Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

INTERNATIONAL COOPERATION

External evaluation

Key evaluator: Manuela Leonhardt

Technical evaluator: Walter Bich

Building up a regional metrology system in the ECOWAS region II

Country | Region:	Economic Community of West African States (ECOWAS)
Project number:	2021.2052.5
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Lead executing agency:	ECOWAS Commission
Executing agency(ies):	ECOWAS regional metrology organisation ECOMET
PTB | Section:	Sub-Saharan Africa
PTB | Project Coordinator:	Guillaume Robardet
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This evaluation is an independent assessment. Its contents reflect the assessor's opinion which is not necessarily equivalent to PTB's view.

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List of abbreviations

AfCFTA	African Continental Free Trade Area
AFRIMETS	Intra-Africa Metrology System
BMZ	*Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung* German Federal Ministry for Economic Cooperation and Development
CD	Capacity Development
CMC	Calibration and Measurement Capability
DAkkS	Deutsche Akkreditierungsstelle
ECOMET	ECOWAS Community Committee for Metrology
ECOWAQ	ECOWAS Agency for Quality
ECOWAS	Economic Community of West African States
EU	European Union
FEWACCI	Federation of West African Chambers of Commerce and Industry
FOPAO	Federation of West African Employers' Organisations
GDP	Gross Domestic Product
GSA	Ghana Standards Authority
ILC	Inter-laboratory comparison
NMI	National Metrology Institute
OECD/DAC	Development Assistance Committee of the Organisation for Economic Cooperation and Development
OIML	International Organisation of Legal Metrology
QI	Quality infrastructure
SME	Small and Medium-sized Enterprise
SOAC	Système Ouest Africain d'Accréditation
TC	Technical Committee
UNIDO	United Nations Industrial Development Organization
WACOMP	West Africa Competitiveness Programme

1. Summary

The subject of this evaluation is the project “Building up a regional metrology system in the ECOWAS region II”, implemented by PTB in the ECOWAS region between August 2023 and January 2027. The project is financed by the German Federal Ministry for Economic Cooperation and Development (BMZ) and has a budget of 1.500.000 EUR. The political partner is the ECOWAS Commission. The implementing partner, and direct beneficiaries of the project, are the ECOWAS Community Committee for Metrology (ECOMET) and the National Metrology Institutions of several of its member states. ECOMET is an operational arm of the ECOWAS Agency for Quality (ECOWAQ) established in 2017 by the ECOWAS Commission and yet to be operationalised.

The project pursues the following (module) objective: “The division of labour and cooperation in the metrology system at ECOWAS level are improved.” In order to achieve this objective, the project is expected to deliver the following outputs:

Output 1: “The less advanced metrology institutes are strengthened in their service delivery.”

Output 2: “ECOMET and its technical committees are organisationally strengthened.”

Output 3: “Metrology institutions have improved their service orientation and visibility to the private sector”.

This project continues the efforts of a predecessor project to strengthen the capacities of ECOMET as the regional metrology organisation of West Africa and its member institutions. The foundations of this structure were laid by the adoption of the “ECOWAS Quality Policy” by the ECOWAS heads of states in 2013, followed by the establishment of the “ECOWAS Agency for Quality” (ECOWAQ) in 2017. ECOMET is one of the operational arms of ECOWAQ. Its members include all ECOWAS member state. - This evaluation was carried out by Manuela Leonhardt (evaluation expert) and Walter Bich (technical expert). Data collection took place in January and February 2026.

Assessment according to the OECD DAC criteria

Criterion	Evaluation of the criterion
1. Relevance	2,0
2. Coherence	2,5
3. Effectiveness	2,0
4. Efficiency	2,0
5. Impact	2,3
6. Sustainability	3,0
Global assessment	**2,3**

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☐ Since effectiveness, impact or sustainability were rated "4" or worse, the global assessment is downgraded to "4" although the mean would actually be better than "4".

☐ No downgrading of the global assessment.

Relevance	*Justification: The project is well aligned with the objectives and strategies of the ECOWAS Commission and the German government regarding regional cooperation and trade promotion. It adopts an appropriately differentiated approach to building the capacity of more and less advanced metrology institutions, but could develop a more systematic approach to capacity building of ECOMET and addressing women as providers and beneficiaries of metrology services. By focusing it capacity development efforts at the national member institutions of ECOMET, the project flexibly reacts to challenges at regional level.* Mark: 2,0
Coherence	*Justification: The project shows a good degree of internal coherence as it complements other German development initiatives in the area of trade and private sector promotion as well as other PTB bilateral projects in the ECOWAS region. It also shows good external coherence with the initiatives of other donors, mainly mediated through the needs expressed by the national metrology institutes. The project supports ECOWAS own – albeit limited – efforts to establish a quality infrastructure in West Africa.* Mark: 2,5
Effectiveness	*Justification: The project demonstrates a good level of effectiveness by ensuring the ongoing functioning of ECOMET and supporting ten national metrology institutions in improving their services. In this way, it helped create the foundations for an improved division of labour and cooperation across the region. Project management was smooth and showed responsiveness to evolving partner needs. Project results could have been strengthened by a more explicit capacity development strategy, particularly towards ECOMET.* Mark: 2,0
Efficiency	*Justification: The project used its operational resources in an economical manner, but there is room for improvement by investing resources in a more targeted and proactive manner. Efficiency gains could be achieved by streamlining needs assessment processes, building a regional expert pool for training, on-the-lab advisory services and maintenance, and by supporting ECOMET in developing a sustainable funding mechanism and carrying out activities consistent with its mandate.* Mark: 2,0
Impact	*Justification: Quality infrastructures in West Africa, including metrology, have shown some progress in the past two decades. There are some indications that stronger quality infrastructure had positive effects on the exportation of basic commodities from West Africa – together with many other factors. There have also been advances in legal metrology and in environmental controls and monitoring. By strengthening metrology institutions across the region and their*

	regional integration, the project contributed to a certain degree to these developments, although many challenges remain. Mark: 2,3
Sustainability	*Justification: Many national metrology institutions in West Africa and the ECOMET network itself are young institutions that still have to consolidate their structures and procedures. For the foreseeable future, they will continue to rely on external technical and financial support. The project supported specific capacities of the national metrology institutions and ECOMET, but does not have the mandate nor the funding to address more-fundamental challenges such as limited government support, financial sustainability, weak human resources, and high staff attrition. There is no sustainable funding mechanism for ECOMET. For these reasons, some project achievements are expected to function for a limited amount of time only.* Mark: 3,0

2. Introduction

The subject of this evaluation is the project “Building up a regional metrology system in the ECOWAS region II”, implemented by PTB in the ECOWAS region between August 2023 and January 2027. The project is financed by the German Federal Ministry for Economic Cooperation and Development (BMZ) and has a budget of 1.500.000 EUR. The results matrix of the project proposal, submitted to BMZ in August 2023, is the basis of this evaluation. At the time of the evaluation mission, the project was expected to end in July 2026. After the completion of the evaluation report, the project received a no-cost extension until end of January 2027.

The political partner is the ECOWAS Commission. The implementing partner, and direct beneficiaries of the project, are the ECOWAS Community Committee for Metrology (ECOMET) and the National Metrology Institutions of several of its member states. ECOMET is an operational arm of the ECOWAS Agency for Quality (ECOWAQ) established in 2017 by the ECOWAS Commission and yet to be operationalised.

Subject of the evaluation

Project title	Building up a regional metrology system in the ECOWAS region II
Programme	n/a
Project objective	The division of labour and cooperation in the metrology system at ECOWAS level are improved.
Term	01 August 2023 – 31 January 2027
Volume	1.500.00 EUR
Evaluation period	01 August 2023 – 28 February 2026

The evaluation was carried out by Manuela Leonhardt, main evaluator, and Walter Bich, technical evaluator. Data collection took place from 26 January to 13 February 2026 by document review and about 30 semi-standardised interviews with representatives of the ECOWAS Commission, the president and executive secretary of ECOMET, members of ECOMET technical committees (TC), national metrology institutes of ECOMET member states, AFRIMETS, private sector representatives, technical experts, consultants, and PTB staff. Data collection was carried out virtually. The results of the evaluation were presented and discussed with the project team at a debriefing workshop on 6 February 2026. The evaluators would like to thank the project team for their excellent preparation of the evaluation. They are also grateful to all the interviewees for sharing their time and insights on the project. – The evaluation results are expected to inform the follow-up project due to start in February 2027.

3. Framework conditions and strategic approach of the project

3.1. Framework conditions

Quality infrastructures (QI) are ecosystems of public and private institutions as well as legal and regulatory frameworks and practices that establish and implement standardisation, accreditation, metrology, and conformity assessment (testing, inspection and certification). Quality infrastructures are required for the effective operation of domestic markets and the enforcement of technical regulations, which safeguard public health and safety and ensure consumer, environmental and social protection. As about 90 percent of world trade are shaped by nontariff measures, mostly linked to standards, low-

and middle-income countries are challenged to establish internationally recognised national quality infrastructures that increase their competitiveness and enable access to foreign markets[1]. Metrology as the science of measurement and its application is a key element of the quality infrastructure. It involves scientific metrology concerned with the establishment of units of measurement, legal metrology concerned with the implementation of regulatory requirements, and industrial metrology concerned with the application of measurements to manufacturing, including calibration.[2] International and regional metrology organisations play an important role in coordinating comparisons of national measurements standards, facilitating traceability to primary realisations of certain quantities, supporting metrological infrastructures in member states, and sharing technical capabilities and facilities. In Africa, the Infra-Africa Metrology System (AFRIMETS) has played this role at the continental level since 2007, in cooperation with sub-regional metrology organisations such as ECOMET in West Africa.

West African states have made important advances in establishing national metrology institutions in the past years, but progress has been uneven. According to the Global Quality Infrastructure Index (2025), Ghana (99th), Nigeria (122nd), Côte d'Ivoire (127th), Benin (127th) and Senegal (132nd) are the highest-ranking West African countries in the area of metrology (out of a total of 185 countries), with Cabo Verde, Guinea, Liberia, Sierra Leone (all 144th) and Guinea Bissau (174th) ranging among the lowest developed countries.[3] In terms of the overall quality of their quality infrastructures as measured by the Quality Infrastructure for Sustainable Development (QI4SD) Index (2025), Burkina Faso (71st), Cote d'Ivoire (85th) and Benin (99th) rank highest among the West African countries, while The Gambia (121st), Guinea Bissau (124th) and Nigeria (133th) (out of a total of 155 countries) occupy the lowest ranks.[4] Key challenges at the national level remain limited political awareness, lack of sustainable funding mechanisms for the national quality infrastructure, shortage of qualified staff, inadequate physical infrastructures (buildings, electricity, cooling etc.), and limited awareness of and demand for metrology services. At the regional level, metrology development is challenged by the limited availability of pilot laboratories for comparisons, the inability of some states to participate in inter-laboratory comparisons, and the limited ability of some countries to participate in regional metrology activities without external support. With the establishment of the African Continental Free Trade Area (AfCFTA) in 2021, however, the political interest in strengthening the competitiveness of the national economy has increased markedly, together with an increased willingness to invest in quality infrastructures.

The foundations for the development of a regional metrology system in West Africa were laid by the adoption of the "ECOWAS Quality Policy" by the ECOWAS heads of states in 2013, which was followed by the adoption of this policy by the ECOWAS member states until 2018. In 2017, the ECOWAS Commission established a Quality Agency called "ECOWAS Agency for Quality" (ECOWAQ) responsible for its Quality Infrastructure System, which is yet to become fully functional. The "ECOWAS Community Committee for Metrology" (ECOMET) is one of the operational arms of ECOWAQ responsible for matters related to the field of metrology in the ECOWAS region. ECOMET terms of reference include assisting the ECOWAS Commission and member states in establishing appropriate legal and institutional frameworks for metrology, advising the establishment of National Metrology Institutions in member states, and promoting regional cooperation in the field. Its membership is comprised of all 15 former ECOWAS member states. Although Burkina Faso, Mali and

[1] World Bank, 2025: World Development Report. Standards for Development. Washington, DC.
[2] Kellermann, Martin, 2019: Ensuring Quality to Gain Access to Global Markets. A Reform Toolkit. Washington, DC: World Bank Group/PTB.
[3] Global Quality Infrastructure Index (GQII) Program, https://gqii.org/home/gqii-2025/
[4] UNIDO, 2025: Quality Infrastructure for Sustainable Development Index. Country Profiles. Vienna.

Niger left ECOWAS in 2025, ECOMET continues to invite representatives of these countries to participate in its activities at a technical level. ECOMET has five Technical Committees (TC) working on awareness and communication on regional metrology approaches (TC1), legal metrology (TC2), mass and related quantities (TC3), thermometry (TC4) and quality systems (TC5). With previous support from PTB and UNIDO, ECOMET has harmonised procedures and technical guides, trained technical experts on relevant ISO standards, conducted inter-laboratory comparisons, and participated in the activities of the Intra-Africa Metrology System (AFRIMETS) as the Regional Metrology Organisation for the ECOWAS region.[5] However, ECOMET still meets challenges in the areas of organisational development, operations and funding. Prior to this project, PTB had already supported ECOMET and its member states under the project "Building up a regional metrology in the ECOWAS region I" from 2019 to 2023.[6]

The implementation period of this project (2023-2026) was marked by political instability in the ECOWAS region, which affected the consolidation of national metrology structures and cooperation across the region. This includes the aftermath of the military coups in Mali (2020-21) and Burkina Faso (2022) and - successful or thwarted - military coups and political crises in Niger (2023), Guinea Bissau (2025) and Benin (2025) in addition to growing insecurity in the Sahel region and in Nigeria. The withdrawal of Burkina Faso, Mali and Niger from ECOWAS, announced in 2024 and formalised in 2025, challenged regional cohesion, undermined democratic governance norms, and affected trade, free movement and regional infrastructure projects in the region. With the withdrawal of the three countries, ECOMET lost several highly competent and committed Technical Committee members and chairs, which still have to be adequately replaced. It further meant the loss of member state contributions, requiring ECOMET to downsize some activities.

3.2. Strategic approach of the intervention

The project pursues the following (module) objective: "The division of labour and cooperation in the metrology system at ECOWAS level are improved." In order to achieve this objective, the project is expected to deliver the following outputs:

> Output 1: "The less advanced metrology institutes are strengthened in their service delivery."
>
> Output 2: "ECOMET and its technical committees are organisationally strengthened."
>
> Output 3: "Metrology institutions have improved their service orientation and visibility to the private sector".

