

**International Committee  
for Weights and Measures**  
Proceedings of the 109th meeting  
(12-14 October 2020)

## Executive Summary

### **109th meeting of the CIPM (12-14 October 2020)**

#### **Covid-19 pandemic response**

The effect of the Covid-19 pandemic on the BIPM and the way it has responded to the challenges was a recurring theme throughout the meeting.

#### **CIPM representative to JCGM-WG2**

Prof. Neyezhnikov will represent the CIPM at the JCGM-WG2:VIM.

#### **OIML D-01 as a joint publication**

Document OIML D-01 should be developed for final publication as a joint BIPM/OIML publication.

#### **MoU between the BIPM and ITU approved**

The draft MoU between the BIPM and the International Telecommunication Union ITU was approved.

#### **Audited financial statements for 2019**

The CIPM confirmed its approval of the audited financial statements of the BIPM and of the BIPM Pension and Provident Fund which were reviewed by the CIPM Sub-Committee on Finance in June 2020. The CIPM granted the BIPM Director quietus for the 2019 exercise.

#### **Online meetings**

The CIPM decided to allow Consultative Committees, Consultative Committee Working Groups and Consultative Committee Workshops to be held online and agreed to version 3.1 of document CIPM D-01

#### **MoU between the BIPM and IFCC approved**

The draft MoU between the BIPM and the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) was approved.

#### **Republic of Azerbaijan to be encouraged to accede to the Metre Convention**

The CIPM decided that it would be appropriate for the Republic of Azerbaijan to accede to the Metre Convention.

#### **Working Group closure**

The CIPM Task Group to propose terms of reference for a Working Group of Member State representatives completed its tasks and has been closed.

#### **Advances made by Member States**

The CIPM agreed with the timetable proposed by the Chair of the Sub-Committee on Finance (FSC) to implement Resolution 5 “On the financial arrears of Member States and the process of exclusion” of the 26th meeting of the CGPM (2018) and requested the FSC to continue to coordinate the needed actions to build a consensus amongst advancing Member States on the issue.

#### **BIPM Pension Fund**

The CIPM welcomed the report from the PFAB Chair and noted the participative and consensus-building approach taken by the CIPM Members and Staff and Pensioner Representatives.

The CIPM endorsed the 2019 Actuarial Study and considers it as an expert actuarial basis for its decision making to ensure the long-term financial stability of the Pension Fund.

The CIPM asked the FSC to explore the possibility and feasibility of authorizing exceptional contributions or

voluntary injections of liquidity into the Fund.

The CIPM asked the BIPM Director to consider commissioning a new actuarial study before the next meeting of the CGPM.

### **Rules, Regulations and Instructions applicable to BIPM staff**

The CIPM approved the amendments to Title IV (Service and Leave) of the RRI. The new provisions of the RRI will enter into force as of 1 January 2021.

### **Joint Task Group between the BIPM and the OIML**

The CIPM approved the Terms of Reference of a Joint Task Group between the BIPM and the OIML with the aim to foster enhanced cooperation between BIPM and OIML.

### **Evolving Needs in Metrology**

The CIPM welcomed the draft document “Evolving Needs in Metrology” prepared by SC1 of the Sub-Committee on Strategy and decided to appoint CIPM contact persons for each theme proposed.

### **“Grand Vision” prepared by the Task Group on the “Digital SI”**

The CIPM endorsed the “Grand Vision” prepared by the Task Group on the “Digital SI” (TG) and the Expert Group (EG), recognizing that it will continue to evolve.

### **IMU granted ‘liaison organization’ status in the CCU**

The CIPM decided to grant the status of ‘liaison organization’ within the CCU to the International Mathematical Union (IMU).

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

As of 12 October 2020

**President**

W. Louw, South Africa.

**Secretary**

T. Usuda, Japan.

**Members**

F. Bulygin, Russian Federation.

D. del Campo Maldonado, Spain.

I. Castelazo, Mexico.

N. Dimarcq, France.

Y. Duan, China.

H. Laíz, Argentina.

T. Liew, Singapore.

P. Neyezhnikov, Ukraine.

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

S.-R. Park, South Korea.

M.L. Rastello, Italy.

P. Richard, Switzerland.

G. Rietveld, the Netherlands.

M. Sené, United Kingdom.

A. Steele, Canada.

J. Ullrich, Germany. *CIPM Vice-President.*

**Honorary members**

W.R. Blevin, Australia.

L.M. Branscomb, United States of America.

E.O. Göbel, Germany.

B. Inglis, Australia

K. Iizuka, Japan.

R. Kaarls, the Netherlands.

J. Skákala, Slovakia.

## Agenda

1. Opening of the meeting and approval of the agenda
2. Secretary's report (including recall of decisions taken by correspondence)
3. Director's report
4. Finance
  - Report from FSC Chair
  - Update on payments received and spend to date
5. Institutional matters
  - Advances made by Member States (“the CIPM shall address the situation where historical practice has resulted in the accumulation of arrears” - Resolution 5 of CGPM (2018)
  - Update on status of Member States and Associate States and Economies
6. Staff matters – Pension and salary
  - Report from the PFAB Chair and Recommendation from the PFAB following the Actuarial Study of 2019
7. Staff matters - Changes to the RRI
8. Report on Liaison activities
9. Terms of Reference for the Joint OIML/BIPM Task Group
10. Rules of Procedure for the CIPM
11. Reports on progress with strategy discussions.
  - SC1: Responding to evolving needs for metrology
  - SC2: Addressing key scientific challenges
  - SC3: Strategy for deepening engagement with other IOs
  - SC4: Review of the strategy for future membership of the Organization
  - SC5: Modernizing the operations of the organization
12. Report from the CIPM Task Group on the “Digital-SI”
13. Questions and discussion of points arising from reports by CC Presidents:
  - CCs that had planned plenary meetings in 2020 - CCQM, CCT and CCTF
  - Other CCs and JCs
  - Applications for Membership and Observership
14. Report and progress with the 2020-2023 Work Programme and plans for revisions following the global pandemic
15. Plans for the 27th meeting of the CGPM
16. CIPM policy on “hybrid” meetings for CCs
17. Any other business

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

The International Committee for Weights and Measures (CIPM) held its 109th meeting on Monday 12 to Wednesday 14 October 2020 online.

Present: F. Bulygin, D. del Campo Maldonado, I. Castelazo, N. Dimarcq, Y. Duan, H. Laiz, T. Liew, W. Louw, M.J.T. Milton (Director of the BIPM), P. Neyezhnikov, J. Olthoff, S.-R. Park, M.L. Rastello, P. Richard, G. Rietveld, M. Sené, A. Steele, J. Ullrich and T. Usuda.

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director and Head of the Secretariat and Housekeeping Office), C. Planche (Librarian and Drafting Officer) and R. Sitton (Publications Officer).

The following were in attendance for parts of the meeting:

H. Fang (Executive Secretary of the CCM), R. Guliyeva (International Liaison Assistant), A. Henson (Director of the International Liaison and Communication Department), P. Imbert (Head of Human Resources), S. Judge (Director of the Ionizing Radiation Department), G. Panfilo (Executive Secretary of the CCAUV), S. Picard (Executive Secretary of the CCT), F. Rojas Ceballos (Legal Adviser), M. Stock (Director of the Physical Metrology Department and Executive Secretary of the CCEM and CCU), P. Tavella (Director of the Time Department and Executive Secretary of the CCTF) and R. Wielgosz (Director of the Chemistry Department and Executive Secretary of the CCQM)

With 18 members present at the start of the meeting the quorum was satisfied according to Article 12 of the Regulations annexed to the Metre Convention.

Dr Louw, the CIPM President, asked if there were any changes or additions to the draft agenda. There were no changes and the agenda was adopted. He recalled that the minutes of session II of the 108th meeting (2019) had been circulated to the CIPM for comment and that the latest version, with comments incorporated, had been available on the CIPM members' working area of the BIPM website in advance of the meeting. He asked the CIPM for acceptance of the minutes as a true record.

**Decision CIPM/109-01** The CIPM accepted the minutes of the second session of the 108th meeting of the CIPM as a true record.

Following a brief discussion on the format of the official record of the 109th meeting, it was confirmed that the written report will continue to be the official record. The audio and video recordings are used solely as an *aide memoire* by the BIPM staff during the drafting of the minutes, following which the files are deleted.

The President followed up on the decisions from Session II of the 108th meeting. Prof. Ullrich recalled that Decision CIPM/108-26 and Decision CIPM/108-28 are ongoing within the CCU. Decision CIPM/108-38, regarding the MoU with the Preparatory Commission of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is nearing completion. The Director noted that the CTBTO has agreed with the wording of the MoU and the text will be circulated to the CIPM for a decision by correspondence after the current meeting. The President referred to Decision CIPM/108-19 and confirmed that the CIPM Task Group to propose terms of reference for a Working Group of Member State representatives had completed its tasks.

