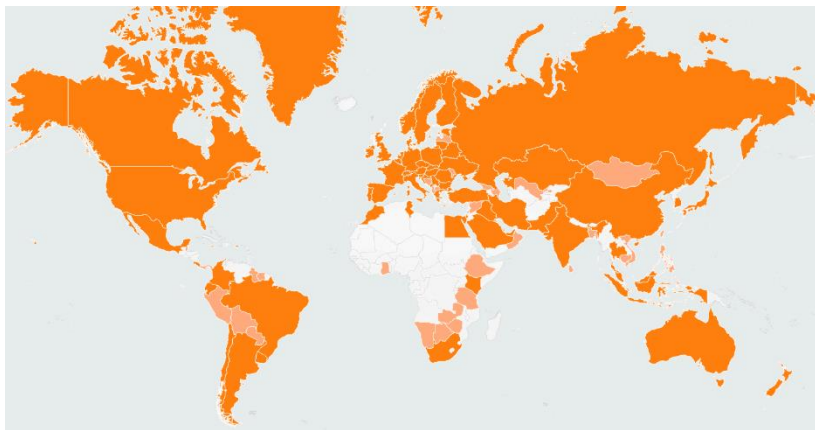


Report from the BIPM to the 17th AFRIMETS General Assembly

Rahima Guliyeva
Principal Liaison Officer, BIPM

01 August 2024

Member States and Associates (July 2024)



- 64 Member States*
- 36 Associates of the CGPM
(States and Economies)

** The official term is "States Parties to the Metre Convention"; the term "Member States" is its synonym and used for easy reference.*

The CIPM MRA has been signed by:

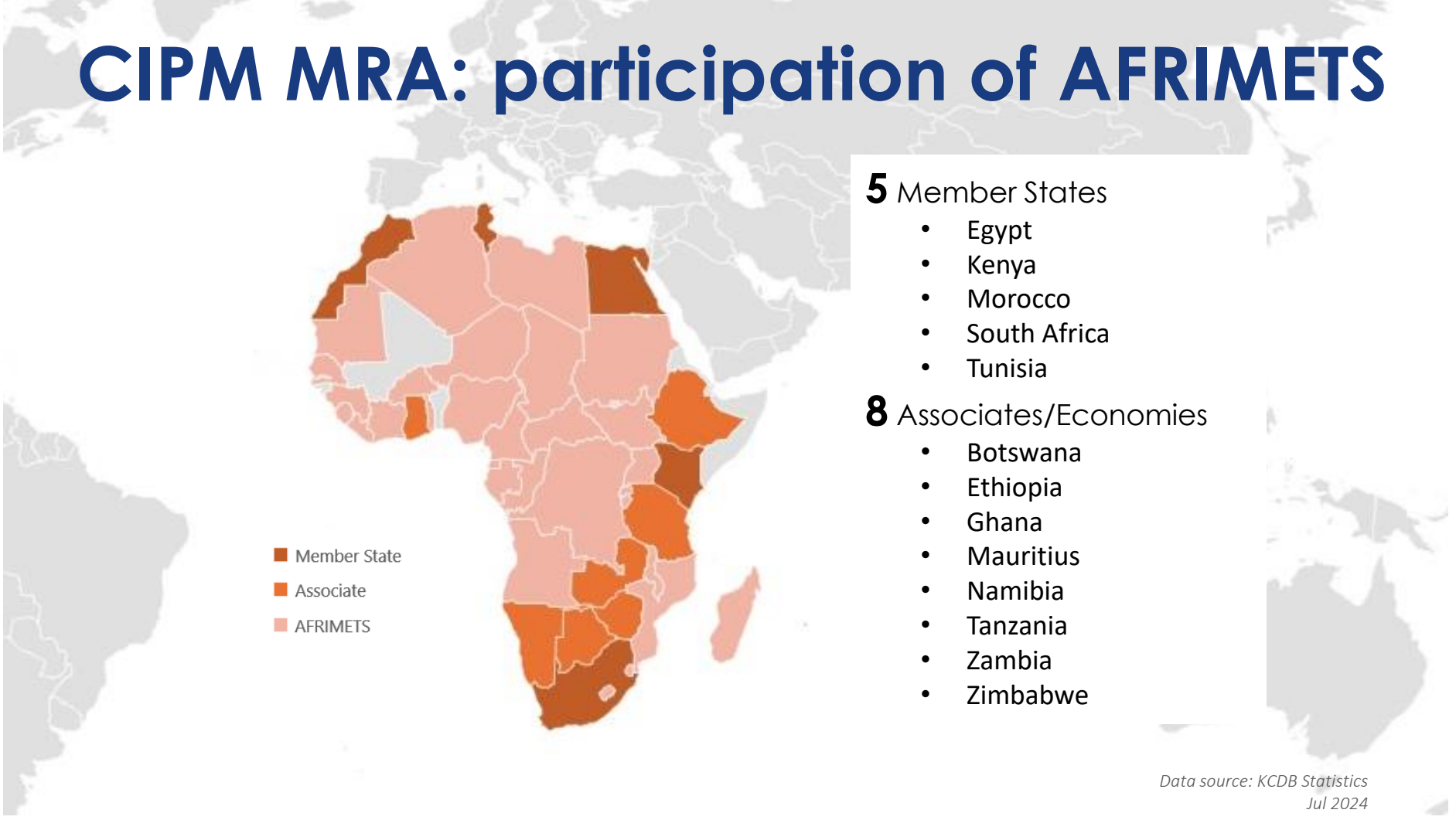
- representatives of 100 institutes
 - 64 Member States
 - 36 Associates of the CGPM
- 4 international organizations (ESA, IAEA, JRC, WMO) and covers a further 149 designated institutes.



