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Quality Standards for Increased Trade in the Eastern Partnership Countries 2022–2025

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DEUTSCHE ZUSAMMENARBEIT

On behalf of

Federal Ministry
for Economic Cooperation
and Development

On behalf of the Federal Government of Germany, the Physikalisch-Technische Bundesanstalt promotes the improvement of the framework conditions for economic, social and environmentally friendly action and thus supports the development of quality infrastructure.

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https://www.ic.ptb.de/media/fileadmin/Publications/PTB_Info_EaP_Final_Publication_EN.pdf

1. Introduction to the PTB Eastern Partnership Project

Reliable Quality Infrastructure (QI) is essential for economic relations in the Eastern Partnership (EaP) region, which includes Armenia, Azerbaijan, Georgia, Moldova and Ukraine. Trade with neighbouring and EU markets depends on commonly accepted standards and technical regulations, accurate measurements and credible conformity assessment. Only QI systems that follow international standards and European best practices can ensure mutual recognition, market access and trust.

Over recent years, the five EaP partner countries have gained valuable experience in metrology, accreditation, standardisation and conformity assessment. Building on these achievements, regional knowledge exchange offers strong potential for synergies, supported by the Physikalisch-Technische Bundesanstalt (PTB) in the framework of several bilateral as well as regional projects financed by the German Ministry of Economic Cooperation and Development (BMZ).

Figure 1: PTB EaP partner conference in Moldova (2024) © PTB

Objectives of the PTB EaP Project

The PTB EaP project was aimed in its phase 11/2022–01/2026 to enable QI institutions in the partner countries to further adapt their services and processes to support value creation, productivity and innovation. A key focus was alignment with international and European best practices in response to economic needs.

The PTB EaP project strengthened technical capacities and international recognition of QI institutions to deliver QI services such as calibrations, testing, interlaboratory comparisons, training and consultancy. These services were tailored to the needs of local economies, with particular attention to priorities linked to the European Green Deal. In addition, the PTB EaP project raised awareness among policymakers, QI staff and representatives of industry about the role of QI in competitiveness and innovation. National and regional cooperation dialogue and exchange formats brought together QI institutions, political decision-makers and the private sector to exchange expertise and best practices.

The long-term expected impact is that companies in the region will better meet regulatory and market requirements and enhance their competitiveness. A coherent and increasingly internationally recognised QI ecosystem provides transparent and reliable evidence of compliance, strengthens consumer and environmental protection, and contributes to sustainable development and improved quality of life.

Cooperation Framework

Over the past years PTB worked closely with National Metrology Institutes (NMI), National Accreditation Bodies (NAB), National Standardisation Bodies (NSB) and, depending on sector priorities, with conformity assessment bodies (CAB) such as testing laboratories, enterprises, regulators and industry associations across all five EaP partner countries. A selection of the *outcomes* and learning experiences achieved jointly over the three years of the PTB EaP project is presented on the following pages.

2. EaP Quality Infrastructure

2.1. Rapid Diagnostic Toolkit (RDT): Assessing the status of QI development and monitoring progress and change

The *RDT* – a joint PTB/World Bank assessment tool – was applied at the beginning of the PTB EaP project to establish a baseline of each EaP partner country's metrology, accreditation and standardisation maturity across four pillars. A follow up assessment after project completion shows the respective progress.

Assessing the Status of QI development and monitoring progress and change

At the beginning of the PTB EaP project term, the status of maturity of the QI ecosystem was analysed in each of the EaP countries (baseline) by applying the RDT, developed conjointly by PTB and the World Bank. The RDT is a comprehensive questionnaire developed for several QI components and was applied for the three components metrology, accreditation and standardisation.

Each component is structured into four pillars: 1. Legal and institutional framework, 2. Administration and infrastructure, 3. Service delivery and technical competency and 4. External relations and recognition, which consist of more than 20 elements each. The table (see Figure 2) illustrates the overall score for each component, based on the average score of the four pillars.