**Decision CIPM/109-02** The CIPM noted that the Task Group established by Decision CIPM 108-19 to propose terms of reference for a Working Group of Member State representatives had completed its mandate and decided to close it.

Progress with other outstanding decisions was covered under the agenda items.

## 2. SECRETARY'S REPORT (INCLUDING RECALL OF DECISIONS TAKEN BY CORRESPONDENCE)

Dr Usuda, the CIPM Secretary, gave a presentation that summarized the contents of documents [CIPM/2020-02.01](#) "Bureau meetings held on 14 and 23 September 2020" and [CIPM/2020-02.02](#) "Decisions taken by correspondence". He began by thanking the CIPM members for submitting documents in advance of the meeting for posting on the CIPM members' working area. The Secretary recalled that the Bureau had discussed the schedule and agenda for the 109th meeting of the CIPM, institutional matters including membership of the BIPM, the procedure to update appendices of the *SI Brochure*, a policy for hybrid meetings and the voting process for online meetings. He added that the institutional matters discussed had included an update about Chinese Taipei, Kosovo and Azerbaijan and their engagement with the BIPM, as well as the outstanding subscriptions of Cuba, Panama and Zimbabwe. These issues will be discussed under §5 on the agenda. The Bureau's discussion on hybrid meetings had culminated in the drafting of the document "General Considerations and Rules for holding Hybrid Meetings in 2021" (CIPM/2020-16.01) for discussion and approval by the CIPM (See §16).

The Secretary continued by recalling that the CIPM had made eight decisions by correspondence since its last meeting in October 2019 and that it need to be officially noted in this meeting.

**Decision CIPM/109-03** The CIPM noted the decision taken by correspondence on 28 February 2020 that Prof. Neyezhnikov will represent the BIPM at the JCGM-WG2:VIM. Seventeen members had voted in favour and one had abstained.

**Decision CIPM/109-04** The CIPM noted the decision taken by correspondence 9 March 2020 that the document OIML D-01 should be developed for final publication as a joint BIPM/OIML publication. Twelve members had voted in favour and six had abstained.

**Decision CIPM/109-05** The CIPM noted the decision taken by correspondence on 13 June 2020 that the draft MoU between the BIPM and the International Telecommunication Union (ITU) was approved. Seventeen members had voted in favour and one had abstained.

**Decision CIPM/109-06** The CIPM noted the decision taken by correspondence on 3 July 2020 that it confirmed its approval of the audited financial statements of the BIPM and of the BIPM Pension and Provident Fund which were reviewed by the CIPM Sub-Committee on Finance in June 2020. The CIPM granted the BIPM Director quietus for the 2019 exercise. All eighteen members had voted in favour.



**Decision CIPM/109-07** The CIPM noted the decision taken by correspondence on 7 August 2020 to allow Consultative Committees, Consultative Committee Working Groups and Consultative Committee Workshops to be held on-line and agreed version 3.1 of CIPM D-01 “Rules of procedure for the Consultative Committees (CCs), CC working groups and CC workshops”. Seventeen members had voted in favour.

**Decision CIPM/109-08** The CIPM noted the decision taken by correspondence on 21 August 2020 to hold its 109th meeting online between 11:00 and 13:30 (UTC) on 12, 13 and 14 October 2020. All eighteen members had voted in favour.

**Decision CIPM/109-09** The CIPM noted the decision taken by correspondence on 11 September 2020 that the draft MoU between the BIPM and the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) was approved. Sixteen members had voted in favour.

**Decision CIPM/109-10** The CIPM noted the decision taken by correspondence on 9 October 2020 that, on the basis of the criteria it has previously adopted, it would be appropriate for the Republic of Azerbaijan to accede to the Metre Convention. The BIPM will convey the Decision, recalling Resolution 4 ‘On the status of Associate State of the General Conference’ adopted by the CGPM at its 24th meeting, and the implications regarding the increase in subscription should the Republic of the Azerbaijan choose to remain as an Associate of the CGPM. Sixteen members had voted in favour.

### 3. DIRECTOR’S REPORT

The Director gave the following report:

“I would like to start my report by congratulating Dr Patrizia Tavella, the Director of the Time Department at the BIPM who has been awarded the Enrico Fermi Prize by the Italian Physical Society. The prize was awarded jointly to her and Dr Giovanni Mana of INRIM. The citation reads: “for their original and important contributions to the measurement of time and to the definition of mass”. We all know that her work is central to the success of the BIPM and to its services in providing UTC. This award provides well-deserved recognition for her achievements.

The dominating event in the period since the last meeting of the CIPM has been the global COVID-19 pandemic and the consequent confinement measures that affected us in France, as in most other countries around the world. The special measures implemented by the French Government to protect the health of everyone in France were imposed at the beginning of March and were lifted at the beginning of July. Whilst the strict confinement has now been lifted, many other measures are still in place that we have adopted into our working practices on the BIPM site.

Attendance on site in Sevres was greatly limited during the period of confinement. Fortunately, we were able to ask nearly all our staff to work from home. Thanks to the use of on-line meeting technology the five directors of the departments and the heads of the support functions were able to re-organise the activities of their staff in order to keep our services running with only limited interruption. For example, the monthly publication of *Circular-T*, the presentation of World Metrology Day on 20 May and the renewal of the Key Comparison Database all continued without interruption.

Recognising that certain lab-based activities would be delayed, a number of activities that could be performed by tele-working were brought forward in our plans, for example: the automation of data handling for the SIR

service and the launch of new on-line capacity building webinars. We also took advantage of the time available to complete the transition of our Quality Management System to meet the requirements of the new standard ISO 17025:2017.

Throughout this period, we have been able to support the work of the Consultative Committees by providing on-line meetings and video meeting facilities. We have also maintained close contact with the NMIs to respond best as a “new normal” has emerged. Following an initiative by the CIPM President, we launched a web-based repository of information submitted by NMIs about their responses to the pandemic. Also, the Chemistry department worked on a very short timescale to support the CCQM in the preparation of two pilot studies on the measurement of the SARS-COV-2 virus.

Since the beginning of July, the confinement measures have been relaxed in France. We have been able to use tele-working to operate with a reduced number of staff on site in order to incorporate all the recommended health protection measures. During this time, we have been able to maintain close to 100 % efficiency in our activities.

I will now return to the topics that I report to each CIPM meeting. We have not recruited any staff in the last year, but two recruitments for the Time Department are underway. You will see the outcome of the work of the Legal Adviser with the Head of HR later on the agenda when they report on the staff salary survey, which was received shortly before this session and the proposals for amendments to Title IV of the RRI, which have been the subject of an advisory opinion from the staff representative committee *Commission des conditions d'emploi* (the CCE) and have been submitted for your decision later in this session.

In July, the Administrative Tribunal of the International Labour Organisation (ILO) (the ILOAT) published its judgements on two cases brought against the organization by two retired staff members. These cases were launched early in 2018. Since the cases were submitted in French, they were considered by three very senior French-speaking judges nominated by the Member States of the ILO. I am very pleased to report that the judgements confirm that the CIPM acted legally in 2017 when it took the decision to “freeze” the pensions in payment to retirees for 2018 and 2019.

I am also pleased to report that we have completed two very significant IT projects. The first is the launch of the new Key Comparison Database (KCDB) which has substantially greater capability than the first one by also coordinating the whole CMC review process carried out by the RMOs. The second is the upgrade of all the BIPM staff computers, to the latest Office 365 system, and, of course, providing them with access to WebEx and Zoom which are now essential parts of our working life. We are also very close to completing the implementation of a new BIPM website. This has been a huge project which will be launched next month. Finally, we have moved all the accounting software system to a cloud-based system and will be able to issue all payslips for staff and pensioners electronically from the beginning of next year.

As I mentioned above, as a result of the confinement measures in place in France, we have had to make some changes to our work programme. I have submitted these to you for your consideration later on the agenda.

There have, of course, been very few events held on site in 2020. I am pleased to report that the CIPM President hosted a reception with the OECD in February to launch their report on the work of the BIPM.

We achieved another “first” for recent years by hosting 140 visitors from the local community for the national *Journées des patrimoines* on 19 and 20 September. Finally, I would like to announce, that we will be holding a symposium online on Saturday 17 October, to celebrate the 100th anniversary of the award of the Nobel Prize for Physics to our most-distinguished Director, Charles-Édouard Guillaume.”

