



Introduction and Background

EURAMET, with a diverse membership composed of National Metrology Institutes (NMI) and Designated Institutes (DI) at all levels of development, has always encouraged cooperation and free exchange of information among its members. However, formal endorsement of capacity building, aiming to support and improve the technical capabilities of developing NMIs came in the year 2008 with the formation of the Focus Group on National Metrology Infrastructure Development (FGNMID) under the TC – Interdisciplinary Metrology. The FGNMID built upon the foundation laid by the PTB project on “Promotion of regional cooperation in South-eastern Europe in the field of quality infrastructure” and focused on organising training, comparison and workshop activities open to all EURAMET members.

Based on recommendations of the mid-term review of the European Metrology Research Programme (EMRP) in 2011, EURAMET included capacity building focused activities into planning for the second phase of the EC-funded research programme that eventually became the European Metrology Programme for Innovation and Research (EMPIR). The inclusion of new capacity building tools in EMPIR significantly broadened the means by which EURAMET supported the development of its members and marked the first time that EURAMET funded both through EU funding and directly through members’ cash contributions to EMPIR.

In late 2015, the EURAMET Board of Directors, approved the establishment of the Working Group for Capacity Building (BoD-WGCB) under its direct authority, indicating a greater level of commitment by EURAMET to capacity building efforts. Through the BoD-WGCB, EURAMET aims to “underpin the vision of a coherent, efficient, sustainable and integrated European metrology network”, as stated in the working group’s Terms of Reference.

This document aims to set out EURAMET’s strategy for capacity building which will guide all activities undertaken to develop the human, institutional and research capacity of EURAMET member NMIs and DIs in the years to come.

Stakeholders

The stakeholders of EURAMET capacity building activities are:

- **Direct Stakeholders:**
 - o EURAMET NMIs and DIs
 - o EURAMET TCs, TGs, WG and other bodies
 - o BIPM and Other RMOs
- **Indirect Stakeholders:**
 - o Industry and end users
 - o International Legal metrology organisations
 - o International Quality infrastructure organisations
 - o European policy makers and National Governments
 - o Academic institutions

Vision

An efficient, balanced and integrated European metrology infrastructure which meets national and European needs.

Mission

Develop and implement effective and efficient capacity building instruments to

- a) Support EURAMET members in meeting their own national requirements for metrology services while taking account of EURAMET's strategy for an efficient, balanced, integrated European metrology landscape.
- b) support EURAMET members in developing the capability to contribute to an internationally competitive and recognized European measurement infrastructure

Capacity Building Instruments

Currently, EURAMET deploys a number of instruments in support of capacity building:

- Joint research projects (JRPs) within EMPIR to support the development of research potential in participating NMIs/DIs according to stakeholder needs
- Training courses covering technical topics, legal metrology, CIPM MRA and QMS issues, EMPIR, communications, and NMI/DI management which are planned and implemented as an annual Human and Institutional Capacity Building Plan
- Research Mobility Grants within EMPIR, which give researchers from EURAMET NMI/DIs the opportunity to perform research related to an EMPIR JRP on secondment at a project partner NMI/DI

EURAMET shall seek to continually evaluate and improve existing capacity building instruments and may deploy other instruments as the need is seen to arise.

Objectives¹

- **Support building the human and institutional capacity of member NMI and DIs necessary to respond to the demands of indirect stakeholders, in a manner that aligns with EURAMET priorities for a balanced and integrated European metrology landscape.**

EURAMET supports and implements training initiatives that aim to develop the technical skills of its member NMI/DI staff in subject areas identified as priorities for stakeholders while taking the need for a balanced European metrology landscape into account.

The main vehicle for the delivery of this objective is the Human and Institutional Capacity Building Plan (HI-CB Plan) that is assembled at the annual BoD-WGCB meetings and subsequently approved by a relevant EURAMET body². The plan consists of a list of short-term training courses selected with input from WGCB members and Technical Committees, with an emphasis on subjects that are of concern to multiple NMIs/DIs. Training topics may be diverse, including subjects in technical areas, legal metrology, CIPM MRA, communications, NMI/DI management, reflecting the need to address all aspects of NMI and DI activities.

¹ EURAMET's CB objectives are in line with the strategic objectives identified in the EURAMET 2020 Strategy:

- Engagement of key stakeholders,
- Further develop co-operation in R&D,
- Deliver high value to members and associates,
- Supporting quality infrastructure in Europe and internationally
- Increase influence with European policy makers and National Governments

² EMPIR Committee at present.

