Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

INTERNATIONAL COOPERATION

EXTERNAL EVALUATION – SHORT REPORT

Key evaluator: Annette Schmidt

Technical evaluator: Jaime Mendoza

Strengthening Quality Assuring Services for the Drinking Water and the Wastewater Sector

Country | Region:	Nicaragua
Project No.:	2017.2154.7
Period:	09/2019 – 08/2023
Executing Agency:	Ministry of Development, Industry and Commerce (MIFIC)
Implementing Partner:	Directorate of Standardization and Metrology (DNM) National Metrology Laboratory (LANAMET) National Accreditation Office (ONA)
PTB | Section:	9.33
PTB | Project Coordinator:	Ann-Kathrin Krekeler
Date:	16.10.2023

List of abbreviations

BMZ	Federal Ministry for Economic Cooperation and Development
CIRA	Nicaraguan Center for Aquatic Resources
DNM	Directorate of Standardization and Metrology
ENACAL	Nicaragua Company of Aqueducts and Sewers
GIZ	Gesellschaft für Internationale Zusammenarbeit
KfW	Kreditanstalt für Wiederaufbau
LANAMET	National Metrology Laboratory
LCM	Costa Rican Metrology Laboratory
MIFIC	Ministry of Development, Industry and Commerce
MINSA	Ministry of Health
ONA	National Accreditation Office
QI	Quality Infrastructure
SDG	Sustainable Development Goal

1. Project Description

The subject of this final evaluation is the project "Strengthening Quality Assurance Services for the Drinking Water and Wastewater Sector in Nicaragua", with a duration of four years (09/2029 - 08/2023) and a budget of EUR 750,000. The on-site evaluation was carried out by Annette Schmidt (key evaluator) and Jaime Mendoza (technical evaluator) in April/May, 2023. The evaluation team had the opportunity to interview 47 persons and to visit several public, academic, and private laboratories in and around Managua.

The political counterpart of the project is the Ministry of Development, Industry and Commerce (MIFIC) while the implementation counterparts are the three Quality Infrastructure (QI) directorates: the National Metrology Laboratory (LANAMET), the National Accreditation Office (ONA) and the Directorate of Standardization and Metrology (DNM). These three state institutions of the Quality Infrastructure have as their main mission to provide water distributors and state, academic and private laboratories with qualified services, also to improve their capabilities in measuring drinking water consumption and in analysing drinking water and wastewater quality. However, due to their limited capacities, these institutions have had difficulties in performing the function of providing these services in the past. This also applies to the performance of the central institution in the drinking and waste water sector, the state water supplier for urban and peri-urban regions, Nicaragua Company of Aqueducts and Sewers (ENACAL). ENACAL is responsible for measuring water consumption and controlling the quality of drinking water and waste water. However, for reasons such as shortage of personnel, lack of technical training and lack of equipment maintenance, reliable measurements in both areas cannot be guaranteed. The deficits of these institutions responsible for the water sector mean that a functioning, efficient and sustainable drinking water supply and sanitation and water resources management remain a challenge.

Therefore, the project objective is formulated as follows: "The strengthened national quality system offers services that contribute to the reliability of drinking water consumption measurements and analysis of drinking water and wastewater quality". Three lines of action were defined to achieve this objective:

Output 1: Laboratories relevant to the drinking water sector and the National Metrology Laboratory LANAMET have expanded and improved their measurement capabilities.

Output 2: The accreditation body ONA and relevant institutions in the drinking water sector have strengthened their capacities in the laboratory accreditation scheme and in measurements for drinking water consumption.

Output 3: Wastewater laboratories have strengthened their measurement capabilities and necessary standards are developed and agreed.

2. Assessment of the project

The evaluators concluded that the project has a positive impact on strengthening quality assurance services for the drinking water and wastewater sector. Despite major political challenges in Nicaragua, which also affected project implementation, and COVID-19, the project has been able to work successfully on these three action lines. The implementation of a proficiency test by the Nicaraguan university laboratory Center for Aquatic Resources (CIRA) to determine parameters in drinking water and wastewater can be considered particularly successful. Under the technical direction of the Costa Rican Metrology Laboratory (LCM) 16 private, academic, and public laboratories participated in the first round of this proficiency test, most of them with satisfactory results; the second round is scheduled for the end of 2023.

2.1 Status of the change process

Relevance

The project is in alignment with Nicaragua's policies and priorities, as reflected in the national human development plans and government regulation related to water and sanitation. It is also in line with the two relevant strategies of the Federal Ministry for Economic Cooperation and Development (BMZ), more precisely the Regional Strategy for Central America 2017 - 2022 and the Water Strategy, both of which prioritize the protection of the environment and water resources. The project is adapted to the needs of the final beneficiaries - the population in Nicaragua - and to the needs and capacities of the implementing institutions, although some were not able to take full advantage of the offers due to organisational restrictions. The design of the project is considered appropriate, realistic, and feasible to achieve its objective, with the limitation that some ambiguities were identified in the indicators. The project management was able to adapt to changes in framework conditions, such as implementation delays and the pandemic, in an appropriate manner.