The President thanked the Director and invited questions and comments. It was asked if the BIPM has had any well-being engagement with its staff during the Covid-19 lockdown period. The Director replied that there has

been engagement with the CCE before any changes were made to onsite practices and that the BIPM has carefully followed the regulations issued by the French government covering the response to the pandemic. He added that exact provisions in each building had been delegated to the department directors, particularly regarding the use of shared spaces and the return to the laboratories. Dr Steele commented that the CIPM, in its role as the ‘overseeing body’ for the BIPM, should record its support for the introduction of pro-active measures to ensure the mental well-being of the BIPM staff while they are working from home, particularly those working alone or with families that need care during school closures.

The Director said that it is important to recall that when we talk about “teleworking” in France we currently mean a maximum of one or two days a week. We are not like UK and US where staff have been at home for many months. That period only lasted eight weeks in France. We have been almost fully working on site again since the beginning of May. All the summer period, which is so important in France, went almost exactly the same as usual.

#### 4. FINANCE

##### **Report from the CIPM Sub-Committee on Finance Chair**

Dr Richard, the Chair of the CIPM Sub-Committee on Finance (FSC), recalled that document [CIPM/2020-04.01](#) “Notes of the meeting of the CIPM Finance Sub-Committee” had been made available on the CIPM members’ working area of the BIPM website in advance of the meeting for noting. He added that the audited financial statements of the BIPM and of the BIPM Pension and Provident Fund for 2019 had been reviewed online by the CIPM Sub-Committee on Finance in June 2020. The Sub-Committee had recommended the approval of the accounts to the CIPM and this had been carried out unanimously by correspondence (See Decision CIPM/109-05).

The President confirmed that the report had been noted and thanked Dr Richard. He invited comments and questions. It was asked if the BIPM carries out continuous upgrades to its cybersecurity provisions, particularly in view of the increase in cybercrimes during the Covid-19 pandemic. The Director replied that a full cybersecurity review was carried out in 2019 and the BIPM has recently migrated to Office 365. He is considering whether another cybersecurity review will be useful in 2021 or 2022.

##### **Update on payments received and spend to date**

The Director presented the document [CIPM/2020-04.02](#) “Finance Report”. Contributions and subscriptions (income) received by the BIPM to date were in line with previous years, with a total of 11 635 921 € received as of 30 September 2020. The spend against budget to 30 September showed that site expenses of 591 071 € were significantly lower due to postponement of several site renovation projects as a result of the period of confinement. In addition, coordination and communication spend in the year to date stood at 13 752 €, which is significantly less than budgeted because no onsite meetings had been held during the period, and there had been no travel by staff since March 2020. Laboratory operating expenses and investments are expected to be on budget for 2020. Site investments will be below budget due to the difficulty in launching new projects during 2020.

The President thanked the Director and invited questions. In response to a question, the Director clarified that the budget figures shown in the 2020 expenditure and budget graph were for the whole year: expenditure in a ‘normal’ year would be expected to be at 75 % of budget by 30 September. He added that the salary spend for the year to 30 September was at 60 % of budget rather than the predicted 75 %, resulting in salary expenditure projected to be below budget for 2020. This lower than expected figure is due to open positions.

## 5. INSTITUTIONAL MATTERS

### **Advances made by Member States (“the CIPM shall address the situation where historical practice has resulted in the accumulation of arrears” - Resolution 5 of CGPM (2018))**

Dr Richard, in his role as Chair of the CIPM Sub-Committee on Finance (FSC), referred to document [CIPM/2020-05.01](#) “Considerations on CIPM actions needed to implement Resolution 5 of the 26th meeting of the CGPM (2018)”, with particular reference to the proposed timetable to implement the resolution. Mr Henson summarized the background to Resolution 5 and the situation regarding the accumulation of advances. Following a discussion, the CIPM agreed to the proposed timetable and asked the Sub-Committee to continue to coordinate the actions required to build a consensus amongst advancing Member States on the issue.

**Decision CIPM/109-11** The CIPM agreed with the timetable proposed by the Chair of the CIPM Sub-Committee on Finance to implement Resolution 5 of the 26th meeting of the CGPM (2018) and requested the CIPM Sub-Committee on Finance to continue to coordinate the needed CIPM actions to build a consensus amongst advancing Member States on the issue.

### **Update on status of Member States and Associate States and Economies**

Mrs Guliyeva joined the meeting and gave presentation [CIPM/2020-05.02](#). It was recalled that the Republic of Belarus, which has been an Associate State since 2003, became a Member State on 13 January 2020. This took the number of Member States to 62 and the number of Associate States and Economies (Associates) to 40. Estonia, Peru and the Philippines have now reached the final step on the ‘escalator mechanism’ towards being encouraged to become Member States.

Azerbaijan has been encouraged by the CIPM to accede to the Metre Convention, having been an Associate State since 2015 and having fulfilled the criteria related to Resolution 4 adopted by the 24th meeting of the CGPM (2011) and CIPM Decision CIPM/106-20 of October 2017 (See Decision CIPM/109-10, which was taken by correspondence).

Cambodia applied to become an Associate State on 8 July 2020 and has now completed all the necessary diplomatic steps. Confirmation of Cambodia becoming an Associate State on 1 January 2021 is dependent on the BIPM receiving the payment of its first annual subscription. The Dominican Republic has expressed an interest in re-engagement with the activities of the BIPM, following its exclusion in 2015. It has made enquiries about Decisions CIPM/108-33 and CIPM/108-34 and the amount it is in credit. Kosovo has made an approach to the BIPM; correspondence is being drafted following discussions within the CIPM bureau. Cuba, Panama and Zimbabwe are facing exclusion as Associates on 1 January 2021 unless timely payment of their outstanding subscriptions is received. *Notes verbale* were sent to the embassies of each State on 8 June 2020.

The situation regarding the calculation of the subscriptions for Associate Economies was queried. It was noted that any changes to the way in which subscriptions are calculated would require approval at the CGPM. The situation remains under consideration by the CIPM and a position is being developed in advance of the 27th meeting of the CGPM. The President added that nothing concrete has been developed so far and that the CIPM will be given the opportunity to comment and, if necessary, to take a decision.

## 6. STAFF MATTERS – PENSION AND SALARY STUDY

### Report from the PFAB Chair and Recommendation from the PFAB following the Actuarial Study of 2019

Dr Steele, Chair of the Pension Fund Advisory Board (PFAB) presented the package of documents in the zipped file [CIPM/2020-06.01](#) “Report from the PFAB Chair and Recommendation from the PFAB”, which had been made available on the CIPM members’ working area of the BIPM website. Reference was made to the PFAB Recommendation in the document “Recommendations to the CIPM on the long-term sustainability of the BIPM pension fund, which summarizes the background to the BIPM pension fund situation and makes recommendations for the decision making process and the proposed next steps for the pension fund. In this respect, Dr Steele noted that the report includes three recommendations in §18 that were made by the PFAB directly as a result of the Actuarial Study conducted by Mercer in 2019. In particular, the PFAB:

- RECOMMENDS that the CIPM endorse the conclusions formulated in the 2019 Actuarial Study as a valid expert analysis;
- RECOMMENDS increasing the Fund’s resources by authorizing exceptional contributions or voluntary injections of liquidity. Pursuant to articles 3.3 (b) or (c) of the BIPM Pension Fund Regulations, it is recommended to the CIPM to explore the possibility and feasibility of authorizing exceptional contributions or voluntary injections of liquidity into the Fund before the next actuarial study is conducted; and
- RECOMMENDS that a new actuarial study is commissioned, if possible before the next CGPM takes place, that could not only assess the financial impact of the COVID-19 situation world-wide, but which could provide the CIPM and the CGPM additional conclusions for their consideration.

Dr Steele recalled that the staff representatives to the PFAB had expressed concerns over certain issues, particularly the option for staff to join to the “Post-2017” Section of the Pension Scheme as of 1 January 2021 if they choose.

Dr Sené asked for clarification, to avoid any doubt, that at present, there is no recommendation to make changes to any of the terms and conditions of the pension fund or to the contributions made by staff. In addition, he asked if the intention is to open the possibility of authorizing exceptional contributions. Dr Steele confirmed that this is the case and that the intention is to pave the way for the next steps, considering what has already been established by the PFAB.

There was a discussion on whether some of the advances made by Member States to cover accumulated arrears of defaulting States could be paid into the BIPM pension fund. Dr Steele replied that the advances are held as part of the operational reserve fund, which may have to be reimbursed, and cannot be used for other purposes without first building a consensus among the advancing Member States. A consensus-building exercise is being undertaken by the CIPM Sub-Committee on Finance (See Decision CIPM/109-11). One option being pursued is the possibility of using the advances to cover unfunded liabilities, the largest of which is the pension fund. Dr Steele added that separate to the advances made to cover arrears, which have been set aside, the CIPM has previously authorized the transfer of money into the pension fund and that some of the operational savings made by the BIPM during the coronavirus pandemic (see §4) could be used to reduce the unfunded liability of the pension fund. The Director recalled that there is an existing precedent for using Member States’ advances for the pension fund: in 1895 the CIPM used advances to establish the pension fund (*Compte Rendu* of the 2nd meeting of the CGPM, 1875, pages 121 to 125).

