BIPM Liaison Report
to the WTO TBT Committee

March 2019
THE VISION, MISSION AND OBJECTIVES OF THE BIPM

The BIPM is an intergovernmental organization established by the Metre Convention, through which Member States act together on matters related to measurement science and measurement standards.

Its vision is to be universally recognised as the world focus for the international system of measurement.

Its mission is to work with the NMIs of its Member States, the RMOs and strategic partners world-wide and to use its international and impartial status to promote and advance the global comparability of measurements for:

- Scientific discovery and innovation,
- Industrial manufacturing and international trade,
- Improving the quality of life and sustaining the global environment.

The objectives of the BIPM are

- To represent the world-wide measurement community, aiming to maximize its uptake and impact.
- To be a centre for scientific and technical collaboration between Member States, providing capabilities for international measurement comparisons on a shared-cost basis.
- To be the coordinator of the world-wide measurement system, ensuring it gives comparable and internationally accepted measurement results.

Fulfilling the BIPM mission and objectives is complemented by its work in:

- capacity building, which aims to achieve a global balance between the metrology capabilities in Member States;
- knowledge transfer, which ensures that the work of the BIPM has the greatest impact.

The objectives of the BIPM were confirmed by Resolution 3 adopted by the General Conference on Weights and Measures (CGPM) at its 26th meeting held in Versailles, France on 13-16 November 2018.

The presentations and outcomes of this meeting are available on the BIPM website, https://www.bipm.org/en/cgpm-2018/

REVISION OF THE SI

The recommended practical system of units of measurement is the International System of Units (Système International d’Unités, with the international abbreviation the SI).

The SI is defined by the 8th edition of the SI Brochure, which is published by the BIPM.

The SI consists of a set of base units, prefixes and derived units.

The SI base units are a choice of seven well-defined units: the metre, the kilogram, the second, the ampere, the kelvin, the mole and the candela.

Member States voted on 16 November 2018 during live open session of the 26th meeting of the CGPM, to revise the SI, changing the world’s definition of the kilogram, the ampere, the kelvin and the mole. A recording of this session can be viewed on the BIPM’s YouTube Channel, https://www.youtube.com/thebipm

Pursuant to Resolution 1 adopted by the CGPM at its 26th meeting (2018) all SI units will now be defined in terms of constants that describe the natural world. This will assure the future stability of the SI and open the opportunity for the use of new technologies, including quantum technologies, to implement the definitions.

In the revised SI four of the SI base units – namely the kilogram, the ampere, the kelvin and the mole – are redefined in terms of constants; the new definitions are based on fixed numerical values of the Planck constant \( (h) \), the elementary charge \( (e) \), the Boltzmann constant \( (k) \) and the Avogadro constant \( (N_A) \), respectively. Further, the new definitions of all seven base units of the SI are also uniformly expressed using the explicit-constant formulation, and specific mises en pratique will be drawn up to explain the realization of the definitions of each of the base units in a practical way.

The new definitions will come into force on 20 May 2019.

The 9th edition of the SI Brochure is expected to be published on 20 May 2019.

THE CIPM

All CIPM Decisions are available on the BIPM webpages.

On 16 November 2018, the CGPM conducted an election for all 18 seats on the CIPM.

Twelve current members stood and were re-elected:

- Dr F. Bulygin (Russian Federation)
In addition, the following six new members were elected and will start their term at the next session of the CIPM, scheduled for 20-21 March 2019:

- Dr D. del Campo Maldonado (Spain)
- Dr N. Dimarcq (France)
- Dr P. Neyezhmakov (Ukraine)
- Dr J. Olthoff (United States of America)
- Dr S.-R. Park (Republic of Korea)
- Dr A. Steele (Canada)

The next session will also mark the retirement of six CIPM members who did not stand for re-election:

- Dr M Buzoianu (Romania)
- Mr L. Erard (France)
- Dr B. Inglis (Australia)
- Dr D.-I. Kang (Republic of Korea)
- Dr W. May (United States of America)
- Dr J. McLaren (Canada)

Members of the new CIPM bureau (President, Secretary, First Vice President and Second Vice President) will be elected at the next session of the CIPM, scheduled for 20-21 March 2019.

