

International Committee
for Weights and Measures

Proceedings of Session II

of the 112th meeting

(21 June 2023)

Executive Summary

Session II of the 112th meeting of the CIPM (21 June 2023)

Amendments to the RRI

The CIPM accepted the proposed amendments to Title X of the RRI.

Approval of the audited financial statements of the BIPM and the BIPM Pension Fund

The CIPM approved the audited financial statements of the BIPM and of the BIPM Pension and Provident Fund, and granted the BIPM Director quietus for the 2022 exercise.

Membership of the CCs

The CIPM accepted NIS (Egypt) and UME (Türkiye) as members of the CCM.

Approval of GUM Part 1: Introduction

The CIPM approved the Final Draft of the document Guide to the expression of uncertainty in measurement - Part 1: Introduction.

Forum on Metrology and Digitalization

The CIPM adopted “Forum on Metrology and Digitalization” as the name for the horizontal forum on digitalization. It adopted the mission and structure of the forum and approved the BIPM Headquarters’ updated workplan on digitalization for 2023 and 2024.

**MEMBERS OF THE
INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES**

As of 21 June 2023

President

W. Louw, South Africa.

Secretary

T. Usuda, Japan.

Members

V.G. Achanta, India.

D. del Campo Maldonado, Spain.

V. Coleman, Australia.

N. Dimarcq, France.

Y. Duan, China.

J.-T. Janssen, United Kingdom.

H. Laiz, Argentina.

G. Macdonald, Canada.

P. Neyezhnikov, Ukraine.

J. Olthoff, United States of America. *CIPM Vice-President.*

S.-R. Park, Republic of Korea.

M.L. Rastello, Italy.

P. Richard, Switzerland. *CIPM Vice-President.*

G. Rietveld, the Netherlands.

G.P. Ripper, Brazil.

J. Ullrich, Germany.

Agenda

1. Opening of the session; quorum; approval of the agenda.....	131
2. Secretary’s report.....	131
3. President’s report.....	131
4. Director’s report	132
5. Report from the Chairs of the CIPM Sub-Committees.....	134
6. Reports from the Consultative Committees and Joint Committees	135
7. Report from the International Liaison and Communication Department	138
8. Any other business	138
9. Close of meeting.....	140

1. **OPENING OF THE SESSION; QUORUM; APPROVAL OF THE AGENDA**

The International Committee for Weights and Measures (CIPM) held Session II of its 112th meeting on Wednesday 21 June 2023 in a hybrid format.

Present in person: D. del Campo Maldonado, J.-T. Janssen, W. Louw, G. Macdonald, M. Milton (Director of the BIPM), J. Olthoff, P. Richard and T. Usuda.

Present remotely: V.G. Achanta, V. Coleman, N. Dimarcq, Y. Duan, H. Laiz, P. Neyezhmakov, S.-R. Park, M.L. Rastello, G. Rietveld, G. Ripper and J. Ullrich.

Absent: N. Dimarcq.

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director and Head of the Executive and Meetings Office), A. Cypionka (Director of the International Liaison and Communication Department), C. Planche (Web and Translation) and R. Sitton (Publications).

The following were in attendance for parts of the meeting: H. Fang (Executive Secretary of the CCM), V. Gressier (Director of the Ionizing Radiation Department and Executive Secretary of the CCRI) and R. Wielgosz (Director of the Chemistry Department and Executive Secretary of the CCQM).

W. Louw opened the meeting and welcomed those members attending in person and those taking part remotely.

There were no changes to the agenda, which was approved by the CIPM. To give additional time to reflect on the discussions by those CIPM members attending the session remotely as well as to those that were absent, it was decided that decisions taken during the meeting would be formalized in a vote by correspondence.

[Note added to the meeting report. All decisions shown in this report were subsequently approved by correspondence on 19 July 2023].

The CIPM accepted the records of Session I of its 112th meeting as a true record.

Decision CIPM/112-19 (2023) The CIPM accepted the minutes of Session I of the 112th meeting of the CIPM as a true record.

2. **SECRETARY'S REPORT**

There was no report from the last meeting of the CIPM bureau.