Based on the results (0 is the lowest score, 4 the highest), the toolkit helped to identify recommendations to bridge the gaps in the QI ecosystem, support reforms and build the capacity of the institutions. At the end of the project term, a second assessment was undertaken in order to monitor and document the changes that were made during the PTB EaP project implementation period. Being aware that the reasons for changes are complex and the improvements are largely the result of the countries' own efforts, it indicates that the PTB project made a certain contribution to the progress made in the components metrology and accreditation (see sections 2.2 and 2.3). Please note that the PTB EaP project support for the standardisation focused mainly on the regional exchange of experience.

2.2. Metrology milestones in the EaP: Building capacity, gaining international recognition and strengthening regional cooperation

Targeted technical support combined with robust quality management practices and regional collaboration has produced tangible, sustainable results across the EaP countries. The EaP's continuous investments in capacity building have now borne fruit, delivering international accreditation, advancing EURAMET membership pathways and establishing a lasting regional metrology network.

QI Pillar		Armenia	Georgia	Moldova	Ukraine
Metrology	2023	2.2	3.2	2.8	3.1
	2025	▲ 2.5	▲ 3.3	▲ 2.9	▲ 3.2
Accreditation	2023	3.1	3.7	3.8	3.4
	2025	▲ 3.3	▲ 3.8	3.8	▲ 3.5
Standardisation	2023	2.6	3.2	2.9	2.7
	2025	2.6	3.2	2.9	–

Figure 2: RDT results 2023 & 2025

Armenia's laboratories achieve internationally recognised accreditation

During the PTB EaP project, two laboratories of the Armenian NMI National Bureau of Standards and Metrology (NBSM) – mass and temperature – received *accreditation* from the Greek accreditation body ESYD, that is a signatory of the European Accreditation (EA) Multilateral Agreement (MLA). This remarkable *outcome* reflects a systematic capacity development approach that began with targeted trainings on mass, temperature and ISO 17025 requirements, followed by hands on consulting to revise quality systems and technical procedures, and a two phase internal audit covering both the overall quality system and the individual laboratories. After an initial audit, focused training was delivered, and a second audit confirmed the improvements. The PTB EaP project also supported inter laboratory comparisons (ILCs) in temperature, building on earlier PTB initiatives and facilitating a mass ILC in cooperation with Georgia.

Georgia and Ukraine move toward EURAMET membership

The PTB EaP project aimed to help Georgia's and Ukraine's *transition* toward full EURAMET membership. In Georgia, targeted consultations and internal audits enabled laboratories to expand internationally recognised temperature services, complemented by a study visit that reinforced best practices. In *Ukraine*, where the national metrology landscape is complex, the EaP coordinated multiple meetings with EURAMET, the Ministry of Economy and the four designated Ukrainian institutes. Ukraine now holds the status of an associate EURAMET member.

A key step was preparing the four designated Ukrainian institutes for presentation of their quality systems to the respective EURAMET Technical Committee, including two full rounds of mock presentations and internal audits that enhanced consistency and readiness. Ukrainian participants were enabled to increasingly participate in the work of EURAMET Committees and Sub-Committees.

Moldova expands calibration and measurement capabilities

Moldova's measurement capability achievements are clearly measurable: The country submitted calibration and measurement capabilities (CMCs) *for small volumes,* is preparing a CMC submission for mass, and has extended its temperature scope of accreditation. These results stem from focused capacity building activities and internal audits covering mass, temperature and small volume measurements, as well as active participation in interlaboratory comparisons. Two mass comparisons were organised – one as a EURAMET comparison – further strengthening international confidence in Moldovan metrology.

Regional dimension: Common activities and expert networks

Beyond national successes, the PTB EaP project's regional impact stands out as one of its strongest legacies. Regional trainings covered small volume and large volume measurement methods. The EaP *Metrology Forum* convened three times to discuss CIPM/MRA requirements, internal audits and market surveys. An e-learning course on calibration and the use of volumetric instruments was launched on a Moodle learning platform. Need surveys conducted by metrology institutes revealed market orientation gaps for many NMIs, many of which were undertaking such surveys for the first time.