1 884 comparisons
1182 KCs, 702 SCs

26 032 CMCs

CIPM MRA: participation of AFRIMETS



■ Member State
■ Associate
■ AFRIMETS

5 Member States

- Egypt
- Kenya
- Morocco
- South Africa
- Tunisia

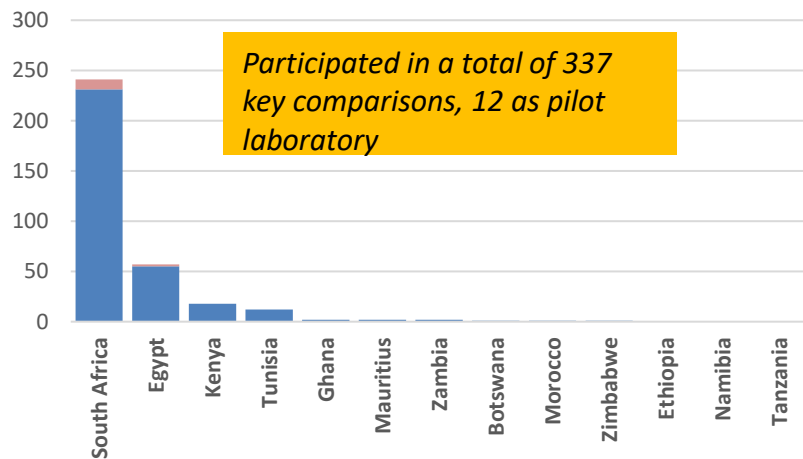
8 Associates/Economies

- Botswana
- Ethiopia
- Ghana
- Mauritius
- Namibia
- Tanzania
- Zambia
- Zimbabwe

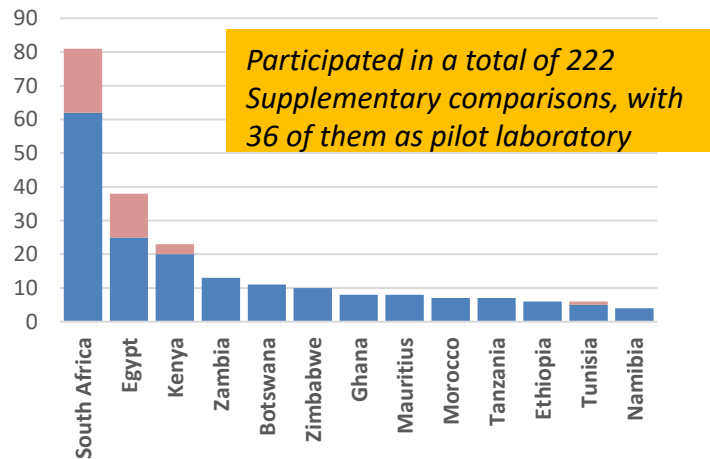
KCDB Statistics – AFRIMETS:

Participation in KCs and SCs

**KC participation, of AFRIMETS
NMI/DIs ordered by number of
KCs**

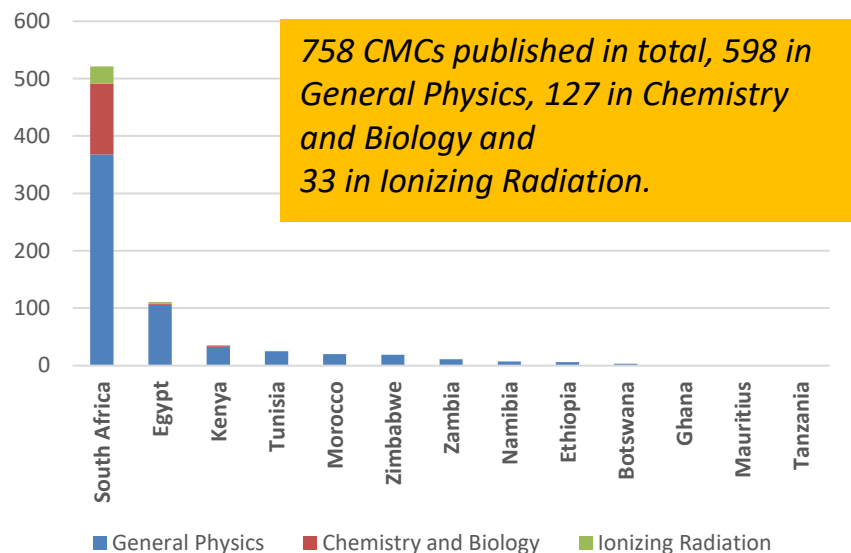


**SC participation of AFRIMETS
NMI/DIs ordered by number
of SCs**



KCDB Statistics - AFRIMETS: *CMCs*

AFRIMETS CMCs



In context of the CIPM MRA calibration and measurement capabilities underpin:

- calibrations and measurements delivered by NMIs in accordance with the requirements of the ISO/IEC 17025:2017
- certified reference materials (CRMs) that are produced by NMIs according to ISO 17034:2016.