3. **PRESIDENT'S REPORT**

The President said that the main activities of the CIPM since Session I in March 2023 had been on the further development of the "CIPM Strategy 2030+". The CIPM Sub-Committee on Strategy (CIPM-SC-STRATEGY) had met on 19 June to discuss themes 1 and 2 (Responding to evolving needs for metrology and Addressing key scientific challenges to advance the global measurement system.). An outcome of this meeting had been a schedule to prepare the final strategy, based on the *Report on the actions taken by the CIPM towards a "CIPM Strategy 2030+"*, which the CIPM had submitted to the 27th meeting of the CGPM. The Sub-Committee will summarize the information in this document and produce a more concise strategy document.

He recalled that the CIPM has established two "cross-cutting" forums to start addressing the five "Metrology Grand Challenges" identified in the report. The CIPM Sectorial Task Group on Climate Change and Environment has been set up and the CIPM is finalizing details of the Forum for Metrology and Digitalization.

He added that the strategy should also discuss the future of activities at the BIPM Headquarters, particularly how the work programmes for the technical areas may become increasingly involved in international coordination, for example assisting in the organization of key comparisons. The future strategy may include proposals on how the CIPM could evolve. The Sub-Committee had discussed allowing future calls for nominations of CIPM members to include the requirement for skills in particular areas to help address the cross-cutting challenges as well as the option of allowing the CIPM to invite observers to assist with its work on the challenges. The Sub-Committee expects to complete a first draft of the concise strategy document by late August 2023, even though some of the issues may still be under discussion.

The President said that the *ad hoc* Working Group on Universal Adherence to the Metre Convention had met on 20 June 2023. The steering group consists of V. Coleman, A. Cypionka and W. Louw and there had been a total of 14 participants in the meeting. The meeting had focused on a potential model that could be used to move towards universal adherence. The meeting discussed and rejected the possibility of introducing a second category of membership as it would require a change to the Metre Convention. A second option considered by the Group was to work with non-adhering countries through the membership of the RMOs and a third option was to introduce a way for countries to interact directly with the BIPM. V. Coleman suggested a hybrid solution by combining elements of the last two proposals. The meeting participants focused on the 71 countries that are members of the RMOs but which do not adhere to the Metre Convention and the 14 countries that are not members of any RMO. The Group will investigate a model that will allow such countries to participate without any cost implications to the BIPM. He reminded the CIPM that meetings hosted by the BIPM are funded through the dotation, which is paid for by the Member States' contributions and the Associates' subscriptions. Any non-adhering states that want to attend meetings would be asked to pay an attendance fee in order for this option to have no cost for the BIPM. The possibility for these countries' laboratories to participate in the CIPM MRA by becoming an Associate will remain as an option.

The President said that a meeting of the CIPM Sub-Committee on Governance (SC-G), Chaired by P. Richard, had been held on 20 June. The discussions had centred on the aspects of the Organization that need to be modernized and the process to carry this out. He added that the SC-G developing the By-Laws will maintain full transparency during the process.

4. DIRECTOR'S REPORT

The Director reported that there have been two new secondees since the last session of the CIPM. The BIPM has appointed Ibrahim Ahmed (KEBS, Kenya) as the new Secretary of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) for a 2-year term. In addition, the BIPM has welcomed Kangyoung Sung (KRISS, Republic of Korea) as a secondee in the International Liaison and Communication Department for a 2-year term to support A. Cypionka and W. Louw with the CIPM Strategy as well as assisting with the Young Metrologists programme. Interviews are under way for a new Head of the Human Resources Service and two technical posts.

The Director recalled that the elections for the BIPM Commission for Conditions of Employment (CCE) in early 2022 had been unsuccessful due to a lack of candidates. Following this, an *ad hoc* group of twelve staff came together to prepare a report on the way forward, entitled "*Rethinking the CCE*". The *ad hoc* group circulated the report to all staff for comments in late 2022 and their subsequent recommendations were submitted to the Director and the CIPM bureau. The Director said that he had accepted all the recommendations made by the group. The CIPM bureau indicated they will meet with the *ad hoc* group later in the afternoon to give their response to the recommendations. The Director noted that part of his response to the recommendations included "[Note no. 2 to the CIPM on open access to information for BIPM staff](#)", which is available on the CIPM webpages. This Note repeats the Director's commitment to make available to staff all papers prepared by the management that concern staff conditions of employment and are submitted to the CIPM. He added that such

papers are shared with staff via a SharePoint site.

The BIPM has completed the Financial Report for 2022 and the Chair of the CIPM Sub-Committee on Finance will bring forward a decision to accept the report later in the meeting. The actuarial study for the BIPM Pension Fund is underway. The PFAB will discuss the first draft of the actuarial study at its meeting on 22 June.