Looking ahead, the PTB EaP project has laid the groundwork for sustained collaboration within a regional metrology network. Concrete ideas for further collaboration on operational level include a pool of internal auditors in cooperation with accreditation bodies and a working group dedicated to proficiency testing and ILC, again in partnership with accreditation organizations. By enhancing the effectiveness of the internal processes and services, facilitating peer learning and the exchange of best practices across the region, the PTB EaP project delivered a substantial uplift in the overall QI ecosystem.

Figure 3: Visit to mass laboratory INM in Moldova (2025) © Private

2.3. Strengthening accreditation across the EaP: Regional collaboration and national success stories

Coordinated workshops, expert exchanges and targeted national activities have advanced harmonization, risk-based thinking and EU accession readiness for accreditation bodies throughout the EaP region.

Regional harmonisation and best practice sharing

At the regional level the EaP focused on aligning accreditation practices and spreading proven approaches. A series of workshops and interactive events were organised under the Accreditation Forum, bringing together experts from seven accreditation bodies across the EaP and EU region. Participants exchanged views on a range of challenging topics, including risk based thinking in accreditation, competence management for personnel, flexible cooperation models and accreditation for notification purposes – a critical element especially for the EaP partner countries on the EU accession path. These activities underscored the added value of collective work and demonstrated how joint exchange can foster consistent, high quality accreditation practices.

Success story in Armenia: Legal amendment and pre-evaluation success

During the PTB EaP project duration, Armenia's accreditation law was revised. The project supported aligning day-to-day accreditation activities with the new legal framework. The Rapid Diagnostic Toolkit provided a solid baseline for this alignment. Other key achievements include the completion of a successful pre evaluation for four accreditation schemes covering testing, calibration, product certification and management system certification. Targeted workshops, trainings and two internal audits prepared the National Accreditation Body of Armenia (ARMNAB) for its first-ever peer evaluation by the European Cooperation for Accreditation (EA) in 12/2025, which yielded positive results. These milestones have positioned Armenia's accreditation system for full international recognition, once the identified nonconformities have been removed and recognition is formally granted by EA.

Success story in Ukraine: Extending EA MLA signatory status under wartime conditions

The National Accreditation Body of Ukraine (NAAU) has made notable progress despite the ongoing war. Recent accomplishments are the maintenance of the signatory status for the existing seven EA Multilateral Agreements (MLA) plus an extension of the signatory status for *greenhouse gas validation and verification*. Furthermore NAAU has been supported to apply for a future MLA for the accreditation of proficiency testing (PT) providers. During the project duration, NAAU received positive outcomes of the latest EA peer evaluation. These results stem from extensive support provided by the PTB EaP project, including specialized trainings, workshops and internal audits that identified gaps and improvement opportunities, as well as continuous mentorship that helped NAAU maintain a trajectory of constant improvement. The resilience and dedication of NAAU staff have been pivotal in achieving these gains under exceptionally adverse conditions.

2.4. Standardisation in the EaP

Although standardisation was a new area within the PTB EaP project, it gained momentum over time. The project has placed a strong emphasis on regional exchange, tackling the most pressing challenges that standardisation bodies face across the region.

Recommendations from the RDT

In 2023, the Rapid Diagnostic Toolkit (RDT) for standardisation was deployed (cf. 2.1), providing a systematic way to assess the current state of national standardisation systems and to identify priority actions. The toolkit was applied again in 2025 with three partner countries to assess progress. While the improvements are largely the result of the countries' own efforts, the EaP's facilitation and the shared methodology have been acknowledged as key contributors. The RDT reports generated a series of concrete recommendations. These suggestions are intended to guide the ongoing work of national standardisation bodies and to inform the design of future initiatives within the EaP. By building on the lessons learned and the recommendations produced, EaP NSB can continue to translate, adopt and implement standards that strengthen productivity, innovation and value creation.

Exchanging solutions to common challenges
One difficulty that is common to EaP countries is the translation of international standards into language versions that can be adopted by national standards bodies. This task requires not only linguistic work but also a deep understanding of the technical content, and it has proved to be a major hurdle for all participating countries. Parallel to this, the PTB EaP project has worked to improve stakeholder engagement by encouraging standardisation councils and boards to involve industry, academia and civil society representatives early in the drafting process. By creating structured channels for dialogue, the aim is to ensure that new standards reflect real world needs and enjoy broader acceptance.