27th meeting of the CGPM

15-18 November 2022

<https://www.bipm.org/en/cgpm-2022>



The CGPM adopted seven resolutions at the meeting:

- **Resolution 1:** *On the report prepared by the International Committee for Weights and Measures on the “Evolving Needs in Metrology”*
- **Resolution 2:** *On the global digital transformation and the International System of Units*
- **Resolution 3:** *On the extension of the range of SI prefixes*
- **Resolution 4:** *On the use and future development of UTC*
- **Resolution 5:** *On the future redefinition of the second*
- **Resolution 6:** *On universal adherence to the Metre Convention*
- **Resolution 7:** *On the dotation of the International Bureau of Weights and Measures for the years 2024 to 2027*

Please see the BIPM website for the full text of the resolutions.

Wider participation in BIPM activities



Resolution 6 of
the 27th CGPM
(2022)

The CGPM invites the CIPM

- to review the membership practices of other international organizations,
- to examine the current application of Article III of the Metre Convention,
- to consider the implications of wider participation in the BIPM Work Programme and services.

*Appropriate actions to be proposed for consideration by the CGPM at its 28th meeting
to be held in October 2026.*

85 UN Member States are not Member States or Associate States

60 States participate in an RMO



25 States do not participate in an RMO

11 States on UN Scale ≥ 0.02

AFRIMETS members (3) *Algeria, Cote d'Ivoire, Nigeria*

SIM members (3) *Dominican Republic*, Guatemala, Venezuela**

APMP members (2) *Brunei, Jordan*

COOMET member (1) *Cuba**

EURAMET member (1) *Cyprus*

GULFMET member (1) *Bahrain*

3 States on UN Scale ≥ 0.02

European States (1) *Iceland*

Asian State (2) *Lebanon, Turkmenistan*

49 States on UN Scale < 0.02

AFRIMETS members (34) *Angola, Benin, Burkina Faso, Burundi, Cabo Verde, Cameroon*, Central African Republic, Chad, Comoros, Congo Brazzaville, Dem. Rep. of Congo, Equatorial Guinea, Eswatini, Gabon, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Seychelles*, Sierra Leone, South Sudan, Sudan*, Togo, Uganda*

APMP members (6) *DPR Korea*, Fiji, Kiribati, Myanmar, Nepal, Papua New Guinea*
(inc. 3 Pacific Islands Forum members: Fiji, Kiribati, Papua New Guinea)

SIM members (5) *Bahamas, El Salvador, Haiti, Honduras, Nicaragua*
(inc. 2 CARICOM members: Bahamas, Haiti)

COOMET members (3) *Armenia, Kyrgyzstan, Tajikistan*

GULFMET (1) *Yemen**

22 States on UN Scale < 0.02

African States (4) *Djibouti, Eritrea, São Tomé and Príncipe, Somalia*

Pacific Islands Forum members (9) *Marshall Islands, Micronesia, Nauru, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu*

Asian States (5) *Afghanistan, Bhutan, Laos, Maldives, Timor-Leste*

European microstates (4) *Andorra, Liechtenstein, Monaco, San Marino*

Towards wider participation

- Why do we seek “**wider participation**”?
 - We believe that all UN Member States use the SI and UTC; they implement the concept of metrological traceability and follow the decisions of the CGPM.
 - But there is no visibility that 85 UN Member States do this.
 - 71 of these States (with scale < 0.02) are too small to realistically consider Member or Associate status.
- To achieve **wider participation**, we must engage with these States.
 - They should not be required to have a NMI or to sign the CIPM MRA and to register CMCs.
 - They should not be required to pay; its not about money.
 - **The way forward cannot require renegotiation of the Metre Convention.**
 - **The way forward must be acceptable to existing Member States and close to cost neutral.**

“Observer” status

- The CIPM plans to follow current practice at other International Organizations and propose a new status of **“Observer”**.
 - Observers would be able to attend meetings of the CGPM as an observer.
 - Observers would be able to access tailor-made capacity-building activities and dedicated information resources.
 - There would be no membership fee required for an Observer status.
 - Achieving Observer status will give visibility of the fact that they implement the SI and UTC.
- To achieve **“Observer status”**, States will be required to give evidence of a national / government level decision(s) that has committed them to:
 - use (or, introduce the use of) the SI and UTC.
 - implement relevant resolutions of the CGPM in “good faith” and implement the concept of metrological traceability (for example through an RMO).

