

Ex post evaluation – Armenia



Sector: Drinking water, water management, waste water/solid waste (1402000)
Project: Municipal Infrastructure (KIP) I (1999 65 286)*
 Open programme, municipal infrastructure training component (1930 02 342)
Executing agency: Nor Akunq (regional water and sewage association)



Ex post evaluation report: 2017

		Investment Planned	Training Planned	Investment Actual	Training Actual
Investment costs (total)	EUR million	15.23	1.70	14.19	1.70
Counterpart contribution	EUR million	2.45	0	1.41	0
Funding	EUR million	12.78	1.70	12.78	1.70
of which BMZ budget funds	EUR milli	12.78	1.70	12.78	1.70

*) Project in 2015 random sample

Brief description: In the context of this programme, improvements were made to the drinking water supply and to sewage disposal systems in the cities of Armavir and Metsamor and the surrounding communities. Programme measures included investments in the water supply systems and a partial rehabilitation of the sewage infrastructure. Staff at the executing agency, the regional operator Nor Akunq, also received training. The executing agency was supported by an international operator consortium through the end of 2016 as part of an FC-financed management contract.

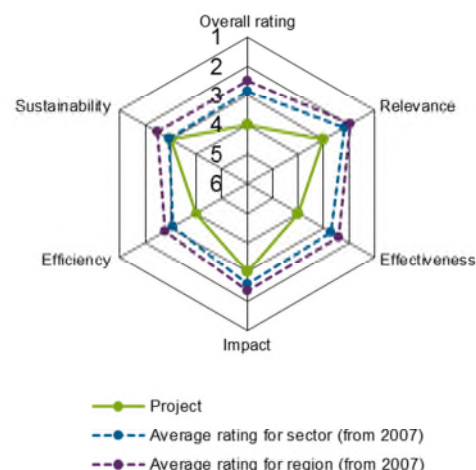
Objectives: The ultimate objective of the project was to make a sustainable contribution to reducing drinking-water-related health risks to the population in the programme region, while also using scarce drinking water resources more efficiently. The programme objective was to provide the population in the programme region with a continuous, economically efficient and hygienically safe water supply in accordance with local needs, as well as sewage disposal services that do not pose any direct risks to public health.

Target group: The target group for this programme was the population living in the cities of Armavir and Metsamor and in neighbouring villages (about 75,000 inhabitants).

Overall rating: 4

Rationale: Although the supply of drinking water to the population has improved significantly, the level of non-revenue water remains high (70%). Water resources are used inefficiently, and the project's effectiveness is limited. Despite massive personnel support, no significant improvement in the financial situation has been achieved in the approximately 15-year term of the project. Recently, the equity of the executing agency was completely consumed. Frequent policy changes in the water sector (centralisation, municipalisation, management contract with a private operator) were also unable to improve the situation. The programme's sustainability is currently at risk. It remains to be seen whether current reforms in this sector (with a return to centralisation) bring any improvement.

Highlights: Knowledge from this first FC project in the water sector in Armenia was acquired in the course of the project's execution, and has already been implemented in subsequent projects. Acceptance of the results accomplished by the executing agency – namely, a continuous supply of drinking water in the region – is high. As a result, other communities also want to work with the executing agency.



Rating according to DAC criteria

Overall rating: 4

Relevance

The project included measures to improve the drinking water supply and rehabilitate existing sewage networks, as well as to train staff at the executing agency Nor Akunq. Improvements to social infrastructure, including the drinking water supply and proper sewage disposal, have long been a key urban development priority for the Armenian government. Cholera outbreaks in the Armavir region in the late 1990s highlighted the urgency of improving the water supply and sewage disposal infrastructure. As such, the programme has been and continues to be a good fit for the needs and priorities of the region.

However, the programme design sought to rehabilitate only a subset of the various municipal water supply systems. From today's perspective, it would have been more developmentally desirable to include fewer municipalities in the programme, and renovate the water networks there as completely as possible, including house connections.

The programme design called for the establishment of a regional water utility, Nor Akunq. The regional approach was plausible at the time of the PA; from today's perspective, however, a larger catchment area for the water utility would have been more appropriate, given the ongoing inability to cover costs through utility fees, high levels of non-revenue water, and the associated consequences for the executing agency's financial performance. The economic risks associated with the regional approach have materialised.