Fostering regional exchange
The *Standardisation Forums* gave a platform for partner-led dialogues. An in person regional meeting in Moldova in March 2025 lifted direct interaction and collaboration to a new level. This evolution has resulted in strengthened cooperation, with agenda setting driven by the EaP countries themselves, fostering genuine partnership, speeding up decision making and enabling the development of shared solutions. The Standardisation Forums address common priorities such as stakeholder engagement, expanding the financial base of standardisation bodies by analysing diverse European financing models, encouraging greater business participation in technical committees, and coordinating the translation of standards to ensure wider accessibility.

3. QI for Green Transformation

3.1. Calidena: A participatory path to stronger needs-oriented quality infrastructure

Several years ago in Latin America, PTB created the participatory Calidena approach to stimulate quality in value chains. Within the PTB EaP project, Calidena was selected as an approach to strengthen the user-orientation of EaP QI bodies, by piloting projects that close specific quality gaps along concrete value chains that might serve as a pilot to other products or sectors in the country.

Calidena follows three steps: a preparatory mapping of the value chain and its quality bottlenecks, a joint workshop where stakeholders co-design QI driven solutions, and a follow up phase that implements and monitors the agreed actions. Within the PTB EaP project, Calidena was applied in five countries across three sectors, namely building materials (roof and floor tiles in Azerbaijan, sandwich panels in Georgia), electrotechnical products (LED lighting in Moldova, cables in Ukraine) and pharmaceuticals in Armenia. These sectors and products were commonly selected with national decision makers, based on feasibility studies drafted by trained national Calidena experts. Calidena projects turn abstract quality concepts into actionable improvements that support the PTB EaP projects' broader green transition goals.

Success story: Strengthening the pharmaceutical value chain in Armenia
The Armenian Ministry of Economy has developed a strategy to increase local pharmaceutical production, including financial support to manufacturers. In addition to investment into new production capacities, pharmaceutical manufacturers must follow strict guidelines and Good Manufacturing Practices (GMP) along the value chain to get their products approved for placement on the local market and for export. The Calidena process responded to the need for a robust quality management system (ISO 9001) in the National Medical Regulatory Authority and *laboratory competence* (ISO 17025, proficiency testing) in the quality control laboratories of the *pharmaceutical industry*, as well as calibration services for pressure and humidity critical to drug quality.

Success story: Greening sandwich panel production in Georgia

Georgia prioritized QI required for sustainable sandwich panel production as a suitable pilot Calidena project. Stakeholders worked together on updated standards, reliable testing, precise metrology and awareness of clients for quality issues. With technical support from the European Association for Panels and Profiles, Georgian sandwich panel manufacturers enhanced their competitiveness and sustainability of production. Georgian QI institutions increased their services for ensuring sustainability, safety, and performance standards throughout the products' lifecycle. By implementing the Calidena action plan, QI thereby enabled the transition to more sustainable sandwich panel production and use, supporting the overall greening of the construction industry.

Figure 4: Calidena study visit in Georgia (2022) © PTB

3.2. PTB QI4GT fund driving Green Transformation in the EaP

The QI for Green Transformation (QI4GT) fund offers a flexible, demand driven financing tool that enables QI bodies to develop services essential for the region's ecological transition. By linking public institutions with partners from the private sector, civil society organizations and academia, the fund turns technical gaps into sustainable solutions.

A flexible mechanism for green transformation

Established as part of the PTB EaP project, the *QI4GT fund* flexibly supports short term projects that address concrete needs in the green economy. Two calls for proposals were launched in 2023 and 2024, resulting in a portfolio that spans organic certification, photovoltaic standards, greenhouse gas validation and verification, proficiency testing services and thermal performance testing.