“Observer” status will also be open to any intergovernmental organization having activities related to the Vision, Mission and Objectives of the BIPM and having interest in the work of the BIPM.

World Metrology Day now a UNESCO initiative



The UNESCO General Conference have agreed to proclaim
“World Metrology Day” on 20 May every year.

- Many thanks to the Permanent Delegation of Kazakhstan and 43 UNESCO Member States.



UNESCO Member States in support

21 Member States (out of 64): Belarus, Brazil, Bulgaria, China, Hungary, Indonesia, Iran, Malaysia, **Morocco**, Pakistan, Poland, Republic of Korea, Russian Federation, Saudi Arabia, Serbia, Singapore, **South Africa**, Switzerland, **Tunisia**, Türkiye, United Arab Emirates

12 Associates of the CGPM (out of 36): Albania, Azerbaijan, Bangladesh, **Ethiopia**, **Ghana**, **Mauritius**, Moldova, Mongolia, Sri Lanka, Syria, Uzbekistan, Viet Nam

10 States out of 85 UN Member States/non-members: **Cameroon**, Dominican Republic, **Gabon**, Jordan, Kyrgyzstan, Lebanon, **Liberia**, Myanmar, Palau, Turkmenistan

World Metrology Day – launch at UNESCO



- Organized by UNESCO in partnership with the BIPM, the OIML and the Permanent Delegation of the Republic of Kazakhstan
- 2024 theme *"We Measure Today for a Sustainable Tomorrow"*
- App. 200 guests in person and online (Permanent Delegations to UNESCO, Embassies of BIPM Member States and Associates to France, International Organizations and members of the metrology community)



World Metrology Day – participation in 2024

More than 40 posters from Member States and Associates
More than 30 national celebration events



Bahrain



Tajikistan



Nigeria

Posters from non-members

New CIPM members and CC Presidents



The CIPM elected three new members:

- Prof. Dr C. Denz, PTB President (Germany)
- Dr J. Qu, Vice-director, NIM (China)
- Mr H. A. Frøystein, Director, Head of Department, JV (Norway)



CCM and CCT new presidents

- Ms G. MacDonald is a new CCM President.
 - Dr D. del Campo Maldonado is a new CCT President.
- Dr S. Solve is a CCT Executive Secretary.



CCU and CCAUV new presidents

- Dr G.P. Ripper is a new CCAUV President.
- Prof. R.J.C. Brown is a new CCU President.

CIPM Strategy 2030+

21st Century Metrology Grand Challenges

The CIPM identified five “Metrology Grand Challenges”:

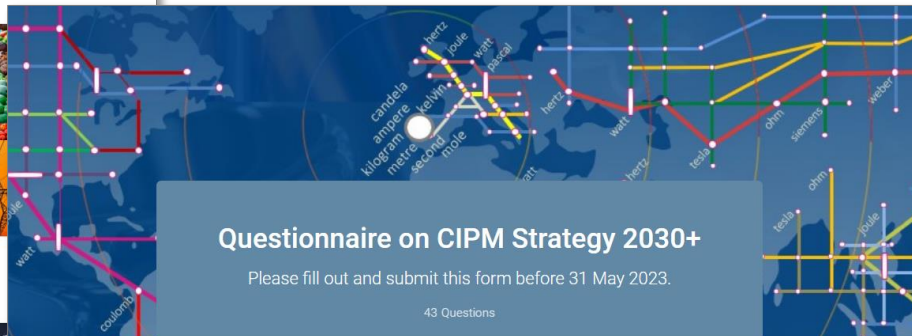
- Climate change and environment
- Health & life sciences
- Food safety
- Energy
- Advanced manufacturing

Next to cross-cutting challenges related to *how* we make measurements:

- Digital Transformation
- “New” metrology (e.g. sensor networks, NMI-on-a-chip)



10



Overview Follow-up Questionnaire

- Follow up on the first questionnaire (April 2023) to prioritize the needs from Member States on the future role of CIPM
- Questionnaire was made openly available from **August 2nd to September 8th (approx. 5 weeks)**
- E-mails were sent to NMI directors, State Representatives of Member States (approx. 200 people)

Thank you for your participation!

„Horizontal Groups“



Sectorial Task Group on Climate and Environment

- Workshop with WMO 26-30 September, 2022: report available
- First time in 2023: Participation in COP 28 as observer
- 1st Stakeholder meeting of the CIPM Sectorial Task Group on Climate Change and Environment: 16/18 September 2024



Forum on Metrology and Digitalization

- Kick-off Meeting: 21 November, 2022
- Workshop on FAIR Data: 05/06 March, 2024
- First Forum Meeting: 07/08 March, 2024