The achievement of the project (module) objective is measured by the following three indicators:

> Module objective indicator 1: "A regional traceability chain is established for four (4) quantities based on ECOMET priorities."
>
> Module objective indicator 2: "The Members of ECOMET and the technical committees rate their cooperation in selected areas on a five-point scale on average half a point better than 08/2022."
>
> Module objective indicator 3: "Cross-border metrology services provided by public providers increased by 100 compared to the situation before the Covid 19 pandemic (2019)."

[5] Striggner, Bedu-Addo, 2024: ECOMET Presentation at the 2024 AFRIMETS General Assembly. Abuja.
[6] Voionmaa, Petra/Bich, Walter, 2022: External evaluation of the project "Building up a regional metrology in the ECOWAS region". Braunschweig: PTB.

At output level, the indicators foresee the development of priority lists and the implementation of metrology guidance by six less advanced metrology institutions (output 1), the harmonisation of the annual reports of the five ECOMET technical committees, the participation of six more ECOWAS member states at the AFRIMETS General Assembly (output 2), the expansion of calibration or verification services by four metrology institutes to gender-sensitively selected value chains, and the implementation of eight workshops for exchanges between national metrology institutes and private sector organisations (output 3). The indicators largely comply with the SMART criteria (specific, measurable, attainable, relevant, timely).

The project's intervention logic is based on the delivery of complementary services to less and more advanced national metrology institutions at national level and to ECOMET at regional level. The support provided to less advanced national metrology institutions (output 1) is based on the following hypothesis: If less advanced national metrology institutions are provided with basic equipment, participate in foundational training courses and benefit from advisory services provided by more advanced national metrology institutions in the region, then they are in a better position to provide services and fully participate in the technical exchanges at ECOMET level. If they are better able to communicate their capacities and needs, the regional division of labour between national metrology institutions will be enhanced. The support provided to ECOMET and its technical committees (output 2) is based on the following hypothesis: If the internal processes and structures of ECOMET are strengthened, then it will be better able to expand the activities of the technical committees and thus facilitate a better regional division of labour. Under output 3, it was foreseen to promote the visibility of national metrology institutions and ECOMET. At the time of the evaluation (February 2026), however, most activities under this output targeted more advanced national metrology institutions, based on the following hypothesis: If the capacities of more advanced metrology institutions are strengthened through equipment, training and individual consultancies, they are in a better position to serve as pilot laboratories for regional comparisons, to provide regional traceability for selected quantities, and to provide formal and informal advisory services to less advanced national metrology institutions under the umbrella of ECOMET. Overall, the project strategy was based on the hypothesis that if the capacities of less advanced national metrology institutions are brought up to a level at which they are able to identify and articulate their needs, and if the capacities of more advanced national metrology institutions are strengthened to a level at which they can provide services and advice to less advanced metrology institutions, and if both more and less advanced national metrology institutions are brought together under a strengthened ECOMET umbrella for technical exchanges, then the division of labour and cooperation in the metrology system at ECOWAS level will be improved (module objective, outcome). By enhancing regional cooperation, the project aims to offer less advanced national metrology institutions cost-effective access to regional traceability chains.

The intervention logic draws on the following assumptions: continuing support and funding by the ECOWAS Commission to regional metrology cooperation; a favourable regional economic environment that allows small and medium-sized enterprises to pay for metrology services; continuing prioritisation of regional and continental trade by the ECOWAS Commission; political instability does not prevent the implementation of regional activities; staff continuity at metrology institutions; and member states support and fund national metrology institutions.

4. Evaluation methodology

4.1. Evaluation design

The evaluation is based on the OECD-DAC evaluation criteria relevance, coherence, effectiveness, efficiency, impact and sustainability, as they have been spelled out by BMZ for German development

cooperation[7] and adapted by PTB. The assessment of the evaluation criteria effectiveness and impact is based on a theory-based approach, which provides the foundation for contribution analysis. The starting point for the evaluation is the project's intervention logic (see section 3.2.), including the results hypotheses and underlying risks and assumptions. The intervention logic was validated with the project team during the kick-off workshop at the beginning of the data collection phase. On this basis, the evaluation team verified to what extent changes at partner level could be observed and how far they could reasonably be attributed to project activities.

The evaluation approach considered the following additional evaluation questions provided by PTB:

- How is ECOMET, its role and functioning perceived by its members?
- How can ECOMET's sustainability be further strengthened?
- How can gender aspects be better integrated into project activities?

Data collection methods included:

- Review of documents provided by PTB (module proposal, progress reports, expert reports, minutes of meetings, project results), general information on project partners and region-specific data;
- Semi-structured interviews with representatives of the ECOWAS Commission, ECOMET members, national metrology institutes, AFRIMETS, private sector representatives, technical experts, and PTB staff;
- Analysis of the project monitoring system for indicator verification;
- Validation of the preliminary evaluation results at a debriefing workshop with the project team.

Data collection was carried out remotely through virtual interviews with the relevant stakeholders (e.g. via Webex or WhatsApp). PTB recommendations on conducting remote evaluations were considered. The two evaluators jointly conducted the interviews. For data analysis, qualitative data were analysed through thematic coding based on the project intervention logic, while quantitative data (e.g. survey data) were analysed using descriptive statistics. The results of different data collection methods and sources were triangulated to verify their accuracy. Contribution analysis was used to examine alternative explanations and assess the project's contribution in the context of other influencing factors. The main limitations of the evaluation include its remote character, which did not allow for visits to the ECOWAS commission and individual national metrology institutions and respective observations. Data collection took place from 26 January to 13 February 2026.

4.2. Data sources; data quality

The evaluation is primarily based on project documents, including a short proposal to BMZ (2022), evaluation of the previous phase (2022), the module proposal to the BMZ (2023), the BMZ assignment (2023), the implementation agreement with ECOWAS (2022), the annual progress reports (2024, 2025), the Capacity WORKS tools (stakeholder analysis, capacity building strategy, process landscape, results model, project organisation chart, steering structure), the project’s operational planning and monitoring tool (2023-2026), lists of the trainings and equipment provided by the project (2023-2026), budget data (2026), the reports of the external experts deployed by the project (2023-2025), the project’s ranking exercise of national metrology institutions (2023), and the reports of the

[7] BMZ, 2020: BMZ-Orientierungslinie zum Umgang mit den OECD-DAC-Evaluierungskriterien in Evaluierungen der deutschen bilateralen Entwicklungszusammenarbeit. Berlin.

ECOMET general assembly (2023-2025). The evaluation team consulted further documents and websites on the structure and capacities of ECOMET and its member institutions, the ECOWAS Quality Policy (2013), websites of relevant institutions (AFRIMETS, SOAC, DAkkS, BIPM, national metrology institutions) and secondary literature on metrology in West Africa. The overall quality of the project documents is good, but some monitoring data for 2025 were not yet available.

In addition, the evaluation conducted about thirty individual virtual interviews with representatives of the ECOWAS Commission, ECOMET members, national metrology institutes, AFRIMETS, private sector representatives, technical experts, and PTB staff. All intended interview partners made themselves available for interviews, with very few exceptions.

5. Evaluation results

5.1 Status of the transformation process (OECD/DAC)

Marking scale for the evaluation of the OECD/DAC criteria

Evaluation	Grade	Description
very successful	1	very good result, far above expectations
successful	2	good result, entirely meets expectations
successful to a limited extent	3	satisfactory; results are below expectations, but mainly positive
rather unsuccessful	4	unsatisfactory result; below expectations; negative results prevail despite several positive results
mainly unsuccessful	5	negative results clearly prevail despite several positive partial results
entirely unsuccessful	6	the project has failed completely; situation has rather deteriorated

5.1.1 Relevance

Evaluation dimensions and evaluation questions

Dimension 1: To what extent is the intervention's design geared to country-specific, regional, and global policies and priorities of the partners and the BMZ?

The project objectives are aligned with relevant policies and priorities at continental, regional and national level. At the African continental level, the project supports the implementation of the African Continental Free Trade Area (AfCFTA by contributing to the reduction of non-tariff barriers through functioning quality infrastructures. It is aligned with the Africa Quality Policy (2021), which foresees the establishment of the Pan-African Quality Infrastructure. The project is further geared towards supporting the ECOWAS Quality Policy (ECOQUAL) (2013) and particularly the establishment of the ECOWAS Agency for Quality (ECOWAQ), of which ECOMET shall be an operational arm. By strengthening the capacities of national metrology institutions, the project also contributes to the implementation of national quality policies as they have recently been adopted in several ECOWAS member states (e.g. Benin, Nigeria, Senegal). While the development is uneven, ECOWAS member

states have been showing increased interest in the development of national quality infrastructures, including metrology, in the past years.

The project design considers the political and institutional characteristics of the ECOWAS Commission. ECOWAS is an important model of regional integration in Africa and thus provides a useful framework for the strengthening of regional cooperation in the field of metrology, an opportunity that was used by the project. The intergovernmental character of ECOWAS as a treaty-based regional organisation implies that ultimate authority rests with the heads of state of its member states represented by the Council of Ministers, whereas the ECOWAS Commission functions as the executive arm. For ECOMET, this means that any technical regulations and guidelines drafted by its technical committees have to be formally adopted by the ECOWAS member states, which can be a cumbersome process, as experienced by the project. The funding of the ECOWAS Commission relies on a community level (0.5 % import levy) and significant donor funding, which shapes programme priorities and institutional capacities. Similarly, ECOMET strongly relies on donor funding so far and has still to develop a sustainable financing mechanism to become sustainable. This is an issue partly addressed by the project.

The project is well aligned with German development cooperation priorities towards ECOWAS. Under the BMZ reform concept “BMZ 2030”, it falls under the action area “Private sector and financial system development” of the central theme “Training and sustainable growth for quality jobs” by strengthening the development of market-orientated metrology structures in West Africa. It further supports the implementation of the BMZ Aid for Trade Strategy (2017), particularly its focus on the strengthening of quality infrastructures that allow partner countries to benefit from international trade. It is also aligned with BMZ’s sector concept “Quality infrastructure” of 2004. By strengthening regional integration and contributing to consumer protection, fair trade and employment in West Africa, the project is consistent with the focus areas “Sustainable economic development” and “Peace and security” of the BMZ Africa Strategy (2023).

Overall, the project is well aligned with the policies and priorities of ECOWAS and its member states, the political and institutional dynamics of ECOWAS, and the policies and priorities of German development cooperation.

Dimension 2: To what extent is the intervention’s design geared to the needs and capacities of the target groups?

The project targets the members of ECOMET and its technical committees as well as the executive and technical staff of the national metrology institutions in the ECOWAS member states. ECOMET is composed of the directors of the national metrology institutions of the 15 (since 2025: 12) ECOWAS member states or their representatives. It has five technical committees working on awareness raising (TC1), legal metrology (TC2), mass and related quantities (TC3), thermometry (TC4) and quality management systems (TC5). In a larger sense, the project also targets decision-makers at the Department of Industry of the ECOWAS Commission and in member states and the private sector as the main client of metrology services. The indirect target group includes the more than 400 million consumers in the ECOWAS region, who are to benefit from enhanced product quality. This group includes particularly disadvantaged and vulnerable individuals, although they are not specifically targeted by the project. However, the project is expected to orientate its services particularly towards value chains that employ many women.

At ECOMET level, project support is mainly geared towards supporting and strengthening the ongoing activities of this regional network, including the introduction of a new reporting template, the funding of the annual ECOMET general assemblies and the participation of some ECOMET representatives at the annual AFRIMETS general assembly. The project also provides financial support to the

implementation of the annual work plans of the technical committees, including the harmonisation of technical regulations (TC2) and training on the ISO 17043 standard on the implementation of conformity assessments for the more advanced member states (TC5), with further English language and project management training planned for 2026. It is unclear how far the selection of these measures was based on a systematic assessment of the organisational development needs of ECOMET, while it may respond to specific requests. In order to avoid long-term dependency of ECOMET on external technical and financial support, more attention may be paid to establishing sustainable structures.

The project offers different forms of support to the more and the less advanced national metrology institutions within the ECOMET network. It is geared towards establishing a basic level of operation of the less advanced national metrology institutions, while the more advanced institutions shall be supported in offering new metrology services to specific value chains. In a time-consuming identification and needs assessment process, the project identified six less advanced metrology institutions (Cabo Verde, Guinea, Guinea Bissau, Liberia, Sierra Leone, The Gambia) and established their priority needs in terms of small-scale equipment, which was subsequently procured and delivered. A training course on controlling pre-packaged products was implemented for these institutions, in accordance with a frequently expressed need. In addition, the project provided basic equipment to the less advanced national metrology institutions, in combination with remote support provided by project experts and a practical training session on unpacking, calibrating and using the equipment delivered at the training course of pre-packaged goods. The provision of equipment and remote support was welcomed by all national metrology institutes, but it was not sufficient to make them fully operational. As some less advanced institutes lack qualified staff, they were not able to install and use the equipment despite the remote support they received. Some of the less advanced institutes had even received substantial equipment from other donors such as the EU or World Bank, but lack the capacities to house, install and use them, with the subsequent risk that these substantial investments will be lost. The less advanced metrology institutions would have benefitted from more intensive training on equipment management or the in-person advisory services of a technical expert such as they were offered to the more advanced metrology institutes (see next paragraph).

The project further aims to support three more advanced metrology institutions (Benin, Nigeria, Togo) in establishing new metrology services relevant for value chains employing predominantly women. The main support provided under this activity line consists in the procurement of relevant equipment for Benin (humidity) and the deployment of consultants to Nigeria and Togo to support the installation and utilisation of existing equipment already provided by other international partners to the national metrology institutions. The latter action is considered very useful by partner institutions, as it allows the valuation of existing investments. The contribution of these activities to the promotion of women-dominated value chains is not entirely clear, however, beyond the abstract general contribution of metrology services to complying with international quality standards.

The project targets women in metrology by committing to achieve the highest possible number of female participants in training courses and to promote networking among female practitioners (PTB, Module Proposal, 2022, p. 10; 16). However, no specific activities are implemented to encourage female metrologists to participate in training sessions and to facilitate their participation, e.g. by offering childcare at training venues or by paying travel allowances for accompanying childminders. Most technical experts deployed to the partner institutions are male, with one notable exception. The project also intends to consider the needs of women-led businesses when identifying value chains to be supported and when developing new metrology services (ibid, p. 7; 11). For this, it aims to consult with women's business associations (ibid, p. 12). In reality, the project team struggles to identify gender-specific value chains. No evidence is available on project consultations with women's business associations, which could guide the project team towards relevant value chains and metrology-related

needs of their members. Therefore, the project approach of strengthening metrology services for gender-sensitive value chains remains unconvincing so far.

Overall, the project adopts an appropriately differentiated approach to building the capacity of more and less advanced metrology institutions, but could develop a more systematic approach to capacity building of ECOMET and addressing women as providers and beneficiaries of metrology services.