Over the long-term, a more regular, multi-year schedule of trainings based on determined needs and in alignment with the CB strategy will be developed.

Capacity building activities may not only be interpreted as those aiming to develop the technical skills of existing staff at developing NMIs/DIs but also at supporting the development of young qualified staff for all EURAMET NMIs/DIs. Many institutes face challenges recruiting technical personnel ready to work in metrology laboratories. EURAMET will support NMIs and DIs with newly hired staff by offering technical courses to prepare them for work in the laboratory (e.g. in the form of summer schools). A cooperative approach across EURAMET to this issue will result in efficiencies in terms of not having the same trainings repeated at various institutes and will also introduce newly hired staff to their colleagues across EURAMET, perhaps setting the foundation for cooperation and interaction in other EURAMET activities and settings.

- **Implement actions for developing or reinforcing member NMI/DI research capabilities**

The incorporation of a targeted programme in A185 funded metrology research programme with the explicit aim of developing research capability gives NMIs/DIs the technical know-how to resolve challenges through research in a manner that benefits indirect stakeholders and embeds them into a Europe-wide network of collaborative research activity.

The instruments supporting this objective are specific joint research projects (JRPs) of “research potential” type and researcher mobility grants (RMG).

Over the long-term EURAMET will continue to incorporate CB activity aimed at enhancing research capacity into all EURAMET administered collaborative programmes and European Metrology Networks (EMN) when appropriate.

EURAMET will ensure that research outcomes are widely disseminated through Technical Committees and European Metrology Networks and emerging NMIs/DIs are encouraged to take advantage of research programmes and mobility grants.

- **Support EURAMET NMIs/DIs toward more effective participation in CIPM MRA processes & mechanisms**

Participation in CIPM MRA processes and mechanisms is an effective means by which EURAMET NMIs/DIs anchor themselves in a highly regarded and trusted system that requires strict adherence to relevant quality standards and provides international recognition of peer-reviewed calibration and measurement capabilities and an institutional framework to maintain international traceability of national standards to the SI. As EURAMET plays a vital role in the CIPM MRA, it also has an interest in providing support to all of its members to participate effectively in the CIPM MRA so that they may take full advantage of its provisions and contribute to its management and sustainability.

To this end, EURAMET will:

- Implement activities that aim to train member NMI/DI staff on the CIPM MRA and its various aspects (comparisons, peer-reviews, QMS implementation, CMC declarations, etc.) as the need is seen to arise.
- Identify unfulfilled comparison needs to support member NMI/DI CMC claims and cooperate with relevant TC in their realisation. Support may be supplied through training in performing and piloting comparisons. Means may also be sought to expedite the comparison process.

- Prepare and encourage member staff to take part in MRA activities, e.g.:
 - Review of CMCs
 - Pilot intercomparisons
 - Take responsibilities in TC.

- **Support integration of all EURAMET members into EURAMET structures and activities**

EURAMET has an interest in ensuring that all member NMIs/DIs participate fully in its structures and activities so that it functions like a true community of NMIs/DIs in which cooperation and information flow is achieved to the greatest extent so that the maximum impact may be derived from the metrology expertise in Europe to the benefit of all shareholders in European metrology.

To this end, EURAMET shall focus on capacity building activities that facilitate integration of all member NMI/DIs into the activities of the Technical Committees (enabling their active participation – e.g. piloting intercomparisons, leading a TC or acting as a peer reviewer), research programmes and further joint activities - enabling their active participation in calls within A185 research programmes aimed at developing research capability and grants to support researcher mobility may be listed among the activities that support this objective.

EURAMET will take account of capacity building concerns in all areas of its activity and incorporate specific actions into activities and structures that address capacity building issues where it is feasible to do so. Examples of this are the inclusion of CB into EMPIR and the designation of contacts for CB issues within many technical committees. This will ensure that capacity building will remain a priority item on EURAMET's agenda and that all EURAMET activities and structures will maintain an inclusive stance towards all member NMIs/DIs.