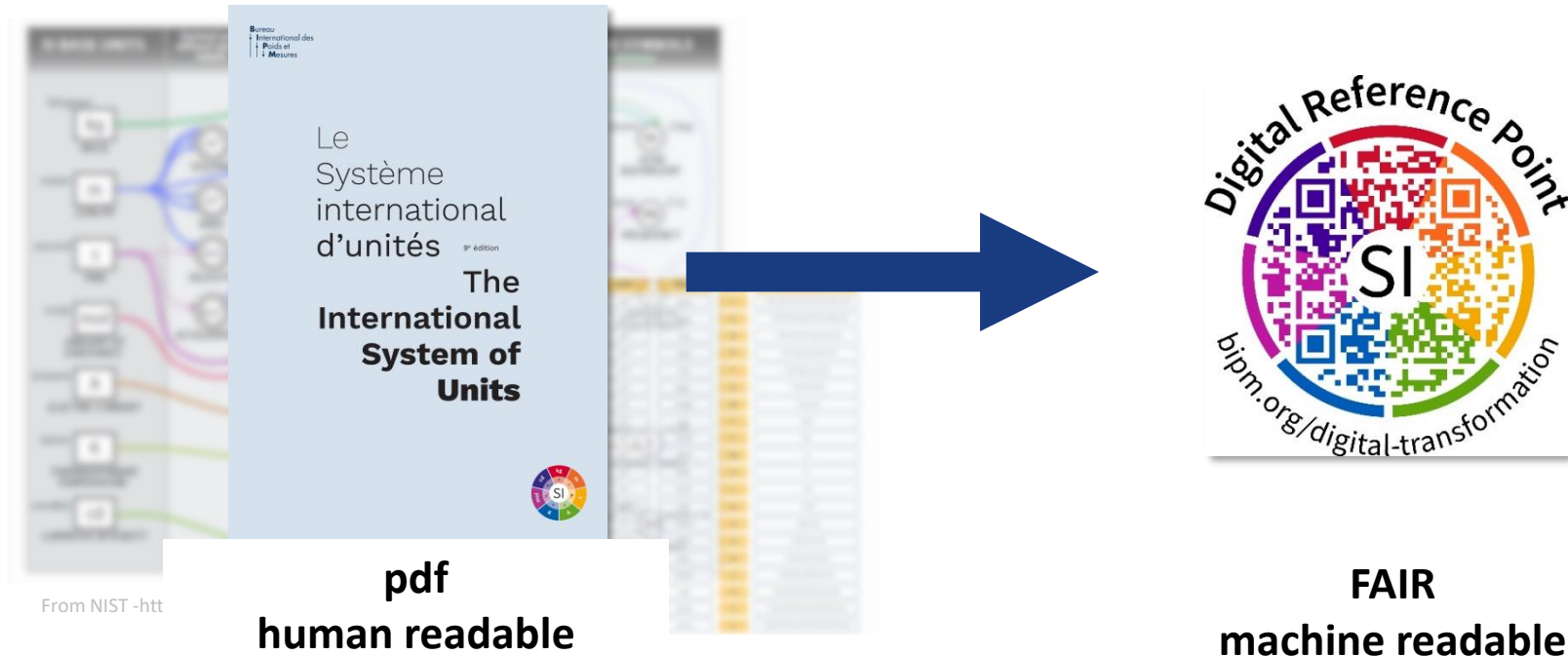


Quantum Technologies

- First workshop: 22/23 March, 2024

The SI Digital Framework provides a fully digital representation of the SI

- Provide the globally accepted anchor of trust for metrology in the digital era
- Facilitate the use of digital certificates and the adoption of the FAIR principles





SI Reference Point

[English](#) | [Français](#)

This service constitutes the authoritative digital reference for the International System of Units (SI). It provides Permanent Digital Identifiers (PIDs) for the named SI units, SI prefixes, and defining constants, and a parsing tool to provide the PID and semantic model for compound units.

- [SI Reference Point](#)
- [Units](#) Lists the named SI units
- [Prefixes](#) Lists the SI prefixes
- [Defining Constants](#) Returns the defining constants of the SI
- [Decisions](#) Returns the decisions of the CGPM and the CIPM bearing directly upon definitions of the units of the SI, prefixes defined for use as part of the SI, and conventions for the writing of unit symbols and numbers.

The Joint Statement

"On the digital transformation in the international scientific and quality infrastructure"

Digital Transformation

Joint Statement of Intent *On the digital transformation in the international scientific and quality infrastructure*

Joint Statement of Intent

On the digital transformation in the international scientific and quality infrastructure

We the undersigned undertake to support in a way appropriate to each organisation the development, implementation, and promotion of the SI Digital Framework as part of a wider digital transformation of the international scientific and quality infrastructure.



Young metrologists' 2050+ vision

Where do “young metrologists” think metrology will be in 2050+?