Dimension 3: To what extent is the intervention's design appropriately, realistically and plausibly geared towards achieving the intervention's objective?

The project's design is appropriate as it seeks to support less advanced and more advanced metrology institutions in West Africa and their exchange through ECOMET in order to achieve improved cooperation and division of labour between them. The intended results at module objective (outcome) level are fairly ambitious, particularly concerning the establishment of four regional traceability chains and an increase in cross-border metrology services. A clear logical link between project activities under outputs 1 and 3 and these intended results appears to be missing so that it is unclear what project activities exactly are expected to contribute to these results. This leads to a certain discrepancy between the services (outputs), which the project shall provide, and their expected results at outcome level. Concerning the capacity building of ECOMET, the services to be provided by the project, namely the introduction of a new reporting template (indicator 2.1.) and the funding of travel costs for ECOMET members participating in the yearly AFRIMETS general assemblies (indicator 2.2.) do not seem commensurate to the stated objective of strengthening the organisation of ECOMET and its technical committees (output 2) .Module objective indicator 2, referring to the perceived quality of cooperation among ECOMET members, is difficult to measure as it is prone to bias and short-term effects, so that changes between the baseline and the measured value at the end of the project period are difficult to interpret. However, working with a mix of modest and ambitious indicators offers the project some leeway to adjust its activities to the needs expressed by its partners and thus remain relevant. This allows it, for example, to support some activities identified in the annual work plans of the ECOMET technical committees or the implementation of additional trainings and expert missions. While these activities seem to respond to expressed needs, it is sometimes difficult to see how they shall contribute to the overall project objective. Generally, the project design is wide-ranging and ambitious considering its limited budget. By aiming to increase the capacities of ten national metrology institutions in addition to building the capacity of ECOMET as an intergovernmental organisation, the project has to spread its resources thinly, which may limit its impact on individual institutions.

Dimension 4: To what extent has the intervention's design responded to changes in the environment and adapted to the needs?

The main changes in the implementation context concern the withdrawal of the three Sahelian states Burkina Faso, Mali and Niger from ECOWAS and the subsequent political and financial crisis of this regional organisation. This included the loss of the ECOWAS Director of Industry and other key figures that had played important roles in the establishment and functioning of ECOMET. The project reacts to the increasing challenges and a certain inertia of ECOMET by focusing its activities on supporting metrology institutions at national level, including the promotion of bilateral cooperation between more and less advanced metrology institutions. Major regional metrology initiatives such as interlaboratory comparisons and the development of regional regulations, which had been initiated in the first project phase (2019-2023), are not pursued. This is a pragmatic shift, but also somehow thwarts the project objective of strengthening regional cooperation through ECOMET.

As the three Sahel states are still members of UEMOA, the economic and monetary union of West African francophone countries using the Francs CFA, the project encourages the invitation of the Department of Quality Management of the UEMOA Commission as an observer at the ECOMET general assemblies as a means of ensuring the continuing integration of the three Sahel states into the regional metrology framework.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal
Relevance	The intervention's design is geared to country-specific, regional and global policies and priorities of the partners and the BMZ.	25 %	1
	The intervention's design is geared towards the needs and capacities of the target groups	25 %	2
	The intervention's design is realistically and plausibly geared towards achieving the intervention's objective	25 %	3
	The intervention's design has responded to changes in the environment and adapted to the needs.	25 %	2
Global assessment of the relevance			2,0

5.1.2 Coherence

Evaluation dimensions and evaluation questions

Dimension 1: Internal coherence: Within German development cooperation, to what extent was the intervention designed and implemented in a complementary manner, based on a division of tasks?

The project is part of an extensive project portfolio with which BMZ supports the ECOWAS Commission and its member countries in the areas of economic development, energy, health, and peace and social cohesion. In the area of economic development, the project complements larger technical cooperation projects supporting the implementation of the African Free Trade Agreement, regional trade in agricultural products, and the development of profitable value chains, sharing impact-level goals such as increased trade, economic growth and employment. At the beginning of the project period (2023), there were discussions with the project "Support to the African Continental Free Trade Area (AfCFTA)" implemented by GIZ about a possible collaboration. However, no immediate synergies could be identified as both projects were following different approaches. Indirectly, the project complements projects supporting the establishment of a regional electricity market and the prevention of pandemics by strengthening the infrastructure for the calibration of required measuring devices. With these projects, synergies at impact level are leveraged, although few ECOMET member states have metrology capacities for electricity so far.

In individual ECOMET member states, the project seeks synergies with German technical cooperation projects supporting specific value chains. This was achieved in Benin to a certain degree, where the project supports the national metrology institute on humidity measurements, which are required for the storage of agricultural products such as soja, corn and niébé. This follows on from previous support to these value chains provided by a bilateral PTB project focusing on the soja value chain and by a technical cooperation project implemented by GIZ. In Togo, project support to the metrology laboratory of the national metrology institute complements to some extent the substantial support of Germany and other donors to the establishment of the new laboratory of the Togolese Agro-Alimentary Institute. While there were exchanges between the project team and GIZ in Togo on this topic, it is unclear how far similar synergies have been achieved in other ECOMET countries.

At the level of PTB, the project works in complementarity with a range of other projects. Its support to ECOMET as a regional metrology organisation is complementary to PTB support to the continental metrology organisations AFRIMETS through the project "Upgrading of quality infrastructure in Africa II – Trade Component" (2024-2027), of which ECOMET has become a member during the first project phase. This link is established by the project financing the participation of selected ECOMET members at the yearly AFRIMETS general assemblies. The establishment of regional cooperation mechanisms within the ECOMET region supported by the project relies on the strong capacities of the Ghana Standards Authority (GSA), which has been nominated as regional reference laboratory by the ECOMET general assembly in 2024. In complementarity to this project, the PTB project "Establishment of a fit-for-future national metrology institute II" (2024-2027) strengthens the capacities of the GSA. As PTB already supports national metrology structures in Senegal under the project "Strengthening the quality infrastructure for innovative energy services II" (2024-2027), this project refrained from providing country-level services to the Senegalese metrology structures.

Dimension 2: External coherence: To what extent does the intervention's design and implementation complement the partner's own efforts and is coordinated with other donors' activities?

Next to the German government (via PTB), the European Union (via its implementing partner UNIDO), the World Bank and the African Development Bank are important international partners in the area of metrology in West Africa. Under the EU-financed "West Africa Competitiveness Programme" (WACOMP) and "West Africa Competitiveness and Quality Infrastructure Project" (WAQIP), UNIDO provided support to the ECOWAS quality infrastructure and individual member states from 2018 to 2025[8]. This support is expected to continue from 2026 onwards under the large EU-funded "Africa Trade Competitiveness and Market Access (ATCMA)" programme. PTB understands that the focus of its support to the ECOWAS quality infrastructure is on metrology, while UNIDO support focuses on regulations and certification. In its external communication[9], however, UNIDO claims ownership of the operationalisation of ECOMET and its membership of AFRIMETS, the creation of the technical committee and working groups of ECOMET, and the development of the ECOMET guide for calibration. Similar claims are made by the PTB project (or its predecessor), too. While it is likely that it was the combined effort of both organisations that led to these results, these contradictory claims suggest that the coordination between both organisations could be further improved. UNIDO further claims to have established the national metrology institute of Nigeria, achieved the re-accreditation of two calibration laboratories in the region, provided national metrology institutions in West Africa with basic calibration equipment, drafted two national metrology bills and trained 320 technicians. At the

[8] UNIDO, 2025: West Africa Competitiveness Programme. UNIDO WACOM Success Stories 2018-2025. Vienna.

[9] UNIDO, 2025: Strengthening Metrology for Sustainable Development, Market Access and Innovation. 24th Meeting of the Directors of NMIs and Member State Representatives. October 16-17, 2025, Sevres, France

national level, a certain pragmatic complementarity can be discerned between UNIDO and the project. This occurs when the project is invited by national metrology institutions in countries such as Nigeria, Cote d'Ivoire and Togo to deploy technical experts to help them install and operate technical equipment that was apparently procured by UNIDO and had so far remained unused.

Similar challenges emerge with equipment purchased by the World Bank or the African Development Bank, as occasionally mentioned by interview partners of the national metrology institutes. There seems to be a tendency among major donors to procure expensive metrology equipment for national metrology institutes that lack the appropriate infrastructure (e.g. buildings, electricity supply) and qualified staff to host, install and operate such equipment. The evaluation team was also informed of metrology equipment whose accuracy exceeds the local technical requirements and is therefore expensive to maintain, particularly as there are no regional calibration options for such advanced devices. The project attempts to mitigate such situations by providing technical expertise to help the concerned metrology institutions to install and utilise the equipment. The identification of unused equipment and respective capacity building needs occurs through the respective national metrology institutions, not through exchanges with the providers of such equipment. While the project does its best to ensure the utilisation of such equipment, it cannot compensate for the lack of a comprehensive capacity development approach to national metrology institutes by other, larger donors. As there are few international donors in this field, it would be desirable to establish regional or even global donor working groups to coordinate assistance to individual national metrology institutions, possibly under the umbrella of the existing global metrology infrastructure. – The project is aligned with ECOWAS' efforts to establish a regional quality infrastructure in West Africa, which began in 2017 with the formal creation of ECOWAS Agency for Quality (ECOWAW) but still awaiting operationalisation.

Overall, the project shows a good degree of internal coherence as it complements other German development initiatives in the area of trade and private sector promotion as well as other PTB bilateral projects in the ECOWAS region. It also shows good external coherence with the initiatives of other donors, mainly mediated through the needs expressed by the national metrology institutes. The project supports ECOWAS own – albeit limited – efforts to establish a quality infrastructure in West Africa.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal
Coherence	Internal coherence: Within German development cooperation, the intervention was designed and implemented in a complementary manner, based on the division of tasks.	50 %	2
	External coherence: The intervention's design and implementation complement the partner's own efforts and are coordinated with other donors' activities.	50 %	3
Global assessment of the coherence			2,5

5.1.3 Effectiveness

Evaluation dimensions and evaluation questions

Dimension 1: To what extent has the intervention achieved its objective (at outcome level) according to the indicators agreed upon?

Outcome indicator	Degree of fulfilment (in %)	Appraisal (A-C)*	Justification
1. *A regional traceability chain is established for 4 quantities based on ECOMET priorities.* Initial value: 0 Target value (01/2027): 4 Current value (01/2026): 0	0%	A	The Ghana Standards Authority (GSA) has been recognised as regional reference institute for the quantities mass, volume, temperature and pressure by the ECOMET general assembly (2024). While GSA is regularly providing calibrations to private economic actors in West Africa, it has not yet performed recalibrations of reference standards (establishing traceability) to other national metrology institutions in the region.
2. *The Members of ECOMET and the technical committees rate their cooperation in selected areas on a five-point scale on average half a point better than 08/2022* Initial value: 3.9 Target value (01/2027): 4.4 Current value (01/2026): 3.9	50%	C	This is a perception-based indicator that is liable to bias and short-term effects on interviewees' assessment of ECOMET. As it may be a project achievement that the assessment of cooperation among ECOMET members did not deteriorate from the good initial 3.9 index points, the indicator is assessed as 50% achieved.
3. *Cross-border metrology services provided by public providers increased by 100 compared to the situation before the Covid 19 pandemic (2019).* Initial value: 136 Target value (01/2027): 236 Current value (01/2026): 7,939	780%	B	The increase in the yearly number of cross-border metrology services is due to reporting from the Ghana Standards Authority. Accordingly, it provided 439 services in 2023 and 7,673 services 2024. This includes metrology services (calibrations, trainings) provided to public and private clients in the West and East Africa regions.

*: Appraisal: A = adequate indicator; B = slight objections; C = poor indicator, to be revised if applicable

The project is making progress towards achieving its objective of improving the division of labour and cooperation in the metrology system of the ECOWAS region. It is possible that the module objective indicators will be achieved by the end of the project period.

Establishment of regional traceability chains for four quantities: With the support of the project, the ECOMET general assembly recognized the Ghana Standards Authority (GSA) as regional reference laboratory for the quantities mass, volume, temperature and pressure. This equals a confirmation of the status quo and was accepted by GSA. GSA is accredited by DAkkS in Germany for the quantities temperature, humidity, volume, pressure and mass. With support of another PTB project, GSA is currently establishing capacities for mass calibrations at E2 level. So far, national metrology institutions in ECOMET member states have not yet formally requested GSA to perform re-calibration services of their reference standards, thus providing traceability. The reasons are diverse and range from logistical issues to political sensibilities.

Improved cooperation among ECOMET members and technical committees: Fully established in 2022 with support of both PTB and UNIDO, ECOMET convened annual general assemblies and meetings of its technical committees during the project period (2023-2026). The general assemblies, which took place alternately virtually and in person, were held back-to-back with meetings of the technical committees and the steering committee meetings of the project. They included general ECOMET business, technical presentations and information on planned activities. Under technical committee 1 (awareness raising), member states regularly organised activities to celebrate World Metrology Day and raise awareness of metrology during the project period. These activities will be financially supported by the project in 2026. Under technical committee 2 (legal metrology), ECOMET members prepared four harmonized technical regulations and ten technical guides on different measurements (e.g. water meters, electricity meters, blood pressure, pre-packaging), which have been submitted to ECOWAS member states and yet have to be adopted. Under technical committee 3 (mass and related quantities), ECOMET coordinated interlaboratory comparisons on the quantities mass, temperature, and pressure initiated in 2022 with support of the project. Based on the recommendations resulting from this exercise, a face-to-face training course on the ISO/IEC standard 17043:2023 (June 2024) and an online training course on calculating uncertainty measurements (November 2025) were conducted. It is unclear how far the training measures foreseen by the other technical committees were implemented, possibly with funding by other donors. The project conducts annual online surveys among ECOMET members to capture their assessment of the cooperation quality within ECOMET, including questions on overall satisfaction with ECOMET, access to information through ECOMET and the application of additional skills and information gained through ECOMET in their daily work in their home institutions. The surveys carried out in 2024 and 2025 resulted in average values of 3.9 each, equalling the baseline value of 2022. This may signify that ECOMET members continue to be rather satisfied with the work of the organisation.