Selected actions include:

- *Organic Product Certification* in Georgia
- *Photovoltaic Standards* in Armenia
- *Greenhouse Gases (GHG) emissions validation and verification* in Azerbaijan
- *Developing of infrastructure and establishing sustainable practices for Proficiency Testing service implementation* in Georgia
- *Laboratory for Measuring Thermal Performances of Building Materials in Georgia*
- *Transfer of European best practices to the metrological control of EVCS* in the Republic of Moldova

Success story: Thermal performance of building materials in Georgia

Georgia's civil construction sector lacks laboratories capable of testing thermal properties according to European standards, limiting manufacturers' ability to demonstrate energy efficiency compliance. In partnership with the National Agency of Standards and Metrology of Georgia (GeoSTM) and the Georgian Technical University's research and educational centre (GTU-REC), the PTB EaP project supported the development process of a national testing infrastructure. Key outcomes are procedures for measurement uncertainty assessment, calibration of existing instruments, an assessment of ISO 17025 readiness and active participation in standardisation activities. The cooperation is designed to continue beyond the project's timeframe, focusing on laboratory modernisation, accreditation support, industry engagement and sustained alignment with EU standards.

Success story: GHG emissions validation and verification in Azerbaijan

Azerbaijan's Ministry of Ecology and Natural Resources (MENR), together with other ministries and operators, is introducing mandatory monitoring, reporting and

verification for greenhouse gas (GHG) emissions in selected sectors, using the EU emissions trading system as a reference. With QI4GT Fund support, the national standardisation body (AZSTAND) adopted six internationally recognised GHG standards as Azerbaijani national standards, providing a legal basis for future legislation and a potential national emissions trading scheme. The standards also enable companies that export to the EU or other markets to voluntarily validate their emissions. Following adoption, the national accreditation body (AZAK) is preparing an accreditation scheme for GHG validation and verification providers, defining procedures, qualified assessors and sector specific expertise.

Broader impact and future outlook

The QI4GT fund has shown that targeted, short term financing can generate lasting capacity in QI institutions. By delivering recognised calibration services, accreditation schemes and harmonised standards, the fund strengthens the region's ability to meet EU green deal requirements and to compete in emerging low carbon markets. The networks established among metrology institutes, accreditation bodies and industry stakeholders lay the groundwork for future collaborative projects. Continued investment in these partnerships will be essential to scale up green services, deepen regional integration and ensure that the EaP region develops towards a proactive contributor to global climate objectives.

4. Other Interdisciplinary Project Topics

4.1. Digitalisation as an interdisciplinary theme

Throughout the PTB EaP project, digitalisation was treated not as an isolated module but as an overarching thread. This approach ensured that technical and organisational processes were examined for their potential to be supported by digital tools, rather than adding a separate *digital* layer at the end of the project.

SoSafe Awareness Training

The SoSafe training reached employees in metrology institutes, accreditation bodies and other partner organisations. Its short term goal was to raise immediate awareness of information security risks (ransomware, compromised social media accounts and similar threats) and to provide practical countermeasures. The longer term ambition was to lay the groundwork for ISO 27001/ Information Security Management System (ISMS) adoption, with the expectation that staff would receive automatic certification after completing the e learning modules. Feedback indicated that participants left the training equipped with concrete tools to protect data and recognise digital threats.

Synergy with the global PTB M4DT-IC initiative

A decisive accelerator for digitalisation was the overlap with PTB's global Metrology for Digital Transformation in International Cooperation (M4DT-IC) project, which also involved the NMIs of Georgia, Ukraine and Moldova. This joint participation allowed EaP partners to address institute specific digital challenges while benefiting from the broader strategic framework of M4DT-IC. Additionally, all EaP partners were invited to a virtual exchange event series, gaining a panoramic view of digital transformation strategies and a solid starting point for their own roadmaps.

Country specific process digitalisation examples

In Moldova, the National Institute of Metrology (INM) received support to develop a task manager system for handling official enquiries. The work followed a four phase, specification driven model. Phase 1 (problem understanding) is complete as of January 2026; Phase 2 (requirements specification) is underway, during which existing processes have been modelled and prioritised for inclusion in the initial Document Management System (DMS) scope. The next step will be to design optimised target processes that incorporate the user perspective.