The Director informed the CIPM that he has launched a study into how to reduce the use of electricity across the site. He noted that annual electricity consumption on site is divided equally into thirds between heating, air conditioning and all other uses.

He said that the first draft of the report of the meeting of the CGPM is close to being complete.

The Director said that he was pleased to report a successful outcome following Decision CIPM/112-16 (2023), in which the CIPM agreed that a letter be sent to NMIs and DIs participating in the Joint Committee for Traceability in Laboratory Medicine (JCTLM) requesting voluntary contributions to complete development of the JCTLM database. Seven NMIs have agreed to provide around 5 000 euros each and the corporate members of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) and the International Council for Standardization in Haematology (ICSH) will provide additional funding. Revenue from the implementation of a registration fee for the JCTLM Stakeholders' meeting in December 2023 is expected to bring in enough money together with these additional sources of funding to allow the BIPM to go ahead with the work to complete the extension of the JCTLM database.

The BIPM has published the report of the BIPM-WMO Metrology for Climate Action Workshop. The Director acknowledged the considerable amount of work by R. Wielgosz, E. Flores Jardines and D. del Campo Maldonado, as well as the members of the Steering Committee, which went into the production of the report.

The Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM) has asked the Director to write to the World Health Organization (WHO) to reinvigorate liaison activities between the two bodies.

The Director informed the CIPM that the BIPM has been unsuccessful in its bid to win the Princess of Asturias award in the category "International Cooperation" in 2023. He acknowledged the work of D. del Campo Maldonado and J.Á. Robles Carbonell (CEM, Spain) in helping with the bid and commented that the BIPM will consider resubmitting its bid in 2025.

The Director completed his presentation by saying that World Metrology Day 2023 had been the most successful ever in terms of engagement and the number of posters and events. He thanked H. Laiz and INTI (Argentina) for inspiring the theme and for producing the poster. He also thanked D. Vlad (BIPM International Liaison and Communication Department) for her work in growing the impact of World Metrology Day.

The Director concluded by presenting the proposal from the CCE for amendments to the RRI (i.e. changes to Rule 21.2.1, Instruction I-21.4.1 and Regulation 21.5). He recalled that, as he had mentioned earlier, the CCE has had a shortage of candidates for election over recent years which has triggered a range of actions to address the problem. The three current members of the CCE developed proposals on how to broaden the eligibility criteria for election. The proposals are available as document [CIPM/2023-II-5.1](#) and were presented to the CIPM bureau earlier on 21 June.

The President said that the CIPM bureau supported the proposal, with one change to the sentence regarding the time allowed for staff to carry out the work of the CCE. The sentence is as follows: "*Supervisors shall give elected staff members, in particular those elected to serve in the CCE and the CAS, adequate time for the performance of these official functions during working hours, corresponding to at least 10 % of their weekly official duties.*" The proposal is to change "*at least 10 %*" to "*up to 10 %*". The seventeen members of the CIPM participating in the meeting agreed with the proposed change.

The Director thanked the CIPM and said that he will communicate the support of the CIPM to the CCE, which plans to conduct an election, using the broadened criteria, in the near future. The President said that the bureau

will meet with the *ad hoc* group of twelve staff who submitted the report entitled “*Rethinking the CCE*” and will discuss with them their proposals. The following draft decision was adopted.

Decision CIPM/112-20 (2023) The CIPM accepted the proposed amendments to Title X of the RRI (Rule 21.2.1, Instruction I-21.4.1 and Regulation 21.5).

5. REPORT FROM THE CHAIRS OF THE CIPM SUB-COMMITTEES

CIPM Sub-Committee on Finance

P. Richard, the Chair of the CIPM Sub-Committee on Finance (FSC), referred to the report “Notes of Meeting of the CIPM Finance Sub-Committee (22 May 2023)”, which is available on the CIPM webpages as document [CIPM/2023-II-6a.1](#). He recalled that the FSC has two new members: V.G. Achanta and G. Macdonald.

He said that the FSC had received the draft French version of the accounts in advance of the meeting on 22 May. He thanked the Director and D. Spelzini and her team in the BIPM Finance Office for the good financial performance in 2022 and for the efficient preparation, completion and external audit by KPMG of the 2022 Financial Statements for both the BIPM and the Pension and Provident Fund. The external auditor signed the financial reports at the end of May 2023. The FSC had circulated the final version of the Financial Report 2022, in both French and English, including the auditor’s report, to the CIPM in advance of Session II of its meeting. Following a discussion by the FSC, the members unanimously agreed that the 2022 Financial Statements of the BIPM and of the BIPM Pension and Provident Fund should be recommended for approval by the CIPM and that the “Director be granted Quietus”. P. Richard presented a draft decision to this effect. The seventeen CIPM members attending the meeting approved the draft decision.