Increase in cross-border metrology services provided by public providers within the ECOWAS region: The project collects annual data on the metrological services provided by ECOMET member institutions in the respective calendar year, including verifications, calibrations and cross-border metrology services. Between 2022 and 2024, there has been an overall increase of activities in all three areas. The number of verifications across all ECOMET member states increased from 330,776 in 2022 to 327,821 in 2023 to 623,809 in 2024. The number of calibrations decreased from 33,119 in 2022 to 25,930 in 2023 to 19,726 in 2024. Cross-border metrology services increased from 617 in 2022 to 620 in 2023 to 7,939 in 2024. In this period, most metrology services were provided by the national metrology institutions of Benin, Burkina Faso, Ghana, Guinea, Mali and Nigeria. In 2024, cross-border metrology services were provided by Ghana (7,673), Burkina Faso (156) and Benin (110). Cross-border metrology services provided by Ghana include calibrations and trainings provided to private and public sector clients in West Africa and East Africa. Overall, there has been a clear

increase in the number of cross-border metrology services provided by public providers within the ECOWAS region, even if their exact number and measurement are difficult to establish. They are mainly driven by the dynamic development of the Ghana Standards Authority (GSA), which serves clients within the ECOMET region and beyond.

It can be concluded that progress has been made towards achieving the module objective and its related indicators. The contribution of the project to these changes remains unclear, however, as will be discussed in the following section.

Dimension 2: To what extent have the intervention's activities, inputs and outputs considerably contributed to achieving the intervention's objective (at outcome level)?

The project largely delivered the activities, inputs and outputs foreseen in the project logframe (results matrix). However, there remain attribution gaps between project activities and observable results at outcome (module objective) level.

Capacity building of less advanced national metrology institutes (output 1): Heeding advice from the evaluation of the previous project period, the project focused on the capacity building of less advanced national metrology institutions to enable them to fully participate in and benefit from ECOMET activities such as interlaboratory comparisons. The project identified six less advanced national metrology institutions (Cabo Verde, The Gambia, Guinea, Guinea Bissau, Liberia, Sierra Leone) through a complex needs assessment process. The project supported these metrology institutions through the procurement of small-scale equipment, based on priority lists established by each institution, and the organisation of a face-to-face training course on the metrological control of pre-packaged products, that took place in Cabo Verde in October 2025. This was in in addition to trainings on the ISO/IEC 17043 standard (June 2024) and calculating uncertainty measurements (November 2025) offered to all ECOMET members.

By the time of the evaluation, Cabo Verde was already using the laboratory benches and air conditioning procured by the project. In Sierra Leone, The Gambia, and Guinea, the procured equipment had not yet been unpacked and installed, either because of the need for a surge protector to protect the new equipment from voltage spikes (Guinea), the expectation of help from an external consultant (The Gambia), or because laboratory staff did not feel confident to do so after equipment provided by another donor had previously been damaged due to improper handling (Sierra Leone). Where used, the equipment is reported to have made a difference to the respective institution's ability to provide metrology services. The training on pre-packaged good, implemented in Cabo Verde, responded to a frequently expressed need, as many consumers in the concerned countries do not trust the content of pre-packaged goods. Some training participants are already putting the training content into practice. Liberia, for example, is currently working on a technical regulation on pre-packaged goods, including technical manuals and inspection checklists, that is expected to be adopted by the Ministry of Commerce shortly.

The effects of these measures are strongly influenced by the activities of other donors. With its limited budget, the project complements the efforts of other donors to strengthen the capacity of less advanced metrology institutions in West Africa. Major players in this field are the European Union (via its implementing partner UNIDO), the World Bank and the African Development Bank. The Gambia, Guinea, Guinea Bissau and Sierra Leone, for example, had already benefited from laboratory equipment and training provided by UNIDO under the WACOMP project (2018-2025). Guinea is currently waiting for a significant amount of additional equipment under an industrial development project financed by the African Development Bank, while World Bank investments are expected in Sierra Leone and The Gambia. The significant budgets, which are available to equip national

metrology institutions in West Africa, are not always congruent with the existing infrastructures (e.g. laboratory buildings, electricity, internet). Laboratory staff has to juggle between competing offers of equipment and can never be sure whether they will receive all the requested equipment. This situation leads to inefficiencies, as donors tend to procure expensive, high-accuracy equipment that exceed local needs and causes high maintenance and re-calibration costs and as information deficits lead to duplications in the procurement of equipment. Against this background, the project seeks to position itself as an actor that leverages the more substantial budgets of other donors by providing targeted technical assistance and equipment that allows partner institutions to make full use of the expensive equipment provided by others. By focusing on procuring equipment for less advanced metrology institutions and with a limited budget for technical capacity development, it has succeeded in this to some degree only.

There also seem to be inefficiencies in the area of training, as different donors tend to offer introductory trainings on similar topics, often using the same technical experts. Some laboratory staff are said to have gone through multiple trainings on similar topics, mainly with the objective of obtaining training certificates, but seem to be reluctant to share their knowledge among their teams. In the interviews, some staff of both more and less advanced national metrology institutions were not able to articulate in what project-provided trainings they had taken part, while assuring that they had already attended “many” trainings, whose topics they did not clearly remember, although they had been “very useful”. Staff rotation is a further challenge, as laboratory staff often does not have an adequate technical background and uses the training certificates to obtain better-paying jobs in the private sector. This leads to a constant demand for foundational training courses, while the needs of the more advanced institutions for more specialised trainings are rarely fulfilled. By tailoring its training offer to the respective needs of the more and less advanced metrology institutions, the project responds to this situation to some extent. However, there may be room for implementing a more thorough training needs assessment among ECOMET members that would provide ECOMET and the project with a more nuanced understanding of actual training needs. This would allow the development of a more systematic and long-term orientated training programme that ECOMET can submit to other donors for co-funding.

The effectiveness of project activities is further influenced by the low capacities of the less advanced national metrology institutions. Many metrology institutions lack staff with adequate technical or science background let alone specific training in metrology. There are concerns that some of them are not sufficiently qualified to identify the specific equipment needs of their laboratories. Difficult climatic conditions, shoddy infrastructures and unreliable electricity supply, together with limited maintenance and repair skills, reduce the usability and lifespan of the procured equipment. Many national metrology institutions struggle with the costs of the expensive re-calibration of their measurement units, which is a precondition for their providing calibration services. The project addresses this issue by aiming to strengthen regional traceability chains, but it appears that the less advanced national metrology institutions have difficulties with accessing them or lack usable reference equipment and standards for receiving traceability.

Strengthening the institutional capacities of ECOMET and its technical committees (output 2): As foreseen, the project supported the consolidation of the institutional structures of ECOMET by seconding a staff member to the ECOWAS Commission, who acts both as ECOWAS metrology officer and the permanent general secretary of ECOMET. In this function, he advises the ECOWAS Director of Industry on metrology-related issues, convenes the ECOMET general assembly, supports the work of the technical committees, coordinates ECOMET initiatives such as the inter-laboratory comparisons and trainings, and implements the project monitoring. In addition, he facilitates communication between PTB, ECOMET and the ECOWAS Commission on project-related issues. The project further provides technical and financial support to the implementation of the ECOMET general assemblies

and technical committee meetings, and the participation of some ECOMET representatives in the annual general assemblies of AFRIMETS. The project also provided technical and financial support to the inter-laboratory comparisons initiated during the previous phase, the development of harmonized technical regulations by the technical committee 2, and the above-mentioned training courses. It introduced new templates for the annual reports of the technical committees and is planning additional trainings on project management and monitoring for ECOMET members.

The services of the seconded staff member play an important role in sustaining ECOMET. The general assemblies, technical committee meetings and joint activities are important instances, at which ECOMET comes to life as an organisation. By providing technical and financial support to activities such as trainings and inter-laboratory comparisons, the project maintains the relevance of ECOMET for its members and thus secures their ongoing engagement. There are some indicators that member states benefit from the exchanges and visibility offered by ECOMET. Particularly for the less advanced metrology institutions, ECOMET provides a network of technical experts, into which they can tap in the case of need. Most technical committees seem to have established WhatsApp groups, which members use to obtain advice. National metrology institutions from Liberia and Sierra Leone, for example, seem to make active use of this opportunity. Liberia appears to have used these contacts to establish a more formal cooperation with the Ghana Standards Authority, endorsed at ministerial level. The participation of the ECOMET leadership in the annual general assemblies of AFRIMETS offers visibility to ECOMET and allows them to participate in technical exchanges.

The further consolidation of the institutional structures of ECOMET, originally envisaged by the project, was hampered by the political instability in the ECOWAS region during the project period. This involved the political changes in Burkina Faso, Mali and Niger, their withdrawal from ECOWAS, as well as successful and attempted military coups in other countries. The ensuring instability and financial crisis of the ECOWAS structures prevented more ambitious attempts to consolidate ECOMET structures. Project efforts to support ECOWAS in preparing and introducing harmonized technical regulations in the area of metrology have not proceeded as expected, as they seem to be caught within the ECOWAS bureaucracy. This is unfortunate as harmonized technical regulations would be a key role of ECOMET as part of the ECOWAS quality infrastructure.

Improving the service orientation and visibility of metrology institutions towards the private sector (output 3): Under this output, the project is expected to support four metrology institutions in introducing one new metrology service each in order to support specific value chains with relevance for the employment of women. Among the more advanced national metrology institutions, Benin, Côte d'Ivoire, Nigeria and Togo were selected for this task. The project adapts a pragmatic needs-based approach towards each country. Support to Togo is based on a needs assessment implemented by a national consultant that offers a useful diagnostic of the metrology situation in the country and identifies needs related to the quantity pressure, which is relevant for agri-alimentary value chains. Support to Benin is guided by the results of a Calidena process implemented by a previous bilateral project with Benin implemented by PTB. The project procured metrological equipment on humidity for the national metrology institute of Benin and deployed technical experts to assist the national metrology institutions in Cote d'Ivoire, Nigeria and Togo in the installation of already existing equipment procured by other donors and train laboratory staff in its utilisation. The technical advice and equipment provided by the project are well received and have led to immediate improvements in the performance of the national metrology institutions, particularly the utilisation of hitherto unused equipment for service provision. Together with the other ECOMET members, Benin, Côte d'Ivoire, Nigeria and Togo further benefitted from the trainings on ISO 17043 and on calculating measurement uncertainty and from the online English classes (November 2025 – March 2026) implemented by the project. While these activities improved the overall service delivery of the partner institutions, they

were less geared towards improving their cooperation with specific value chain actors, including women, as was originally foreseen in the project strategy.

In 2023-2024, the project completed the interlaboratory comparisons on mass, volume, pressure and temperature among ECOMET members initiated under the previous phase of this project, including the drafting of the final reports. The interlaboratory comparisons are considered very useful by all participants for demonstrating metrological equivalence and laying the foundation for the accreditation of metrology laboratories.

In order to increase the visibility of metrology in the ECOMET member states, the project plans to implement sensibilisation activities in eight countries related to the celebration of World Metrology Day 2026.

While the deployment of technical experts, procurement of equipment and technical trainings are welcomed by the national metrology institutes and are said to have led to marked improvement in their performance, their impact is limited by a range of external factors. These include the high staff rotation in the metrology institutes, their insufficient number and frequent lack of an adequate technical background, quality management challenges, complex hierarchies and cumbersome bureaucracies, and the sometimes questionable traceability to the international system of units (SI). Demand for metrology services is often limited by the private sector's lack of understanding of international quality standards (e.g. ISO 17025, ISO 9001) and of the importance of metrology services for accessing international markets. In this situation, expert deployments of one week may not be sufficient to ensure the functionality of national metrology institutions for certain quantities. For this reason, PTB seeks to achieve some overlap between bilateral and regional projects, for example regarding support to the Ghana Standards Authority.

The project does not directly target vulnerable individuals and individuals facing multiple forms of discrimination. It is expected that these groups will indirectly benefit from enhanced product safety and economic growth made possible through enhanced metrology services. The project does not implement activities that specifically target women.

Dimension 3: To what extent has the quality of the intervention's implementation considerably contributed to achieving the intervention's objective (at outcome level)?

CW – Strategy factor

The project team prepared a results model based on the original module proposal that was to serve as its overall strategy. Partners such as the ECOMET chair were not involved in the strategy development process, but interviews showed that they have a good understanding of the project's strategic approach. The project's overall strategy with its triad of offering differentiated support to more and less advanced national metrology institutions and assistance at regional level resonates well with the needs expressed by interview partners during the evaluation. The project did not develop a formal capacity development strategy but pragmatically chose to provide ad hoc support to individual national institutions based on their expressed needs. These mostly concerned support with the installation and utilisation of expensive equipment provided by other donors, at the expense of other important capacity development topics such as, for example, the reform of inefficient management systems. The lack of a systematic capacity development approach is most acutely felt at the level of ECOMET. While the project ensures the survival of ECOMET as an organisation by financing essential activities such as general assemblies, a systematic approach towards ensuring that ECOMET is able to fulfil its mandate and becomes sustainable is missing.

CW – Cooperation factor.

Based on a comprehensive actor mapping, the project team established working relationships with major stakeholders such as the ECOWAS Commissioner for Economic Affairs and Agriculture, the ECOWAS Directorate of Industry and the Private Sector, the chair and vice-chair of ECOMET, the chairs of the ECOMET technical committees and the national metrology institutions in the 12 members states of ECOMET. It also established consultative meetings with UNIDO as the other important supporter of ECOMET and GIZ for its support to various laboratories in ECOWAS member states. The project's regional coordinator plays an important role in facilitating these relationships. The project has been able to establish smooth working relationships with its partners. Stakeholders seem to know their role in the project and communication channels seem to be well-established, facilitating overall project implementation.

CW - Steering structure factor

The project has a well-established steering structure, which is assured by the ECOWAS Commission at the political level. The Steering Committee guides and oversees the project at strategic level and is composed of the Commissioner for Economic Affairs and Agriculture, the Directorate of Industry and the Private Sector of the ECOWAS Commission, the chairs of ECOMET, and representatives of AFRIMETS, UNIDO, and the private sector organisations *Fédération des Chambres de Commerce et d'Industrie d'Afrique de l'Ouest* (FEWACCI) and *Union des Prestataires, des Industriels et des Commerçants du Sénégal* (FOPAO). The Steering Committee meetings are held annually back-to-back to the general assemblies of ECOMET. Steering Committee meetings usually cover a report on project activities and the presentation and discussion of the work plan for the coming year. At operational level, the project is steered by the PTB project team, which is responsible for the implementation of the project's annual plan of operations and its results-based monitoring system. While the steering structures seem to operate smoothly, it appears that they were not able to provide sufficient political backing to the project on sensitive issues such as the harmonization of technical regulations, which have remained uncompleted so far.

CW – Processes factor

The project counts with well-established processes to steer and manage its operations. At ECOMET level, the key processes are the annual ECOMET general assemblies, the annual AFRIMETS general assemblies and the meetings of the ECOMET technical committees. The project team meets weekly to discuss day-to-day business and organise biannual monitoring and lessons learned meetings to reflect on project progress and lessons learned. The procurement of experts and equipment followed established PTB regulations and was assured in an efficient manner. However, needs assessment and decision-making processes that prepared the implementation of activities under outputs 1 and 3 proved time-consuming and reduced the remaining implementation time.