**BIPM LIAISON AND COORDINATION WORK**

**Liaison with Member States and Associates of the CGPM**

As of November 2018 the BIPM had 59 Member States, and 42 Associate States and Economies of the CGPM.

The Republic of Uzbekistan became an Associate of the CGPM as from 13 July 2018.

Ukraine became a Member State as from 07 August 2018, after having been an Associate State of the CGPM for 16 years.

Unfortunately, the Bolivarian Republic of Venezuela was excluded and it is no longer a State Party to the Metre Convention as from 14 November 2018 due to persistent non-payment of its contributions.

The list of Member States and Associates of the CGPM is given in Annex.

**Liaison with international organizations**

The BIPM has a series of ongoing institutional and technical interaction with over 30 international organizations and international bodies.

The BIPM works with its liaisons through a wide range of forums, including the quadripartite arrangement with the International Organization for Standardization (ISO), the International Laboratory Accreditation Cooperation (ILAC) and the International Organization of Legal Metrology (OIML) as well as via joint working groups (WG) created by the International Committee for Weights and Measures (CIPM), as well as through joint committees, for example Joint Committee for Guides in Metrology (JCGM).

The Joint BIPM, OIML, ILAC and ISO declaration on metrological traceability was updated and re-signed on 13 November 2018 during the 26th meeting of the CGPM.

In particular, the BIPM maintains close relations with the OIML. Whilst the missions of the two organizations are complementary, both now present an integrated description of the worldwide metrology infrastructure, and its benefits. The BIPM contributes to the planned update of the OIML document D 1 - Elements for a Law on Metrology. The BIPM is also participating in the CEEMS Advisory Group together with the organizations listed above.

Each year on 20 May, World Metrology Day, the worldwide metrology community celebrates the signing of the Metre Convention in 1875. The project is run jointly by the BIPM and the OIML. The theme this year is “The International System of Units - Fundamentally better”. This theme was chosen because on 16 November 2018, the CGPM agreed perhaps one of the most significant revisions to the SI since its inception. The 2019 poster was designed by the Standards and Calibration Laboratory, Hong Kong, P.R. China. 2019 World Metrology Day Resource Website is now live http://www.worldmetrologyday.org/

The BIPM also collaborates with a number of international organizations, including OIML, to support developing countries through the International Network on Quality Infrastructure (INetQI) (previously known as DCMAS Network). Its terms of reference is currently...
under review noting the key structural changes of INetQI. The World Bank Group and WTO joined INetQI in November 2018.

A study describing the operation of the BIPM is under development within the OECD initiative “A partnership for effective international rule-making”. Its publication is foreseen in 2019. This study will be complementary to a series of the OECD studies of rule-making practices of selected IOs developed during of 2014-2016 FAO, IMO, ISO, OECD, OIML, UNECE and WHO.

CIPM MRA AND KCDB

The CIPM MRA is the ‘Mutual Recognition Arrangement of National Measurement standards and of calibration and measurement certificates issued by National Metrology Institutes’. Participation in the CIPM MRA continues to grow: it has been signed by representatives of 101 institutes – from 59 Member States, 42 Associates of the CGPM (Uzbekistan is the latest signatory), and four international organizations – and covers a further 156 institutes designated by the signatory bodies.

The CIPM MRA has matured into a well-recognized pillar of the international quality infrastructure. After a decade and a half of successful operation, a review has been undertaken to ensure the sustainability of the Arrangement for the coming years (see CGPM Resolution 5, 2014). The recommendations from the Working Group on the Implementation and Operation of the CIPM MRA were published on 23 August 2016, available at https://www.bipm.org/en/cipm-mra-review/

In respect of implementing the WG recommendations a new database – KCDB 2.0 is being developed and the implementation will continue through 2019.

As of September 2018, the BIPM key comparison database (KCDB) included a total of 25 070 Calibration and Measurement Capabilities (CMCs):

- 18 863 in Physics,
- 6 207 in Chemistry.

As on 25 February 2019, the KCDB covered 1022 key comparisons and 565 supplementary comparisons.