Decision CIPM/112-21 (2023) The CIPM confirmed its approval of the audited financial statements of the BIPM and of the BIPM Pension and Provident Fund for 2022, which were reviewed by the CIPM Sub-Committee on Finance in May 2023.

The CIPM granted the BIPM Director quietus for the 2022 exercise.

CIPM Sub-Committee on Governance

P. Richard said that the Sub-Committee had held its first meeting on 20 June. Raphael Portmann, a lawyer from METAS, supported P. Richard at the meeting and provided an external view on the issues discussed. Three main subjects were identified in advance of the meeting and a working document was produced to assist with the preparation of the meeting. These were organizational structure, roles and responsibilities, and the CIPM election process. He recalled that there had been an open discussion covering all the options with the objective of collecting ideas, which the Sub-Committee will collate into a summary. The next step will be a consultation exercise with external legal advisers and the BIPM Legal Adviser. The Sub-Committee will then ask a legal expert to draft a first version of the By-Laws.

P. Richard gave a summary of the agenda for the work of the Sub-Committee. The consultation exercise mentioned above will be carried out during mid-2023 and the first draft of the By-Laws is scheduled for completion in late September/early October 2023. This schedule will allow the Sub-Committee to discuss the first draft and to inform the CIPM and the 22nd meeting of the NMI directors about the process at their meetings in October 2023. The Sub-Committee will then carry out the first official consultation of the By-Laws with Member States by the end of 2023.

6. REPORTS FROM THE CONSULTATIVE COMMITTEES AND JOINT COMMITTEES

Consultative Committee for Mass and Related Quantities (CCM)

P. Richard presented the report [CIPM/2023-II-7a](#) “CCM Report to the 112th CIPM, 2023”. The CCM had held its 19th meeting on 25-26 May 2023. There had been 100 participants at the hybrid meeting, with 70 % on-site at the BIPM Headquarters and 30 % on-line. The CCM working groups and task groups made nine presentations during the meeting and there had been a workshop each day on new activities and digitalization in the CCM area. The CCM meeting received updates on the technical work at the BIPM and on the digital transformation activities, particularly the work towards an SI Reference Point.

The CCM had discussed the consensus value for the kilogram and developed a CCM recommendation to the NMIs that have a realization of the kilogram so that they engage in targeted activities to directly investigate any lack of agreement between individual NMIs’ realizations of the kilogram. P. Richard presented the text of the recommendation, which the CCM had developed in advance of the third key comparison of primary realizations of the kilogram.

P. Richard said that the CCM had received two applications for membership at its meeting: NIS (Egypt) and UME (Türkiye). The CCM President and the working group chairs supported both applications and he asked the CIPM for approval.

P. Richard finished his presentation by noting that the CCM will celebrate its 20th meeting, along with meetings of its Working Groups, on 23-27 June 2025. He thanked H. Fang, the Executive Secretary of the CCM, for her support over the last year.

The President thanked P. Richard and asked the CIPM members if they approved the two applications for membership. The CIPM approved the applications and agreed the following draft decision.

Decision CIPM/112-22 (2023) The CIPM accepted the following changes to the membership of the Consultative Committees:
 CCM
 NIS (Egypt) as a member
 UME (Türkiye) as a member.

Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM)

S.-R. Park presented the report [CIPM/2023-II-7b.1](#) “CCQM report to the CIPM”. He said that the 28th meeting of the CCQM had been held at the BIPM Headquarters on 27-28 April 2023. This was the first time the CCQM had held an in-person meeting, with the possibility to participate remotely, after three years of on-line only meetings. He noted that the adoption of new technologies to hold hybrid meetings has brought some positive benefits, for example leading to increased participation.

