

Ex post evaluation

Environmental Protection Programme Lake Ohrid – Pogradec III, Albania



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|--|--|------------------------------|------|
| Title | Environmental Protection Programme Lake Ohrid/Sewage Disposal Pogradec Phase III | | |
| Sector and CRS code | Water supply and sanitation – large systems 14020 | | |
| Project number | 2008 65 204 / 2020 59 988 | | |
| Commissioned by | BMZ and EU mandate | | |
| Recipient/Implementing agency | UK Pogradec | | |
| Project volume/financing instrument | EUR 13.7 million, EUR 10.3 million of which were loans under Financial Co-operation and EUR 3.4 million of which came from EU financing (IPF/MW) | | |
| Project duration | 2013 to 2018, 5 years | | |
| Year of report | 2022 | Year of random sample | 2020 |

Objectives and project outline

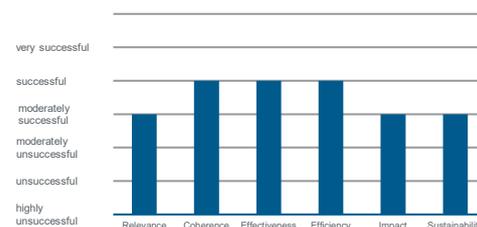
The objective at the outcome level was environmentally safe waste water disposal in the project area (urban area of Pogradec and surrounding villages) and its reliable water supply. The objectives at the impact level were to protect the water quality of Lake Ohrid and reduce the health risks for the population in the project area. The measures included the expansion of the sewage network and the wastewater treatment plant in Pogradec as well as the extension of water supply systems (Verdove, Remanj, Curras).

Key findings

The project is in line with national environmental policy and was a key milestone in achieving UNESCO World Heritage status for the Albanian part of Lake Ohrid. The beneficial effects of the project in reducing organic pollution in the wastewater treatment plant are very important for the protection of the lake and its significance for the region. In view of the existing deficits with regard to the sustainability effect, the project is rated as “moderately successful” for the following reasons:

- The project currently achieves the defined target values at the outcome level – in particular the effluent values of the wastewater treatment plant – without restrictions.
 - However, the sustainability effect of the wastewater treatment plant operation and especially the nutrient elimination are not permanently secured, as significant deficiencies in substance conservation are evident, and adequate preventative maintenance of the systems and machines is not currently being carried out.
 - The project makes a significant contribution to improving water quality, although additional measures would be required to stabilise the lake in the long term.
- The objectives at the impact level with regard to the protection of Lake Ohrid, the reduction of health risks for the population and the promotion of economic development in the project region were too comprehensively defined. The nutrient content in the lake is increasing measurably and the water quality at the lake banks has demonstrably deteriorated since 2014. In future, the protection of Lake Ohrid will depend on the continuation of further protection measures, including cross-border measures.

Overall rating:
moderately successful



Conclusions

- The project is of great importance for the protection of Lake Ohrid and the development of the region
- The impact hypotheses were too ambitious in part, but correct in principle.
- The phased approach was wise and correct, but not yet sufficient or comprehensive enough.
- The question arises as to why only UK Pogradec customers should bear the costs of protecting an UNESCO World Heritage site in the long term. An appropriate, possibly temporary national or international participation would be of great value.

Evaluation according to DAC criteria

Overall rating: 3

Ratings:

| | |
|----------------|---|
| Relevance | 3 |
| Coherence | 2 |
| Effectiveness | 2 |
| Efficiency | 2 |
| Impact | 3 |
| Sustainability | 3 |

Breakdown of total costs

| | | (planned) | (actual) |
|-----------------------------|----------------|-----------|----------|
| Investment costs | in EUR million | 13.5 | 13.7 |
| Counterpart contribution | in EUR million | 0 | 0 |
| Financing | in EUR million | 13.5* | 13.7 |
| Of which budget funds (BMZ) | in EUR million | 10.0 | 10.3** |

* including EU/IPA funds of EUR 3.5 or 3.4 million (target/actual)

**Surplus financed from residual funds from the previous phase

Relevance

The Lake Ohrid environmental protection programme is in line with Albania's national environmental policy and the other measures required by UNESCO for Lake Ohrid's World Heritage status. The adverse consequences of the discharge of wastewater into Lake Ohrid were identified as the main problem for the Lake Ohrid ecosystem, the only one of its kind in the world. The associated secondary detriment to the health of swimmers and for tourism development were also correctly identified.