The Ukrainian State Service of Metrology and Technical Supervision (SSMT) received assistance focused on market research and the definition of requirements for a DMS that would integrate smoothly with legacy systems and existing internal workflows. The preparatory work is intended to minimise disruption when the system is eventually rolled out. Also in Ukraine, NAAU was supported by PTB digitalization experts in analysing and modelling the accreditation application process, which is now ready for digitalization. In parallel, in co-operation with GIZ, the specifications of a new web interface of NAAU databases were developed and the interface was implemented in 2024.

As the current PTB EaP project draws to a close, the *digital foundations* laid in Moldova, Ukraine and the broader EaP QI community position the partner countries to launch more ambitious digitalisation initiatives in the next phase. While digitalisation has thus far been a supporting element, the upcoming stage will place it at the centre of the programme's agenda, building on the awareness, tools and preliminary implementations already achieved.

4.2. Policy briefs for QI in the EaP

QI drives productivity and sustainability, yet its technical depth can deter policymakers. Short, action focused policy briefs turn complex insights into clear recommendations that capture decision makers' attention.

Why concise communication matters
QI topics are highly technical but essential for value creation, productivity and innovation. Busy stakeholders rarely have time for long reports, and modern media favours brief, actionable texts. Policy briefs distil the core messages and point to the framework conditions and public awareness needed to nurture QI development.

Building communication capacity
A workshop gathered about fifty experts from national metrology institutes, accreditation bodies, standardisation organizations and other partners. Participants learned the purpose, structure and dissemination channels of policy briefs, enhancing the communication skills of PTB experts and partners, so future briefs can reach legislators, donors and the wider public with persuasive messages.

First briefs from the Calidena and QI4GT activities
The EaP team has drafted three briefs that translate Calidena and QI4GT outcomes into concrete recommendations:

- *Let the sunshine in* shows how a robust QI can support photovoltaic systems and accelerate renewable energy deployment.
- *Trust in carbon footprint calculations* stresses the need for credible, transparent greenhouse gas monitoring to underpin climate policies.
- *A greener pharmaceutical sector* demonstrates how quality standards can be aligned with sustainability goals in drug production and distribution.

Drafts were prepared by PTB experts, refined with input from NMIs, NABs, NSBs and other partners, and finalised through peer feedback from the five EaP countries.

Impact on policy and practice
By presenting technical QI issues in a concise, action oriented format, policy briefs can put QI on the agenda of key stakeholders. They provide clear evidence of the economic and societal benefits of strong QI systems, guide the design of supportive legislation and highlight financing opportunities. Effective communication through policy briefs has the potential to strengthen the role of QI in driving sustainable development, green transformation and public well-being across the EaP.

4.3. Customer orientation in the EaP: From Green Transformation to market needs surveys

The Calidena process, QI4GT funding and other regional and bilateral activities have brought QI institutions and their clients together across the EaP. Virtual workshops and peer exchanges have created a platform for sharing experiences, identifying needs and shaping services, especially in the area of green transformation.

Regional QI4GT collaboration to tackle emerging needs

Six virtual *QI4GT workshops* gave QI bodies a space to discuss the rising demand for environmental standards, energy efficiency measures, carbon emissions measurement and other green transformation issues that need to be enhanced by QI services. Participants highlighted common challenges such as limited resources and low awareness, while also recognizing the opportunity to become key enablers of greener economies. The workshops emphasised pillars for future success such as collaboration among institutions, innovation in QI service delivery and a clear focus on user requirements in an increasingly digital and sustainable world.

From surveys to actionable insight

One practical outcome of the regional EaP collaboration was the common endeavour to strengthen *customer orientation* through systematic customer surveys. Good practices with regular satisfaction questionnaires, already part of quality management systems, were shared and solutions to usual challenges in their implementation exchanged. Some of these challenges and solutions also apply to larger demand assessment studies that are often supported by international cooperation projects. A metrology demand survey covering all five EaP countries was prepared and implemented as one EaP project activity. Initial training sessions and peer-to-peer exchanges allowed representatives from NMIs and accreditation bodies in Armenia, Georgia, Moldova and Ukraine to share survey formats, practical experiences and methodological tips.

Success stories and next steps

Other examples of customer orientation supported by the PTB EaP project include QI institutions' participation in industry fairs and the digitalization of service delivery. The EaP project events provided a vital networking venue, ensuring that QI bodies in the EaP region are equipped to meet the evolving demands of a green, digital future.

