* Includes: FC grant of EUR 19.2 million (BMZ no. 2007 65 792), FC promotional loan of EUR 25.0 million (BMZ no. 2020 96 485) and EU grant of EUR 3.0 million.

in EUR million	Phase II.1 & II.2 (planned)	Phase II.1 & II.2 (actual)	Phase II CM (planned)	Phase II CM (actual)
Investment costs (total)	29.0	27.0	1.5	1.5
Counterpart contribution	0.0	0	0	0
Funding	29.0	27.0*	1.5	1.5
of which BMZ budget funds	29.0	27.0	1.5	1.5

* Includes: FC grant of EUR 9.5 million (BMZ no. 2008 66 301) and interest rate reduction of EUR 17.5 million (BMZ no. 2009 65 822)

Relevance

A results chain was not explicitly presented in the FC projects, but the impact relationships underlying the project design can be plausibly derived.

The FC programme is in line with the public water supply objectives set out in the water management strategy of the Republic of Serbia. From today's perspective, it should be noted that the global and Serbian priorities are currently more focused on environmental protection. German development cooperation also supports the Republic of Serbia in this direction with regard to the EU association process (here, see section 27 Environment and climate change). However, a sustainable and secure water supply and strengthening the capacities of public utilities continue to be a priority of the municipalities and are in line with the partner sector policy and the BMZ 2030 strategy for sustainable urban development.

The concept of the FC projects took into account relevant political and institutional framework conditions as far as possible, as well as the involvement of political decision-makers at municipal level, but it was not always possible to achieve full commitment on the part of the respective municipality in the long term. The key problems were identified, and almost all actions met the needs of the beneficiaries.

The successful performance-oriented approach in combination with technical support in the qualification phase should be highlighted. This enabled the municipalities and PUCs to understand the concept of the programme and, in most cases, to prioritise the most urgent investment needs with a view to the sustainable operation of the company and the financial capacities of the water suppliers.

The aim of the measure is to meet the needs and capacities of particularly disadvantaged and affected individuals and organisations. The CM focuses on the individual needs and opportunities of the involved organisations, but at the same time also demanded appropriate performance on their part. In the design, the approach of "socially acceptable prices" was pursued; the FC projects were ultimately unable to provide verifiable proof of this. In addition, from today's perspective, corresponding projects should take into account a stronger gender weighting.

The FC projects responded flexibly to changed framework conditions by restoring destroyed infrastructure after the flood disaster in 2014 with the additional funds from the EU flood control programme, thereby improving flood control. This is in line with Serbia's overall strategy to reduce flood risk.

In summary, the relevance of the FC projects can be classified as very high.

Relevance rating: 1 (both projects)

Coherence

At the time, the design of the measure focused on an important area (improvement of a cost-covering and safe water supply) in the water sector and addressed this as a complement to other activities in the sector. The programme intervention in relation to the performance-based approach (PBA) was outstanding compared to other donors' interventions. However, the donor community has been slow to respond to this innovative approach.

FC made every effort to raise awareness of PBA in the donor community. From today's perspective, donor coordination within the sector has become more challenging, competition between donors has intensified, and strict coordination on the part of the partner country is also difficult due to the lack of leadership

for the sector. Nevertheless, an EU programme to support reforms in the water sector links to the activities and needs of public utilities identified as part of the FC projects.

EU standards, such as the EU Water Framework Directive, formed the basis for the design of the measure. This also supported Serbia in its efforts towards the EU association process, as mentioned above. The project is consistent with international and national norms and standards to which German DC is committed.

When implementing the FC projects, care was taken to ensure that support was always tailored to the individual needs of the individual water supply companies and that problems were solved in a practical manner. The PUCs showed a high level of acceptance and appreciation for the horizontal learning and benchmarking sessions introduced.

The developed management information system is largely used by utilities and municipalities and shows clear ownership. In subsequent FC programmes, there will be a further exchange on this topic. The Serbian Ministry of Construction, Transport and Infrastructure (MCTI) assessed the data collection as a valuable source of information, e.g. for future interventions.

In summary, the internal and external coherence of the intervention can be assessed as very successful.

Coherence rating: 1 (both projects)

Effectiveness

The objective at outcome level, which was supplemented in the PP for phase I.2, “In some cases, efforts should also be made to achieve a sustainable improvement in wastewater disposal” was not recorded with an indicator. Since few measures for improved waste water disposal were implemented (e.g. in Programme I, Sewer expansion in Pancevo), this aspect was not taken into account in the evaluation.

