# Compendium of International Organisations' Practices

## Working Towards More Effective International Instruments

**OECD**
BETTER POLICIES FOR BETTER LIVES

**Snapshots of IO Practices**

**Review of the implementation and operation of the CIPM MRA**

**Organisation(s): International Bureau of Weights and Measures (BIPM)**

*The Snapshots of IO Practices present examples of specific efforts undertaken by an international organisation to work towards more effective international instruments. They aim to highlight examples of practices within the five focus areas of the Partnership of International Organisations for Effective International Rulemaking (IO Partnership), namely the variety and development of international instruments, their implementation, evaluation, ensuring stakeholder engagement, and co-ordination among IOs. The snapshots are submitted by the secretariats of the relevant international organisations implementing the relevant practice. The practices were compiled by the OECD Secretariat and focal points of the IO Partnership (UNCITRAL, OIE, WHO, ISO, WCO, BIPM, and SIECA), with a brief review to ensure consistency and comparability of the information provided within the snapshots. The inclusion of a practice in these snapshots implies no endorsement or assessment of that practice on the part of the OECD Secretariat or the focal points of the IO Partnership.*
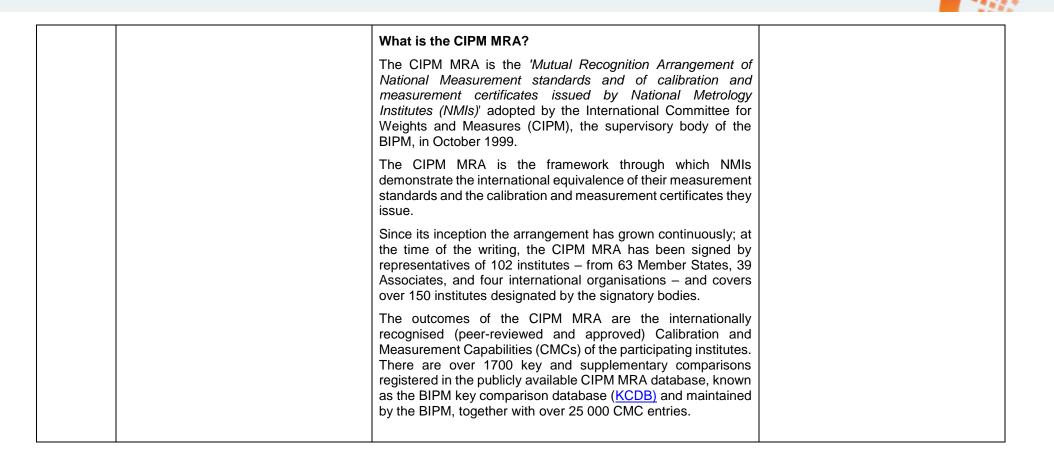
| 1 | Overview of the Practice | Answers | Comments and intersections |
|---|---|---|---|
| 1.1 | Organisation | International Bureau of Weights and Measures (BIPM) | |
| 1.2 | Area of relevance among the IO partnership focus themes (variety of instruments, implementation, stakeholder engagement, evaluation, co-ordination) | Evaluation (of the use/implementation of a single instrument) | |
| 1.3 | Name of the Practice | Review of the implementation and operation of the CIPM MRA | |
| 1.4 | Name of person(s) completing the template | Andrew Henson<br>Rahima Guliyeva | |