- **Achieve sustainability of CB activities over the long-term through securing appropriate financial and human resources**

Taking into account the interests of the funders of CB activities, it is a priority for EURAMET to ensure their most efficient and optimal use. It is thus necessary to devote resources to those activities that are seen to deliver the most impact for beneficiaries of these activities and to avoid directing resources at activities that duplicate existing efforts, benefit only very narrow sections of the European metrology community and to periodically take account of the benefits and impact of CB activities to make sure they are aligned with EURAMET priorities.

For EURAMET to maintain and further expand its capacity building efforts, it is crucial to ensure the longer-term stability of the resources (human and financial) that sustain them.

In service of this objective, EURAMET shall:

- Maintain commitment to include CB component in all funded programmes and activities, when feasible,
- Seek to cultivate and reserve resources for longer-term funding of CB,
- Achieve stability of training infrastructure by building a stable pool of trainers and hosts for training courses.
- Closely monitor impact of CB activities with the aim of continual improvement of CB tools as well communication of outcomes with stakeholders to generate further support.

- **Cooperate with other organisations on CB matters**

EURAMET shares a concern for capacity building in developing NMI/DIs with a number of international metrology organisations, chief among them the BIPM. In the interest of making efficient use of resources and building cooperative links in areas of mutual interest, EURAMET will cooperate with these organisations in capacity building activities whenever feasible to do so. An example of such cooperation may be found in the joint BIPM – EURAMET TC Leadership Course aimed at training potential TC chairs in the CIPM MRA), as well as the EURAMET - BIPM Training on review of quality management systems, both undertaken in 2017.

In order to support inter-RMO cooperation EURAMET is offering participation possibilities, upon availability, at training courses to students from other RMOs. It is likely that as other RMOs develop their own CB strategies and activities, opportunities for cooperation will grow.

Legal metrology is contained in the portfolio of many EURAMET members (e.g. initial conformity assessment as well as subsequent verifications and metrological inspection). This will be supported by CB activities which may be realised in cooperation with WELMEC.

EURAMET Strategy for Capacity Building (CB)



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Summary table with the objectives and activities for their short-and-long term realisation

CB strategic objective	Short term	Long term	Comment
Support building the human and institutional capacity of member NMI and DIs necessary to respond to the demands of indirect stakeholders, both: <ul style="list-style-type: none"> Emerging All NMIs: Basic technical skills for the new staff 	HI-CB trainings	Regular offer - long term plan of: <ul style="list-style-type: none"> technical trainings (e.g. summer schools), NMI/DI strategic management courses and communication workshops (pool of hosts – training centres and trainers)	<ul style="list-style-type: none"> Support members in developing a national metrology infrastructure and its promotion among national authorities and stakeholders Supporting members with specific knowledge for providing services Support members in aligning their strategy to EURAMET Strategy
Implement actions for developing or reinforcing member NMI/DI research capabilities	RPTs RMGs Linking RPTs to EMNs	Preparation of the RPT-like instrument for new programme	
Support EURAMET NMIs/DIs toward more effective participation in CIPM MRA processes & mechanisms	HI-CB trainings, e.g. <ul style="list-style-type: none"> for piloting intercomparisons possible future TC chairs QMS review 	Regular offer - long term plan of CIPM-MRA trainings (with BIPM); e.g. <ul style="list-style-type: none"> TC leadership, QMS review, (pool of hosts – training centres and trainers)	
Support integration of all EURAMET members into EURAMET structures and activities	HI-CB trainings, e.g. <ul style="list-style-type: none"> for piloting intercomparisons possible future TC chairs QMS review 	HI-CB trainings, e.g. <ul style="list-style-type: none"> for piloting intercomparisons possible future TC chairs QMS review 	<ul style="list-style-type: none"> e.g. share the load of piloting intercomparisons (increase the number of countries piloting ILCs) leading technical committees act as assessors in peer-reviews
Achieve sustainability of CB activities over the long-term through securing appropriate financial and human resources	Maintain current staff and financial resources allocated to CB	<ul style="list-style-type: none"> Staff and financial resources in EURAMET Stable pool of trainers Stable pool of hosts / training centre(s) 	
Cooperation with other organisations on CB matters	joint events with BIPM	<ul style="list-style-type: none"> joint events with BIPM, other RMOs (cross-RMO activities where applicable) Investigate possibilities of cooperation with WELMEC 	<ul style="list-style-type: none"> joint events with BIPM and/or other RMOs on technical and CIPM-MRA related topics Cooperation with WELMEC can be on training courses, RPT type of JRPs and RMGs for legal metrology activities