CW – Learning and Innovation Factor

The project aims to promote technical and institutional innovations within its partner system such as the implementation of interlaboratory comparisons, the development of harmonized technical regulations, the establishment of regional traceability chains and increased cross-border cooperation between national metrology institutions. Despite the high ownership of this agenda among partner organisations, systemic change has been slow to occur, although the overall understanding of the importance of metrology seems to be evolving in the region. The project team organised biannual internal meetings to discuss learns and promote internal learning.

Dimension 4: To what extent has the intervention leveraged potentials of unintended positive results and reacted to risks and/or the occurrence of (unintended) negative results

The project monitors external risks and defines mitigating measures on an annual basis. This does not include unintended results, however. A possible unintended positive project result consists in its contribution to the installation and utilisation of costly equipment provided by other donors, helping to valorise these investments. Although this is a positive side-effect of the project, it is the result of a deficient international cooperation system in the area of metrology. This is characterized by a preference for large-scale investments in equipment at the expense of the more complex and time-consuming institutional and technical capacity building of national metrology institutions, driven by competition between implementing organisations and donors' search for visibility. No unintended negative effects of the project have been observed.

In summary, the project shows a good level of effectiveness by ensuring the ongoing functioning of ECOMET and supporting ten national metrology institutions in improving their services. In this way, it helped create the foundations for an improved division of labour and cooperation across the region. Project management was smooth and showed responsiveness to evolving partner needs. Project results could have been strengthened by a more explicit capacity development strategy, particularly towards ECOMET.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal
Effectiveness	The intervention has achieved its objective (at outcome level) according to the indicators agreed upon.	25 %	2
	The intervention's activities, inputs and outputs have considerably contributed to achieving the project's objective (at outcome level).	25 %	2
	The quality of the intervention's implementation has considerably contributed to achieving the intervention's objective (at outcome level).	25 %	2
	The intervention has leveraged potentials of unintended positive results and reacted to risks and/or the occurrence of (unintended) negative results.	25 %	2
Global assessment of the effectiveness			2,0

5.1.4 Efficiency

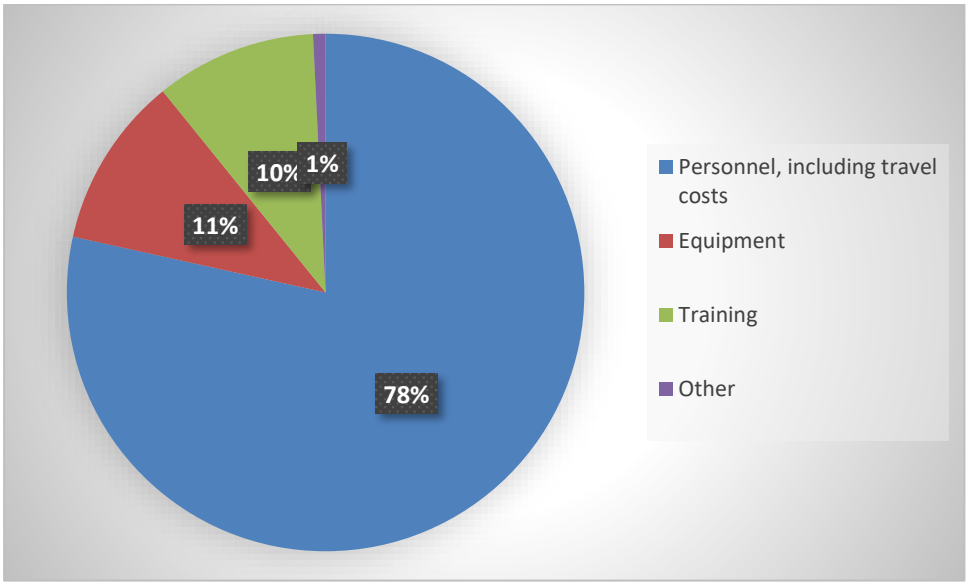
Description of inputs

The project was commissioned with a budget of EUR 1,500,000 and a duration of three years (08/2023 – 07/2026). Information on the disbursement of funds is available until 12 January 2026. At that date, 57% of the project's financial resources had been disbursed and another 12% of project funds had already been committed. The disbursement rate was 63% for output 1, 65% for output 2,

and 24% for output 3. The low disbursement rate for output 3 can be explained with some committed, but not yet disbursed funds and the plans to conduct eight workshops in 2026.

The project is implemented by a part-time coordinator (50% working time) and a part-time technical-administrative assistant (50% working time) in Germany, who are assisted by a short-term technical expert and a short-term expert on organisational development. The project team further includes a regional coordinator based at the ECOWAS Commission in Abuja, who also functions as the seconded ECOWAS metrology officer and permanent secretary of ECOMET. In addition, the project mobilised five technical experts to conduct training courses and provide on-the-lab advisory services to the partner institutions. In addition, the project procured technical equipment for seven national metrology institutions and financed the costs of ECOMET general assemblies, participation in AFRIMETS general assemblies, and training courses. Table 1 shows the project costs by type.

Table 1: Overview of project costs by type (January 2026)

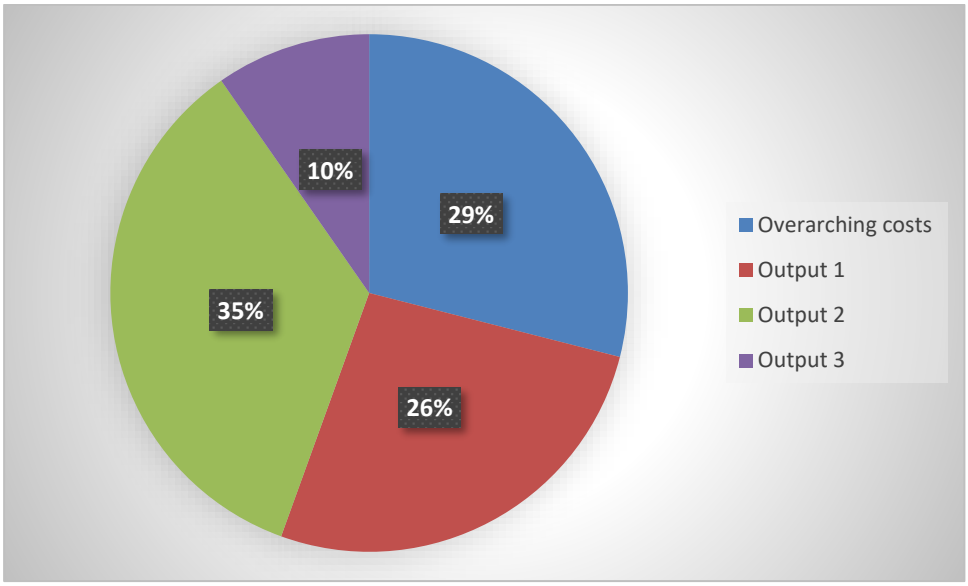


By January 2026, the project had allocated 35% of its actual expenses to permanent staff (including travel costs), while 43% of its expenses were spent on external consultants that delivered the majority of advisory and training services to beneficiaries. This also includes the secondment of a team member/consultant to ECOWAS as metrology officer and permanent secretary of ECOWAS. Given the presence of other, well-funded donors providing equipment to metrology institutions in West Africa, the project limited its own procurement of equipment to about 11% of overall expenses, focusing on specific needs and the role of equipment as an entry point towards more sustained engagement with the partner institutions. Training and meeting costs – except for the cost of trainers – were kept to a minimum by holding about half of all meetings and trainings online. In this way, the project negotiated trade-offs between the perceived lower effectiveness of online meetings and trainings and alternative beneficial uses of the savings.

Until January 2026, 29% of project expenditures were allocated to overheads, 27% to Output 1, 35% to Output 2 and 10% to Output 3 (see table 2). The low expenditure on output 3 may be related to the late start of project activities on this output, which mainly took place during the third project year. Otherwise, project expenses are fairly evenly distributed among the outputs, with about one third of

project funds directed at the regional level and two thirds at the national level. With ten national metrology institutions directly benefitting from project services (equipment or consultant advice), project resources are thinly spread across the region, which may reduce their impact on the individual institutions.

Table 2: Overview of project costs by output (January 2026)



Dimension 1: To what extent can the use of resources by the intervention be deemed reasonable with regard to the outputs achieved (production efficiency)?

The project used its operational resources in a targeted and economical manner. The largest investment is the secondment of an expert as ECOWAS metrology officer and ECOMET general secretary, while simultaneously functioning as regional project coordinator. The double role of this person seems an efficient use of resources, as its services are critical both for the project and for liaison with ECOWAS and maintaining ECOMET as an organisation. However, this is not a sustainable arrangement. Instead, the project may want to provide capacity building to a metrology officer regularly employed by ECOWAS or to a permanent secretary of ECOMET elected by its members and paid by ECOWAS via its customs levy or by membership fees. The savings may be invested in more systematic capacity building of ECOMET.

The project further invested in external experts that were deployed to several national metrology institutions for training and advisory services. Several of these experts had been heads of the national metrology institutions of their home countries and have huge experience in their fields. This expertise is not always efficiently used. Sometimes, the experts carried out basic activities such as installing equipment and hands-on training with the installed equipment, in addition to further tasks such as theoretical training and strategic advisory. These activities can be carried out more cost-effectively by the technicians of the supplier or regional technicians, which might need some capacity building for this role. The project tried to reduce costs by offering remote support for the installation of procured equipment or integrating this into ongoing training courses. In a few less advanced countries, however, some of the provided equipment remained uninstalled due to technical challenges faced by the national metrology institutions.

Regarding the project's investments in equipment for its partner institutions, it is not always clear how far it is complementary to equipment provided by other donors. Given the important investments of other donors in equipment, the project may want to consider whether it would be more cost-effective to focus on PTB's real value added, namely the provision of technical advice and training, instead of procuring equipment. The project's technical advice and training should be well targeted to be cost-efficient, which can be achieved by the implementation of training needs assessments. Training measures should also be coordinated with other donors to avoid duplication.

Project activities were implemented in a timely manner. However, the selection process of the six less advanced metrology institutions was time consuming, although relevant data such as the Global Quality Infrastructure Index (GQII) and the Quality Infrastructure for Sustainable Development (QI4SD) are available. Given the low informative value of these indices – one of them supported by PTB –, the project had to carry out its own ranking exercise for the West Africa region by drawing on various layers of surveys, interviews and reports. Similarly, the selection of the four more advanced national metrology institutions and identification of their needs took up a lot of time, which reduced the time available for providing services to them. Overall, this process allowed the project to develop an understanding of metrology laboratories and their capacities in the ECOWAS region.

Dimension 2: To what extent can the use of resources by the intervention be deemed reasonable regarding the achievement of the intervention's objective/outcome (allocation efficiency)?

The project spent about a third of its budget on maintaining ECOMET as an organisation, including costs for the seconded expert, meetings and travel costs. The efficiency of this funding could be increased, if these capacities were used to pursue specific initiatives that are consistent with ECOMET's mandate. There had been some initiatives such as interlaboratory comparisons, the harmonization of technical regulations, the establishment of a database of accredited laboratories in the region and the establishment of a shared maintenance facility, but there has been little follow up. The available capacities in terms of meetings and workforce might also have been more efficiently used to implement a Strategic Development Plan, including a sustainable funding mechanism, for ECOMET. The latter should ideally be independent of the fragile structures of ECOWAS.

While donors show a preference for procuring new equipment, less attention is paid to its operation and maintenance. The project may wish to support the establishment of a regional pool of metrology technicians, who can be called on to help with the installation and maintenance of metrology equipment by the ECOMET member institutions. Although maintenance is critical for ensuring that the metrology equipment procured by PTB and other donors has a long service life, few national metrology institutions have the capacities to do it properly. Establishing a regional maintenance pool would therefore contribute to the longevity of this equipment and thus increase the efficiency of these investments

In summary, the project used its operational resources in an economical manner, but there is room for improvement by investing resources in a more targeted and proactive manner. Efficiency gains could be achieved by streamlining needs assessment processes, building a regional expert pool for training, on-the-lab advisory services and maintenance, and by supporting ECOMET in developing a sustainable funding mechanism and carrying out activities consistent with its mandate.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal

Efficiency	The use of resources by the intervention is deemed reasonable with regard to the outputs achieved (production efficiency).	50 %	2
	The use of resources by the intervention is deemed reasonable with regard to the achievement of the objective/outcome (allocation efficiency).	50 %	2
Global assessment of the efficiency			2,0

5.1.5 Impact (Higher-level development results)

Evaluation dimensions and evaluation questions

Dimension 1: To what extent have the intended higher-level development changes taken place or are expected to take place in the near future?[10]

According to the module offer, the project is expected to contribute to economic, ecological and social changes at higher development level (impacts).

Economic impact: By strengthening the division of labour and cooperation among national metrology institutions belonging to ECOMET, the project is expected to contribute to expanding the offer of regionally recognised metrology services, which shall be part of a broader internationally recognized quality infrastructure in West Africa. This infrastructure is expected to reduce non-tariff barriers for regional and international trade, leading to an increased trade volume, which shall reduce poverty. Simultaneously, it is expected that improved metrology services which increase the competitiveness and productivity of agribusinesses and industry in West Africa, which shall lead to higher incomes and more employment as well as overall broad-based economic development (theory of change).

Over the past two decades, metrology services in West Africa have seen some steady development.[11] Around the early 2000s, most West African countries had weak or incomplete metrology systems, often limited to legal metrology (weights and measures) with little industrial or scientific capacity. Since then, many West African states have adopted national quality policies and regulatory frameworks for quality infrastructure systems. New national metrology institutions were created or existing ones strengthened by procuring calibration equipment and training of technicians. The establishment of sub-regional (ECOMET) and regional (AFRIMETS) organisations offers West African countries access to knowledge exchange, standards and interlaboratory comparisons, a precondition for accreditation. Simultaneously, there is a growing awareness within the West African private sector of the importance of a functioning quality infrastructure for the competitiveness of businesses and their access to international markets. Challenges remain, however, regarding uneven capacities across countries, limited funding and dependence on donor programmes, and shortage of trained specialists. The overall positive development of metrology in West Africa is the result of wider policy shifts towards regional and international free trade promotion, the efforts of national stakeholders, and support

[10] Potential sources: Country strategy and the programme objectives or, in addition, from relevant development policy strategies, development policy indicators and SDGs

[11] Moturi, Dennis, 2018: Supporting the development of metrology in Africa. AFRIMETS. 26th General Conference on Weights and Measures. Versailles.

programmes of international donors, including those implemented by PTB, UNIDO and others. It can be reasonably argued that this project, although small, strengthens national and regional metrology capacities in West Africa and thus contributes to the overall positive development of this sector.