Coherence

Concerning its internal coherence, the project is framed within the "Drinking Water Supply and Sanitation Program in Nicaragua" of the German Development Cooperation. Although synergies were expected between the PTB project and other modules of the program, cooperation has not materialized effectively and there is no common strategy implemented among the three German cooperation institutions - PTB, GIZ and KfW - active in the country.

Concerning external coherence in the water sector in Nicaragua, several international donors, such as the European Union, the World Bank, Spanish cooperation, and others, have been involved through various programs and projects. There is no effective coordination among donors, and meetings among them are infrequent, but PTB as the partner with the smallest budget does not have the means to influence this aspect. PTB works in close coherence with the water quality policies of Nicaragua.

In summary, the project is given a rating of 2,5 in the evaluation dimension of coherence.

Effectiveness

Quantitative and qualitative indicators have been established to assess progress towards the objective. The first outcome indicator relates to participation in proficiency testing programs and could be fulfilled by 50%. The second outcome indicator measures the accreditation in two quantities. LANAMET has achieved accreditation in mass, but not in volume, this also means a 50% achievement of the indicator. The third outcome indicator relates to the development of standards and has been fully achieved with the creation of 17 standards for the wastewater sector. Thus, the objective was partially achieved, as measured by the three indicators.

The activities, services and outputs of the project have contributed significantly to the achievement of the project’s objective. The project management has responded appropriately to the risks identified which were within the sphere of their influence. The collaboration and technical work done is noteworthy. However, there are areas for improvement, such as supporting partners in a more strategic orientation of their institutions.

In summary, the project is given a rating of 2,3 in the evaluation dimension of effectiveness.

Efficiency

Regarding production efficiency, as of December 31, 2022, the project is reported to have spent approximately 34% of its planned budget for the three outputs and with indirect costs included, 41% of its budget. This suggests that it is likely that the project will not spend the entire estimated budget by the end of the term in August, 2023. It is assumed that this is due to a mismatch between the original planning of activities and the allocated resources, as well as the planned activities that were not carried out. Clear statements on production efficiency - the relationship between resources and outputs - cannot be made due to the lack of cost distinction between outputs and the lack of outcome indicators for Output 2.

The allocation efficiency, described as the relation between financial input and the project outcome, is assessed as adequate. Given that the overall project expenditure is very low, it cannot be assumed that the same impacts could have been achieved with less expenditure. However, as in the evaluation of production efficiency, it is true that possibly greater impacts could have been achieved with the total planned expenditure.

In summary, the project is given a rating of 3 in the evaluation dimension of efficiency.

Impact

Five expected impacts were identified for the project. Three were related to the Sustainable Development Goal (SDG) 6 - water and sanitation for all – specifically, Targets 6.1 (access to drinking water), 6.2 (access to sanitation) and 6.3 (improve water quality). One impact was related to the improvement of competencies for proficiency testing and the fifth to the expansion of water laboratory accreditation scopes. In Nicaragua, an increase in drinking water and sanitary sewerage coverage was observed, according to the First SDG National Voluntary Report. The project contributes indirectly to Targets 6.1 and 6.2, but more directly and plausibly to Target 6.3 by improving water quality. It is noted that proficiency testing helps laboratories to produce reliable analyses, especially for total iron and pH in drinking water and Chemical Oxygen Demand (COD) in wastewater. The project strengthens laboratory competencies, which lays the foundation for possible laboratory accreditation in the future.

In summary, the project is given a rating of 2 in the evaluation dimension of impact.

Sustainability

Most of the partners and organizations involved have the capacity to sustain the positive results of the project. The wastewater and drinking water standards committee, ONA and LANAMET for example, demonstrate capacity and willingness to maintain and continue project-related activities. This was supported by the close collaboration in the selection of activities and training measures between PTB and the partners. PTB contributes to sustainability by strengthening the technical processes and experience of partner institutions with various initiatives. Nevertheless, sustainability challenges were also mentioned, such as constant staff turnover in governmental organizations and lack of knowledge or dissemination of LANAMET accredited calibration services.

In summary, the project is given a rating of 2 in the evaluation dimension of sustainability.

2.2 Success factors for the observed results and change processes

Strategy

The project has a planning history going back seven years; however, it lacks relevant documents. Nevertheless, according to unanimous statements, all major stakeholders were involved in the planning and were able to contribute to it. The project strategy is known to the

counterpart and jointly implemented, although a capacity building strategy was not developed, and very few of the now mandatory Capacity WORKS tools were created at the time of planning. The project focuses on advising at the micro and meso level, but it has not addressed consultation at the macro level. This lack of strategic support for institutions such as LANAMET or ENACAL is a negative point identified by the evaluation team.