The Director recalled that he has been asked by the BIPM staff if it is possible to transfer some of the money from the reserve fund into the pension fund, particularly considering the strength of the reserves.

Finally, the Director mentioned that the Administrative Tribunal of the International Labour Organization (ILOAT) issued its Judgments on 24 July 2020 ruling in favour of the BIPM concerning two outstanding complaints brought forward by two pensioners. Now that the Judgments have been issued and the decisions made by the CIPM concerning the Pension Fund confirmed, a timetable can be developed in collaboration with the Chairs of the PFAB and the FSC to re-examine the BIPM's reserves and to determine whether any money could be transferred into the pension fund.

Following a discussion, the CIPM welcomed the report by the PFAB Chair, taking note of the participative and consensus-building approach taken by the CIPM Members and Staff and Pensioner Representatives. The CIPM gave due consideration to the PFAB Recommendation together with its annexes, in particular to the 2019 Actuarial Study and the three recommendations in §18 and adopted as a result Decision CIPM/109-12.

**Decision CIPM/109-12** The CIPM welcomed the report from the Chair of the Pension Fund Advisory Board and noted the participative and consensus-building approach taken by the CIPM members and staff and pensioner representatives.

The CIPM endorsed the 2019 Actuarial Study and considers it as an expert actuarial basis for its decision making to ensure the long-term financial stability of the Pension Fund.

The CIPM decided to ask the Sub-Committee on Finance to explore the possibility and feasibility of authorizing exceptional contributions or voluntary injections of liquidity into the Fund pursuant to the discussions at the 2nd meeting of the CGPM and to articles 3.3 b) and c) of the Regulations of the Pension Fund.

The CIPM noted Article 3 of the Regulations of the Pension Fund, and asked the BIPM Director to consider commissioning a new actuarial study before the next meeting of the CGPM if necessary.

The Director reminded the CIPM that §18 (v) of the PFAB Recommendation noted that the CIPM may decide to offer the option for BIPM staff to join to the "Post-2017" Section of the Pension Scheme as of 1 January 2021 if they choose, as set forth in Decision CIPM/105-7, while giving due consideration to the actual scenarios tested in the Actuarial Study. If allowed by the CIPM, the one-time option to change Sections should be available to staff for implementation by December 2020. While the impact of having all eligible staff exercise this option was modelled in the Actuarial Study, it was not possible to model the impact of choices made by individual members, even though it is anticipated that few staff in the "Pre-2010" and "Post-2010" Sections will choose to change sections. He added that a decision was required at the 109th meeting to be able to offer this option to staff from 1 January 2021. The CIPM discussed this option, as noted in the PFAB Recommendation, which was adopted as Decision CIPM/109-13.

**Decision CIPM/109-13** The CIPM recalled Decision CIPM/105-07 and, whilst giving due consideration to the scenarios tested in the 2019 Actuarial Study, decided to offer the option for active BIPM staff to join the "Post-2017" Section of the Pension Scheme as of 1 January 2021 if they choose. This "one-time" option should be available to staff for implementation by the end of December 2020.

### **Salary Study (after review by the CIPM *ad hoc* Working Group on Conditions of Employment)**

Dr Usuda, Chair of the CIPM *ad hoc* Working Group on Conditions of Employment, gave a brief summary of the meeting held on 7 October 2020, details of which are presented in document [CIPM/2020-06.03](#). He recalled that the mission of the Working Group is to advise the CIPM whether the current salary structure is in line with other IGOs and NMIs. A study has been carried out by ISRP and the report was delivered shortly before the 109th meeting of the CIPM. The study will be reviewed by the Working Group and recommendations and proposals will be made to the CIPM in the future.

## 7. STAFF MATTERS - PROPOSED CHANGES TO THE RRI

Mr Rojas Ceballos, BIPM Legal Adviser, summarized the process that had been followed in the development of the proposed changes to the Rules, Regulations and Instructions (RRI) applicable to BIPM staff (Annexes 1 and 2 in the zipped file [CIPM/2020-07](#)). He recalled that the last review of the RRI was conducted in 2007. At the time, the amendments were made, taking into consideration the staff rules applicable to the Organisation for Economic Co-operation and Development (OECD) and were intended to attract, recruit and retain highly-qualified staff. However, these rules have not been regularly updated, particularly the provisions for flexible working arrangements, teleworking, sick leave, non-active status and special leave, which are no longer considered fit-for-purpose. An update is therefore recommended. The proposed modifications are based on the provisions applied at the OECD and tailored for the BIPM, such as accounting for the different size of the organizations (Comparison amendments BIPM and OECD staff rules in the zipped file [CIPM/2020-07](#)). All the proposed changes to the RRI followed a consultation procedure with the CCE, which has provided advisory opinions (Annexes 3 and 4 in a zipped file provided on 29<sup>th</sup> September 2020 [CIPM/2020-07](#)). It was noted that the CCE was not in agreement with all the proposals but that no counter proposals had been put forward.

Mr Rojas Ceballos recalled that the ILOAT in its recent judgements (4277 and 4278) had ruled that "the staff members of international organisations are not entitled to have all the conditions of employment or retirement laid down in the provisions of the staff rules and regulations in force at the time of their recruitment applied to them throughout their career and retirement. Most of those conditions can be altered during or after an employment relationship as a result of amendments to those provisions". Furthermore, the Tribunal recalled that "a competent authority is not bound to follow the recommendations of an advisory body which is internal to the organisation, except where a text requires that the advisory body give its assent". Therefore, the organization has the discretion to change the conditions of employment when appropriate, and in particular when those changes are in the organization best interest.

Mr Imbert, Head of Human Resources, added that the changes were not simply initiated by management proposals; they were also driven by several years of analysis of HR data that led to the conclusion that some of the existing rules were no longer adapted to today's reality. In some areas, changes were needed to avoid procedural errors or misunderstandings, and to help ensure consistency in the way staff issues are addressed.

The President thanked Mr Rojas Ceballos and Mr Imbert and initiated a discussion, particularly at whether the proposals were in the best interests of the BIPM and its staff. Dr Usuda, spoke as Chair of the CIPM *ad hoc* Working Group on Conditions of Employment which had considered all of the documents before the CIPM meeting. He recalled that the BIPM staff are not supported by any national pensions or welfare programmes and noted that the Working Group considers the proposed changes to be reasonable. Dr Richard, speaking as the Chair of the FSC, commented that the proposed updates are important from a financial perspective and for the stability of the organization, particularly those related to the provisions on sick leave.

It was asked why the list of illnesses to be considered for cases of long-term sick leave is dependent on [a list developed by] the BIPM medical practitioner, rather than referring to lists such as the one used by the OECD. The Director said that the BIPM's staff rules are independent and do not necessarily refer to the social security rules in France or to those of any other Member State. However, the BIPM does not have a full-time in-house doctor like the OECD does, so a 'middle ground' approach has been proposed. The list of illnesses can be developed and updated by the BIPM doctor in line with any changes in practice. Mr Rojas Ceballos added that the advantage of adapting the list on the advice of the BIPM doctor is that it will avoid having to come back to the CIPM for approval if any new illnesses, that might result in long-term sick leave, need to be added. If adopted, the staff rules will now include a provision that the list is not exhaustive and may be modified on the advice of the medical board. The intervention and assessment of the medical practitioner is, and shall remain, essential in determining any health and illness related matters.

Dr Steele asked if there are any provisions in the proposed changes covering parental leave for both genders and if there are any rules on length of service before a staff member is entitled to long-term sick leave. Mr Rojas Ceballos confirmed that the entitlement to sick leave due to a long-term illness is applicable from the first day of employment. This is the practice normally followed in other international organizations relating to staff with permanent contracts. Sick leave provisions for staff with fixed-term contracts in other organizations differ, for example their sick leave entitlement is conditioned to the length of their contract. The President said that it will be made clear in the Decision that the modernization of the RRI is a recurrent process and the holistic review will continue.

It was asked if there is a coordinated system among the IOs for changes to conditions of employment and if there is a periodic review, rather than changes being proposed on an *ad hoc* basis. The Director replied that the Legal Adviser and the Head of Human Resources are invited regularly to conferences of the coordinated organizations and HR and Legal networks to discuss these matters. They both have regular contact with their equivalent counterparts in other IOs to keep up to date with policy in regard to conditions of employment. He added that the CIPM should commit to regular reviews of the RRI, however the periodicity would depend on the specific area.