- **To complement the CIPM Strategy 2030+ with visionary ideas**
- **Foresight exercise in collaboration with the RMOs**
- RMO Coordinators nominated
- Online questionnaire launched
- Six RMO virtual workshops organized
- Consolidation workshop (in-person) with RMO Coordinators at BIPM HQ

Online questionnaire

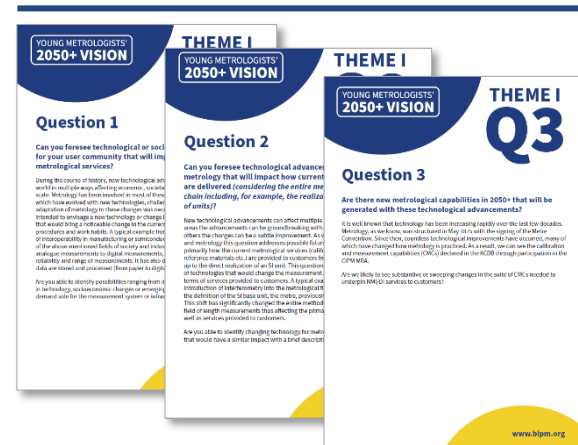
<https://www.bipm.org/en/committees/cb/cbkt/ym-2050>



Mr Chingis KUANBAYEV
Head of CBKT and
CIPM MRA support



Mr Kangyoung SUNG
Strategy Development
and Capacity Building
Seconded (KRISS)



YM2050+

RMO Coordinators

AFRIMETS



*Alphonsus KIPKEMBOI
(Kenya)*

AFRIMETS



*Pritesh JIVAN
(South Africa)*

APMP



*Oijai ONGRAI
(Thailand)*

APMP



*Yin Hsien FUNG
(New Zealand)*

COOMET



*Nikita ZVIAGIN
(Russian Federation)*

COOMET



*Gulaikhan SUYEUBAYEVA
(Kazakhstan)*

EURAMET



*Peter PAVLASEK
(Slovakia)*

GULFMET



*Rayan ALYOUSEFI
(Saudi Arabia)*

GULFMET



*Moza Khalfan
ALMEMARI (UAE)*

SIM



*Rodrigo COSTA-FELIX
(Brazil)*

SIM

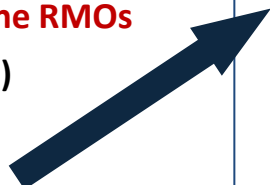


*Fernando José Andrés
MONGE (Costa Rica)*

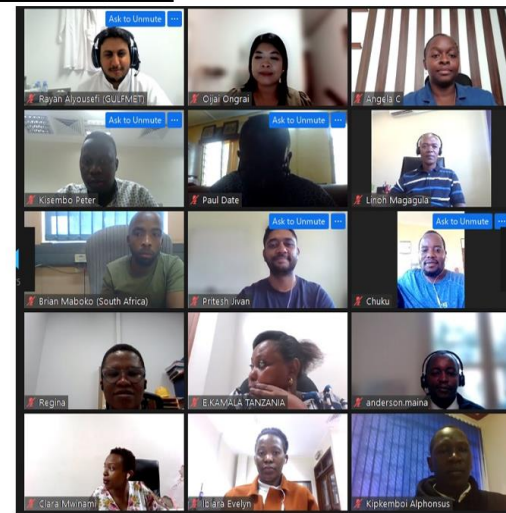
Young metrologists' 2050+ vision

Where do “young metrologists” think metrology will be in 2050+?

- ✓ **To complement the CIPM Strategy 2030+**
 - ✓ **Foresight exercise in collaboration with the RMOs**
1. RMO Coordinators nominated (**March 2023**)
 2. Online questionnaire launched (**July 2023**)
 3. Six RMO virtual workshops:
 4. RMO internal encouragement events are being held
 5. Consolidation workshop (in-person) with RMO Coordinators at BIPM HQ (**July 2024**)
 6. The draft will be reported at the October CIPM and NMI Directors meeting (**October 2024**)



YM2050+ _AFRIMETS workshop (06.03.2024) – 78 participants



www.bipm.org

Online questionnaire

<https://www.bipm.org/en/committees/cb/cbkt/ym-2050>

Capacity Building and Knowledge Transfer

WORKSHOP-BASED

CB activities



- take place at the BIPM
- in the regions jointly with RMOs

LABORATORY-BASED

CB placements



- placements at the BIPM
- placements at the partner NMI/DI

KNOWLEDGE TRANSFER

activities



- by VISITING SCIENTISTS from NMIs/DIs
- other KT activities (i.e. hosting workshops etc.)

REMOTE-LEARNING

online activities



- online short courses
- technical exchanges
- e-learning

CBKT statistics *(as of July 2024)*

60 CBKT initiatives

- **27 (+3 placements)** projects in-person at the BIPM and regions
- **31** projects online (*15 of them repeated to cover all time zones*)
- **60 +** lecturers from NMIs/DIs and IOs have been involved in delivery of the CBKT activities

BIPM/RMO CBKT Officers meeting organized to exchanges ideas

- Integrated '*comparison toolbox*' to support potential comparison pilots/participants (e-learning, webinars and RMO hands on sessions)
- Orientation session to newly appointed RMO TC/WG Chairs (or potential Chairs)

4109 participation

- **558** in-person participation from NMIs/DIs
- **3551** online participation

Additionally:

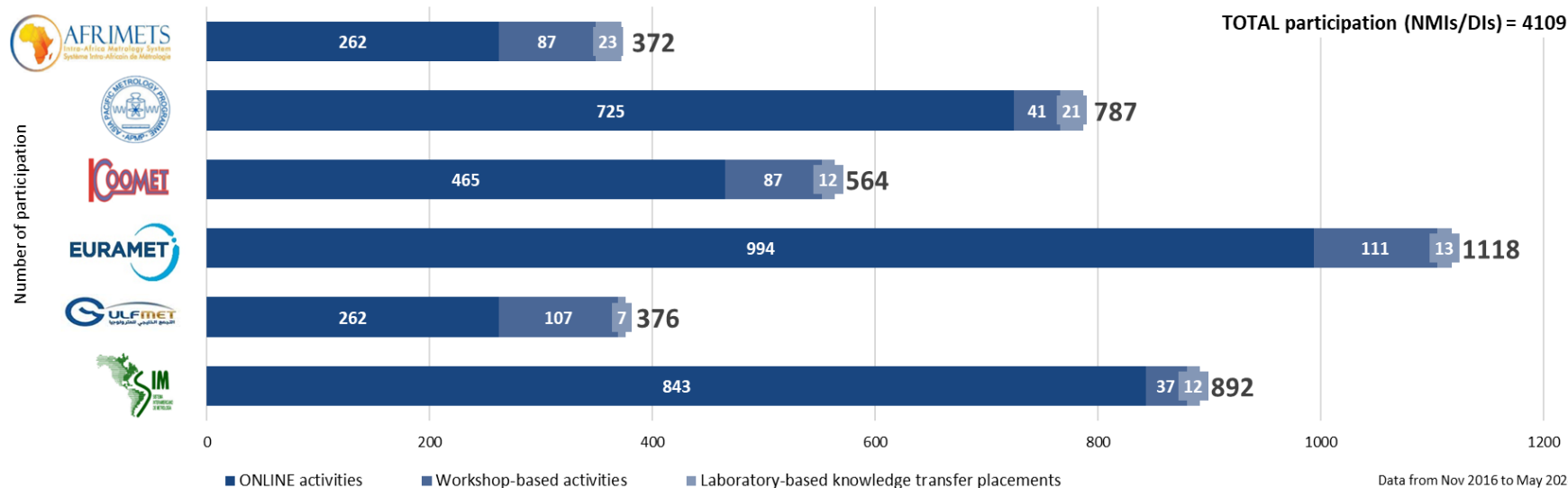
- **604** *Accreditation community*
- **950** *registered users in e-learning*



27 to 29 September 2023

CBKT Participation by RMO

CBKT participation by RMO



Thanks for support from:

- METAS, Switzerland
- NIM, China
- NIST, USA
- NMISA, South Africa
- NPL, United Kingdom
- PTB, Germany
- SCL, Hong Kong, China
- TÜBİTAK UME, Türkiye
- IEEE, USA

Plus
- All the RMOs

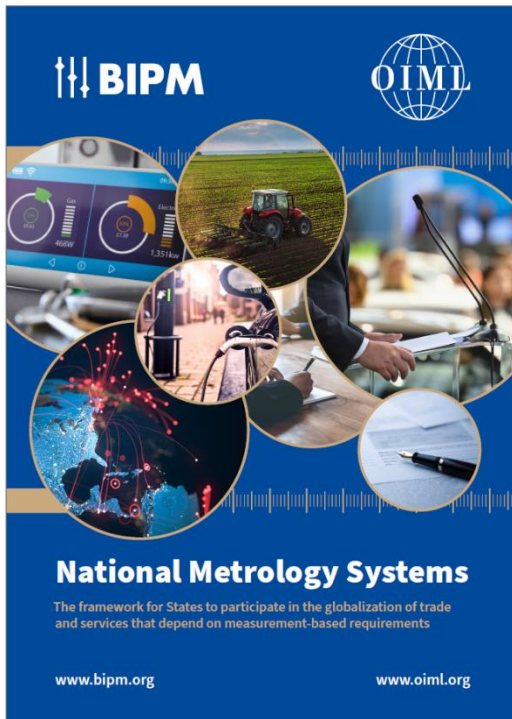
Laboratory-based projects



BIPM – TÜBİTAK UME Project Placements Seventh cycle (2024)

- Selection for the seventh cycle is complete, where 11 participants have confirmed their participation.
- There were 60 applications from all the RMOs, with requests from **Cameroon, Nigeria, Uganda**, Egypt, Ethiopia, Kenya, and Tanzania.
- Previously successful candidates include those from Zambia, Tunisia, Ethiopia, Tanzania, South Africa, Ghana, Kenya, and Sudan.
- Training will start in September, with placement durations ranging from 1 to 3 months.