| 2 | Description of the Practice | Answers | Comments and intersections |
|---|---|---|---|
| 2.1 | Please describe the practice shortly, providing information on its core features. | The CIPM MRA, launched in 1999, allows measurements at the highest level to be recognised internationally and underpins measurements made in industry and some 70 000 accredited calibration and testing laboratories worldwide.<br><br>After a decade and a half of successful operation, a review of the operation and implementation of the CIPM MRA was launched. The review of the CIPM MRA was an inclusive process with the Working Group on the Implementation and Operation of the CIPM MRA, which carried out the review, appointed by a workshop involving all relevant stakeholders. The Working Group was chaired by the CIPM President and its membership included representatives from all metrology regions and from large, medium and small NMIs.<br><br>In advance of the formal meeting of the Working Group, four sub-groups were identified to consider the questions posed by the Workshop. The sub-groups were asked to consider particular questions and conveners were appointed to report back to the whole Working Group. The reports from the sub-groups formed the basis for much of the discussion that took place at the Working Group meeting and also the development of the recommendations. The Working Group formulated a list of nine recommendations with 28 sub-recommendations and proposed lead parties to act on each recommendation. A further CIPM *ad hoc* committee (CIPM *ad hoc* Working Group on Implementing the Recommendations from the Review of the CIPM MRA) oversaw the implementation of the recommendations, which were largely completed by the end of 2018 except for the renewal of the BIPM key comparison database (KCDB), which ran through to October 2019. | |

**What is the CIPM MRA?**

The CIPM MRA is the *'Mutual Recognition Arrangement of National Measurement standards and of calibration and measurement certificates issued by National Metrology Institutes (NMIs)'* adopted by the International Committee for Weights and Measures (CIPM), the supervisory body of the BIPM, in October 1999.

The CIPM MRA is the framework through which NMIs demonstrate the international equivalence of their measurement standards and the calibration and measurement certificates they issue.

Since its inception the arrangement has grown continuously; at the time of the writing, the CIPM MRA has been signed by representatives of 102 institutes – from 63 Member States, 39 Associates, and four international organisations – and covers over 150 institutes designated by the signatory bodies.

The outcomes of the CIPM MRA are the internationally recognised (peer-reviewed and approved) Calibration and Measurement Capabilities (CMCs) of the participating institutes. There are over 1700 key and supplementary comparisons registered in the publicly available CIPM MRA database, known as the BIPM key comparison database (KCDB) and maintained by the BIPM, together with over 25 000 CMC entries.

| 2.2 | What are the objectives of the practice? | To ensure the sustainability of the Arrangement for the coming years and to improve its efficiency and effectiveness, in particular:<br><br>• to consider whether processes for the review, approval and uptake of CMCs could be improved.<br>• to collect and summarise key expectations for the CIPM MRA and for its future development.<br>• to formulate guiding principles for further improvements including to the overall hierarchy of key comparisons – CMCs – services.<br>• to consider whether there should be more "top‑down" governance (by the CIPM or another group mandated to do so).<br>• to review the role of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) in the governance and operations of the MRA. | |
| --- | --- | --- | --- |
| 2.3 | What have been the key results of the practice? | The planning and execution of the underpinning scientific comparisons has been significantly streamlined to ensure that the suite of comparisons is the optimal balance between the costs of executing them and the confidence they provide in the system. The CMC review process has been refined and accelerated, reducing or eliminating duplication of effort.<br><br>A new database – KCDB 2.0 has been developed and was launched on 29 October 2019. It incorporates the CIPM MRA review platform and has an extended numerical search facility aiming to greatly increase the efficiency of the operation of the CIPM MRA by integrating the whole process into one on-line platform and ending the need for manual transfer of data for review and publication. On 2 April 2020 the BIPM KCDB office published the first CMC that had been submitted, reviewed, approved and published entirely using the recently-launched KCDB 2.0. This first publication provided the evidence that the new system allows the process of review to be completed far more quickly than in the older system. | |

| 2.4 | In what year was the practice introduced? | Resolution 5 "On the importance of the CIPM Mutual Recognition Arrangement" was adopted at the 25th meeting of the General Conference on Weights and Measures (CGPM), plenary body of the BIPM, held in November 2014. It invited the CIPM to establish a working group under the chairmanship of its President, with membership to be determined at the 2015 workshop, to conduct a review of the implementation and operation of the CIPM MRA. | |
| --- | --- | --- | --- |
| | | The CIPM MRA Review Workshop met on 13 and 14 October 2015. It appointed a Working Group on the Implementation and Operation of the CIPM MRA to conduct the review and to consider the issues of concern identified by the Workshop in further detail. | |
| | | The Working Group met on 14 and 15 March 2016. Its recommendations were published on 23 August 2016. | |
| | | The review process was largely completed in October 2019 with the launch of the KCDB 2.0. | |
| 2.5 | Has the practice been updated/reformed since then? If yes, when and how has it evolved over time? | No.<br><br>Major update/reform since then, however a number of minor refinements have been and are being introduced. | |