The President asked the CIPM members if they agreed with the proposed changes to Title IV (Service and Leave) of the RRI and proposed that the decision should reflect on the fact that the CIPM has duly reviewed and taken into consideration the concerns and views expressed by the CCE in their advisory opinions, and that the CIPM considers that the changes are in the interest of both the staff and the BIPM. The following decision was adopted.

**Decision CIPM/109-14** The CIPM approved the amendments to Title IV (Service and Leave) of the RRI (Rules, Regulations and Instructions applicable to BIPM staff) as submitted in document CIPM/2020-07 (Annex 1). It noted that the CCE had been consulted and had submitted its advisory opinion expressing its views about the proposed measures. The CIPM was confident that the amendments will improve the conditions of employment of BIPM staff whilst serving the interests of both the staff and the BIPM. The new provisions of the RRI will enter into force as of 1 January 2021.

The CIPM encouraged the BIPM Director to continue with the steps necessary to further modernize the RRI and to bring forward policies that reflect current standards of conduct expected from International Civil Servants.

## 8. REPORT ON LIAISON ACTIVITIES

Dr Olthoff presented key liaison activities carried out by the BIPM between October 2019 and October 2020, which are summarized in document [CIPM/2020-08](#). He recalled that Memorandums of Understanding (MoUs) have been signed between the BIPM and IUPAC as well as the BIPM and ITU. In addition, the Declaration of Cooperation, that established the JCTLM, was re-signed between the BIPM, ILAC and IFCC in December 2019. MoUs are being prepared between the BIPM and the CTBTO and CODATA.

Liaison with the OIML has centred on World Metrology Day and the revision of the joint document OIML D 1. Interactions with ILAC focused on documents ILAC P10:07/2020 “*ILAC Policy on Metrological Traceability of Measurement Results*”, ILAC P14:09/2020 “*ILAC Policy for Measurement Uncertainty in Calibration*” and G18:04/2010 “*Guideline for the Formulation of Scopes of Accreditation for Laboratories*”. Liaisons are ongoing with the INetQI, WTO TBT, UNESCO and the OECD.

Dr Olthoff commented that although these are the key points, there are other significant ongoing liaison activities. Mr Henson added that the period of confinement in France had delayed progress with UNESCO



regarding the Joint BIPM-OIML World Metrology Day proposal to have WMD proclaimed by UNESCO as a ‘World Day’. The President added that a strategy may be needed to try and make some progress with this issue.

Dr Park asked if changes to some of ILAC’s practices regarding proficiency testing will have an impact on the NMIs. Mr Henson replied that this issue is not being tracked by the BIPM as it only tracks changes to ILAC practices that directly relate to the SI, metrological traceability and measurement uncertainty, and when it is asked to do so by the CIPM, and if so, the CIPM position has to be defined. Mr Henson added that if the BIPM is asked to track the change, it will require clarification as to the exact concerns expressed by the NMIs. Dr Park agreed that he will collect the concerns from the relevant NMIs and will work with Mr Henson informally. If a CIPM response is required, this will be carried out by correspondence. (See §13 CCQM)

## 9. TERMS OF REFERENCE FOR THE JOINT OIML/BIPM TASK GROUP

Dr Richard introduced the report [CIPM/2020-09.01](#) “Proposal for the Terms of Reference of a Joint Task Group: BIPM and OIML”, which had been developed in collaboration with Dr Schwartz, the OIML President. He recalled that the original proposal for a joint task group had been made by Dr Schwartz at the 26th meeting of the CGPM (2018). Dr Richard noted that Appendix 2 includes the “Proposal for the Terms of Reference of a Joint Task Group”. He requested CIPM approval for the ToR. The report includes a draft decision related to the ToR.

Dr Rietveld said that he had previously discussed the report with Dr Richard, and it was confirmed that the proposal had been approved by the OIML. As such, any changes to the text would require approval by the OIML. Dr Rietveld added that he appreciated the aim of having a “single voice for metrology”. In addition, he suggested that the operational objectives of the Joint Task Group, as stated in Appendix 2, could be made more specific by changing the text of the second bullet point to read ‘to explore opportunities and to make concrete proposals for shared resources.’

The President asked the CIPM if they agreed with the ToR and the text of the draft decision. He noted that other CIPM members will be invited to join the task group as required. The CIPM approved the draft ToR of the Joint Task Group and the following decision was adopted.

**Decision CIPM/109-15** The CIPM approved the Terms of Reference of a Joint Task Group between the BIPM (representing the States Parties to the Metre Convention) and the International Organization of Legal Metrology (OIML) with the aim to foster enhanced cooperation between the BIPM and OIML in order:

- to facilitate both organizations in serving their member states better,
- to make both organizations more attractive to states that do not currently participate in the activities of either/both organization(s).

Dr Louw, Dr Milton and Dr Richard were appointed as the representatives of the BIPM in the Joint Task Group. Other CIPM members will be invited to join the task group as required.

## 10. RULES OF PROCEDURE FOR THE CIPM

Dr Richard presented the documents [CIPM/2020-10.01](#) “Proposal for the Rules of Procedure of the CIPM: Modernizing the Organization” and [CIPM/2020-10.02](#) “Proposed Rules of Procedure of the CIPM (version 2.2)”, which had been made available to the CIPM in advance of the meeting for discussion. He recalled that the proposals either clarify current practices or reflect best practice in other international organizations. It was

suggested that a general discussion only of the proposed rules of procedure of the CIPM should be carried out in the current meeting to save time; any more specific comments should be submitted to Dr Richard by correspondence within one-month of the meeting. This feedback will be used to produce an updated document for approval by correspondence in early 2021. He suggested that the final rules of procedure may not consist of a single document; the process of developing the rules could mark the start of a wider process to modernize the organization according to best practices. This could include additional documents such as codes of conduct or ethics for the CIPM, BIPM staff and meeting attendees. Dr Richard concluded by saying that the review of the rules of procedure should reflect an enhanced culture of working and communicating together for the whole organization, with the CIPM setting the example.

The President thanked Dr Richard and invited comments. In response to a question, Dr Richard confirmed that the most significant change to current practices in the Proposed Rules of Procedure of the CIPM (version 2.2) was on Financial and Administrative Arrangements. The CIPM discussed the fact that CIPM Vice-Presidents are not members of the CIPM bureau according to the Metre Convention (but have been included by decision of the CIPM); support to the CIPM for attending meetings; and clarification of what is meant by the support for a candidate when a Member State nominates a candidate for the CIPM. The Director recalled that the BIPM has a budget line only for the CIPM President and Secretary, there is no provision for expenses for other CIPM members.

Dr Richard concluded the discussion by reiterating that he will circulate the document to the CIPM for further comment, along with a template to provide a common structure for the comments.

## 11. REPORTS ON PROGRESS WITH STRATEGY DISCUSSIONS

Document [CIPM/2020-11.01](#) “The CIPM Strategy 2022” was introduced by Dr Louw, Chair of the CIPM Sub-Committee on Strategy. He thanked the convenors of the five Sub-Committees for the work of their groups in the development of the reports.

### **SC1: Responding to Evolving needs for Metrology (Dr Rietveld)**

Dr Rietveld gave a summary of document “SC1: CIPM strategy 2030+: responding to evolving needs in metrology” ([CIPM/2020-11.02](#)). Five main evolving needs in metrology were identified, together with two additional cross-cutting horizontal themes. For each of these seven needs, general sector challenges and those specific to metrology were identified, and CIPM/BIPM actions were proposed to promote and enhance international cooperation in these areas. A common action identified was a need for the establishment of interdisciplinary, cross-cutting Task Groups or Working Groups that could be set up within Consultative Committees or as part of the CIPM. This suggestion recognized that for some of the challenges, there may be a lack of specific expert information. These TGs or WGs could further develop their themes as a first task. Dr Rietveld added that CIPM decisions and recommendations, and possibly a CGPM Resolution may be needed on the relevance and urgency of the ‘grand challenges’. The first draft of the SC1 discussion document will be completed following the 109th meeting of the CIPM and the meeting of NMI Directors. The document is intended to steer and trigger actions within the CIPM; it is not intended to be a definitive document. He suggested that contact persons could be assigned for the various themes.

It was noted that the report refers to actions for the BIPM and CIPM. These actions remain as ‘proposed actions’ at this stage and have not been subjected to a decision-making process. The report should reflect this and should note that many of the identified actions could have consequences for the budget. Dr Sené said that the proposed TGs and WGs could assist in addressing the identified challenges by: articulating internationally accepted

metrology challenges and possible responses to raise the profile and importance of metrology in the challenge areas; supporting NMIs in shaping their programmes of work and gaining support of their governments; encouraging collaboration between NMIs (and others) to address these challenges; providing input into the Consultative Committees to help with the development of their strategies; providing steer to the BIPM and CIPM with regard to their interactions with IGOs; and providing direction to the BIPM in the development of its programme of work.