BIPM/OIML brochure

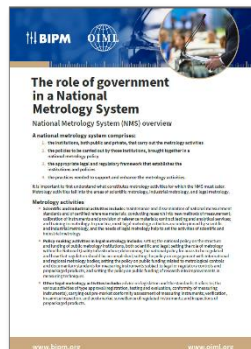


BIPM **OIML**

National Metrology Systems

The framework for States to participate in the globalization of trade and services that depend on measurement-based requirements

www.bipm.org www.oiml.org



BIPM **OIML**

The role of government in a National Metrology System

National Metrology System (NMS) overview

1. Metrological, technical and legal aspects of the role of the metrology system
2. Metrological, technical and legal aspects of the role of the metrology system
3. Metrological, technical and legal aspects of the role of the metrology system
4. Metrological, technical and legal aspects of the role of the metrology system

www.bipm.org www.oiml.org




BIPM **OIML**

Policy implementation options for governments

When governments implement metrology laws, they need to consider a range of factors, including the legal framework, the technical framework, and the financial framework. This brochure provides a range of options for governments to implement metrology laws, taking into account the different needs and circumstances of different countries.

www.bipm.org www.oiml.org



BIPM **OIML**

International aspects of National Metrology Systems

The need for international recognition and compatibility between national and international metrological requirements.

www.bipm.org www.oiml.org

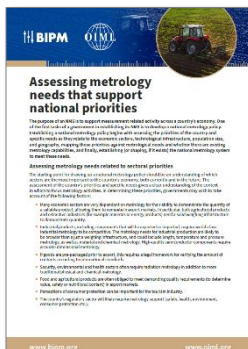


BIPM **OIML**

Legislating for metrology

General considerations when developing a law on metrology

www.bipm.org www.oiml.org



BIPM **OIML**

Assessing metrology needs that support national priorities

The need for metrology to support national priorities is a key factor in the development of a national metrology system. This brochure provides a range of options for governments to assess their metrology needs, taking into account the different needs and circumstances of different countries.

www.bipm.org www.oiml.org



BIPM **OIML**

Developing a metrology system for the future

Responding to a changing world

www.bipm.org www.oiml.org

The first
BIPM/OIML joint
e-Learning
course published
in 2024

<https://www.bipm.org/en/committees/cb/cbkt/bipm-oiml-brochure>

<https://e-learning.bipm.org/local/explore/index.php?field%5B0%5D=provider&value%5B0%5D=0>



Module 1:
Introduction to the course, the importance of metrology, and developing a metrology system for the future

Overview of this course



- Module 1**
Introduction and the importance of metrology
- Module 2**
The concept of a national metrology system
- Module 3**
International aspects
- Module 4**
The role of government & policy options for national authorities
- Module 5**
Options when legislating for metrology

4 of 15



Module 2:
The concept of a National Metrology System



Module 3:
International aspects



Module 4:
Policy options for government



Module 5:
Legislating for metrology

The first
BIPM/OIML joint
e-Learning
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in 2024

e-Learning



<https://e-learning.bipm.org/>

A “*training platform*” operated by the BIPM, hosts BIPM and RMO e-learning material

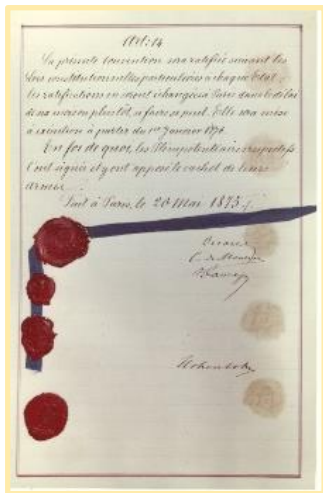
- 1050 users in the platform
- 6 RMOs have joined the initiative
- 23 courses from BIPM and participating RMOs are available today
- Self-registration system

Accessible around the clock and on any device

New courses published:

- National Metrology Systems (BIPM)
- Young Metrologist’ 2050+ Vision (BIPM)

150th anniversary of the Metre Convention



We are planning several events in 2025 to celebrate the 150th anniversary.

The aim of the events will be:

1. To celebrate the achievements of 150 years of metrology by the BIPM since the signature of the Metre Convention.
2. To present some of the new vision and strategy for the BIPM for 2030 and beyond developed by the CIPM.
3. To promote metrology to the widest possible global audience.
4. To increase the profile of metrology and the work of the BIPM with Member State delegations at UNESCO and with Embassies in Paris.

150th anniversary of the Metre Convention



19th May - BIPM

VIP reception for Heads of local organizations and authorities (the Mayor, the Prefect etc). Representatives from M/S Embassies, CIPM, NMI senior staff, BIPM senior staff.



20th May - UNESCO HQ, Paris*

"150 years of the BIPM and celebration of World Metrology Day"

A one-day event with VIP speakers, video tributes, a panel discussion of the future of "scientific multilateralism" and the launch of the anniversary book.



21st & 22nd May – Palais des Congrès de Versailles

"From units to the universe – future revolutions in metrology"

A conference highlighting themes from the CIPM Strategy (Climate, Quantum and Digital Transformation plus the "new second" and future metrology technologies). Poster competition for NMI staff.

Annual Review 2023/2024



THANK YOU

rahima.guliyeva@bipm.org