Bureau International des Poids et Mesures

MARCH 2025 REPORT ON THE KCDB TO THE JCRB

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www.bipm.org/

KCDB

KCDB Report to the JCRB[1]

September 2024 to March 2025

Executive Summary

The KCDB is a platform providing publicly available, peer reviewed, free and, searchable information on CMCs of NMIs and DIs participating in the CIPM MRA, as well as information on the supporting scientific comparisons. The platform also provides behind the scenes tools for the registration, review and publication processes used by the NMI and DI community and additionally provides a tool for user-generated statistics. The KCDB provides an Application Programming Interface for search on CMCs.

The number of CMCs is approximately stable, with increasing information offset by the adoption of wider scope CMCs. The time for CMC reviews has decreased significantly since the implementation of KCDB 2.0 in late 2019. The JCRB review duration has largely remained stable and low at 85 median days (same as in September 2024) compared to 140 days with the old system.

The comparisons record is cumulative, so increases over time, however, the rate of increase is approximately stable, with the majority of new comparisons being repeats of outdated comparisons or new supplementary comparisons within the RMOs.

Introduction

This report summarizes the major progress and evolution of the BIPM Key Comparison Database (KCDB) over the last six months.

The key comparison database - KCDB – is a supporting database for the implementation of the Mutual Recognition Arrangement of the International Committee for Weights and Measures (CIPM MRA) that was implemented in 1999. It contains data on Calibration and Measurement Capabilities (CMCs) and comparison results of measurements in physics, ionizing radiation, chemistry and biology. The KCDB is an evidence-based database: all data included has been reviewed by international groups of experts and approved for mutual recognition.

The KCDB website www.bipm.org/kcdb gives access to the following services with open access:

- searching on published CMCs in the KCDB
- searching on published comparison information, reports and results
- information on statistics and recent news on issues linked to CMCs and comparisons

supported by a set of guidance documents.

[1] The KCDB Office provides the KCDB report, addressed to the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB), every 6 months. Those reports are made publicly available via the BIPM website: https://www.bipm.org/en/cipm-mra/kcdb-reports

The status of the database concerning Calibration and Measurement Capabilities is given in **Section 1**. In **Section 2**, recent information concerning Comparisons carried out within the framework of the CIPM MRA is summarized, and **Section 3** highlights the status of Associates of the BIPM. The performance of the system is discussed in **Section 4**, while **Section 5** highlights on CMCs with the status JCRB: Revision Requested. A short overview on the software status is presented in **Section 6**. The BIPM KCDB and digitalization is highlighted in **Section 7**.
This report reflects the status as of 03 March 2025.

1. CIPM MRA Appendix C: Calibration and Measurement Capabilities

1.1. CMC statistics

There were[2] 26 091 (25 877) CMCs published in the KCDB on 3 March 2025 of which 19 651 (19 485) are in Physics and 6 440 (6 392) in Chemistry and Biology, as shown in **Figure 1**. GULFMET, through the United Arab Emirates and Saudi Arabia, published its first CMCs in Thermometry and Ionizing Radiation measurements. GULFMET is now able to review and vote for CMCs in these metrology areas and their JCRB review statistics will now be available. The total number of published CMCs remains almost the same over the previous year with a 1% increase across the domains. This confirms the observed steady-state trend over the last five years.

The repartition of CMCs on metrology areas, expertise and state or economy is available in real-time from the KCDB home page in “CMC statistics” https://www.bipm.org/kcdb/cmc/statistics/public .

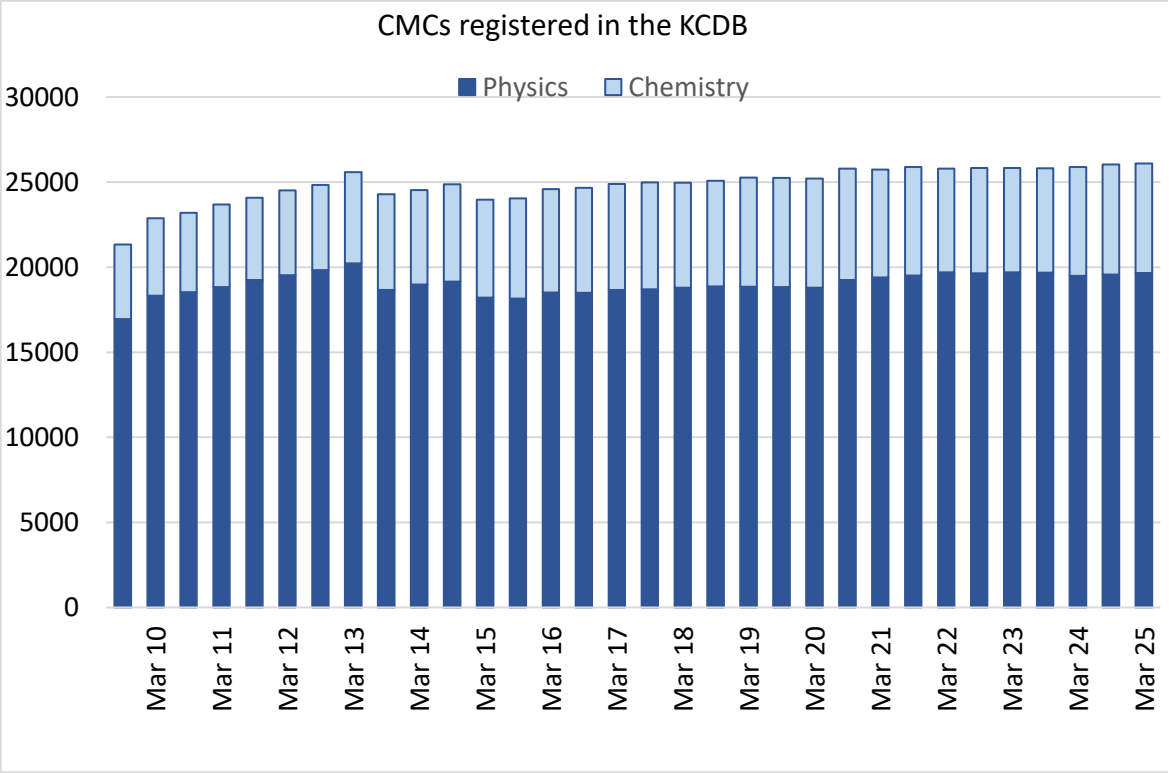

Figure 1: Number of CMCs registered in the KCDB **over time (2009-2025)**.