| 2.6 | What do you consider to be the primary strengths of the practice? | The review of the CIPM MRA was an inclusive process involving all stakeholders and was built on its long-term success. | |
| | | It allowed the entire system of implementation of the CIPM MRA to be looked at holistically leading to much greater clarity in the systems needed for its operation, which had developed organically over time. | |
| | | It looked for opportunities to simplify the overall system and came up with proposals for the optimization of the implementation of the CIPM MRA by using modern IT tools. | |
| | | As a result of the review it was reaffirmed that, the CIPM MRA as an arrangement between NMIs, is a tool to support them. The CIPM MRA should continue to maintain its high levels of quality and integrity, so as not to undermine the effort invested over previous years, be inclusive and provide the technical basis for wider agreements negotiated for international trade, commerce and regulatory affairs. | |
| 2.7 | What do you consider to be the main challenges faced during the implementation of the practice? | The major revision had to be designed, implemented and integrated into the live system. Over the years there has been some divergence between the regions in some of the operational aspects. The software support was extended to cover wider aspects which required a mixture of harmonization and adaptability within the software. The recommendations of the review also led to some process improvements, which have to be integrated. This was particularly challenging as there were nine technical areas and as a solution it was necessary to group them into three technical areas (physical metrology, chemical metrology and metrology for ionizing radiation) each tailored for its specifity. | Intersection with area of IO Partnership on 'Strengthening the Implementation of International Instruments' (WG2) |
| | | It placed more control with the NMI user community but equally requires greater understanding from them. There were significant IT challenges with the KCDB 2.0. | |

| | | |
|---|---|---|
| 2.8 | Does the practice have a formal/normative basis within the organisation or is it conducted informally? Does this basis make the practice mandatory or voluntary?<br><br>If there is formal basis, please provide the relevant link or documentation. | The formal/normative basis for the CIPM MRA review is Resolution 5 adopted at the 25th meeting of the CGPM (2014), which makes the practice mandatory. https://www.bipm.org/en/committees/cg/cgpm/cgpm-resolutions<br><br>This CGPM Resolution was supported by a number of CIPM consequent decisions: https://www.bipm.org/en/committees/ci/cipm/outcomes | |
| 2.9 | At what frequency is the practice applied? i.e. is it conducted once or on an iterative basis? | The major review was conducted once with ongoing evolution carried out via CIPM and JCRB decisions. | |
| 2.10 | Is this practice applied systematically, (e.g. with respect to every normative instrument, according to specific criteria or on an ad hoc basis)? | *Ad hoc* | |
| 2.11 | Please provide specific details or examples to illustrate the practice (including supporting links and documents). | The Recommendations of the Working Group on the Implementation and Operation of the CIPM MRA can be found at https://www.bipm.org/en/cipm-mra/cipm-mra-documents | |
| **3** | **Design of the Practice** | **Answers** | **Comments and intersections** |
| 3.1 | Who designed the practice (e.g. Was it developed internally, in collaboration with other organisations, etc?) | The practice was developed by the CIPM following the mandate of the CGPM. | |