S.-R. Park said that a significant task at the CCQM meeting had been to appoint the chairs of five working groups and four Deputy Chairs to replace those who had reached the end of their terms in April 2023. The CCQM approved the initiation of 24 new comparisons in 2023 as foreseen in the CCQM 2021-2030 Strategy. In addition, the CCQM set up a Steering Committee for a CCQM Workshop on digital FAIR data in 2024; Carlos Gonzalez (NIST) will lead the Steering Committee. A newly-formed CCQM Task Group on Metrology Education is drafting its Terms of Reference. He noted that many academic programmes in chemistry and biology do not include metrology on the syllabus; the aim will be to address this by advocating for metrology resources to be added to academic curricula. The BIPM e-learning platform offers opportunities in this area. He added that other organizations, for example International Union of Pure and Applied Chemistry (IUPAC) and International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) had expressed similar concerns about the lack of educational materials on metrology.

The CCQM approved the formation of a CCQM Task Group on Metrology for Lithium-ion batteries, which will collaborate with experts from the Consultative Committee for Electricity and Magnetism (CCEM) and possibly other CCs.

S.-R. Park said that the CCQM Workshop on Particle Metrology, held on 25-27 October 2022 may result in possible collaboration with the Consultative Committee for Length (CCL) to investigate areas such as fine airborne particulates. The CCQM Workshop on Metrology for Viral systems as molecular tools on 24-27 January 2023 resulted in plans to form a Task Group on Metrology for Viral Vectors, for which Terms of Reference are being drafted. He added that the final outcomes of the CCQM's response to the Covid-19 pandemic were the publication of the "CCQM Roadmap to Metrology Readiness for Infectious Disease Pandemic Response" and plans to strengthen collaboration under the Memorandum of Understanding (MoU) with the World Health Organization (WHO).

S.-R. Park said that the joint Consultative Committee for Units (CCU)/CCQM Workshop on the metrology of quantities which can be counted, held on 28-30 March 2023, was very successful, attracting more than 400 participants. The joint CCRI-CCQM Workshop on the Use of Mass Spectrometry in Radionuclide Metrology: Opportunities and Challenges, held on 14-16 February 2023 was also very successful and resulted in CCRI(II) laboratories being invited to participate in the CCQM-P223 study on rare-earth elements, thorium and uranium in soil.

S.-R. Park completed his presentation by recalling that the theme for World Metrology Day 2023 had been "Measurements supporting the global food system". This theme was of greatest importance to the CCQM and its stakeholders had made available a number of videos on the theme of "metrology to support food safety in the global supply" in advance of 20 May. The CCQM is reviewing a number of follow-up actions in the area of evolving needs in metrology in food safety.

The President thanked S.-R. Park and invited questions and comments.

J. Ullrich agreed that the joint CCU/CCQM Workshop on the metrology of quantities which can be counted had been successful. The follow-up actions will consider the relevant text in the SI Brochure. P. Neyezhnikov said that the workshop included clarification of the treatment of counting as a measurement process and a description of numbered quantities in the SI Brochure and the International Vocabulary of Metrology (VIM). The treatment of counting of numbered quantities in the VIM will be taken forward independently by the JCGM Working Group on the International Vocabulary of Metrology (JCGM-WG2:VIM).

The Director said that each CC has digitalization activities and the CCQM is the first to come forward with a proposal for a workshop. The hope is that the CCQM Workshop on FAIR digital data in chemistry and biology will broaden the discussion on the digitalization challenges in its community. The President suggested that existing resources within the CCs should be considered before setting up new working and task groups for digitalization. R. Wielgosz added that the CCQM has not set up a dedicated working or task group on digitalization as there are many efforts being undertaken within its existing structure. The workshop will focus on the unique added value to the chemistry and biology community, and following the workshop, the CCQM will take a decision on whether there is a need for a working group or forum to continue with the work.

R. Wielgosz was asked if the CCQM has agreed a date for the workshop. He replied that June 2024 has been set as a provisional date. The on-line workshop will take place over several days and will include pre-recorded presentations, followed by discussions, which will be led by experts from each area. The CCQM is considering three potential topics for inclusion in the workshop: unique identifiers for chemistry and biology species; digitalization of certified reference material (CRM) certificates; and databases for chemistry and biology and how to apply FAIR principles.

S.-R. Park asked G. Rietveld for an update on progress regarding collaboration between the CCEM and the CCQM on lithium-ion batteries. G. Rietveld said that he had received a request for cooperation from S. Seitz, the Chair of the CCQM Task Group on Metrology for Li-ion batteries. G. Rietveld will contact S. Seitz, now that the CCQM has formally approved the formation of the Task Group in order to determine the next steps.