[2] The numbers given within parenthesis represents the number of CMC reported one year earlier.

Table 1 shows the distribution of published CMCs by RMO. The distribution of the overall number of published CMCs within RMOs remains stable over the last six months period. A slight decrease in CMCs from APMP and SIM was observed.

RMO	Number of CMCs 03/03/2025	Number of CMCs 2024-08-28
AFRIMETS	769	758
APMP	6 660	6 716
COOMET	2 308	2 225
EURAMET	11 768	11 709
GULFMET	95	83
SIM	4 491	4 538
Total	**26 091**	**26 029**

Table 1: Number of published CMCs in the KCDB per RMO on 03 March 2025 (follow-up of Action 17/1 of JCRB 2006).

Table 2 gives the number and status of not yet published CMCs on the KCDB platform, with 3 922 unpublished CMCs as compared to 3 179 six months earlier. This number can vary considerably, depending on the status of the review campaigns applied by some of the Consultative Committees.

Status	Number of CMCs 2025-03-03	Number of CMCs 2024-08-28
Draft	609	546
RMO: Submitted	379	596
RMO: Under Review	153	256
RMO: Review Completed	262	133
RMO: Accepted	202	21
RMO: Revision Requested	249	188
RMO: Revision Completed	159	171
Submitted to the JCRB	29	0
JCRB: Under Review	919	299
JCRB: Revision Requested	232	222
JCRB: Revision Completed	22	22
JCRB: Approved	1	149
JCRB: Waiting for VOTE	0	10
Greyed out	706	566
TOTAL	**3 922**	**3 179**

Table 2: Status of not yet published CMCs in the KCDB on 03 March 2025

Table 3 lists the total number of CMCs published after JCRB approval during the last six months for each metrology area. The total number of published CMCs has increased in comparison to the previous six-month period. The relatively large increase of CMCs in the field of Chemistry and Biology

can be attributed to their annual batch review cycle. In addition, 67 % of the overall published CMCs (1 458) were not subject to JCRB review but revised to the KCDB for editorial modification as per criteria 8.1 and 8.2 of the CIPM MRA G-13.

Metrology area	Published CMCs 2025-03-03	Published CMCs 2024-08-28
AUV	22	24
EM	82	31
L	15	3
M	12	33
PR	6	13
T	20	53
TF	15	13
QM	283	149
RI	19	18
TOTAL	**474**	**337**

Table 3: Number of published CMCs per metrology area during the last 6 months.

1.2. Greyed out CMCs and reinstatements

There are presently 713 greyed out CMCs, compared to 566 CMCs six months earlier, with a large number attributable to the field of Chemistry and Biology.

Table 4 displays all greyed-out CMCs with recent changes highlighted in yellow for increases and green for decreases. 2 greyed out CMCs will reach their five-year limit in April 2025.

The dynamically updated full list of greyed-out CMCs is available for registered users from the KCDB platform under the statistics menu; https://www.bipm.org/kcdb/cmc/statistics/greyed-out.

RMO	COUNTRY	AUV	EM	L	M	PR	QM	RI	T	TF	TOTAL
AFRIMETS	ZA							0			**0**
APMP	AU			3			1	46			**50**
APMP	CN						10	1			**11**
APMP	IN	34	74	44	54	14	1		4	0	**225**
APMP	KR		8				119				**127**
APMP	NZ				1	8				2	**11**
APMP	SG			4			4				**8**
APMP	VN			9	13				4	5	**31**
COOMET	RU	19			1		48				**68**
EURAMET	DE						7		1		**8**
EURAMET	ES						3				**3**
EURAMET	FI								7		**7**
EURAMET	FR						13				**13**
EURAMET	GB		5								**5**
EURAMET	HU			6							**6**
EURAMET	IT		3								**3**
EURAMET	LT			3	7						**10**
EURAMET	LV		4								**4**
EURAMET	NO			1	4				3		**8**
EURAMET	PL			1							**1**
EURAMET	PT			1							**1**
EURAMET	SE			1							**1**
EURAMET	SK						10				**10**
EURAMET	UA				6			1			**7**
SIM	AR			1			6				**7**
SIM	BO						2				**2**
SIM	BR		1			2					**3**
SIM	CA		0		1						**1**
SIM	MX					4	7				**11**
SIM	US					0			6		**6**
	TOTAL:	**53**	**95**	**74**	**87**	**48**	**269**	**48**	**25**	**7**	**706**

Decrease
No change
Increase

Table 4: Status of greyed out CMCs on 3 March 2025

2. CIPM MRA Appendix B: Key and supplementary comparisons

2.1. Comparison statistics

Table 5 shows the distribution per RMO of comparisons published in the KCDB as of 03 March 2025 where 1 218 are key comparisons and 719 supplementary comparisons. This represents a total increase of 50 comparisons since 28 August 2024.

Entity	KC	SC
BIPM	105	1
CC	606	36
AFRIMETS	8	38
APMP	158	129
COOMET	52	128
EURAMET	202	229
GULFMET	7	31
SIM	80	127
TOTAL	**1 218**	**719**

Table 5: Key and Supplementary Comparisons on 03 March 2025.

Figure 2 shows the evolution of the total number of key (dark blue) and of supplementary (light blue) comparisons registered in the KCDB since September 2003. There has been an increase of around 30 comparisons every year corresponding to a 3 % increase. Supplementary comparisons now constitute 37 % of all registered comparisons up from 20 % in 2006.