This problem was addressed with appropriate measures, in particular the reduction of organic pollution in the wastewater treatment plant as the first significant step towards protecting the lake and upgrading Lake Ohrid as a tourist destination. The project only partially includes a permanent reduction in organic pollution, including the total nutrient input to maintain low nutrient levels in the lake, as the project in Pogradec is not designed to reduce all relevant harmful substances and nutrients, and not all lakeside residents on the Albanian side are included. Targeted nitrogen reduction was not included in the plant concept.

During the project appraisal, the drinking water component of the project was rated as highly important for the acceptance and profitability of the wastewater component as well as for upgrading tourism, which is consistent from the perspective of the evaluation.

The project's results chain aimed to improve the infrastructure in the drinking water and wastewater sector for the population living in the project area, thereby improving access to a reliable and socially affordable water supply as well as ecologically and hygienically safe sanitation. Furthermore, the aim was to contribute to the protection of the ecosystem and to the attractiveness of the region in terms of tourism as well as to the reduction of wastewater-induced health hazards by reducing raw sewage discharged into Lake Ohrid. These correlations also appear valid from today's perspective.

It was only possible to make a limited contribution to achieving the overarching objectives with the chosen design. However, the consistent protection of water quality and the achievement of the associated objectives would have required a more comprehensive overall concept (see section on overarching developmental impact).

The project purpose was very demanding in terms of protecting the nutrient-poor Lake Ohrid (UNESCO World Heritage Site and one of the oldest lakes in the world), reducing the health risks of the population and promoting economic development in the project region, at least in relation to the planned measures.

In this respect, the project had the potential to make a significant but limited contribution to these objectives and is rated as moderately successful in terms of its relevance.

Relevance rating: 3

Coherence

The project is consistent with the objectives of the German DC, but also of other donors in their efforts to bring the country up to the standards of the European Union, making a visible and essential contribution to this. The provision of funding from the Albanian budget to meet the high demand for extra connections with the sewer network indicates a high level of acceptance and coherence with expectations and commitment at local and national level.

The FC project was complemented by the regional TC project “Conservation and Sustainable Use of Biodiversity at Lakes Prespa, Ohrid and Shkodra”. The basic research conducted there on the quality and uniqueness of Lake Ohrid was an essential basis for achieving UNESCO’s World Heritage status in the Albanian part of Lake Ohrid.

In its first phase, the project was already implemented with the cooperation of SECO (State Secretary for Economic Affairs). The FC co-financed a waste water project in Korca with the EIB at the same time, and the EU contributed EUR 3.4 million to the phase under consideration here in Pogradec using IPA funds. The project was therefore well coordinated with the most important donors and was implemented with their cooperation.

Even after the project was completed, Albania worked with the support of donors (including FC) to draw up national action plans and strategies, including in the water, wastewater and waste sectors (“master plans”), in preparation for future EU accession talks. From today’s perspective, it can be assumed that the content of the project can be integrated into these action plans effectively due to its definition of priorities.

Coherence rating: 2

Effectiveness

The project purpose at the outcome level of the third project phase is to ensure environmentally safe sanitation in the project area (urban area of Pogradec and surrounding villages in the community of Bucimas) and a reliable water supply, including in the villages of Verdove, Remenj and Gurras.

The target achievement at the outcome level is summarised in the table below:

| Indicator | Status PA, target PA | Ex post evaluation |
|--|----------------------|-----------------------|
| (1) Covering of the costs: with the exception of phosphorus elimination, UK Pogradec covers its ongoing operating expenses including maintenance and debt service with tariff revenues | n/a / 100% | 100% of direct costs; |
| (2) Connection rate I: at least 80% of the population in the city of Pogradec is connected to the public sewer network | 80% | 99.8% |
| (3) Connection rate II: Taking into account the upgraded or new cesspits, at least 80% of the population in the project area are connected to a sanitation | 80% | 99.8% |