Consultative Committee for Ionizing Radiation (CCRI)

J.-T. Janssen presented the report [CIPM/2023-II-7c](#) “CCRI report to the CIPM”. He noted that the 29th meeting of the CCRI, held on 8-9 June 2023, had been his first as President. The hybrid meeting had 66 participants, with 36 on-site at the BIPM headquarters in Sevres. The meeting received reports from the three Sections of the CCRI, as well as reports from its working groups and task groups.

The meeting of CCRI Section I: X- and gamma rays, charged particles (CCRI(I)) was held at the International Atomic Energy Agency (IAEA) and was a joint meeting with the Secondary Standard Dosimetry Laboratory (SSDL) Network. Such a joint meeting will be repeated possibly in 2029. The representatives from CCRI(I) expressed concerns at the meeting about the technical workload on BIPM staff in this area in supporting comparisons.

J.-T. Janssen said that the meeting of CCRI Section II: Measurement of radionuclides (CCRI(II)) had discussed the advances in transportable reference standards, particularly linking these standards to RMO activities. There is growing interest for comparisons in an increasing range of different radionuclides, as well as shorter-lived isotopes, particularly among countries that are far from the BIPM headquarters in Sevres. Different approaches are being developed to provide traceability for these short-lived radionuclides. The plan is to make copies of the BIPM International Reference System Transfer Instrument (SIRTI) within the different RMOs. The RMO-SIRTIs would then be compared to the BIPM instrument. This will allow local traceability as well as reducing the workload of the BIPM staff. He noted that the ESIR (extension of SIR to beta and alpha emitters) will start in 2024.

The meeting of CCRI Section III: Neutron measurements (CCRI(III)) discussed the growing problem of transporting neutron sources across borders, as well as the regulations on holding such sources in laboratories. In addition, CCRI(III) discussed the cost of acquiring neutron sources; it has set up a task group to investigate these issues. CCRI(III) is considering the establishment of a task group on high-energy neutron sources and a workshop on high-energy neutron metrology.

J.-T. Janssen summarized the recommendations and actions agreed at the CCRI meeting and highlighted the recommendation for NMIs/DIs to use the unique digital CMC identifiers from the KCDB.

- all NMIs/DIs participating in the CCRI are recommended to use the unique digital CMC identifiers from the KCDB and the BIPM is asked to make available appropriate training material to encourage this practice.

The President thanked J.-T. Janssen and opened the floor for questions.

G. Macdonald asked if the CCRI(II) has consulted with the RMO Technical Committees to ensure that the capabilities exist to support the comparisons using the RMO-SIRTIs. J.-T. Janssen confirmed that this had been discussed with the RMOs and added that it is individual laboratories within the RMOs that are building the copies of the SIRTI. V. Gressier recalled that the initial requests for copies of the SIRTI had had been made by the RMOs.

Joint Committee for Guides in Metrology (JCGM)

P. Neyezhnikov recalled that the Committee Draft (CD) of document JCGM GUM-1:202X (Guide to the expression of uncertainty in measurement - Part 1: Introduction) had been circulated to the JCGM Member Organizations (MOs) and the NMIs for comment in 2022. The JCGM Working Group on the Expression of Uncertainty in Measurement (JCGM-WG1:GUM) had received no substantial objections and all 293 of the comments received were addressed. JCGM-WG1:GUM checked the document and carried out rewording where required. Subsequently, JCGM-WG1:GUM has produced a Final Draft of the document, which was circulated to the JCGM MOs for final approval in March 2023. P. Neyezhnikov asked the CIPM for their approval of the final draft, which was granted by all seventeen members present.

Decision CIPM/112-23 (2023) The CIPM approved the Final Draft of the document JCGM GUM-1:202X (Guide to the expression of uncertainty in measurement — Part 1: Introduction).

7. REPORT FROM THE INTERNATIONAL LIAISON AND COMMUNICATION DEPARTMENT

A. Cypionka reported on the work of the International Liaison and Communication Department. She started with an update on progress with the organization of the Young Metrologists' 2050+ Vision exercise. C. Kuanbayev is managing the exercise, with support from K. Sung since early June 2023. The RMOs have appointed coordinators to work with C. Kuanbayev on the exercise and further nominations are expected. The group held a preparatory meeting in May 2023 to prepare a questionnaire in association with the RMO coordinators. The questionnaire focused on three topics: challenges and opportunities; future delivery of metrology; and immediate actions. The BIPM will make available a dedicated webpage, which will give the background to the exercise and the names of the RMO coordinators. A meeting will be held in late June to start planning virtual events in each RMO to progress with the consultation process.