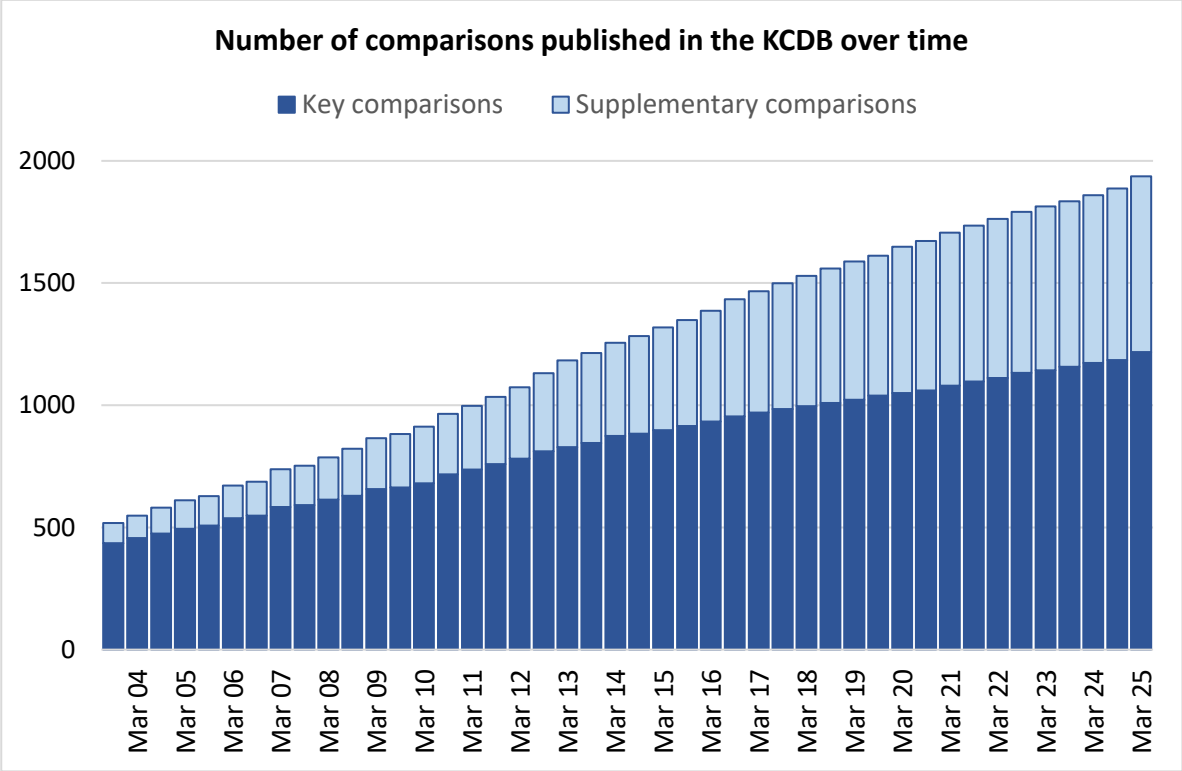

Figure 2: Total number of comparisons over time (2003-2025)

Figure 3 illustrates the number of new key and supplementary comparisons registered in the KCDB over the one-year period ending 2025.

Graphs generated in real-time illustrating the participation in key and supplementary comparisons are available under the Statistics menu on the KCDB home page;

https://www.bipm.org/kcdb/comparison/statistics/key
https://www.bipm.org/kcdb/comparison/statistics/supplementary

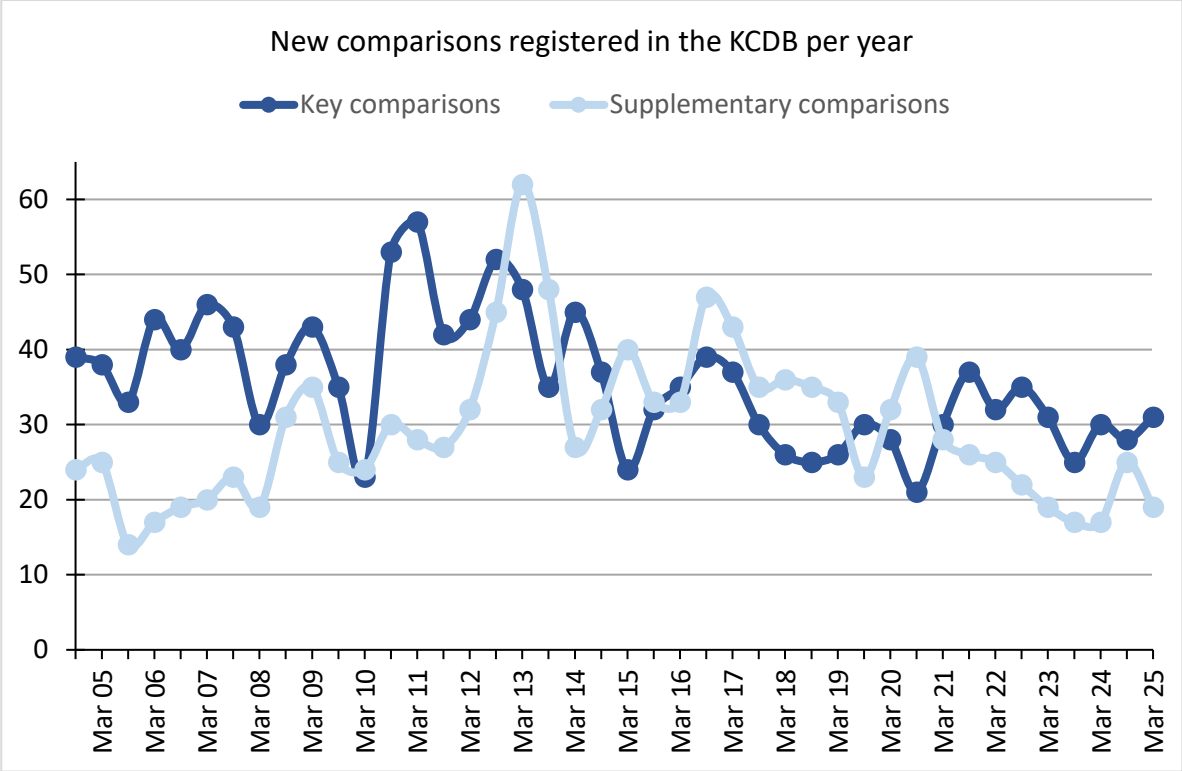

Figure 3: Number of new comparisons registered in the KCDB over one-year period.