The Joint Committee of the RMOs and the BIPM (JCRB) is established under the CIPM MRA. The primary role of the JCRB is to coordinate the activities among the RMOs in establishing confidence for the recognition of calibration and measurement certificates, according to the terms of the CIPM MRA. The JCRB, which is chaired by the Director of the BIPM, is supported by an Executive Secretary seconded from an NMI from across the globe, typically for two years. This approach strengthens the links between the BIPM and the RMOs, helps transfer knowledge to the RMOs and brings recent “front line” experience to the BIPM. On 10 January 2019, Dr Sten Bergstrand, from RISE (Sweden), took over as Executive Secretary of the JCRB.

CAPACITY BUILDING AND KNOWLEDGE TRANSFER (BIPM CBKT) PROGRAMME

The BIPM launched a new Capacity Building and Knowledge Transfer Programme (BIPM CBKT Programme) in 2016 aimed at countries and economies with emerging metrology systems (CEEMS).

The aim of the BIPM CBKT programme is to increase the effectiveness with which Member States and Associates engage in the world-wide coordinated metrological system.

The CBKT programme has become a great success in a short space of time, with a number of successful projects being held so far.

The programme is wholly supported by sponsors and a number of CBKT projects have been held and more are planned. So far 308 participants (around 124 at the BIPM) from 83 countries, covering all six RMOs, have benefited from the CBKT initiatives. 20 visiting scientists who have been seconded to the BIPM for an average of six-month knowledge transfer placements. At the time of writing, over 75 % of Member States and Associates have participated in the CBKT Programme (as trainees, lecturers and sponsors).

A number of BIPM CBKT projects are under development and support from sponsors is always welcomed. Full details are available at: http://www.bipm.org/en/cbkt/

BIPM ANNUAL REVIEW AND WORK PROGRAMME

The BIPM Annual Review 2017/2018 is available online.

The BIPM Work Programme for the period 2016-2019 is publicly available on the BIPM website: http://www.bipm.org/en/bipm/

## ANNEX

### 59 Member States
(as of November 2018)

- Argentina
- Australia
- Austria
- Belgium
- Brazil
- Bulgaria
- Canada
- Chile
- China
- Colombia
- Croatia
- Czech Republic
- Denmark
- Egypt
- Finland
- France
- Germany
- Greece
- Hungary
- India
- Indonesia
- Iran (Islamic Republic of)
- Iraq
- Ireland
- Israel
- Italy
- Japan
- Kazakhstan
- Kenya
- Korea (Republic of)
- Lithuania
- Malaysia
- Mexico
- Montenegro
- Netherlands
- New Zealand
- Norway
- Pakistan
- Poland
- Portugal
- Romania
- Russian Federation
- Saudi Arabia
- Serbia
- Singapore
- Slovakia
- Slovenia
- South Africa
- Spain
- Sweden
- Switzerland
- Thailand
- Tunisia
- Turkey
- Ukraine
- United Arab Emirates
- United Kingdom
- United States of America
- Uruguay

### 42 Associates of the CGPM
(States or Economies*)
(as of November 2018)

- Albania
- Azerbaijan
- Bangladesh
- Belarus
- Bolivia
- Bosnia & Herzegovina
- Botswana
- CARICOM*
- Antigua and Barbuda
  - Barbados
  - Belize
  - Dominica
  - Grenada
  - Guyana
  - Saint Kitts and Nevis
  - Saint Lucia
  - Saint Vincent and the Grenadines
  - Suriname
  - Trinidad and Tobago
- Chinese Taipei*
- Costa Rica
- Cuba
- Ecuador
- Estonia
- Ethiopia
- Georgia
- Ghana
- Hong Kong (China)*
- Jamaica
- Kuwait
- Latvia
- Luxembourg
- Macedonia (former Yugoslav Republic of)
- Malta
- Mauritius
- Moldova (Republic of)
- Mongolia
- Namibia
- Oman
- Panama
- Paraguay
- Peru
- Philippines
- Qatar
- Seychelles
- Sri Lanka
- Sudan
- Syrian Arab Republic
- Tanzania (United Republic of)
- Uzbekistan
- Viet Nam
- Zambia
- Zimbabwe