Indicator	Status PA, target PA	Ex post evaluation
1. Continuity of supply: supply interruptions have decreased significantly.	Status: Sometimes less than 24 hours/day. Target value: 24 hours/day	The population has a 24-hour water supply. All water supply and wastewater treatment companies in Programmes I and II can offer their municipality an uninterrupted water supply. **-> Indicator achieved**
2. Covering of the costs: the tariff income covers the operating costs, debt service and at least EUR 20 per invoiced house connection for maintenance (preventive maintenance/repair work).	Status: No Target value: Yes	Programme I: five out of seven operators cover at least 103% and a maximum of 170% of their running operating costs. For two water suppliers (Kraljevo, Sabac), no data was passed on in the MIS (Management Information System) for the 2021 operating year. **-> indicator largely achieved** Programme II: five out of six companies cover their operating costs by at least 114% and a maximum of 219%. Only the town of Jagodina is below the requirements with an operating cost coverage of 84%. **-> Indicator largely achieved.**[2]

3. Fee collection: The collection rate is at least 85%	Status: 56% – 98% (depending on municipality) Target: ≥ 85%	Programme I: The collection rate of the water supply and wastewater disposal companies amounts to at least 91% and a maximum of 108% in the 2021 operating year.[1] For one water supplier (Sabac), no data was passed on in the MIS for the 2021 operating year. **-> Indicator achieved** Programme II: Collection rate not achieved in one of the six locations (Jagodina: 78%), close to achieved in one (Vranje: 83%) and achieved in the other four locations. **-> Indicator largely achieved**[2]
4. Solvency, affordability: no population group has to pay more than 5% of their income for water and wastewater fees. (% of monthly income)	Status: ≤ 5% Target value: ≤ 5%	The indicator could not be checked at the time of the EPE, as there is no information on the incomes of the population affected by poverty. The data provided in the MIS refers to the average monthly income of the population. For the 2021 operating year, the values for four suppliers were between 1.86% and 2.43%. No data was available for three suppliers. **-> insufficient data**

1) In one particular case, a collection rate of more than 100% resulted from the invoicing of services that were performed before the underlying payment period – e.g. payment of old debts

2) Data is subject to strong fluctuations. For example, in 2018, the town of Jagodina from Programme II had a 178% operating cost recovery rate and a 100% collection rate in 2020.

After the completion of the two programmes, all participating cities largely achieved the defined target figures at outcome level in the areas of continuity of supply, covering of the costs and collection of fees (Indicators 1, 2 and 3). In most cities, the targets were exceeded. In this respect, the projects have been a great success and they have made a significant contribution to the overarching developmental impact of "improving the living conditions of the population in the selected medium-sized cities". It was not possible to adequately assess the target figure for the solvency of all population groups (Indicator 4). However, the final inspection reports assume that solvency remained guaranteed for all population groups despite tariff increases. However, no definable values were used here. It should also be noted that the risk of poverty in Serbia remains high (21% in 2021). A final household survey, as carried out during the project appraisal, would therefore have been desirable in order to confirm the target value for the indicator.

Operating and maintenance concepts are available. These are not fully implemented by all water supply and wastewater disposal companies, partly due to a lack of personnel capacities in the water utilities. Personnel are often used for ad-hoc repairs or for other tasks instead of implementing the planned work of the O&M concept.

The CM aimed to improve the capacity and economic sustainability of the individual water supply companies. The respective utilities were individually analysed, and corresponding optimisation measures identified. A benchmark system was introduced to illustrate the economic and operational situation of the individual water utilities. In addition, the participating water utilities were networked with each other and there was a technical exchange between the individual utilities. Comparing the operational key figures of other utilities enabled those responsible to open up a knowledge transfer with the utilities that had good key figures in a specific business unit. In general, this form of networking was highly appreciated by the

utilities participating in the programme. However, it should be noted that there is no institutional anchoring at regional or national level that would further promote exchange of expertise in the long term. Only a few utilities continue to exchange experiences independently.

Overall, the effectiveness of the projects can be rated as successful.

Effectiveness rating: 2 (both projects)

Efficiency

Due to unexpected delays initially in contract negotiations and later in the construction implementation at some project sites, the duration of the project had to exceed the originally planned time schedule and required re-planning. Some measures could not be implemented due to unsecured land or overlapping responsibilities of different line ministries, which ultimately slowed down the speed of implementation. It can be assumed that a comprehensive environmental and social impact assessment would have indicated the social risks, among other things, and that appropriate consideration and, if necessary, early replanning would have resulted.

The selected procurement strategy dramatically increased the number of orders, significantly increased coordination effort and administrative expenses and therefore extended the programme duration. At the same time, the direct participation of local companies in the tenders led to strong competition and favourable prices, so that additional priority measures could be implemented with the programme budget.