The following 50 comparisons were registered as new during the last 6 months:

AFRIMETS.M.F-S3	CCQM-K182	EURAMET.L-S5.1.n01
APMP.AUV.A-K4	CCQM-K183	EURAMET.M.FF-S21
APMP.EM-S17	CCQM-K184	EURAMET.M.FF-S22
APMP.EM-S18	CCQM-K185	EURAMET.RI(I)-S20
APMP.QM-K3.2019	CCQM-K186	EURAMET.RI(I)-S21
BIPM.QM-K2	CCQM-K192	EURAMET.RI(II)-K2.Ac-225
BIPM.RI(II)-K1.Pb-212	CCQM-K20.2025	EURAMET.T-K10
CCAUV.V-K6	CCQM-K3.2019.1	GULFMET.PR-S1
CCAUV.W-K2.1	CCQM-K71.2024	GULFMET.PR-S3
CCEM-K12.2025	CCQM-K77.2023	GULFMET.T-S1.2024
CCQM-K118.1	COOMET.M.M-S8	GULMET.M.FF-S1
CCQM-K136.2025	COOMET.QM-K118	SIM.M.P-K7
CCQM-K148.c	COOMET.RI(I)-S5	SIM.M.V-S2

Comparisons registered as new during the last 6 months continued...

CCQM-K159	COOMET.T-S7	SIM.PR-K3
CCQM-K173.2	EURAMET.L-K4.n02	SIM.QM-S16
CCQM-K177	EURAMET.L-K7.n01	SIM.QM-S18
CCQM-K181	EURAMET.L-S2.2.n02	

The following 37 reports were published during the last 6 months :

AFRIMETS.EM-S2	BIPM.RI(I)-K8	CCQM-K96.2023
APMP.M.MM-S1	BIPM.RI(II)-K1.Cs-137	COOMET.EM-S18
APMP.M.P-S7	BIPM.RI(II)-K1.Ga-67	COOMET.M.F-S1
APMP.PR-K3.a	BIPM.RI(II)-K1.Mn-54	EURAMET.EM.RF-S46
APMP.T-S16	CCEM.RF-K5.c.CL	EURAMET.M.FF-S16
BIPM.EM-K11	CCM.F-K23	EURAMET.M.M-S11
BIPM.QM-K1	CCM.G-K2	EURAMET.M.P-S16
BIPM.RI(I)-K1	CCQM-K155	EURAMET.QM-S15
BIPM.RI(I)-K2	CCQM-K159	EURAMET.T-K9
BIPM.RI(I)-K3	CCQM-K173.1	EURAMT.T-K9.1
BIPM.RI(I)-K5	CCQM-K176	GULFMET.T-S3
BIPM.RI(I)-K6	CCQM-K73.2018.3	
BIPM.RI(I)-K7	CCQM-K91.2022	

On 03 March 2025, the number of abandoned (78) or superseded key and supplementary comparisons, stored in the KCDB archives is 163.

2.2. **Comparisons older than 5 years** (Follow-up Action 33/3 of JCRB 2015)

Action 33/3: *The BIPM KCDB office, as part of the KCDB report to the JCRB, to identify Key and Supplementary Comparisons which were started 5 or more years ago and have not reached a conclusion.*

While uncompleted Key Comparisons, connected to the Consultative Committees, have reduced by half since the follow-up action was triggered by the JCRB, the number of lasting supplementary RMO comparisons is roughly on the same level as in 2015, when this issue was pointed out by the JCRB.

Figure 4 illustrates the total number of incomplete comparisons that are five years or older. A list of these comparisons is available in **Appendix I**.

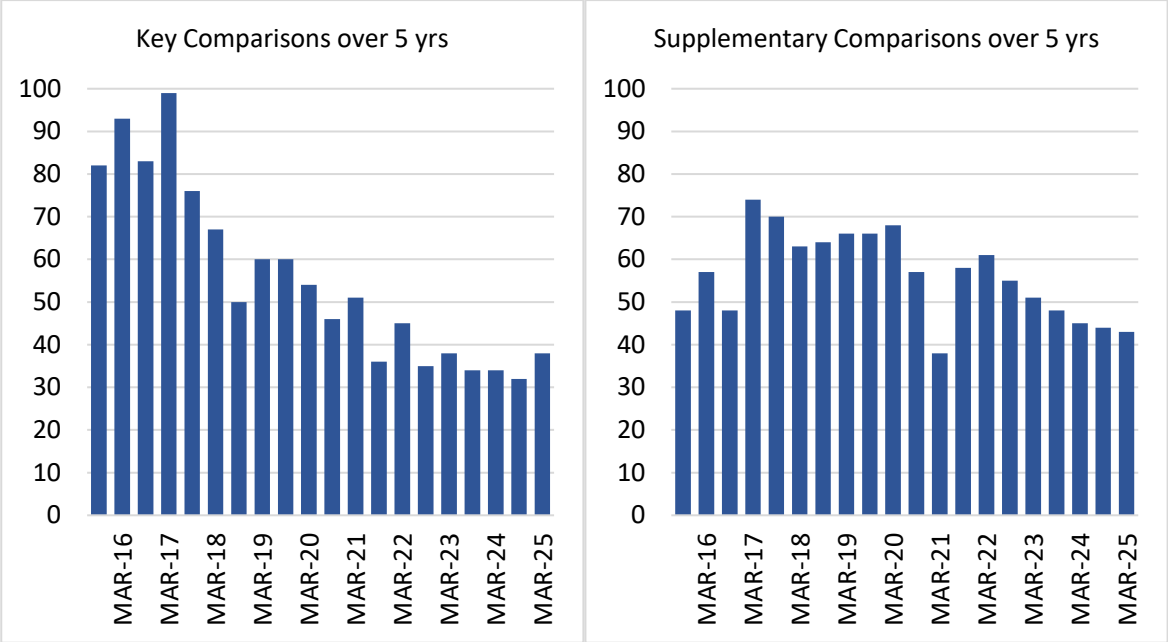

Figure 4: Histogram showing the number of incomplete comparisons that started more than 5 years ago.