A. Cypionka continued by describing progress with the new SI Reference Point (SIRP). G. Duddle, on secondment from METAS, carried out much of the development work together with an external software contractor. G. Duddle's secondment will end in August 2023. It is expected that the new digital service and a number of use cases will be available to allow beta testing in September. The beta testing will be carried out by certain members of the Expert Group of the CIPM Task Group on the SI Digital Framework, before being extended to experts from the NMIs. The SIRP will be made openly available for testing after the beta-testing stage is successfully completed. A. Cypionka acknowledged that the work on the SIRP is also being supported by an additional secondee from the NPL, who is working remotely on the project.

The President thanked A. Cypionka and asked if there were any questions.

J. Olthoff said that he did not have a question, but asked if the CIPM could consider the renewal of the MoU between the BIPM and the International Laboratory Accreditation Cooperation (ILAC). He recalled that the MoU is ready for renewal with a minor modification to the period of the renewal cycle. He added that the renewal period is currently on a three-year cycle and it is proposed to be extended to five-years. J. Olthoff said that he will circulate the revised MoU to members of the CIPM for their approval, noting that it has already been approved by the CIPM bureau. The President said that the changes to the MoU are minor and also include a change from using "Chairman" to "Chair". He asked the Secretary to circulate the MoU and the CIPM to provide their comments and approval or rejection as quickly as possible. The CIPM adopted the following draft decision by correspondence after the meeting.

Decision CIPM/112-24 (2023) The CIPM approved the renewal of the BIPM-ILAC Memorandum of understanding with an amendment to the renewal period from 3 years to 5 years.

8. ANY OTHER BUSINESS

Report from the CIPM Task Group on the SI Digital Framework

J. Ullrich presented the report [CIPM/2023-II-9a](#) "Report from the CIPM-TG-DIG". He recalled that the CIPM had adopted Decision CIPM/112-12 (2023) at its previous session, which approved the establishment of a forum on metrology in the digital world. He noted the draft mission and structure and said that the Task Group has proposed that the name should be the "Forum on Metrology and Digitalization".

J. Ullrich presented the elements of the Work Plan of the BIPM Headquarters that cover Digital Transformation activities in 2023 and 2024. This description of the activities is significantly more detailed than that developed for the 27th meeting of the CGPM in 2022. It was developed following recommendations from the Expert Group. He commented that the detailed Work Plan covers the two-year period 2023 and 2024 since the needs in digitalization are changing very rapidly. He said that it is comprehensive and covers many technical details, with very clear and ambitious milestones. Both the Task Group and the Expert Group have unanimously recommended its adoption.

He observed that Work Plan is very ambitious; additional resources, for example secondees, may be required and the NMIs were asked for support in this area. J. Ullrich thanked J. Miles and her team for their work and presented the text of a draft decision that covered the adoption of the proposed name of the forum, adoption of the mission and structure, and approval of the Work Plan. He asked the CIPM to consider the draft for approval.

J. Ullrich gave a summary of the activities of the CIPM-TG-DIG since the last session of the CIPM in March 2023. An online briefing on the establishment of a Forum for Metrology and Digitalization for the NMIs, RMOs, CCs and stakeholders was held on 22 May 2023. J. Miles has produced a summary of the briefing. The CCs are in the process of setting up Task Groups in digitalization and the forum will need to work on exchanges and harmonization between the RMOs and CCs and vice versa. The briefing heard that there is a requirement for high-level communication and standardization in areas such as Digital Calibration Certificate (DCC) formats and cross-communication between fields. The briefing also discussed the possible involvement of industry and the IT and human resources required to deliver the Work Plan. The need to continue to monitor technological developments was highlighted, particularly in the areas of block chains, AI in metrology and digital identifiers.

J. Ullrich said that the joint OIML-CIPM Digitalization Task Group had held its first meeting on 3 May 2023. The group discussed the establishment of a “Hub” to serve as a platform between the signatories to the “Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure”. The hub will allow the signatories to jointly develop, implement and promote their work in this area. The joint Task Group is planning a second meeting, the outcomes from which will be presented to the CIPM at Session III of its meeting in October 2023.

The President thanked J. Ullrich and invited questions and comments.