The President noted the report from SC1. He added that other CIPM members are welcome to join SC1 and that contact persons should be assigned to the thematic areas established within SC1. The following decision was agreed.

**Decision CIPM/109-16** The CIPM welcomed the draft document “Evolving Needs in Metrology” prepared by SC1 of the Sub-Committee on Strategy and decided to appoint CIPM contact persons for each theme proposed. Dr Rietveld was asked to finalize the list of contact persons that will be published on the BIPM website.

### **SC2: Addressing Key Scientific Challenges (Prof. Ullrich)**

Prof. Ullrich thanked the members of SC2 and presented document [CIPM/2020-11.03](#) “SC2: Addressing key scientific challenges”. In summary, the key scientific challenges to advance the global measurement system were identified and are articulated in terms of current and future actions to better realise the SI. He acknowledged that there is some overlap between the work of SC1 and SC2. In order to address key scientific challenges to advance the global measurement system, SC2 considered how the CIPM can foster and promote international cooperation in response to the challenges of how to implement the revised SI; addressing a possible future revision of the SI; responding to primary metrology outside the NMIs; and responding to the science of systems metrology, which will require the characterization of heterogeneous, large and complex systems of methods and sensors. Prof. Ullrich elaborated on the challenges faced by the metrology community in response to systems metrology and its associated disruptive developments, which rely on an enormous amount of measurement data and which will require “systemic thinking” in metrology. For full details, see the presentation [CIPM/2020-11.03b](#).

Prof. Ullrich was asked if metrological traceability will be required for self-calibrating devices. He replied that traceability will depend on the sensor and the environment. Dr Rietveld reiterated that there are some common areas between SC1 and SC2 and that he will discuss these with Prof. Ullrich.

### **SC3: Strategy for deepening engagement with other IOs (Dr Olthoff)**

Dr Olthoff reported that the strategy for deepening engagement with other international organizations has matured to the implementation stage. He commented that much progress has been made in the way the BIPM interacts with other international organizations over the last few years and plans are in place to continue. The work with OIML and ILAC will remain a major focus. Liaison with international organizations may need to be expanded as a result of the findings of SC1 and SC2, particularly in terms of engaging in new areas of metrology.

Dr Olthoff said that a dedicated section in the Strategic Plan, with specific actions regarding the BIPM’s interactions with other international organizations is not required due to the considerable progress that has already been made

### **SC4: Review of the strategy for future membership of the organization (Dr Steele)**

Dr Steele summarized the three documents in the zipped file [CIPM/2020-11.04](#) “SC4: Review of the strategy for future membership of the organization” that had been made available on the CIPM members’ working area. The three documents are: a summary of work that has been carried out by SC4; a background document with

proposed early-stage wording for a draft Resolution to the CGPM intended to seek a mandate to carry out the work; and a “white paper” on why a strategy for future membership of the BIPM is important. Dr Steele said that the agreement of the CIPM will be sought before approaching representatives of Member States and NMIs to explain and discuss the draft resolution on future membership of the organization in advance of the next meeting of the CGPM. In summary, a way forward has been chartered to augment future membership of the BIPM. Dr Steele added that the development of a strategy for future membership is a consultative and collaborative process with all stakeholders to ensure that concerns are expressed early in the process so that they can be addressed in advance of the next meeting of the CGPM.

The President said that the draft resolution should note that the development of the strategy has considered the impact on the BIPM’s activities. Dr Steele agreed and stated that the next stage in the development of the strategy is to study the impact of changes to membership on both the BIPM and externally. He added that it should be stressed that the strategy is being driven by universality of participation and not by budgetary considerations.

The President thanked Dr Steele and Mr Henson for their work

#### **SC5: Modernizing the operations of the organization (Dr Richard)**

Dr Richard recalled that this had been discussed in §10. He added that comments and feedback on the “Proposed Rules of Procedure of the CIPM” are required by correspondence within one-month of the end of the 109th meeting of the CIPM and approval is needed in early 2021.

## **12. REPORT FROM THE CIPM TASK GROUP ON THE “DIGITAL-SI”**

Prof. Ullrich presented the Report from the Task Group on the “Digital-SI” ([CIPM/2020-12](#)) and mentioned a series of other documents: [CIPM/2020-12.01](#) “Proposal to update the Terms of Reference of the CIPM Task Group on the Digital SI”; [CIPM/2020-12.02](#) “Draft of the Grand Vision: transforming the International System of Units for a Digital World”; [CIPM/2020-12.03](#) “Plans for the Workshop - The SI for FAIR Digital Data”; and [CIPM/2020-12.04](#) “Glossary of Terms”. These documents had been made available on the CIPM members’ working area in advance of the meeting. He noted that the Task Group has been active since its inception and thanked all members and contributors. Full details of the work of the TG and EG can be found in the presentation [CIPM/2020-12](#).

Prof. Ullrich presented draft decisions to the CIPM for discussion and approval, which relate to the work of the Task Group on the “Digital SI” (TG) and of the Expert Group (EG).

The President thanked Prof. Ullrich and invited questions and comments. The Director added his thanks and extended this to the members of the Expert Groups who have made significant contributions. It was noted that the “Grand Vision” being developed by the TG will continue to evolve. However, a definitive version is needed. Following a comprehensive discussion, the following Decision CIPM/109-17 was adopted.

**Decision CIPM/109-17** The CIPM endorsed the “Grand Vision” prepared by the Task Group on the "Digital SI" (TG) and the Expert Group (EG), recognizing that it will continue to evolve. The CIPM decided:

- to appoint Dr Laiz, Dr Duan and Dr Sené as new members of the TG and to approve an update to its Terms of Reference.
- to support the activities in “digital transformation” proposed for inclusion in the BIPM Work Programme (2020 to 2023).

The CIPM encouraged the BIPM and the NMIs to work with the TG to realize the Grand Vision, confirmed its support for the International Workshop on the “The International System of Units (SI) for FAIR Digital Data” to be held in February 2021 and noticed the possible drafting of a resolution for the 27th meeting of the CGPM.

### 13. QUESTIONS AND DISCUSSION OF POINTS ARISING FROM REPORTS BY CC PRESIDENTS:

#### CCs that had planned plenary meetings in 2020 - CCQM, CCT and CCTF

##### CCQM

Dr Park presented the CCQM report ([CIPM/2020-13.06](#)). He said that meetings of eight Working Groups were held in October 2019: SPWG, IAWG, OAWG, GAWG, IRWG, CAWG, NAWG and PAWG. A total of 34 videoconference sessions were organized for eleven of the CCQM Working Groups from April to July 2020 and a further 30 are so far planned for the period September to December 2020. Drafting of the CCQM Strategy Document (2021-2030) is in progress, with an estimated publication date of 30 April 2021. The CCQM has approved the CCQM Vision and Mission statement and strategic aims for 2021-2030 (CCQM/20-15) as well as a template for individual CCQM WG Strategy Documents (CCQM/20-12). The CCQM Working Groups are drafting their strategy documents, with the support of questionnaires and specific videoconferences, with a deadline for completion of 31 December 2020.

The CCQM Webinar on “Ensuring the reliability of measurements in response to the Covid-19 pandemic” was webcast by the BIPM on 7 July 2020. The CCQM Virtual Workshop on “Accurate Monitoring of Surface Ozone” was held online from 2 to 5 October 2020. The CCQM has approved Working Group proposals to start 13 key comparisons and four stand-alone pilot studies, the latter include CCQM-P199.b for SARS-CoV-2 copy number quantification, and CCQM-P216 on SARS-CoV-2 antibody quantification. The CCQM has approved CCQM Recommendation 1 (2020): On the recommended value of the ozone absorption cross-section per molecule at 253.65 nm (air) for applications; including the measurement of atmospheric ozone amount fractions.

Dr Park concluded by recalling that a collaboration is being considered between the CCQM and the CCRI for the use of mass spectrometry in low-level ionizing radiation measurements. He recalled the discussions in §8 regarding proficiency testing with ILAC and commented that he had subsequently discussed the issue with ILAC; no further action is required by the CIPM.

The President thanked Dr Park and invited questions and comments. It was asked if the KCDB 2.0 has been fully implemented in the fields of chemistry and biology. Dr Park replied that this is under way. The Director commented that he is often asked what the NMIs are doing in response to the Covid-19 pandemic. He noted that the CCQM is very active in this area, having organized technology transfer webinars. The Director stated that the CCQM meetings, including Working Group meetings, in 2020 had been divided into 70 separate two-hour sessions.

It was asked if any lessons had been learned regarding the organization of videoconferences/online meetings as

a result of the significant number of online meetings that had been held during 2020. Dr Wielgosz replied that key points are to limit the meetings to two hours duration with midday in Europe as the central time point to accommodate attendees from different time zones. Online platforms (Webex, Zoom) can be an issue with some countries being unable to use specific platforms; Webex is currently the preferred option. The workload to organize 70 meetings has been significant. Questions were posed using the online ‘chat’ facility with a moderator appointed to prioritize the questions. Documentation for the efficient organization of online meetings has been produced and has been shared among the CC Executive Secretaries.