| | | |
|--|------------------|------------------------------------|
| system that is acceptable from an environmental and sanitary point of view | | |
| (4) Sewage treatment I: die BOD ₅ concentration in the effluent from the wastewater treatment plant is < 25 mg/l in the filtered 24-hour composite sample at wastewater temperatures > 12°C | < 25 mg/l | 8.6 mg/l |
| (5) Sewage treatment II: the COD concentration in the effluent from the wastewater treatment plant is < 125 mg/l in the filtered 24-hour composite sample at wastewater temperatures > 12°C | < 125 mg/l | 30 mg/l |
| (6) Sewage treatment III: the phosphorus concentration in the effluent from the wastewater treatment plant is < 2 mg/l in the filtered 24-hour composite sample at wastewater temperatures > 12°C | < 2mg/l | 1.8 mg/l |
| (7) Sewage treatment IV: the microbial contamination in the effluent from the wastewater treatment plant is < 1,000 FC/100 ml at wastewater temperatures > 20°C | < 1,000 FC/100ml | < 1,000 FC/100ml |
| (8) Drinking water is supplied to at least 90% of the population in Verdove and Remenj for more than 20 hours per day | 90% | 100% |
| (9) The water quality complies with WHO standards | Yes | Yes (based on measured parameters) |

The data from the regulatory authority ERRU confirm that operating costs are fully covered. However, it should be noted that one of two trickling filters and the silt container were not functioning at the time of the evaluation. The implementing agency has problems with the maintenance of the technology deployed. As a result, at the time of the EPE, only the second trickling filter financed in the third programme phase and the maturation ponds were available as biological treatment stages for the running operation of the wastewater treatment plant. However, according to the information provided, it was possible to put the trickling filter back into operation again shortly after the end of the evaluation trip.

The financing of chemicals for phosphate precipitation from the implementing agency's own funds appears to be problematic as well. This has not yet taken place and is currently hardly to be expected due to sharply rising energy costs – as well as the resulting sharply rising operating costs.

The target indicators for the purification capacity of the wastewater treatment plant with the corresponding target values for BOD₅, COD and phosphorus concentration in the filtered 24-hour composite sample and wastewater temperatures > 12°C are met according to the submitted documents. Repairs to the trickling filter prior to the summer season with an estimated doubling of the wastewater volume was therefore required to ensure that the purification capacity remains guaranteed all year round. It was not possible to view an automated sampler for the 24-hour composite sample in the wastewater treatment plant. Instead of a composite sample, it seems that individual samples are taken and average values are calculated.

The implementing agency specifies the connection rate to the wastewater treatment plant at 99.8%. The septic tanks of non-connected households are emptied by the implementing agency using its own suction

rinsing trolley and the sludge is transferred to the wastewater treatment plant. Proper disposal therefore seems to be possible as long as the suction rinsing trolleys are sufficiently maintained and ready for use.

The microbial load of < 1,000 coliform germs per 100 ml in the wastewater treatment plant effluent is maintained and is adequate in combination with the connection rate of 99.8% to the wastewater network in Pogradec that has since been achieved.

The drinking water quality of the additionally supplied locations complies with WHO standards. With a connection rate of almost 100%, the corresponding target values have also been achieved in Pogradec's neighbouring communities. However, efforts to cut water supply losses appear to have stalled.

Effectiveness rating: 2

Efficiency

The project follows a very well-adapted and efficient method with its step-by-step approach and robust wastewater treatment plant technology.

The investments made under the project were awarded in the context of public invitations to tender and thus at market prices. The consultancy costs of EUR 2.6 million are still appropriate in relation to the total project costs of EUR 13.8 million and given the relatively low level of investment (19%).

The UK Pogradec Management Board views the high losses in the drinking water supply of approx. 40% (technical and administrative losses) as a secondary challenge. However, due to rising energy prices for water pumping (only approx. 60% of the drinking water pumped is billed), measures to reduce energy costs are now being considered. However, this unaccounted water is also apparent in the Albanian context. The country-wide average in 2020 was 65%.

Until now, the supplier has been able to meet their operating costs. However, this covering of the costs is also achieved by the fact that the funds spent on infrastructure maintenance would be less than technically necessary and the recent sharp rise in energy prices will continue to put a strain on profitability. As a further burden, the debt service for the loan must be met since 2021.

The high connection rate indicates a high level of acceptance (no connection requirement) and thus a good allocation efficiency of the funds, especially since there was no plausible alternative approach.

The original time schedule was not adhered to. However, the actual implementation time for executing the investment measures of around 3 years is appropriate.