In summary, we rate the efficiency as moderately successful.

Efficiency rating: 3 (both projects)

Impact

The overarching development objective (impact) included improving the living situation of the population in the selected cities.

The investments made it possible for the local population in the project areas to have access to a safe and continuous water supply. A total of around 528,000 citizens were reached in the seven cities of Phase II. The projects thus contribute to achieving the SDGs which promote sustainable access to clean water.

However, it should be emphasised in particular that loan financing – in line with the possible level of debt of the respective municipalities – was able to secure revenues that enabled cost-covering operations, loan repayment and maintenance, which was a unique concept in Serbia at the time. Thanks to the cash flow-based analysis for the tariff adjustment, the projects were able to support the partner in the implementation of the statutory tariff guideline.

In addition, horizontal learning and transparent exchange on the benchmarking system created positive competition and allowed public administrations to “learn from the best”. The introduced MIS enabled the municipalities and utilities to systematically and comprehensively manage the company’s resources, and made it easier for them to apply for further investment programmes.

It is therefore not surprising that the benchmarking system introduced in the programme for water suppliers is regarded as a valuable source of information by the project-executing agency. At ministry level, it is used to assess the operational status of utilities and for future project concepts and investment programmes. However, the Serbian partner has so far failed to create an exchange and knowledge platform at national level.

Due to the performance-oriented approach chosen, the measure was a pilot and exemplary in nature and was decisive for the structuring of the four other FC programmes in the area of water supply and wastewater disposal. The projects also contributed to good governance. It supports both the local self-government of the programme municipalities and the efficient and transparent operation of the utilities.

Target achievement at the impact level is rated as successful.

Impact rating: 2 (both projects)

Sustainability

After completion of the FC projects, both the water suppliers visited during the evaluation and the municipal representatives were mostly able to report positive developments. The targets for collection rate and covering of the costs were achieved for the operators still participating in the benchmarking system. The interviews made it clear that the local partners want to maintain and build on this progress. Five out of seven PUCs continue to participate in the exchange on benchmarking, as they are involved in FC follow-up programmes. Learning from the “champions” and exchanging experiences were highly appreciated by the partners. The challenge for the future is how this exchange can be anchored sustainably and institutionally.

The rehabilitation of the water supply networks and the elimination of shortcomings in the registration and billing of customers had led to a downturn in non-revenue water quantities for a time. The installation of SCADA systems has also resulted in efficient supervision of the water supply system. However, reducing the physical unaccounted for water is a constant task and requires qualified and motivated personnel. Recruiting or training staff continues to be one of the biggest challenges for the management of utilities services providers. In this respect, it is not surprising that it poses problems for some utilities to anchor the developed operating and maintenance concept in the long term. Staff shortages, collective bargaining decisions or other priorities set by municipal representatives who are not within the supplier’s sphere of influence also influence sustainable operations at the sites, so that, for example, water losses have largely not decreased and have even increased in some locations.

The above-mentioned political influence of the municipality on the administration of utilities, e.g. with regard to planned tariff increases, staff reductions and sanctions on customers in the event of non-payment of invoices, could be partially reduced by creating a contractual relationship between the local authority and the utilities services providers as well as through the “performance-based approach”. However, this does not seem to be a viable model everywhere in the long term, as shown above.

The intervention provided public administrations and municipalities with the tools to increase their resilience. Provided that the political side gives them the necessary support, most public administrations should be able to cushion upcoming challenges such as rising energy prices.

From today’s perspective, the sustainability of the programme shows some success, but there are also limits with regard to the sustainable operation of the water suppliers, especially in view of the high volume of unaccounted for water at some locations.

Sustainability rating: 3 (both projects)

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**, **coherence**, **effectiveness**, **efficiency**, **impact** and **sustainability**. The ratings are also used to arrive at a **final assessment** of a project's development effectiveness. The scale is as follows:

Level 1	very successful: result that clearly exceeds expectations
Level 2	successful: fully in line with expectations and without any significant shortcomings
Level 3	moderately successful: project falls short of expectations but the positive results dominate
Level 4	moderately unsuccessful: significantly below expectations, with negative results dominating despite discernible positive results
Level 5	unsuccessful: despite some positive partial results, the negative results clearly dominate
Level 6	highly unsuccessful: 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.

The **overall rating** on the six-point scale is compiled from a weighting of all six individual criteria as appropriate to the project in question. Levels 1–3 of the overall rating indicate a "successful" project, levels 4–6 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 "moderately successful" (level 3).