## CCT

Dr Duan presented the activities of the CCT, as highlighted in report ([CIPM/2020-13.08](#)). He recalled that the 29th plenary meeting of the CCT, planned for March 2020, had been postponed due to the Covid-19 pandemic. The CCT plenary will meet late 2020 and in 2021 via videoconference. These rescheduled meetings will be split into five two-hour sessions, with the first of these scheduled on 20 October 2020. The CCT Working Group and Task Group meetings restarted in July 2020 and will continue until early 2021.

Dr Duan noted that although the Covid-19 pandemic has disrupted collaborations, it has triggered new initiatives. Notably, the launch of a CCT Task Group for Body Temperature Measurement (CCT-TG-NCTh-BTM) and an accompanying key comparison is being prepared. The Task Group held its first meeting as a webinar.

In response to a question, Dr Duan said that the CCT plenary meeting has been split into multiple two-hour sessions to be held over several months to allow staged input into the CCT strategy by the Working Groups; this will enable limited sections of input to be evaluated more efficiently during a single session. The CCT Working Group for Strategic Planning (CCT-WG-SP) will meet at the end of this process. Dr Picard added that an advantage to holding the meetings over several months avoids the need for participants, from time zones that are distant from Europe, to make special arrangements to attend either late at night or very early in the morning over five consecutive days.

## CCTF

Dr Dimarcq gave the report ([CIPM/2020-13.09](#)). He said that the 22nd meeting of the CCTF has been split into two online sessions, with Session 1 scheduled online for 28-29 October 2020 and Session 2 for 11-12 March 2021. Many of the CCTF Working Groups met online during 2020; notably the CCTF Task Force on Updating the Roadmap for the redefinition of second (CCTF-TFU) met for the first time on 24 June 2020 together with meetings of sub-group chairs and the CCTF Working Group on Strategic Planning (CCTF-WGSP). The CCTF-TFU has three Sub-Groups: CCTF-TFU Sub-Group on Needs of user communities, NMIs, and Liaisons (CCTF-TFU-SGA), CCTF-TFU Sub-Group on Atomic frequency standards, and possible redefinition approaches (CCTF-TFU-SGB), and CCTF-TFU Sub-Group on TF Dissemination and time scales (CCTF-TFU-SGC). It was noted that a new Task Group on “traceability to UTC from GNSS measurements” (CCTF-TGT) has been formed.

Dr Dimarcq noted that the first session of the CCTF meeting on 28-29 October 2020 will address the following ‘hot topics’: the roadmap towards the redefinition of the second; leap seconds in UTC and building a consensus for a continuous timescale; promoting the mutual benefit of UTC and GNSS; and launching Capacity Building activities to ensure the best performance of the global network of NMIs in producing UTC. The CCTF-TFU and its Sub-Groups will carry out a detailed consultation exercise among stakeholders on the ‘hot topic’ issues. The status of the ‘hot topic’ activities, including the responses to an online questionnaire among stakeholders, will be presented to the second session of the CCTF meeting on 11-12 March 2021. Proposals will be made on how to proceed and a roadmap will be presented. By the end of 2021 it is expected that a white paper covering all the ‘hot topics’ will have been completed. A contribution to the next meeting of the CGPM will be developed if required. An article for *Metrologia* developed from the white paper will be submitted in early 2022. It is

anticipated that the 23rd meeting of the CCTF to be held 27 June to 1 July 2022 will present the completed activities and conclusions of the task force. It is expected that the meeting will approve the selected roadmap and describe the way forward towards a redefinition of the SI second. The agreed strategy and roadmap towards the redefinition of the SI second will then be presented to the meeting of the CGPM in 2022. This will include the different options for the future work of the CCTF and actions taken for the other ‘hot topics’.

Dr Dimarcq proposed that the objectives and organization of the CIPM Task Group on ‘Leap seconds’ convened to support the preparation of the CIPM for the International Telecommunication Union (ITU) World Radiocommunication Conference in 2023 should be discussed at the next CIPM meeting in March 2021. This Task Group has been established in response to Decision CIPM/108-40. The CIPM needs to agree membership, terms of reference and methodology.

The President thanked Dr Dimarcq and suggested that the CIPM organize an online meeting to discuss the CCTF strategy and any decisions arising following the next CCTF Working Group on Strategic Planning (CCTF-WGSP) meeting. He added a decision on the Task Group could be taken by correspondence and the CIPM members are encouraged to consider if they want to participate in the CCTF WG on Strategic planning meeting.

### **Other CCs and the Joint Committees**

#### **CCAUV**

Dr Laiz referred to the report [CIPM/2020-13.01](#) and said that the 13th meeting of the CCAUV will be held on 4–8 October 2021. The CCAUV Working Group on Strategic Planning (CCAUV-SPWG) held an online meeting on 20 July 2020; participants included the Chairs of the three CCAUV Working Groups and the Chairs of the RMO TCs on AUV. The CCAUV Strategy document was reviewed at the meeting and is expected to be finalized in 2021. The meeting discussed the operation of AUV comparisons and the RMO TCs in view of the delays due to the Covid-19 pandemic.

Dr Laiz said that a workshop on very-low frequency acoustic measurements may be held immediately before the 13th meeting of the CCAUV in October 2021. This topic is of relevance to the MoU that is being drafted with the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO).

#### **CCEM**

Dr Rietveld referred to report [CIPM/2020-13.02](#) and said that a complete rewrite of the CCEM strategy is presently under way using the new template. The strategy will be ready for a decision at the next CCEM plenary meeting, which is scheduled for April 2021. The new CCEM strategy will include a revised mission and vision, a more ‘outward look’ to stakeholders, and will reflect upon the impact of the Covid-19 pandemic on the work of the CCEM.

Dr Rietveld reflected that the pandemic has resulted in CCEM meetings being held as videoconferences, which is considered a positive consequence. The structure of future CCEM and Working Group meetings is being considered, with the likelihood that the plenary meeting will become a series of virtual meetings, possibly starting earlier on 12 April 2021, instead of the planned dates 15-16 April 2021. A final decision will be taken in December 2020. The next Working Group meetings are planned for 12-14 April 2021, although these are expected to become virtual meetings in the week of 5-9 April 2021. The CCEM and Working Group members have been informed and a final decision will be taken in December 2020.

Dr Rietveld concluded by recalling that the KCDB 2.0 has been fully adopted by the CCEM Working Group on RMO Coordination (CCEM-WGRMO) in the review of new CMCs. In addition, he said that the coronavirus pandemic has caused a delay in the progress of several key comparisons.

## CCL

Dr Castelazo's report on CCL activities ([CIPM/2020-13.03](#)) was made available on the CIPM members' working area in advance of the meeting. He commented that the 18th meeting of the CCL will be held on 25-28 October 2021. The CCL Working Group on Strategic Planning (CCL-WG-S) held its first virtual meeting on 29 June 2020. Further Working Group meetings will be held in 2021.

Dr Castelazo said that implementation of the KCDB 2.0 in length is proceeding. The migration of 'quantity equation' CMCs has been carried out using a tool that was developed to avoid manual conversions. He concluded by noting that a Focus Issue of *Metrologia* on length is in preparation, with ten papers under revision.

## CCM

Dr Richard referred to the report [CIPM/2020-13.04](#). He said that the most important highlight of the recent work of the CCM was the draft B report of the first Key Comparison of primary realizations of the kilogram (CCM.M-K8.2019), which is now available. The Final report is being approved by the CCM Working Group on Mass (CCM-WGM). There were seven participants in the first Key Comparison: four used Kibble balances, one used a joule balance and two used the XRCD method. The first consensus value for the dissemination of the kilogram will be calculated by the CCM Task Group on the Phases for the Dissemination of the kilogram following redefinition (CCM-TGPfD-kg) by the end of 2020. Dr Richard said that Phase II (dissemination of the kilogram using the consensus value) will proceed following the calculation of the value. He thanked the staff of the BIPM Physical Metrology Department for running the Key Comparison.

## CCPR

Dr Rastello presented the recent work of the CCPR as described in document [CIPM/2020-13.05](#). She said that the next meeting of the CCPR is planned for May 2022. The CCPR Working Groups were scheduled to have met in June 2020 in Boulder (USA). These meetings had been cancelled due to the Covid-19 pandemic and the work was reorganized within Task Groups and will be carried by videoconference and collaborative working documents. Dr Rastello informed the CIPM that the revision of the CCPR strategy will start before the end of 2020. The revision is expected to be minor; the main changes being concerned with the management of CMCs.