G. Macdonald said that she is a member of the CIPM-TG-DIG and noted that the scope of the proposal for the forum is ambitious and that it will have a similar structure to a Consultative Committee. She commented that J. Ullrich had made the supporting documents for the forum available in advance of the meeting and that these documents give the context for the forum. She added that although the CIPM-TG-DIG has set a rapid timetable for the proposed work, it is essential that actions are taken quickly due to the fast-moving nature of the field of digital transformation. D. del Campo Maldonado asked if the involvement of NMIs in the forum will be formalized in the same way as for a Consultative Committee. J. Ullrich replied that this is the intention. J. Olthoff said that the size of the forum is a concern, however the field of digital transformation is evolving in an unpredictable way. H. Laiz recalled that the meeting of NMIs, RMOs, CCs and stakeholders held on 22 May 2023 had found that there is strong support for the forum and that it will mirror the structure of a CC. The CIPM adopted the following draft decision.

Decision CIPM/112-25 (2023) The CIPM adopted “Forum on Metrology and Digitalization” as the name for the horizontal forum on digitalization. It adopted the mission and structure of the forum and approved the BIPM Headquarters’ updated workplan on digitalization for 2023 and 2024.

Proposal for a Quantum Technologies workshop

J.-T. Janssen recalled that he had told the previous session of the CIPM about the enthusiasm among the metrology community for a coordinated activity in the area of quantum technologies. He suggested that a similar approach might be taken to that followed by the CIPM Sectorial Task Group on Climate Change and Environment. The first phase will involve the organization of a workshop on the needs for measurement approaches and standards for quantum technologies to determine the priorities and the scope of a horizontal forum. He added that quantum technologies impact many of the CCs and there are numerous national programmes already under way around the world.

J.-T. Janssen said that he is involved in discussions with the BIPM to reserve possible dates for a two-day workshop at its headquarters in Sevres. A provisional date of 21-22 March 2024 has been set. The expected outcomes are that the workshop would set the scope for a possible horizontal forum, as well as developing a

roadmap with recommendations and actions. A document will be produced following the workshop to give details of the outcomes. He commented that if the workshop does not find that there is enough interest in setting up a forum, the work in this area could be coordinated by additional workshops in the future. It was noted that a number of NMIs have already committed to participating in the organizing committee to prepare the workshop.

The President thanked J.-T. Janssen and opened the floor for questions and comments.

J. Ullrich observed that this is a timely proposal with significant expenditure and many large programmes under way around the world. He added that there is a lot of experience in the NMIs in this area and there will be a future need for standardization, terminology standards and technical standards to support the rapidly expanding quantum technology market. M.L. Rastello suggested that participation in the two-day workshop should be broadened to ensure that technical experts from as many fields of quantum technology as possible are included to ensure that all areas are covered.

Report from the CIPM Sectorial Task Group on Climate Change and Environment

D. del Campo Maldonado began by highlighting the recently published report from the “Metrology for Climate Action” workshop held by the BIPM with the WMO. The report had been approved by the WMO and she thanked R. Wielgosz and E. Flores Jardines for their hard work on it.

D. del Campo Maldonado said that the CIPM Sectorial Task Group on Climate Change and Environment (CIPM-STG-CENV) has expanded its membership, following the suggestion by V.G. Achanta at the previous Session, to include a sub-group for developing economies. As a result, a representative has been added from NPLI (India) and the WMO is seeking a representative from Africa with experience in the environmental field. She recalled that the CIPM-STG-CENV held its first meeting and a second will be held in early July 2023.

D. del Campo Maldonado suggested that following the BIPM’s admittance as an observer international organization to the United Nations Framework Convention on Climate Change (UNFCCC), A. Cypionka should attend the COP28 meeting on 30 November to 12 December 2023 as an observer to gain knowledge and experience of how to make contributions at future meetings. A. Cypionka will then report back to the CIPM-STG-CENV on the possibilities for attendance at COP meetings in 2024 and 2025.

She completed the presentation by noting that the CIPM-STG-CENV includes environmental challenges and this sector is very wide-ranging, however there is limited expertise in this area within the metrology community. A similar consultation exercise and workshop to that carried out for metrology in climate action in 2022 should be considered for the environmental area. In addition, the consultation exercise for the development of the 150th anniversary of the Metre Convention could include questions regarding environmental challenges.

The President thanked D. del Campo Maldonado and asked for feedback. He added that a CIPM member could also attend the COP28 meeting.

Future meeting dates

Session III of the 112th meeting of the CIPM	17-18 October 2023
Session I of the 113th meeting of the CIPM	19 March 2024
Session II of the 113th meeting of the CIPM	19-20 June 2024

9. CLOSE OF MEETING

The President thanked all the participants and closed the meeting.