| 3.2 | Which stakeholders were engaged with in the design of the practice? | The CIPM, CCs, Member States and Associates (primarily through NMIs), JCRB and RMOs, participating IOs and other stakeholder IOs. | Intersection with area of IO Partnership on "Ensuring effective stakeholder engagement" (WG3) |
|---|---|---|---|
| 3.3 | How long did it take to design the practice? | Four years. | |
| 3.4 | What resources were needed to design the practice initially (i.e., staff, budget etc.)? | Staff resources in the BIPM, NMIs, CC Presidents and the CIPM. | |
| 3.5 | What challenges were encountered during the design of the practice and how were they overcome? | The key challenge was reaching consensus on the depth of the review and on the specific recommendations. These challenges were overcome by wide consultations and an iterative process leading to broad consensus. | |
| 3.6 | Has the practice been tested before implementation (i.e. pilot phase)? If yes, please describe. | No but the implications of each recommendation were discussed widely before any decision was made and the method of implementation was overseen by the dedicated team (and this led to some minor modifications in implementation of recommendations).<br><br>The new database was piloted extensively before going live. | |
| **4** | **Implementation of the Practice** | **Answers** | **Comments and intersections** |
| 4.1 | Which units are responsible for implementing the practice within your IO? | The Director of the BIPM, International Liaison and Communication (ILC) Department (KCDB Office maintains the KCDB), BIPM scientific departments (notably CC Executive Secretaries), CIPM and its CCs, JCRB (chaired by the Director of the BIPM). | Intersection with area of IO Partnership on 'Strengthening the Implementation of International Instruments' (WG2) |

| | | | |
|---|---|---|---|
| 4.2 | Are IO members involved in implementing the practice? If so, how? | Yes, all NMIs of Member States and Associates participate in the CIPM MRA by sharing the data on key and supplementary comparisons as well as CMCs in the publicly available KCDB database maintained by the BIPM (i.e. ILC Department). | Intersection with area of IO Partnership on 'Strengthening the Implementation of International Instruments' (WG2) |
| 4.3 | Are external actors beyond the organisation or its membership involved in implementing the practice? If so, how? | Yes. The recommendations of the Working Group included actions for RMOs.<br><br>RMOs are responsible for carrying out comparisons and other actions within their regions to support mutual confidence in the validity of the calibration and measurement certificates of their member NMIs. Through the JCRB, they carry out an inter-regional review of declared capabilities before approved CMCs are published in the KCDB, and they make policy suggestions to the CIPM on the operation of the CIPM MRA. In particular, RMOs carry out regional comparisons corresponding to the international comparisons, establish and maintain quality oversight of participating institutes. | Intersection with area of IO Partnership on 'Strengthening the Implementation of International Instruments' (WG2) |
| 4.4 | Which resources are needed to implement the practice (e.g., staff and budget)? | Staff, budget (for the establishment and maintenance of the new database - KCDB 2.0) and significant resources at NMIs. | Intersection with area of IO Partnership on 'Strengthening the Implementation of International Instruments' (WG2) |
| **5** | **Outputs and Evaluation of the Practice** | **Answers** | **Comments and intersections** |
| 5.1 | Has the practice been evaluated or reviewed? | Yes. | |
| 5.2 | If yes, who carried out the evaluation (please specify whether it was done internally or externally) | The implementation of the practice is discussed at the meetings of the CIPM and NMI Directors. It is also a formal agenda point at the JCRB meetings where the RMOs provide their feedback. | |

| 5.3 | If yes, please describe the evaluation methodology? ( e.g. were any quantitative or qualitative indicators/criteria used to measure/assess the outcomes of the practice?). | Largely qualitative so far but quantitative data will be evaluated over the time. | |
| --- | --- | --- | --- |
| 5.4 | If yes, what were the conclusions of the evaluation,and has the practice evolved subsequently? If possible, please attach related documents or provide a link. | Yes, there were a series of incremental fine-tuning steps, the details are given in JCRB meeting reports https://www.bipm.org/en/committees/jc/jcrb/meeting-outcomes | |
| **6** | **Additional comments and information** | **Answers** | **Comments and intersections** |
| 6.1 | Is there any more information or documentation that would be valuable to share in relation to the practice (e.g. links, reports, meeting minutes, supporting documents)? | CIPM MRA review https://www.bipm.org/en/cipm-mra/cipm-mra-documents<br><br>CIPM MRA text https://www.bipm.org/en/cipm-mra/cipm-mra-documents<br><br>CIPM MRA database - KCDB https://www.bipm.org/kcdb/ | |
| | **Sources** | | |
| | | | |