## CCRI

Dr Sené presented highlights of the report [CIPM/2020-13.07](#). He commented that two new groups have been set up following the CCRI meeting in June 2019: one covering the rapidly expanding field of radiopharmaceutical therapy (CCRI Radiopharmaceutical Therapy Working Group) and one joint group with the CCEM (CCEM-CCRI Task Group - Low Current Measurement) to co-ordinate the introduction of new technology for low current measurement into radionuclide metrology. Dr Sené said that a series of webinars is planned by the CCRI, beginning on 19 October 2020 with an event to mark 60 years of ionizing radiation work at the BIPM.

Dr Sené concluded by saying that a "light touch" review of the CCRI strategy, published in 2019, is under way. The CCRI is using the perspectives adopted in the CIPM strategy work (evolving needs for metrology; key scientific challenges; international liaison; membership and the organization) to shape the review. It is expected that the review will be completed in time for the next CCRI meeting in June 2021.

## CCU

Prof. Ullrich's documents relating to the activities of the CCU had been made available on the CIPM members' working area as [CIPM/2020-13.10](#) in advance of the meeting. He said that the next meeting of the CCU will be held in September 2021. The CCU Working Group on Core Metrological Terms (CCU-WG-CMT) will meet



next in November 2020. The CCU Working Group on Strategy (CCU-WG-S) will meet next in February 2021. The CCU has two ongoing activities of note, one relating to prefixes (Decision CIPM/108-26) and the other on the questionnaire on the implementation of the revised SI by stakeholders of the Metre Convention (Decision CIPM/108-27).

Prof. Ullrich recalled that the International Mathematical Union (IMU) has applied to become a 'liaison organization' within the CCU. He gave a presentation on the IMU and the background to its application. Following a discussion, the CIPM agreed that the IMU should become a liaison organization (See Decision CIPM/109-18).

#### Joint Committee for Traceability in Laboratory Medicine (JCTLM)

Dr Wielgosz presented report [CIPM/2020-13.11](#) on the recent activities of the JCTLM. He said that the JCTLM has had an active year in 2020 and that five days of meetings will be held in December 2020, including meetings of the JCTLM Database Working Group: Reference Materials, Procedures and Measurement Laboratories (JCTLM-DBWG) and the JCTLM Working Group on Traceability: Education and Promotion (JCTLM-TEPWG). Dr Wielgosz recalled that the International Council for Standardization in Haematology (ICSH) became a Member of the JCTLM Executive Committee in December 2019. He concluded by informing the CIPM that the first draft of the technical specifications for new JCTLM Database structure and platform has been completed. This revision of the database is needed to replace obsolete software and to enable machine readability.

#### Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB)

Dr Olthoff referred to document [CIPM/2020-13.12](#) "Report to CIPM on the activities and actions of the JCRB". He said that the last meeting of the JCRB had been conducted online on 8-12 September 2020; the meeting had gone extremely well with many in-depth discussions. The reports by the RMOs addressed the status of quality system reviews within each region. He recalled that significant questions were raised after each report with substantive answers that demonstrated the completeness and depth of the reviews. The meeting confirmed confidence in the quality systems of the CIPM MRA members. The actions from the meeting dealt with the effects of the coronavirus pandemic, particularly how this is delaying certain reviews and what can be done to overcome these delays. The term of the *ad hoc* Task Group established in Action 41/1 has been extended until the 43rd meeting of the JCRB.

The President thanked Dr Olthoff and invited questions. It was asked if the JCRB has a policy to enable remote review of RMO quality systems. Dr Milton replied that the decision lies with the RMOs. The JCRB had asked the TCQ Chair Group to consider the question of remote review over the next few months and to present its findings to the next JCRB meeting in March 2021. In response to a question, Dr Olthoff confirmed that the JCRB has agreed to the use of hybrid comparisons.

#### Joint Committee for Guides in Metrology (JCGM)

Dr Milton recalled that the JCGM has not met since December 2018, and that the next meeting will be held as a videoconference in December 2020. He added that document GUM-6:2020 "Guide to the expression of uncertainty in measurement Part 6: Developing and using measurement models" has been sent out for a final vote. The draft document had been distributed previously to the CIPM in December 2018 and has been circulated among the NMIs for comment. The resulting feedback was incorporated into the final document by the JCGM-WG1:GUM. Dr Milton suggested that, with the approval of the President, the CIPM should vote on the document online after the 109th meeting of the CIPM. He added that any votes 'not in favour' must be justified.

Prof. Neyezhnikov gave an update on his engagement with the JCGM and JCGM-WG2. He recalled that he

had participated in the JCGM-WG2 online meeting on 2-5 June 2020, where the CIPM point of view had been presented. Prof. Neyezhnikov commented that he had given a presentation on the “Grand Vision.” The possibility of developing a machine readable VIM4 was also discussed. The June 2020 meeting of JCGM-WG2 discussed core metrological terms. No decision had been reached on these terms, but it is planned that the discussion will continue at the next meeting of JCGM-WG2, which will be held on 8-11 December 2020. The Director added that there is much work ongoing within the JCGM-WG2, and its rapid response to issues such as the “Grand Vision” should be noted.

### Applications for Membership and Observership

**Decision CIPM/109-18** The CIPM decided to grant the status of ‘liaison organization’ within the CCU to the International Mathematical Union (IMU).

## 14. REPORT AND PROGRESS WITH THE 2020-2023 WORK PROGRAMME AND PLANS FOR REVISIONS FOLLOWING THE GLOBAL PANDEMIC

A final report on the Work Programme 2016-2019 ([CIPM/2020-14.01](#)) and a progress report on the Work Programme 2020-2023 ([CIPM/2020-14.02](#)) were presented by the Director. The progress report on the Work Programme 2020-2023 now includes an additional column providing detailed information regarding amendments to the milestones proposed by the BIPM as a result of the periods of confinement due to the Covid-19 pandemic. The major changes were summarized:

- In the Physical Metrology Department there have been some delays to comparisons and a new activity to complete the calculable capacitor has been initiated.
- The Chemistry Department has included a new action on the coordination of the SARS-CoV-2 pilot study and a further new action on the renewal of the JCTLM database.
- The Ionizing Radiation Department has postponed the facility sharing agreement with the International Atomic Energy Agency (IAEA) for  $^{137}\text{Cs}$ , which has now been transferred to the DOSEO facility in Saclay. The department is also bringing forward the digitization of the back records of the SIR facility.
- The International Liaison and Communication Department is moving some of the Capacity Building activities online and it proposes to put certain Capacity Building training resources into the e-learning packages operated by the OIML, provided OIML are able to make the necessary adjustments to their platform.. In addition, the department may commit resources to develop the International Metrology Resource Registry (IMRR) as part of the digital transformation project.

The President thanked the Director and invited questions. Dr Rietveld commented that he appreciated the addition of a proposal to finish the work on the calculable capacitor in the Work Programme 2020-2023.

The Director continued by presenting the document “Proposals for activities in digital transformation for consideration by the CIPM for prioritization before inclusion in the BIPM Work Programme 2020-2023” ([CIPM/2020-14.03](#)) for discussion. He explained that this proposal was introduced at the meeting of the CIPM Sub-Committee on Strategy on 21 August 2020 and the CIPM Task Group on the Digital SI on 25 October 2020. He recalled that machine-readable access to the KCDB is now in place, and a small user group from the NMIs has been assembled to test the facility and to provide feedback on its usefulness. An XML version of the 9th edition of the SI Brochure has also been commissioned.

The President commended the BIPM on the work it has done with the Work Programme 2020-2023 and the planned revisions following the global Covid-19 pandemic. He added that the proposed changes to the Work

Programme 2020-2023 have been reviewed by the CIPM Sub-Committee on Finance and the CIPM bureau. He urged the CIPM to check the proposed changes and to raise any concerns as soon as possible.

**15. PLANS FOR THE 27TH MEETING OF THE CGPM**

The Director presented draft plans for the 27th meeting of the CGPM, including proposals for possible venues for the meeting ([CIPM/2020-15](#)) for noting.

**16. CIPM POLICY ON “HYBRID” MEETINGS FOR CCs**

The President said that the document “General considerations and rules for holding ‘hybrid’ meetings in 2021” ([CIPM/2020-16.01](#)) had been made available on the CIPM members’ working area in advance of the meeting and will be finalized by correspondence. He asked for comments to be submitted as soon as possible so that the document can be finalized by the end of November 2020; the final version will be circulated for a vote in December 2020. Dr Olthoff commented that hybrid meetings are difficult to organize compared to in-person and on-line meetings.

**17. ANY OTHER BUSINESS**

The President thanked the CIPM for their participation and input and the BIPM staff for organizing the meeting. He commented that as far as is known, this was the first online full-session meeting of the CIPM.