No formal sectoral dialogue has been established in Armenia. However, the measures funded by other donors, including the World Bank, the European Investment Bank, and the European Bank for Reconstruction and Development, effectively complement the measures funded by German FC. An institutional reorganisation of the water sector will take place in 2016-2017, but this development will not be supported equally by all donors.

From today's perspective, we assess the project's relevance as satisfactory, independently of the pending reorganisation of the water sector.

Relevance rating: 3

Effectiveness

The objective established at the time of the programme appraisal (PA) was to provide the region with a continuous supply of clean drinking water, and to ensure a sewage disposal system that does not pose any direct risks to public health. Another objective was the establishment of an efficient water resource management system.

The rehabilitation of existing water supply systems (pipes, house connections) and construction of new production facilities (wells, chlorination, pumping stations, pipelines) have made substantial contributions toward this goal. Due to budget restrictions, and because water supply systems were prioritised over sewage disposal, the planned sewage treatment plant was ultimately not built. Only the main collectors in the cities of Armavir and Metsamor were rehabilitated.

Most problematic at present are the very high levels of non-revenue water, which can be attributed to illegal water connections, meter manipulation and low-quality meters, as well as the poor condition of some of the steel pipes that make up the water supply networks.

No clear indicator was established for the sewage disposal measures at the time of the PA. We assume that the indicator initially established for the functionality of the water supply systems can be applied to sewage disposal systems as well. Given this state of affairs, an additional indicator is introduced for sewage disposal: "the rehabilitated sewage disposal systems are operated appropriately."

The achievement of the programme objectives can be summarised as follows:

Indicator	Status PA	Ex post evaluation (EPE)
(1) Water quality meets Armenian standards (slightly stricter than WHO standards).	Not achieved.	Achieved.
(2) The collection rate is at least 85%, no later than 2 years after the start of the management contract.	No data (association of communes had only just been founded at the time of the PA).	Achieved (> 90%).
(3) Total non-revenue water is less than 60%, no later than 1 year after the start of the management contract.	Not achieved.	The expectations for this point were quite low, but were still not achieved (70%).
(4) Continuous supply of water (24/7). Starting from the second year, interruptions in supply due to repairs and maintenance are no longer than 48 hours in the rehabilitated portion of the network, and no longer than 72 hours elsewhere.	Not achieved, only intermittently.	Achieved.
(5) 1.5 years after the start of the management contract, revenues from water fees cover running costs if rate increases have been approved.	No data (association of communes had only just been founded at the time of the PA).	Not achieved (80-85%) (rate increases made in 2010).
(6) The rehabilitated sewage disposal systems are operated appropriately (connection rates already satisfactory at the time of the PA).	Not applicable.	Achieved with regard to sewage collection (no sewage treatment).
(7) Adequate drinking water is available for the target group.	75 l/R/d	Achieved (110 l/R/d)

Two of the indicators have not been achieved thus far: the indicator for non-revenue water and the indicator for coverage of operating costs. As at the time of the appraisal, total non-revenue water is at 70%, at least 15% of which are financial losses. Revenue from water fees covers about 90% of operating costs. However, operating costs should actually be higher, e.g. to cover necessary pipe repairs and meter upgrades, so the actual extent to which operating costs are covered should be set somewhat lower.

The very high levels of non-revenue water are primarily due to the fact that only parts of the municipal networks have been rehabilitated. The parts of the network that have not been rehabilitated are the most likely to be in poor condition, but this applies to some of the rehabilitated portions as well. Other factors include leaky house connections and the manipulation of water meters.

The indicator for an acceptable level of total non-revenue water was adjusted twice over the course of the programme: from 30% to 50%, then again to 60%. Despite the specific situation in Armenia, involving

complicated house connections in large prefabricated panel buildings, these are very large adjustments, and therefore do not reflect the Armenian government's goal (and that of the programme): sustainable management of limited water resources. The management of the executing agency are making every effort to reduce water losses to an acceptable level, despite difficult conditions. At present, water shortages in the project region are primarily the result of resource overuse by the fish-farming industry.

Since two major indicators are not met, the programme's effectiveness is rated as no longer satisfactory from today's perspective.

Effectiveness rating: 4

Efficiency

At over EUR 190 per capita, unit costs for this programme are high. Per-capita costs would normally not exceed EUR 150 for comparable projects. The water supply system is not particularly complex, and has no complicated treatment plants.