→ See the *Results* section on our website:
https://www.eastern-partnership.ptb.de/results

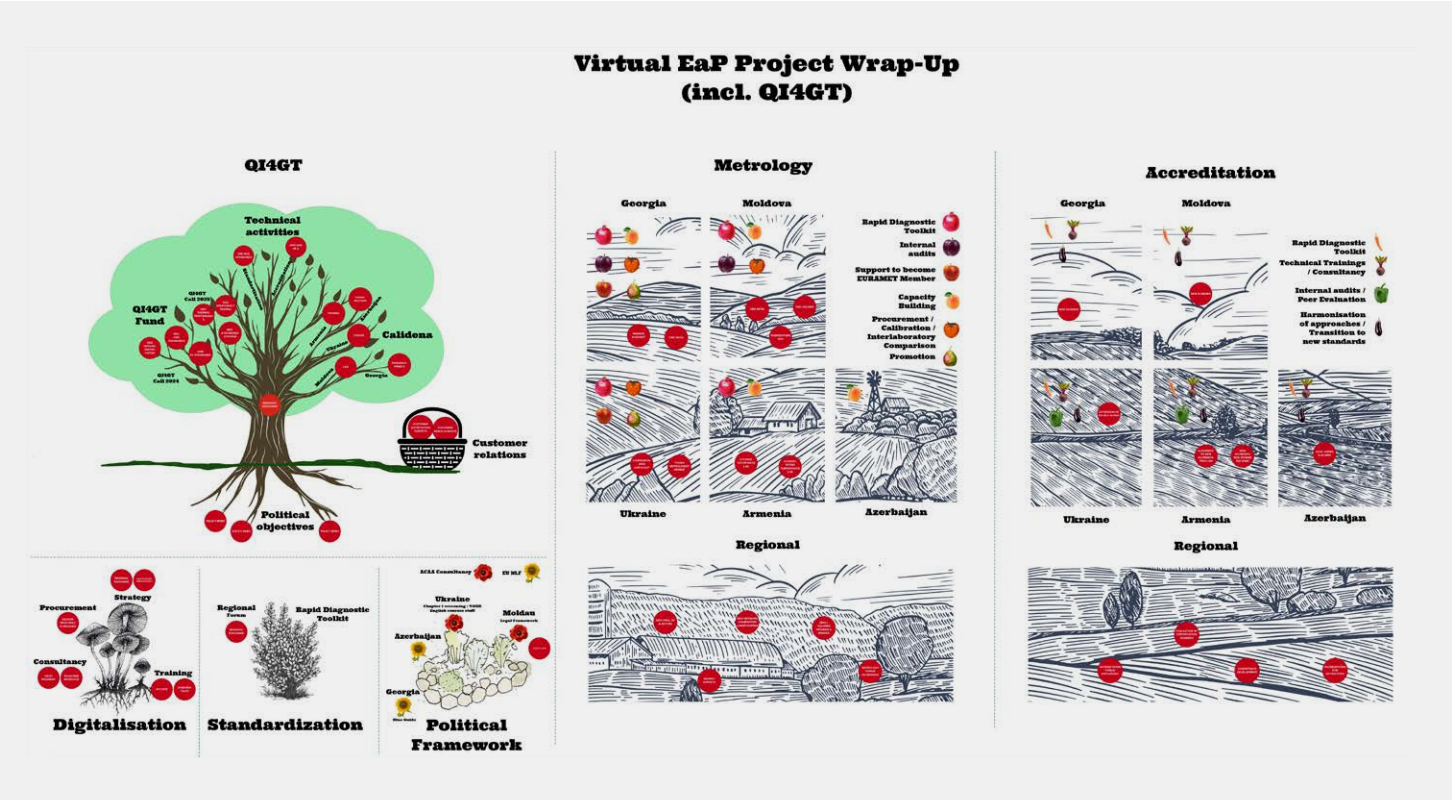

Figure 5: Screenshot of the virtual PTB EaP project wrap-up on concept board (2025) © PTB

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