Improvements in metrology services and quality infrastructure have helped a number of West African products access international markets. This particularly concerns sectors with strict technical requirements such as food, seafood, minerals, pharmaceuticals and textiles. Improvements in laboratory testing, calibration systems and hygiene inspection, for example, contribute to continued access of cocoa products from Ghana and Côte d'Ivoire and fish from Senegal to EU and US markets. This is also the case for cashew nuts from Benin, Côte d'Ivoire and Nigeria and dried mango from Burkina Faso. Accurate metering and calibration systems improved export certification and trade transparency for petroleum products from Nigeria, while improved laboratory services and calibration facilitate the export of gold and precious minerals from Ghana and pharmaceutical products from Nigeria. With functioning quality infrastructures, higher product prices could be achieved, and rejection rates be reduced. Significant growth in exports could be achieved in some value chains. Many of the countries here have sector specific laboratories, such as laboratories for the control of fish and seafood, laboratories for the control of pharmaceuticals and medical instruments, or laboratories for the agri-alimentary industry. Many of them have to obtain calibration and accreditation services outside the region, which is cost-intensive and cumbersome. They can benefit from the availability of calibration services by national metrology institutions, such as those supported by the project. Metrology is a necessary condition, but not sufficient by itself to enable access to international markets – or improve consumer protection. Effective quality control requires regulatory standards, accredited testing laboratories, functioning certification bodies, effective enforcement of regulations by the authorities, and sufficient capacities in the private sector to conform to national and international regulations. Such a comprehensive quality infrastructure is still emerging in many West African countries. The increased export of basic commodities from West Africa can create employment, increase producers' incomes and increase government revenue, but can come at the expense of increasing inequality, poor working conditions, environmental damage and commodity dependence. An export-orientated economic development model requires good regulation, investment in local infrastructures, a focus on local value addition, and labour and environmental protections in order to create pro-poor, inclusive growth. In conclusion, there are instances in which improvements in metrology and quality infrastructures have contributed – together with many other factors – to increasing international exports from West Africa, mainly in the basic commodity sector. However, there is no clear-cut link between increased international exports and pro-poor, inclusive growth.

Ecological impact: By enabling national laboratories to calibrate their measurement instruments and carry out reliable precise measurements, the project is expected to contribute to improving production processes and better compliance with international ecological standards and regulations. It is also expected to enable the identification and monitoring of climate changes, which is required for implementing climate change reduction and adaptation strategies (theory of change). Most West African countries have meteorological laboratories such as the Ghana Meteorological Agency or the *Agence Nationale de l'Aviation Civile et de la Météorologie* in Senegal responsible for rainfall and drought monitoring and climate observations, which can potentially benefit from the functioning of national metrology institutions. There are some accredited environmental testing laboratories such as the Institut Pasteur de Dakar and a number of health-focused laboratories of the West African Health Organisation (WAHO), who could benefit from calibration services. It is unclear how far they actually use the services provided by the project-supported national metrology institutions.

Social impact: By enabling precise measurements, the project is expected to contribute to the protection of consumers against unsafe and low-quality products and improve the reliability of health services. It shall also reduce corruption risks by providing trainings on legal metrology. The project is

further expected to strengthen the role of women as metrologists and as consumers of metrology services, particularly the access of women-led businesses to metrology services (theory of change). Most West African countries, even those with less advanced institutions, have national structures for legal metrology that ensure that measurements used in commerce are accurate and verified. Important areas of application include weighing scales in markets, fuel pumps, electricity and water meters, and the labelling of packaged goods. By certifying measuring instruments, conducting market inspections and prosecuting fraud causes, they shall protect consumers from fraud and ensure fair competition. Despite progress, legal metrology faces constraints such as limited inspectors and funding, large informal sectors, low public awareness and uneven legal enforcement. According to project data, about 620,000 individual verifications were carried by national metrology institutes in ECOMET member states in 2024, mostly in Ghana, Nigeria, Benin, Guinea and Mali. Less than 100 verifications each took place in Cote d'Ivoire, Guinea Bissau and Liberia.

Anecdotal evidence suggests that metrology is a male-dominated sector in West Africa, although there is a significant number of female experts and women in leading positions in national metrology institutions. Women play an important role as workforce in the agricultural sector and in small and mid-sized processing and trading businesses. Women-led businesses in West Africa usually have less access to capital, labour, finance, information, technology and networks than male-led businesses. For this reason, they may have more difficulties in adapting their business processes according to national or international quality standards. Strict enforcement of quality standards may therefore even drive women-led businesses out of the market. Female entrepreneurs are less likely to be involved in large-scale transactions and international trade. However, there are notable exceptions such as cooperatives of female dried mango producers in Burkina Faso, which deserve support in adapting their production to international standards.[12]

Dimension 2: To what extent have the results achieved by the intervention (at outcome level) contributed to the intended or implemented higher-level changes.

Project services have contributed to some extent to the higher-level development changes described in the previous section.

Economic impact: By providing equipment and training for less advanced national metrology institutions, the project enhanced their capacities for providing calibration services to public and private laboratories and individual companies involved in export-orientated value chains. This reduces the costs and time required for calibrating their measurement instruments and thus enhances their productivity and competitiveness. However, this requires the accreditation of the national metrology institution's laboratories, which has so far only been achieved for Senegal (mass), Benin (mass), Côte d'Ivoire (pressure, temperature), and Ghana (mass/balances, pressure, temperature/humidity, volume), with Nigeria currently being in the process of accreditation for mass, temperature, pressure and volume. Supporting the accreditation of the laboratories of the more advanced national metrology institutions would be an important next step to ensure that they can serve the export-orientated industry. Furthermore, the project supported an initiative to developed harmonized metrology regulations for all ECOMET members. Harmonized regulations could facilitate the mutual recognition of export certificates. Unfortunately, this initiative stalled due to lack of political support from the member states, but may still resume in the future.

Ecological impact: The project focused its support to national metrology institutions in West Africa on basic quantities such as mass, volume, temperature and pressure. Meteorological services and

[12] Parrot, L. et al, 2017: Analyse de la chaîne de Mangue au Burkina Faso. Rapport pour l'Union Européenne, DG-DEVCO. Value Chain Analysis for Development Project.

environmental laboratories can in principle indirectly benefit from more accurate measurements of some of these quantities.

Social impact: The project organised a training course on the control of pre-packaged goods for less advanced national metrology institutions. Participants confirmed the utility of this training and their intention to implement their new knowledge. The project may thus have contributed to improving legal metrology procedures on pre-packaged goods in its partner countries. – The project did not implement any specific activities to promote female metrologists or to enhance the access of women-led businesses to metrology services. Therefore, its contribution to promoting gender equality in metrology is limited.

Contribution to structural changes: The project provided financial and technical support to critical activities of ECOMET such as its general assemblies and work of its technical committees. It also helped maintain ECOMET's integration into the regional AFRIMETS by financing the participation of its chairpersons in AFRIMETS general assemblies. In this way, it helped keep a young institution alive.

Dimension 3: To what extent has the intervention contributed to positive and not to negative unintended higher-level development changes?

There is no evidence of positive or negative unintended higher-level development changes resulting from project activities. The project does not monitor unintended higher-level development changes.

In summary, quality infrastructures in West Africa, including metrology, have shown some progress in the past two decades. There are some indications that stronger quality infrastructure had positive effects on the exportation of basic commodities from West Africa – together with many other factors. There have also been advances in legal metrology and in environmental controls and monitoring. By strengthening metrology institutions across the region and their regional integration, the project contributed to a certain degree to these developments, although many challenges remain. The project did not meet expectations in terms of strengthening the role of female metrologists and enhancing the access of women-led business to metrology services.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal
Higher-level development results	The intended higher-level development results have taken place or are expected to take place.	25 %	2
	The results achieved by the intervention (at outcome level) have contributed to the intended or implemented higher-level results.	50 %	3
	The intervention has contributed to positive and not to negative unintended higher-level development changes.	25 %	2
Total assessment of the higher-level development results			2,3

5.1.6 Sustainability

Evaluation dimensions and evaluation questions

Dimension 1: To what extent do the partners, target groups and organizations involved have the capacities required to ensure that positive results are continued?

Regarding the capacities of national metrology institutions, there remain important differences between the more advanced metrology institutions such as Ghana, Senegal and Côte d'Ivoire and the less advanced metrology institutions such as Cabo Verde, Guinea, Guinea Bissau, Liberia, Sierra Leone and Togo. The Ghana Standards Authority (GSA) benefits from a clear policy framework, adequate physical infrastructures, accredited laboratories, sufficient and well-qualified staff, and a large pool of clients in West and East Africa that generates sufficient funds for maintaining its operations. Many national metrology institutions in other West African countries are still very young and yet have to consolidate their structures. They tend to struggle with limited government support, limited financial sustainability and dependency on donor funding, the unavailability of laboratory facilities and equipment, a limited human resource pool, high staff attrition, weak knowledge management, difficult access to traceability, weak regional transportation networks, a limited client base and low demand for their services. As a result, metrology services provided to the private sector and the public in these countries are sporadic and weak. This does not exclude, however, that individual national metrology institutions have well-developed specific capacities, such as Cabo Verde in relation to pre-packaged goods. Their membership in ECOMET, and – via ECOMET – in AFRIMETS allows these institutions to access networks of information and support and may have a stabilising effect on these young institutions. With the exception of Ghana, however, most other national metrology institutions in the region are likely to continue relying on external technical support, training and funding in the area of calibration (industrial metrology).

Since its establishment in 2017, ECOMET has made progress in consolidating its structures and processes. ECOMET now benefits from a formal status towards ECOWAS, recognition by AFRIMETS, a well-defined structure consisting of chairpersons and technical committees, and regular calendar of general assemblies and technical committee meetings. ECOMET has engaged in some activities reflecting its mandate such as coordinating interlaboratory comparisons and the harmonization of technical regulations. The ECOWAS Commission shows interest in the work of ECOMET and has occasionally financed some activities, such as the participation of ECOMET members in ECOWAS meetings or the validation of technical regulations. However, the ECOWAS Commission itself strongly relies on international funding, mainly from the European Union, and is experiencing a reduction in member state contributions with the withdrawal of the three Sahelian states. Reductions in EU and member state contributions are forcing ECOWAS to slash expenses on structures and activities. Therefore, it is unlikely that ECOWAS will be able to make significant financial contributions to ECOMET any time soon. This may also be the case for the ECOMET member states. For these reasons, ECOMET may continue to require external funding to maintain its core structures and activities in the short and medium term.

Dimension 2: To what extent has the intervention considerably contributed to the capacity of partners, target groups and other organizations involved to continue the positive results?

Through the delivery of equipment, training and expert advice, the project assisted national metrology institutions in becoming operational in certain fields of metrology. For example, it helped set up the pressure laboratory in Togo and the temperature laboratory in Nigeria, based on equipment already provided by other donors. By conducting a training on the control of pre-packaged goods, it assisted several less advanced national metrology institutions in enhancing their legal metrology activities in this area. Project support was not sufficient, however, to address the more fundamental challenges faced by these institutions such as weak government support, inadequate laboratory facilities, inefficient management structures, low staff qualification, high staff attrition, low financial sustainability

and limited client demand. These issues should be addressed to make these institutions sustainable, but were beyond the financial reach of the project.

By providing technical and financial support to ECOMET structures and activities, particularly its general assemblies and technical committees, the project helped ECOMET to establish itself as a young institution. It also helped ECOMET show its value added by supporting an interlaboratory comparison process (initiated during the previous project phase) and the harmonisation of technical regulations. Unfortunately, the three years of project support were not used to develop a sustainable funding mechanism for ECOMET, which still relies on external funding.

Dimension 3: To what extent are the results of the intervention durable?

Project investments in the equipment and staff capacity of national metrology institutions can be considered sustainable if these capacities are well used. Key challenges regarding the sustainable use of equipment include unsuitable laboratory facilities, unreliable electricity supply, limited knowledge about the correct handling of the devices, and limited maintenance capacities. In addition, low demand for specific metrology services may lead to sporadic use of specific devices, which may result in their deterioration. Investments in staff capacity such as trainings and participation in ECOMET meetings are challenged by the limited absorption capacity of some staff, if they do not have a technical background, and the high rate of staff attrition in many national metrology institutions. It appears that some metrology staff use the training certificates issued by the project to apply for better-paying positions in the private sector. The consequences of constant brain drain are exacerbated by weak knowledge management systems within the metrology institutions, particularly when trained staff are not encouraged to pass on their knowledge to new colleagues. There also seem to be problems with the loss of user manuals, so that laboratory staff do not know how to operate newly procured devices. Political turmoil and armed conflict pose additional risks to the sustainability of national metrology institutions. Well before the period of the current project, the national metrology institute of Cote d'Ivoire was destroyed and all equipment lost during a period of political turmoil.

Project investments in the structures and processes of ECOMET were sustainable if they contributed to the further consolidation of ECOMET and its regional integration. While ECOMET was recognized as regional metrology organisation for West Africa by AFRIMETS, no sustainable funding mechanism has yet been established for ECOMET. This implies the risk that ECOMET will cease its operations once external support comes to an end. The reality of this risk is demonstrated by the failure of ECOWAS to operationalise the other four branches of the ECOWAS Agency for Quality (ECOWAQ), although it had been formally established in 2017.

In summary, many national metrology institutions in West Africa and the ECOMET network itself are young institutions that still have to consolidate their structures and procedures. For the foreseeable future, they will continue to rely on external technical and financial support. The project supported specific capacities of the national metrology institutions and ECOMET, but does not have the mandate nor the funding to address more fundamental challenges such as limited government support, financial sustainability, weak human resources, high staff attrition and low demand for metrology services. There is no sustainable funding mechanism for ECOMET. For these reasons, the project achievements will continue for a limited amount of time only.

Summarized evaluation

Criterion	Evaluation dimension	Weighting	Appraisal

Sustainability	The partners, target groups and organizations involved have the capacities required to ensure that positive results are continued.	33.33 %	3
	The intervention has considerably contributed to the capacity of partners, target groups and other organizations involved to continue the positive results.	33.33 %	3
	The results of the intervention are durable.	33.33 %	3
Total assessment of the sustainability			3,0

5.1.7 Summary of the intervention's contributions to the 2030 Agenda for Sustainable Development

Universality, shared responsibility and accountability

- The project contributes to the achievement of the Sustainable Development Goals 8a (Aid for Trade support for developing countries) and 9 (industry, innovation and infrastructure), particularly the sub-goals 9.1. (quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure) and 9.a (enhanced financial, technological and technical support to African countries). It also contributes to goal 17.11 (increase the exports of developing countries) and 17.16 (multi-stakeholder partnerships that mobilize and share knowledge).
- The intervention design is geared towards capacity building of national metrology institutions, which are existing structures established by partner governments. It also supports ECOMET, a regional network established under the auspices of ECOWAS.
- There is an implicit division of labour between this project and other donors. The project provides technical and limited financial support to structures such as ECOMET and national metrology institutions, which have partly been established and are supported by other international organisations such as UNIDO.
- The project relies on the monitoring systems of the national metrology institutions for data collection on the number verifications, calibrations and cross-border metrology services that are provided in the ECOMET region per year.