3. Participation of Associates of the CGPM in CIPM MRA activities

Table 6 summarizes the participation of the 37 Associates of the CGPM in CIPM MRA activities as of 03 March 2025.[3] Cuba was reinstated as an Associate State of the CGPM on 16 October 2024

Associate	Published CMCs	Greyed out CMCs	Key Comparisons	Supplementary Comparisons
Albania	10	0	7	5
Azerbaijan	35	0	2	11
Bangladesh	0	0	3	3
Bolivia	25	2	16	36
Bosnia and Herzegovina	94	0	17	28
Botswana	3	0	1	14
Cambodia	0	0	0	0
CARICOM	1	0	1	23
Chinese Taipei	397	0	126	54
Cuba	113	0	6	23
Ethiopia	12	0	0	10
Georgia	65	0	7	19
Ghana	0	0	2	10
Hong Kong, China	314	0	121	32

[3] These numbers take into account all comparisons registered in the KCDB, disregarding status, for which at least one laboratory of the Associate is listed in the participants list.

Jamaica	22	0	7	12
Kuwait	0	0	3	6
Latvia	13	4	15	11
Luxembourg	10	0	6	3
Malta	0	0	3	3
Mauritius	0	0	2	10
Moldova, Republic of	84	0	6	22
Mongolia	23	0	6	4
Namibia	7	0	0	4
North Macedonia	20	0	10	12
Oman	0	0	0	1
Panama	38	0	8	25
Paraguay	14	0	2	21
Peru	113	0	34	48
Philippines	33	0	20	13
Qatar	0	0	2	4
Sri Lanka	2	0	10	2
Syrian Arab Republic	0	0	11	3
Tanzania	0	0	0	9
Uzbekistan	5	0	10	14
Viet Nam	0	31	39	7
Zambia	11	0	2	15
Zimbabwe	19	0	1	13
TOTAL	**1 483**	**37**	**506**	**533**

Table 6: CIPM MRA activity of the Associates of the CGPM: number of published CMCs and participation in key and supplementary comparisons.

The repartition of CMCs and comparisons among Associates is illustrated in **Figure 5** and **Figure 6**, respectively.

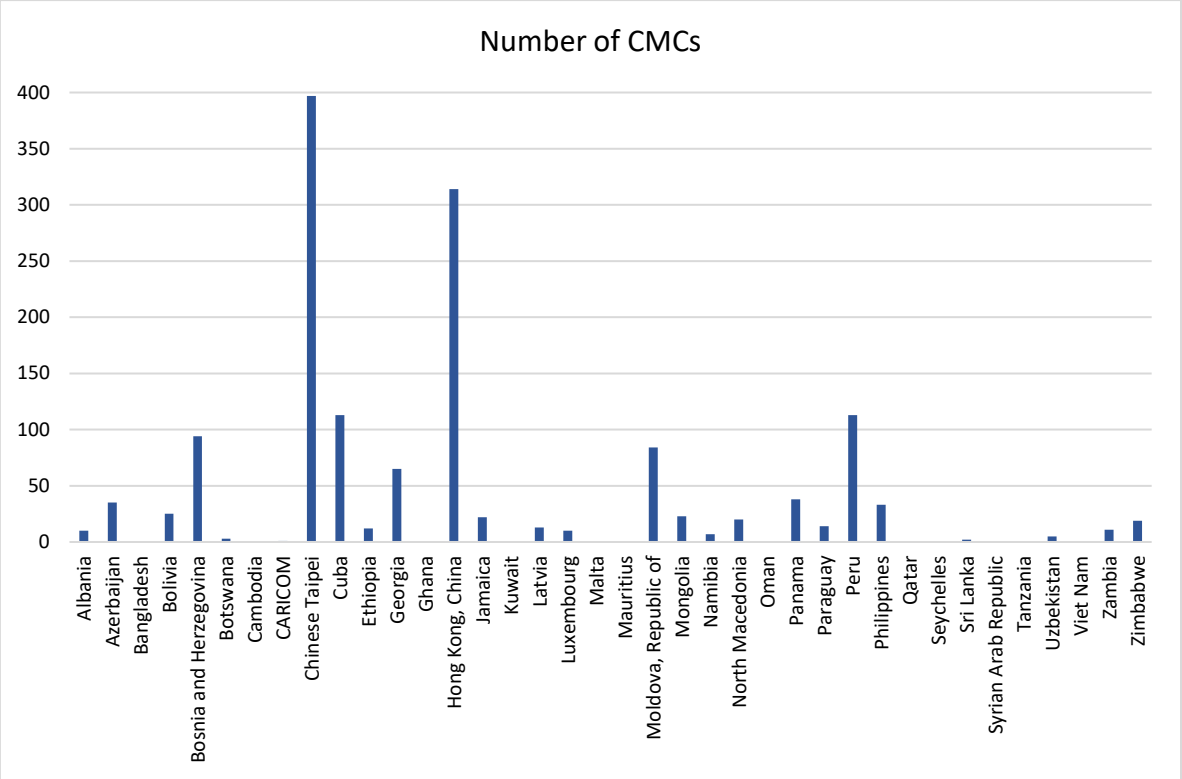

Figure 5: Graph showing the number of CMCs declared by Associates of the CGPM.