Efficiency rating: 2

Impact

Indicators for target achievement at the impact level, i.e. the protection of the water quality of Lake Ohrid and the reduction of health risks for the population in the project area, were not included in the appraisal report/module application. It was therefore implicitly assumed during the project appraisal that the impact objective would also be achieved if the module objective was achieved (environmentally safe and hygienically clean sanitation and clarification of wastewater, or a reliable water supply). This direct relationship is also present from the evaluation's point of view, insofar as the implemented measures make a direct contribution to achieving the overarching objectives. However, not all lakeside residents have been connected to a functioning wastewater treatment plant. The situation is also critical on the North Macedonian side. It is currently estimated that only 30% of the wastewater there is fed to a wastewater treatment plant.

Even if the wastewater treatment plant in Pogradec or its expansion undoubtedly contributes to improving water quality, it should be noted that the nutrient content in the lake is increasing measurably. The water quality on the lake banks has also deteriorated demonstrably since 2014. The UK Pogradec implementing agency has 4 sampling points on the lake shore where the water quality of the lake is monitored twice a month.

The Albanian Ministry of Environment is responsible for coordinating the protection of Lake Ohrid and carries out three measuring campaigns on Lake Ohrid every year. These series of measurements from the Ministry from 2014 to 2021 show massive increases for some parameters, in particular in the chemical

load (COD value) and pollution from nitrate (ammonia value NH_4^+). For these two parameters, the increase has been more than 600% since 2014. There is only a very slight increase in overall phosphorus loads. However, these values make it clear that the contribution of the wastewater treatment plant to protecting the lake is overcompensated for by the increase in waste water generated outside the project area. The measured values have been stable since 2014 only with regard to organic load (BOD_5).

In order to sustainably protect a nutrient-poor Lake Ohrid and preserve its endemic species, all harmful and nutrient inputs must be minimised. This also includes wastewater collection and treatment systems for all lake residents (Lin, Udenisht, Memelisht, and many other villages in the water catchment area) as well as discharges from contaminated mining sites. A corresponding overall concept or master plan for protecting Lake Ohrid is not yet available.

Sewage sludge disposal is currently implemented using ad hoc measures by the municipal administration. A sustainable sludge disposal concept is to be developed at the national level over the next three years. The extent to which a viable concept will actually be available cannot yet be assessed.

Impact rating: 3

Sustainability

UK Pogradec is one of the few wastewater treatment plant operators in Albania to recover its operating costs from its ongoing fee income. This is also remarkable in view of the structurally weak catchment area (28.5% of the population receive social welfare assistance). But from today's perspective, the covered operating costs do not seem to be sufficient. Preserving the value of assets with the corresponding expenses for preventive maintenance, spare parts and upkeep represents a major challenge that cannot be overcome in certain areas (for example, procurement of chemicals). The resulting problems are unresolved at the time of the evaluation and will lead to a decline in the effectiveness of the wastewater treatment plant in the foreseeable future.

The execution of expert maintenance on the machines and systems as well as the procurement of special spare parts appear to overwhelm the implementing agency's capabilities. According to the implementing agency, there are neither specialist personnel nor service providers with sufficient qualifications in Albania and they believe that a temporary export of machines for maintenance is far too costly. In addition, the fact that the implementing agency did not have a strategy for upgrading/repairing the faulty (now rehabilitated) trickling filter at the time of the evaluation trip indicates a lack of prioritisation of preserving the value of assets.

The donor-financed overall concept for the protection of Lake Ohrid was mainly of significant importance for the public image and the acquisition of international recognition and funding. The environmental authority routinely processed and monitored the water quality in Lake Ohrid. A significant and, in particular, sustainable reduction of the chemical load and also of the nitrate input into Lake Ohrid would be necessary in order to preserve its nutrient-poor nature and thus its endemic species. The development of water quality in recent years suggests that the impacts of the project will not be sufficient in the long term to stop the adverse development of the situation.

However, neither the Albanian nor the North Macedonian government seems to be prioritising World Heritage status and the protection of the Lake Ohrid ecosystem, as no medium-term financing of nutrient elimination is discernible for the sustained protection of nutrient poverty in the lake. In addition, there are various burdens on the fauna and flora of Lake Ohrid, the effects of which have so far only been investigated and documented in part from a limnological perspective.

In this respect, there are clear reservations regarding the sustainability both at the wastewater treatment plant operation level as well as the superordinate level. However, as it can be assumed that the project's beneficial effects will continue for the time being – albeit to a potentially lesser extent – sustainability is still rated as moderately successful.

Sustainability rating: 3

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

Projects are evaluated on a six-point scale, the criteria being **relevance, coherence, effectiveness, efficiency, overarching developmental impact** and **sustainability**. 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.

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).