Interplay of economic, environmental and social development

- The project has the potential to lead to positive economic, environmental and social effects, although such effects are difficult to measure. Improved metrology services can contribute to increased exports, improved environmental monitoring and strengthened consumer protection.
- Increased exports, particularly of natural resources and agricultural commodities, can contribute to economic growth, but may also have negative social and environmental side-effects. As these effects are indirect, they cannot be measured nor directly be attributed to the project.
- There is no evidence of direct contributions of the project to potential unintended positive or negative interactions between social, economic, and environmental effects.

Inclusiveness/Leave no one behind

- The project does not directly address particularly disadvantaged groups. It assumes that particularly disadvantaged groups will benefit from the employment created by increased foreign exports and stricter controls of measurement instruments.
- The expansion of export-orientated agriculture and mining, indirectly promoted by improved metrology services, may have negative effects on particularly disadvantaged and vulnerable groups. These may include dispossession, forced displacement from ancestral lands, air, land and water pollution, loss of employment and income, loss of competitiveness, increased social inequality, political marginalisation, spread of transmittable diseases by plantation, mining or factory workers, and increased sexual exploitation and gender-based violence in the vicinity of plantations, mines or factories. On the other hand, improved quality controls of foods, medicines, and other goods are likely to have positive effects on disadvantaged and vulnerable groups.
- As unintended positive and negative effects on particularly disadvantaged and vulnerable groups are indirect, they cannot be attributed to the project directly.
- Improved quality controls of services and goods, a potential indirect outcome of the project, can enhance the resilience of entire societies, with potentially positive effects on the resilience of disadvantaged and vulnerable groups.

6. Assessment of specific evaluation questions

The project team formulated the following evaluation questions:

How is ECOMET, its role and functioning perceived by its members?

The interviews revealed that ECOMET members generally have a positive perception of the role and functioning of ECOMET. They showed overall satisfaction with the structure and activities of ECOMET. Thereby, there was little reflection on the ECOMET mandate and the question of whether ECOMET was actually fulfilling its mandate. Several representatives of less advanced national metrology institutions appreciated that ECOMET provides them with access to a network of colleagues they can turn to when they need technical advice. The more advanced national metrology institutions appreciated that ECOMET provides them with access to AFRIMETS and the global metrology infrastructure, although Ghana already had this before. Some interview partners highlighted the importance of ECOMET becoming independent of external support in the near future.

How can ECOMET's sustainability be further strengthened?

The sustainability of ECOMET can be strengthened by securing stable and diversified funding, increasing its practical value for member states and the private sector, and by building strong institutional structures and governance. ECOMET funding could be strengthened by introducing a modest membership fee, creating revenue streams from services (e.g. regional trainings, calibration schemes, proficiency testing) and by tapping into the ECOWAS community levy. Funding should allow for staff retention (e.g. ECOMET secretariat) and core activities. If ECOMET is able to demonstrate its practical value to member states and the private sector, these will be more likely to buy-in and support the network. ECOMET could demonstrate its value by linking its metrology services directly to export sectors and helping industry to reduce costs by developing regional calibration networks and shared laboratories. Strong governance structures and institutional capacities can increase ECOMET’s credibility and international recognition, thus attracting additional support.

How can gender aspects be better integrated into project activities?

In a new phase, the project may consider the following measures to strengthen the role of women in metrology institutions and to ensure that women benefit from metrology services:

- **Increase women's role in metrology institutions** by organising outreach campaigns to schools encouraging girls to study STEM subjects, offering paid internships for female STEM students in national standards bodies (e.g. Ghana Standards Authority), establishing mentorship networks with senior female metrologists, organising management and leadership training for female inspectors, laboratory managers and engineers, supporting ECOMET in establishing gender targets for national metrology institutions, encouraging the establishment of a regional network for women in metrology in West Africa, and supporting the participation of women in ECOMET and AFRIMETS meetings. These measures can help build female technical expertise, improve gender balance in laboratories, and create more inclusive institutional cultures.
- **Ensure that women-owned businesses actually benefit from metrology services** by helping to orientate metrology services towards female-dominated value chains (e.g. shea butter, dried fruit, fish processing, textile dyeing), enhancing women's access to metrology services (e.g. offer mobile calibration and testing units visiting markets or rural processing hubs, cooperating with women business organisations), reforming regulations that disproportionally affect women (e.g. reform legal metrology rules unintentionally harming small traders, reviewing inspection penalties and compliance procedures, simplifying registration and verification processes, offering compliance support), and implementing consumer awareness campaigns directed at female consumers on correct weights, fuel measurement and labelling.
- **Support women-owned businesses in accessing quality certification and export markets**, in cooperation with other development actors, by providing technical support to women-owned businesses and female cooperatives to comply with EU or regional quality standards, facilitating their access to certification bodies, and establishing financial assistance schemes that help female entrepreneurs pay for expensive calibration and accreditation procedures.

7. Lessons learned

The following lessons emerge from this project:

- It should be positively emphasised that the project design clearly considers many lessons learned from previous projects. These include the regional approach, the focus on regional traceability chains and calibration networks, the promotion of a regional centre of excellence, the idea of peer-to-peer monitoring between more and less advanced national metrology institutions, and the staff secondment to the ECOMET secretariat to ensure its day-to-day functioning.
- The project experience highlights key challenges that many national metrology institutions in West Africa face and that affect the effectiveness of any external assistance programmes. These include low political understanding and awareness of metrology, a limited understanding of the specific demand for metrology services, infrastructure challenges, low budgets, insufficient qualification and high attrition rates of laboratory staff, management challenges regarding procedures and documentation, low maintenance capacities, re-calibration and traceability challenges, and a limited client base. The project showed that traditional forms of support to national metrology institutions – equipment, training and short-term external consultancies – are not sufficient to address these issues. The project experience further shows that a regional approach can help address some of these challenges but requires strong national ownership.

- The project experience suggests that issues to be usefully addressed at a regional level can include the regional harmonisation of technical procedures and guidelines, interlaboratory comparisons, a regional training facility for metrology staff, ideally with training options in the three ECOWAS languages, and a regional maintenance facility for metrology equipment. The project experience further suggests that peer-to-peer mentoring between more and less advanced national metrology institutions can be a useful and cost-efficient approach to long-term capacity building, which can be further explored. This may involve the establishment of a regional multi-lingual pool of metrology experts that can be deployed to less advanced metrology institutions.
- The project experience suggests that the establishment of regional traceability chains and cross-border metrology services requires a systematic approach that strengthens both the offer and the demand side for such services and actively brings them together.
- The project experience highlights the urgent need for improved coordination between international partners intervening in the areas of metrology and certification in West Africa. This could be achieved by establishing a regional technical working group, similar to other donor coordination mechanisms, that allows international partners to align their support, particularly in the areas of equipment and training. The project experience also shows that a focus on providing expensive equipment to less-developed metrology institutions can be wasteful, if this is not accompanied by more comprehensive capacity building on management and technical skills.
- PTB has comprehensive experience in supporting regional metrology organisations. While the challenges of each organisation are different, it may be worth to systematise this experience and draw lessons for future engagement in this field.

8. Recommendations

Recommendations to partners:

Recommendations to national governments and metrology institutions:

- Enhance the understanding by relevant decision makers of the importance of metrology to increase competitiveness of national business and enhance their access to international markets as well as for consumer protection. Strengthen exchanges with the private sector on the need for a functioning quality infrastructure. (► section 5.1.6)
- Enhance data collection on export-orientated national industries, relevant quality requirements (e.g. EU, US, China) and demand for calibration and certification services. Monitor rejection rates and export outcomes to identify specific metrology needs and show the impact of metrology services. Similarly, enhance data collection on product quality and fraud in order to guide the further development of legal metrology services. (► section 5.1.6)
- For less advanced national metrology institutions, focus initial metrology services on legal metrology and priority sectors (e.g. fuel measurement, electricity meters, food testing) with immediate economic and consumer impact and the potential to generate revenues for the national metrology institute. Then expand to industrial metrology, with a focus on services and value chains that are in high demand. For more advanced national metrology institutions, seek international accreditation. (► section 5.1.1.)
- Address low qualification levels and high staff attrition in national metrology institutes by including metrology in secondary and tertiary education, developing a cadre of metrology experts, establish systematic on-the-job and lifelong learning programmes (including e-

learning), establish progressive salary scales, and systematise staff recruitment and human resources management. (► section 5.1.6)
- Provide suitable physical infrastructures for national metrology institutions that offer sufficient protection for sensitive metrology instruments, including stable electricity supply. (► section 5.1.6)
- Increase demand for metrology services by raising awareness of their benefits. Provide technical and financial assistance to economic actors to help them comply with national and international regulations. (► section 5.1.6)

Recommendations to ECOMET and members:

- Develop and implement a Strategic Development Plan for consolidating ECOMET as an institution, including the establishment of a sustainable funding mechanism. (► section 5.1.6)
- Consider strengthening peer-to-peer exchange between more and less advanced ECOMET members by establishing a pool of regional metrology experts that can be deployed to assist ECOMET members. Deployment can be short-term to address specific issues, or they can involve a long-term partnership to accompany the capacity building of less advanced national metrology institutions. Develop a mechanism to fund the deployment of regional experts. (► section 5.1.6)
- Consider establishing regional maintenance hubs for metrological instruments, similar to those established by the West African Health Organisation for biomedical laboratories. Such centres can provide advisory services to less advanced national metrology institutions on the correct operation and conservation of metrology instruments and ensure maintenance and repairs in a cost-effective way. (► section 5.1.4)
- Consider enhancing the availability of qualified metrologists in West Africa by establishing a regional training centre that offers educational courses and training for metrologists at technical and academic level. Ideally, courses are offered in English, French and Portuguese. The lessons learned of the former UEMOA training centre for metrology in Yamoussokro (Cote d'Ivoire) should be considered when establishing the new centre. (► section 5.1.6)
- Assert leadership in donor coordination by inviting donors interested in supporting quality infrastructures and metrology in West Africa to participate in a technical working group. Engage with donors through the working group to ensure alignment and harmonisation of their assistance with ECOMET and member state priorities. (► section 5.1.2.)
- Continue engagement on formalizing traceability mechanisms and harmonising technical regulations and guides in the ECOMET region. (► section 5.1.5)
- Improve data collection on demand for and utilisation of metrology services in the ECOMET region to guide future policy development. (► section 5.1.1.)

Recommendations to the project team:

- When supporting national metrology institutions, go beyond the current focus on strengthening technical capacities through equipment and training. Consider strengthening the management capacity of national metrology institutions in the areas of leadership, organisational strategies, quality management systems, human resource management, customer relationships, and financial planning and sustainability. (► section 5.1.3.)
- Support ECOMET's transition to more institutional independence and stronger reliance on resources available in West Africa. Support the development and implementation of a Strategic Development Plan leading to ECOMET's full sustainability. (► section 5.1.6)
- Support the establishment of a regional pool of metrology experts, who can provide training and advisory services, particularly for less advanced national metrology institutions. Establish a structured training of trainers (TOT) programme for members of this pool (► section 5.1.3)

- Conduct a systematic training needs assessment of national metrology institutions in ECOMET member states to develop a strategic approach to training, considering the needs of both more and less advanced national metrology institutions (► section 5.1.3)
- Develop a deeper understanding of the gender dimension of metrology, possibly with support of regional or international gender consultants, and support ECOMET and national metrology institutions in implementing measures that strengthen the role of women within metrology institutions, help women-owned businesses to benefit from metrology services, and reduce disproportionate effects of legal metrology regulations on women, e.g. small traders. (► section 6)

Recommendations to the International Cooperation Department (Group Q.3):

- Engage in negotiations with ECOMET and interested donors on the establishment of a technical working group under ECOMET leadership to enhance alignment and harmonization of external support to ECOMET and its member institutions. (► section 5.1.2.)

Recommendations to the evaluation unit of Working Group Q.01:

- Continue the systematic steering of the evaluation process.

9. Annexes to the evaluation report

9.1. Intervention logic (from the module proposal)[13]

Name of the module	Project number	Duration
Development of metrology in the ECOWAS Region II	**2021.2052.5**	**08/2023 to 07/2026**
Country/region/global	**Impact matrix created on**	
ECOWAS	**14.09.2022**	

Objectives	Indicators	Sources and timing of data collection	Assumptions
Module objective The division of labour and co-operation in the metrology system at ECOWAS level are improved.	**Module objective indicator 1** A regional traceability chain is established for 4 quantities based on ECOMET priorities. Base value: 0 Target value: 4 (07/2026)	Documentation of ECOMET meetings	
	Module objective indicator 2 The Members of ECOMET and the technical committees rate their cooperation in selected areas on a five-point scale on average half a point better than 08/2022. Base value: 3.9 Target value: 4.4 (07/2026)	Results of an online survey asking about different dimensions of cooperation.	

[13] The project received a no-cost extension until January 2027, which extends the deadline for the project indicators to be fulfilled accordingly.