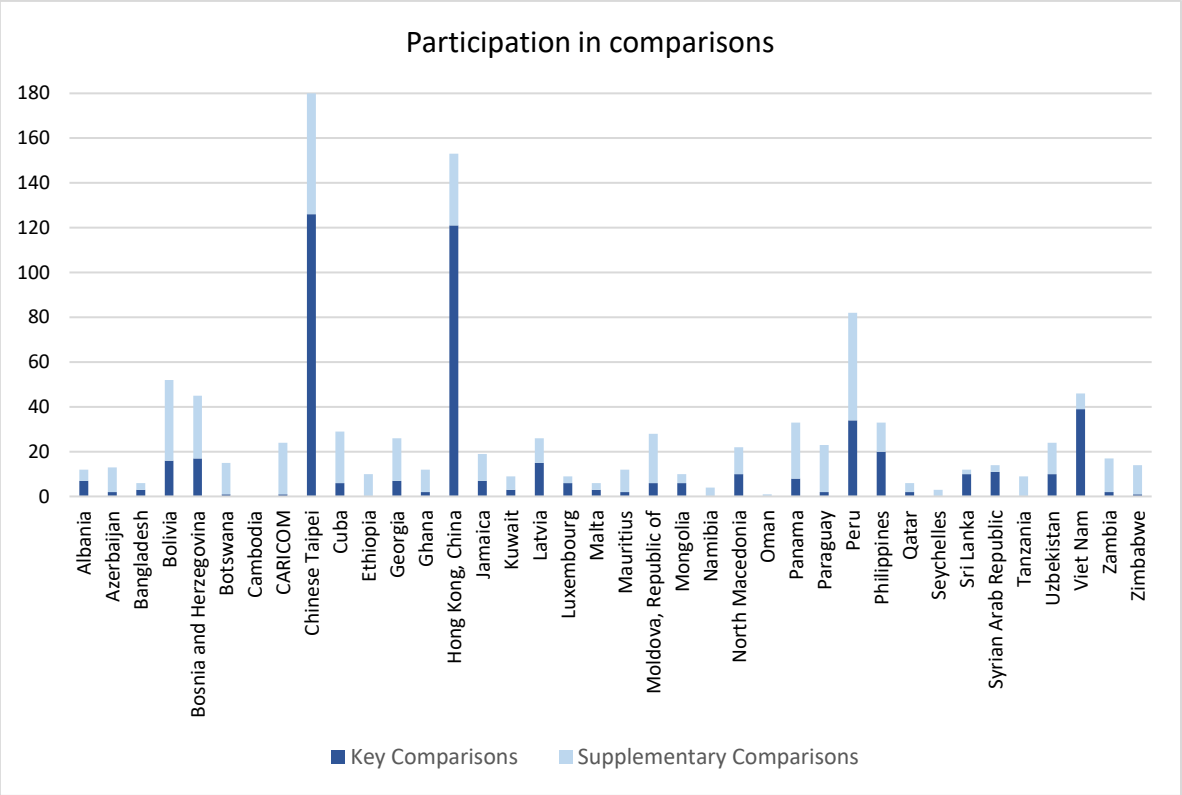

Figure 6: Graph showing the participation of Associates of the CGPM in key and supplementary comparisons.

4. System Performance

The analysis to compare the review duration of CMCs that had been completely processed using the KCDB platform, is ongoing. The evaluation was started in March 2021 and an update is provided in this March 2025 Report on the KCDB to the JCRB. Statistical data on JCRB review durations for CMCs is also available from the Statistics Menu of the KCDB platform.

Figure 7 depicts a screenshot showing the average, maximum, and minimum time it took for the CMCs to pass the JCRB review to publication with the highest at 1400 days equivalent to almost four years.

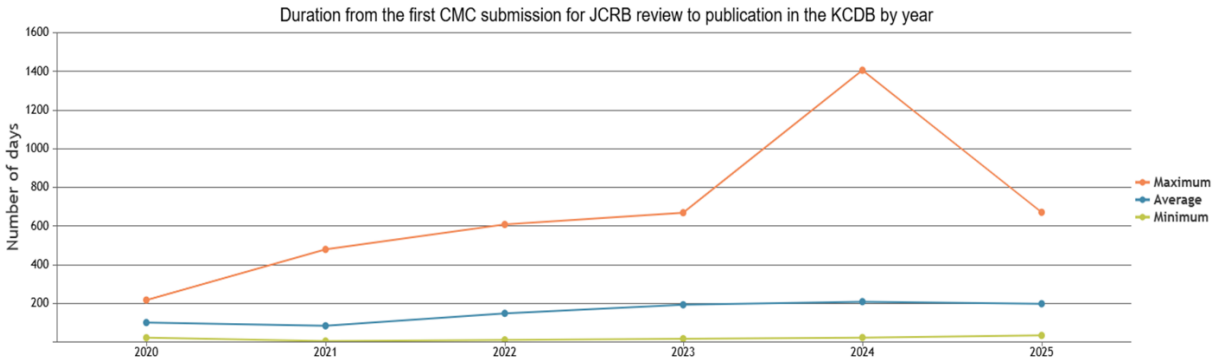

Figure 7: A graph giving a snapshot on 12 March 2025 of the duration of the CMC approval for JCRB review as retrieved from the statistics menu of the KCDB.

Table 7 summarizes the JCRB review durations compared to the more recent data of CMCs processed on the KCDB platform. The median days for the current reporting period, column Mar. 2025, have remained constant compared to the Sep. 2024 reporting period. The average days have reduced by 48 days. The maximum JCRB review duration for the CMCs published within the last 6 months has increased marginally by 99 days. The median review duration for all CMCs processed in the KCDB has also remained constant (same 85 days for the March 2025 and September 2024 reporting periods), still maintaining a reduced duration compared to the old KCDB system.