The water supply facilities are currently running at full capacity. Water supply is continuously available, 24 hours a day, and covers a daily water consumption of 110 litres per resident per day. However, the capacity utilisation rate would be considerably lower if non-revenue water rates were lower.

In significant portions of the network, however, corrosion and the resulting leaks in existing steel pipes – some of which date back to the Soviet era – require prompt rehabilitation. The otherwise positive effects of the measures are limited by defective pipes.

Revenue from water fees alone cannot cover the operating costs, and subsidies are currently necessary. Due to the high volume of "lost" (non-revenue) water, estimated at 70%, we rate the allocation efficiency as unsatisfactory.

In summary, we rate the programme's efficiency as no longer satisfactory.

Efficiency rating: 4

Impact

The overarching developmental objectives of the project were to contribute to a reduction in water-borne health risks for the population, and to manage the scarce water resources more efficiently. No specific indicators were defined at the level of the development policy objective. From today's perspective, it would make sense to add an indicator for the incidence of water-borne illnesses. In addition, an environmental objective would be added today (e.g. sewage treatment and reduced water pumping).

Be that as it may, the programme has significantly improved the water supply situation for the population in the project areas, and has thus contributed to reducing health risks; this extends to the sewage aspect as well thanks to better-organised sewage disposal. Water quality is good and meets the applicable standards, including the standard for residual chlorine content at the tap.

The environmental situation remains unsatisfactory, since construction of the sewage treatment facility is expected to be considerably delayed (currently planned as part of Municipal Infrastructure Programme III), and since non-revenue water rates remain high, meaning water resources continue to be wasted. After being directed into the receiving water, the water is used by nearby farmers for irrigation purposes.

The original target group was not fully reached, since not all the villages that were originally flagged for inclusion in the programme have connected to the Nor Akunq utility. The goal of using scarce water resources more efficiently has not yet been met, although improvements have been seen over time.

From the current perspective, the developmental impact of the project is rated as satisfactory.

Impact rating: 3

Sustainability

The programme has had noticeable positive effects, which are most apparent in the professionalism of Nor Akunq's management work and in the satisfaction of the affected population. The executing agency's financial performance remains limited by its inability to cover its costs through fee revenue and by the high level of non-revenue water, even though its performance has improved in recent years (at least in terms of numbers) since the introduction of private management. It is difficult to assess how realistic the evaluation of the operator's net assets is. At present, we note the following risks for the programme's sustainability:

The future prospects of Nor Akunq, the operator and executing agency, are not clear in light of the institutional reorganisation planned for the water sector in 2016-2017. Based on the current situation, the Armenian government has decided to centralise water supply and sewage disposal operations, and to employ a single (private) operator for the entire country. The five existing operators in the country are to be merged, and water infrastructure operations will be managed through a PPP. The potential consequences of this plan for investments and priorities in the Armavir region are not yet clear. However, there is a chance here for improved economic performance.

To date, fee revenues have not been sufficient to cover running operating costs. Cost coverage can only be achieved with the help of subsidies from the Armenian government; such subsidies are indeed provided, but not at a sufficient level, leaving Nor Akunq to live on its reserves. The Armenian government seeks to achieve full cost coverage as part of the institutional reorganisation.

The total amount of non-revenue water has been, and remains, too high. To ensure a continuous supply of water, Nor Akunq is forced to produce, process and pump significantly more drinking water than is needed for the supply and can be billed. This leads to unnecessarily high investments and running costs, e.g. for energy. Water resources are not used optimally either.

The management of Nor Akunq are aware of these risks, and of the impact of high non-revenue water levels in particular. Reducing NRW levels is a lower priority than providing a continuous water supply, however. The population appears to be satisfied, and the only major complaints relate to the hardness of the water in Armavir/Metsamor.

The main risk to sustainable development effectiveness comes down to how well the management of the executing agency will succeed in resolving various region-specific challenges over time (water meter manipulation and illegal connections, poor pipe quality in some cases). These challenges must be faced regardless of the operator structure, which was previously regional and has now been centralised.

On the assumption that the risks mentioned above can be reduced, and that operator Nor Akunq's efforts continue to yield positive results, it is reasonable to expect that the programme will continue to develop positively in the future.

Sustainability rating: 3

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).