Objectives	Indicators	Sources and timing of data collection	Assumptions
	Module objective indicator 3 Cross-border metrology services provided by public providers increased by 100 compared to the situation before the Covid 19 pandemic (2019). Base value: 136 Target value: 236 (07/2026)	Documentation of metrology institutes in respective ECOWAS member states The 2019 baseline was collected excluding Nigeria as the country does not provide reliable figures.	
Output 1 The less advanced metrology institutes are strengthened in their service delivery.	**Output indicator 1.1** Six less advanced metrology institutions have developed priority lists of improvement measures according to their needs by December 2023. Base value: 0 Target value: 6 (03/2024)	Agreed priority lists	The ECOWAS Commission continues to support regional cooperation in the field of metrology. The ECOWAS Commission provides funding for regional cooperation in the field of metrology. The regional economic situation allows small and medium-sized enterprises to provide funding for metrology services. Regional and continental trade remains a political priority of the ECOWAS Commission and member states.
	Output indicator 1.2 Six less advanced metrology institutions each provide a concrete example of how they implement guidance from more advanced metrology institutions. Base value: 0 Target value: 6 (07/2026)	Documentation of metrology institutes	

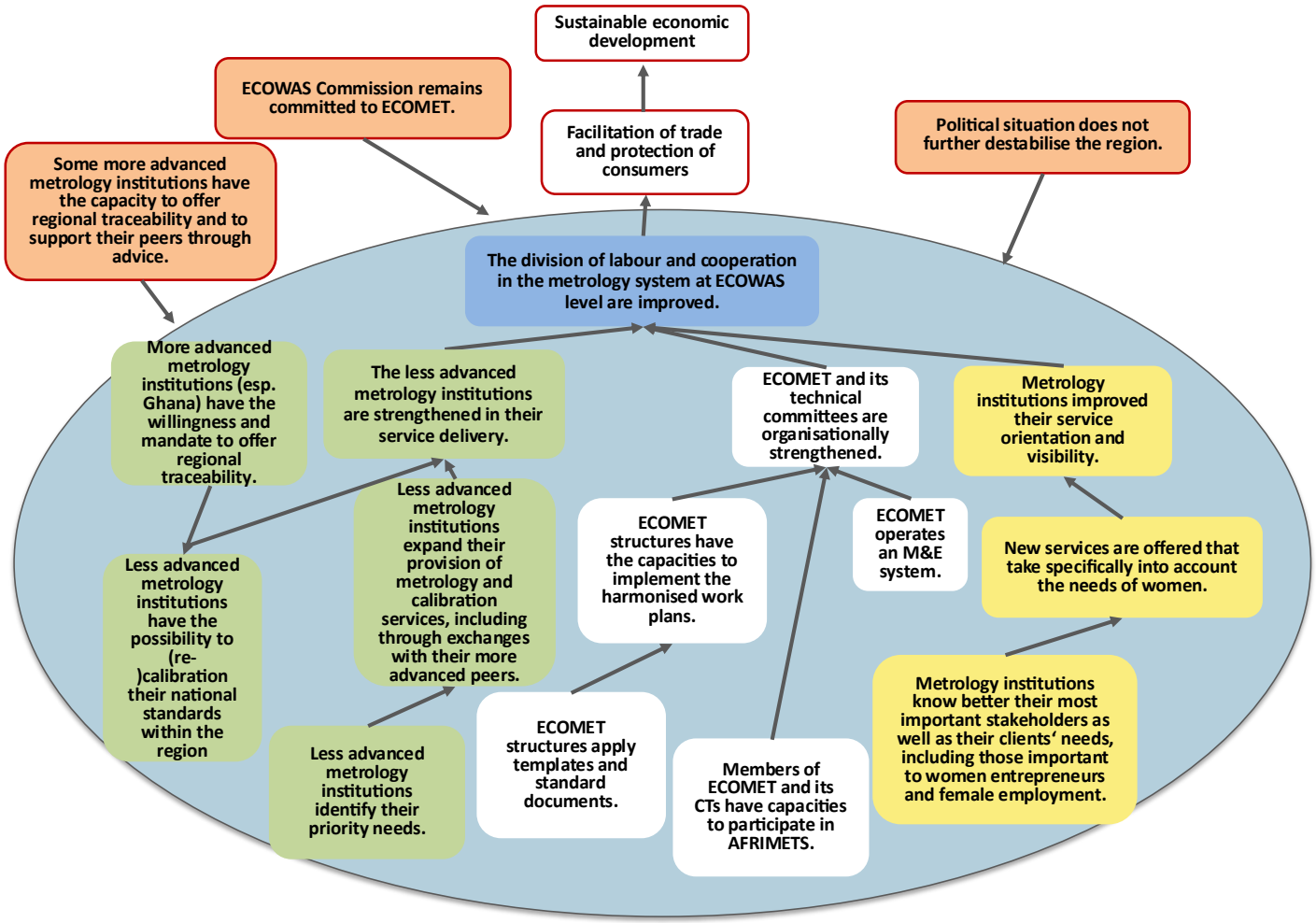
Objectives	Indicators	Sources and timing of data collection	Assumptions
Output 2 ECOMET and its technical committees are organisationally strengthened.	**Output indicator 2.1** As of 2024, the five annual reports of the technical committees to ECOMET are harmonised according to jointly developed regulations. Base value: 0 Target value: 5 (09/2025)	Evaluation of the reports of the technical committees to ECOMET	
	Output indicator 2.2 The annual attendance of ECOWAS member states at the AFRIMETS General Assembly increases by 6 countries by 2025. Base value: 4 (2019) Target value:10 (07/2025)	Reports on processes	
Output 3 Metrology institutions have improved their service orientation and visibility to the private sector.	**Output indicator 3.1** Based on a gender-sensitive value chain analysis, 4 metrology institutions each offer a new calibration or verification service for the respective sector. Base value: 0 Target value: 4 (07/2026)	Reports of the value chain analyses, service catalogues of the metrology institutes.	

Objectives	Indicators	Sources and timing of data collection	Assumptions
	Output indicator 3.2 Metrology institutes held 8 workshops for exchange with private sector organisations (e.g. chambers and associations). Base value: 0 Target value: 8 (until 07/2026)	Media reports and final reports on the workshops	

Outputs	Important activities regarding outputs	Inputs / planned Instruments	Assumptions
Output 1	- Determining the priorities for traceability chains - Participatory development of criteria for determining the development status of the individual metrology institutions - Conducting needs assessments - Prioritisation of identified needs - Conducting training programs for selected calibration and verification services - Further support/advice to the metrology institutes - Procurement of material resources on a small scale, if necessary	PTB LTE (18 expert months) National LTE (12 expert months) STE (5 expert months) Material resources of 100,000 EUR	The continuity of personnel in metrology institutes is ensured. Institutional support at the national level is maintained. Political instability in the region does not prevent the implementation of regional activities.

	- Coordinate and support *peer-to-peer learning* processes, advice "peer teachers" on teaching methods.		ECOMET members develop a common understanding of their strategy and way of working. Member states commit to the project by actively participating and providing resources, e.g. personnel, infrastructure or funding.
Output 2	- Organisational support for ECOMET and technical committees, advice on strategic development - Accompanying ECOMET in the development of templates and standard documents - Capacity development of ECOMET members and technical committees in project management and monitoring & evaluation	PTB LTE (18 expert months) National LTE (12 expert months) KZE (6 FKM) Material resources of 5,000 EUR	
Output 3	- Support to the metrology institutes are to be supported in an advisory capacity in identifying the most important stakeholders, including chambers and (women's) associations - Conducting gender-sensitive value chain analysis and identifying gaps in metrology services in selected sectors, taking into account national policies and strategies. - Consultation to metrology institutions regarding the introduction of demand-driven development strategies - Organisation of workshop events for exchange - Conducting training programs for selected calibration and verification services - Procurement of material resources on a small scale, if necessary	PTB LTE (18 expert months) National LTE (12 expert months) STE (6 expert months) Material resources of 35,000 EUR	

9.2. Results model



9.3. Schedule of data collection and list of contact persons

Date	Hour (CET)	Interview partner	Structure
26/01/2026	09:00	Kathrin WUNDERLICH	Project coordinator AFRIMETS project
	13:30-15:00	ROBARDET, VOIONMAA, LOPES, WATZL	Kick-Off Workshop with project team • Overview of context, project structure and activities • Validation of impact logic • Self-evaluation (based on Capacity WORKS)
	15:00	Petra VOIONMAA	PTB intermittent short-term expert
	16:00	Abraao LOPES	ECOWAS Metrology Officer/PTB expert
27/01/2026	09:00	Carlos Rupp BINDE	PTB expert
	10:00	Paul DATE	PTB expert
	11:00	Kassem El-CHAMI	PTB expert
28/01/2026	10:00	Gabriel AHISSOU	ECOMET Member and ECOMET Chair, Benin
	11:00	Striggner BEDU-ADDO	ECOMET Member and ECOMET Vice Chair, Ghana Standards Authority
	15:00	Issa SAWADOGO (not available)	ECOMET Member and former TC4 Chair, Burkina Faso, Agence Burkinabè de Normalisation, de la Métrologie et de la Qualité (ABNORM)
	16:00	José Antonio CARVALHO	ECOMET Member and TC2 Vice-Chair, Cabo Verde/ Instituto de Gestão da Qualidade e da Propriedade Intelectual (IGQPI)
29/01/2026	10:00	Ibrahima SOUMAHORO	ECOMET Member, Côte d'Ivoire/ Directeur de la Métrologie et des Contrôles Techniques (DMCT), Laboratoire National d'Essais de Qualité, de Métrologie et d'analyses (LANEMA)
	11:00	Amadou Tijan M. A. JALLOW	Former ECOMET Member (until 12/2024), The Gambia/ The Gambia Standards Bureau (TGSB)
	12:00	Mona Makhlouf	PTB Expert
	15:00	Antonio Cruz	PTB Expert
	16:00	Sanoussy DIAKHABY	ECOMET Member, Guinée/ Institut guinéen de Normalisation et de Métrologie (IGNM)
30/01/2026	10:00	Abdoul Kader ZAKARI OUMAROU (not available)	ECOMET Member, Agence Nigérienne de Normalisation, de Métrologie et de Certification (ANMC)
	11:00	Drissa DAOU (not available)	ECOMET Member, Agence Malienne de Métrologie (AMAM)
	12:00	Cheikh Boyo NDIAYE	ECOMET Member, Direction du commerce Intérieur-Ministère commerce et Petites et Moyennes Entreprises-SENEGAL
	13:00	Frank MARTIN	ECOMET Member, Sierra Leone/ Manager, Metrology Department, Sierra Leone Standards Bureau (SLSB)
02/02/2026	10:00	Abdel Madjid ABDELAKOUN	Vice-Chair TC 1, Benin / Agence Nationale de Normalisation et de Contrôle de la Qualité (ANM)
	11:00	Kadidia KEITA (not available)	Former Chair TC 2, Mali/ Agence Malienne de Métrologie (AMAM)
	15:00	Frank Eric Boye ANANG	Chair TC4, Ghana / Ghana Standard Authority

	16:00	Stanislas TAPE	Côte d'Ivoire/ Laboratoire National d'Essais, de Qualité, de Métrologie et d'Analyse (LANEMA) and TC5 Chair
03/02/2026	10:00	Bataba Piya-Abalo BEBEI	ECOMET Member, Togo/ Direction du conditionnement et de la métrologie légale (DCML)
	11:00	Djibrilou BA	ECOMET Member, FOPAO
	12:00	Ndjie Abdouli	The Gambia Standards Bureau (TGSB)
	15:00	Mehefolo KAMARA (not available)	Former ECOMET Member, former Expert West Africa Competitiveness and Quality Infrastructure of UNIDO
	16:00	Aminou AKADIRI	ECOMET Member, FEWACCI
04/02/2026	12:30	Penny MANGANYI	ECOMET Member and AFRIMETS Secretariat, Senior Manager: Africa Reference Institute, Head: AFRIMETS Secretariat
	14:00	Kossi MIDAYE	PPO for Quality and Stardartization, Directorate of Industry and Private Sector - ECOWAS Commission
	16:00	Mohamed BANGURA	Chair TC 1, Sierra Leone/ Sierra Leone Standards Bureau (SLSB) and TC1 Chair
05/02/2026	10:00	Samuel Ayuba USHE	ECOMET Member, SON-NMI - Standard Organization of Nigeria - Nigeria
	11:00	Steve MAMBU	ECOMET Member, Liberia/ National Standards Laboratory (NSL)
	15:00	Cesario Augusto Nunes CORREIA	ECOMET Member, Guinea Bissau/ Serviço da Metrologia/Direcção Geral da Industria, de Ministério do Comercio, Industria e Valorização de produto Local
	16:00	Ibrahima SARR	Former ECOMET Member (until 04/2024), Sénégal/ Direction du commerce Intérieur (DCI), Ministère du commerce et des Petites et Moyennes entreprises
06/02/2026	14:00	Evaluation team, PTB Team ROBARDET, VOIONMAA, LOPES, WATZL	Debriefing workshop with project team
13/02/2026	11:00	Michael ARMAH	Chair TC 3, Ghana/ Ghana Standards Authority

9.4. Interview guideline

Introduction

- Brief explanation of the evaluation purpose and the evaluator
- Explanation of confidentiality and data utilisation

Background of the interviewee

- Could you please briefly describe your area of work and your involvement in the project?

Relevance

- What do you consider the main needs of your institution / your country / of the ECOWAS region in terms of metrology?
- To what extent do you consider the project to have addressed your institution's/country's/the ECOWAS region's needs and priorities?
- How relevant has the regional perspective of the project (e.g. setting up of ECOMET, establishing of regional traceability chain, cross-border metrology services, peer learning) been to you?
- To what extent did the objectives remain relevant throughout the implementation of the project within evolving contexts? To what extent was the strategy of the project adapted during implementation in order to improve its relevance?

Coherence

- Have you been supported by other development cooperation projects at regional and national levels? Where synergies used and duplications avoided?
- How well did the project coordinate its activities with those of other development cooperation projects at regional and national levels? Where synergies used and duplications avoided?

Effectiveness

- What concrete changes can you observe in the metrology capacities of your institution / country / ECOWAS (infrastructure, equipment, procedures, skills)?
- Can you give examples where the project directly contributed to these changes, particularly regarding the quality of measurements and other services?
- How do these changes affect your everyday work or the functioning of your institution or business?
- Are the project's deliverables (trainings, studies, equipment, etc.) being used by project partners as intended?
- What do you see as the main challenges for the project?
- Do you see results related to cross-cutting issues (e.g. gender, environment)? Which?

Efficiency

- Do you consider that the results were delivered in an economic and timely way?
- How well was the project managed? How would you assess it in terms of speed, adequacy of staffing and financial resources, and quality of management?
- Do you consider that the Steering Committee was effective in its role of guiding project management? Why or why not?
- Was a monitoring system put in place that enabled effective project management?

Impact

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- Have you observed a positive trend in terms of availably of metrology services?
- Has the project had a positive impact on a) companies as users of metrology services and /or on b) consumers via strengthened consumer protection?
- How do you assess the value added of ECOMET? Is ECOMET a suitable structure for achieving the desired results? Could the same results be achieved through a different, more suitable structure?
- How would you compare the present situation with a hypothetical one without the project?

Sustainability

- What measures did the project put in place to ensure the sustainability of its achievements (e.g. maintenance, ongoing training, financing)?
- In your opinion, are the project results likely to remain in place, if one day the project ends?
- Do project partners have the capacity and are they committed to working towards continuing project results?
- What are the risks in terms of sustainability?

Recommendations

- In your opinion, what are the strong points of the project?
- In your opinion, what should be improved by the project (or in a future project)?
- What other recommendations do you have to strengthen metrology services and their utilisation in the ECOWAS region?
- Would there be anything else which you would like to share with the evaluation team?