	Sep. 2023	Mar. 2024	Sep. 2024	Mar. 2025'	KCDB 2.0* From 2020
minimum	22	20	25	22	0
median	71	69	144	146	85
mean	131	100	225	177	123
maximum	665	1 305	1 069	1168	1 400

'Computed for CMCs published from 9/2024 to 3/2025
*Computed from the KCDB 2.0 menu 'Statistics on review performance' for the whole period since 2020-01-01

Table 7: JCRB review durations in days for CMCs published within 6 months of the reporting periods and all published in the KCDB since 1 January 2020.

Figure 8 presents a graphical overview of CMCs published between September 2024 and March 2025. The lower chart with green bars shows the Intra-RMO review durations per submitting RMOs. The intra-RMO median durations are fair with all RMOs reporting less than 80 days except for SIM reporting 111 days. The top chart shows the median JCRB review durations. All of them have review durations comparable to the old KCDB system durations of 140 days except for one that has median duration of over 200 days. Two of the RMOs have even better review durations of 50 days. The low

number of CMCs submitted for review from the two concerned RMOs may contribute to the smaller JCRB review durations.

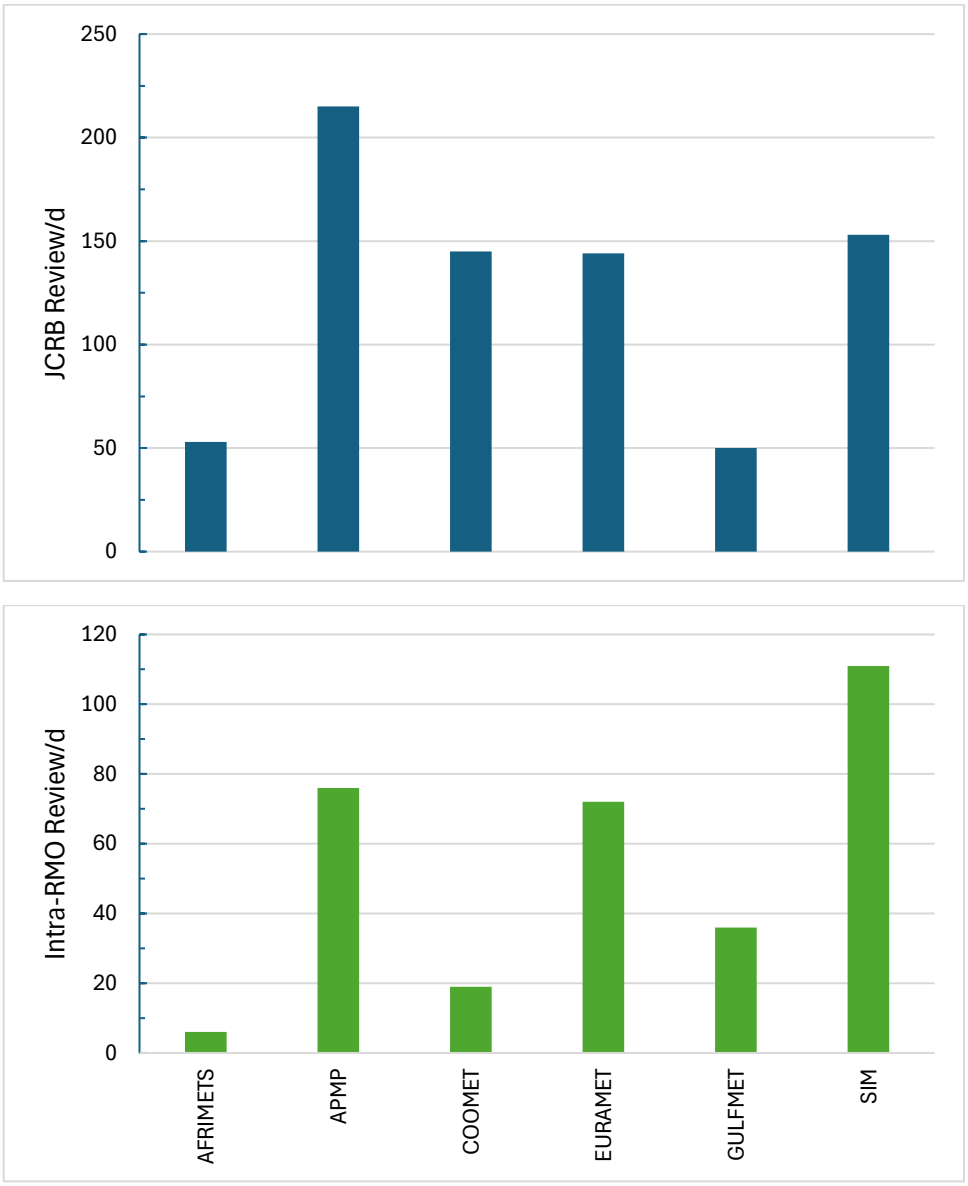

Figure 8: Review durations for CMCs published in the KCDB between September 2024 and March 2025. The bars reflect median intra-regional review in the bottom panel and median JCRB review durations in the upper panel for CMCs submitted by the RMOs indicated on the x axis.

Figure 9 illustrates an overview of all CMCs processed on the KCDB platform since 2020. The column on the right-hand side of the chart shows the median value across all RMOs.