Cooperation

Stakeholders in the sector who are important for achieving the project objective are aware of their tasks and roles and participate in the project implementation with varying degrees of commitment. In general, communication between the project and the counterpart is satisfactory, although it is sometimes necessary to insist on receiving answers in a timely way.

The project proposal foresaw close collaboration with the Ministry of Health (MINSA). However, MINSA was no longer listed as a counterpart in the MIFIC-PTB Implementation Agreement. It was not possible to ascertain during the evaluation the reason why MINSA was not considered in the Implementation Agreement and therefore did not participate more closely in the project activities. From the point of view of the evaluation team, it would have made sense to involve MINSA more closely, since, at least in theory, MINSA plays an important role in the sector. Close integration into the project would certainly have enhanced the institution's capabilities and, therefore, the project could have contributed even more to improving water quality.

Steering structure

There is no written steering structure. The minutes of the virtual meetings of the project management committee, which take place approximately every four to five months, show that the relevant people from the Quality Infrastructure do participate in them. In some cases, progress toward indicators is discussed, new planning steps are agreed upon and organized, and the project's operational plan is updated. The minutes are brief, accurate and give a good idea of the discussions at the meetings. In the interviews, the evaluation team got the impression that those responsible are very familiar with the project, its progress, and challenges, and that they are actively involved in its planning and implementation. However, the operational plan also shows that some activities had to be postponed again and again. This may be due in part to COVID-19, but probably also to other obstacles more deeply rooted in the institutions themselves.

Processes

Processes for the sector could have been identified more precisely, for example, to create synergies. The project has taken great care in the details of the project but has not looked much beyond the boundaries of its own project. The project has not developed a process map. But even without describing these processes as such, the core processes necessary to achieve the project objective were identified and defined through the formulation of the outputs. This selection of outputs was based on an analysis of the processes being developed, existing capabilities and demand in each of the institutions. Since these core processes were carried out together with the partners, they contributed to a better understanding of the capacities that need to be developed, so that the project can ultimately contribute to the strengthening of the Quality Infrastructure institutions. The project management committee defined the steering processes and associated activities. As far as the support processes are concerned, i.e., the organization of training courses, a considerable number could be carried out without major problems and thus provided the necessary support for the realization of the core processes. In some areas, for example, regarding the issue of the magnitude volume in LANAMET, the counterpart’s limitations prevented the necessary support process from being carried out, and therefore the core process of applying for accreditation for this magnitude could not be carried out either.

From the perspective of the evaluation team, the counterparts have not introduced fundamental organizational or institutional change processes.

Learning and innovation

The proficiency test, which is currently being carried out with the support of the project, was one of the first proficiency tests carried out in Nicaragua. In this respect, the project promotes technical innovations in the counterpart's system. The objective jointly agreed upon is that, in the long term, the participating institute CIRA will be able to carry out such proficiency tests independently, possibly also with an extended scope. However, some knowledge is still missing for this. As an inducement to learning, it would be interesting to publish a scientific article about the whole process comparable to the scientific article written by the LCM in the previous process.

3. Learning processes and learning experience

The proficiency testing was strongly supported by two experts from the LCM. They had already participated in the same process in the previous project and were therefore familiar with the partners and their state of development. This cooperation proved to be a great contribution to the project, as a close working relationship between CIRA and LCM could be developed. All interviewees are convinced that this support will continue after the end of the project. For CIRA, this means that they can always turn to a contact person if questions or problems arise, which is an invaluable asset to CIRA's development.

4. Recommendations

Recommendations for the project team

- Involve all institutions interested in fulfilling the standards in the drinking water and wastewater sector, such as MINSA and others, to foster the development of Quality Infrastructure.
- Accompany LANAMET in the development and implementation of a strategic process to improve its visibility.
- Support ONA in the development of other accreditation schemes, such as product certification, certification of people and certification of management systems.
- Further involve the participation and commitment of ENACAL management in the implementation of the project.
- Establish more direct relations between PTB and the institutions of the same program, such as GIZ and KfW, to develop a better coordinated approach.
- Designate an expert in Nicaragua to facilitate and make tasks and activities more efficient.

Recommendations for the counterpart

- Clarify the conditions under which the proficiency testing performed with the support of the project is valid as a requirement for the accreditation of the laboratories that successfully participated.
- Expand the parameters measured in drinking water and wastewater quality tests for future proficiency testing activities.
- Create a forum for discussion and exchange among the different stakeholders involved in water management.
- Disseminate information on how waste generated by laboratories in the country could be managed responsibly.

- Ensure that the knowledge acquired during training and internships is shared and applied correctly within the beneficiary organization.

Recommendations for Group 9.3 "International Cooperation"

- Use the Rapid Diagnostic Tool (RDT) only if the counterpart involved in the situation or project considers it relevant and requests its use.

Imprint

Published by
Physikalisch-Technische Bundesanstalt
Bundesallee 100
38116 Braunschweig
Germany

Responsible
9.01 Processes of International Cooperation
evaluierung-9.3@ptb.de
www.evaluierung.ptb.de