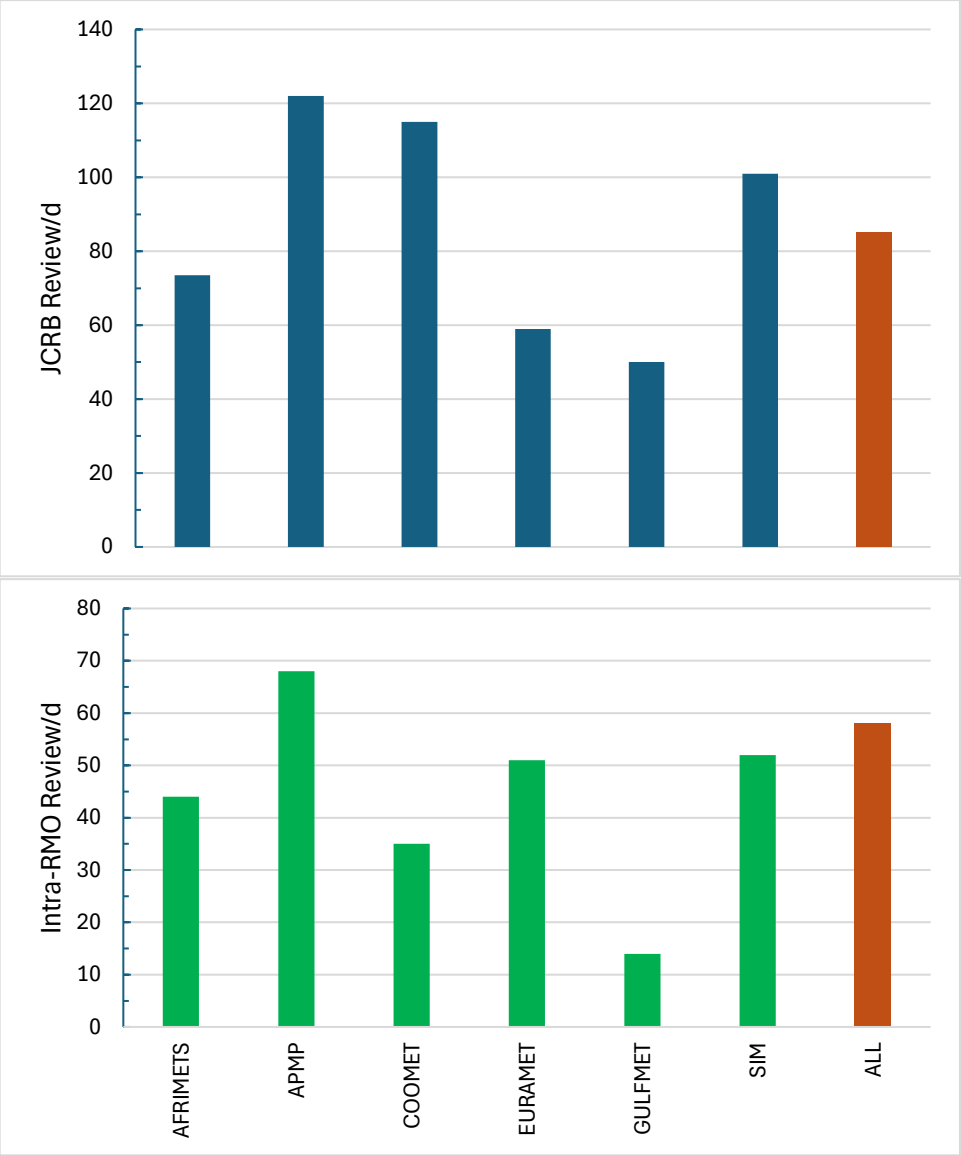

Figure 9: Median review durations computed on CMCs processed in the KCDB platform since 2020. Bottom, the intra-RMO review for all RMOs submitting the CMCs. Top, JCRB review on the same CMCs. Median data on both review stages averaged across all RMO submissions in the right column.

Figure 10 illustrates the review durations across metrology areas. For intra-RMO reviews, all metrology areas have review durations less than 105 days for CMCs published within the last six months and the ones published since 2020. The only exception is for AUV ant T who have recorded review durations of more than 250 days for CMCs published in the last six months.

For JCRB review, the durations are all below 100 days for the CMCs published since 2020 for all metrology areas except for QM that has a special arrangement. For CMCs published in the last six months, with the reduced data set, four metrology areas, M, PR, T and QM have review durations over 150 days while the rest have review durations less than 111 days.

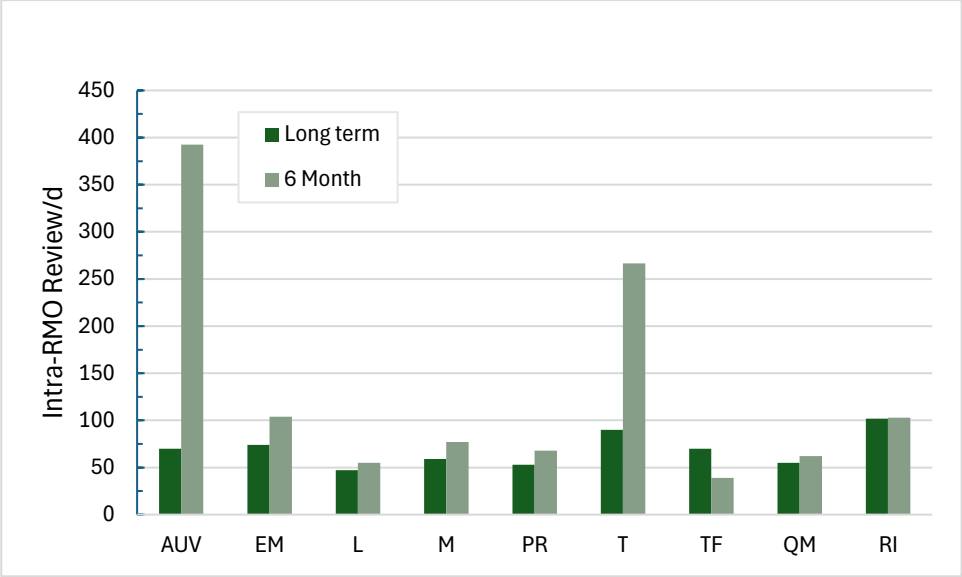

Figure 10a: Median Intra-RMO review duration of CMCs. Light green bars represent CMCs published during the last six months and dark green since 2020 per metrology area.

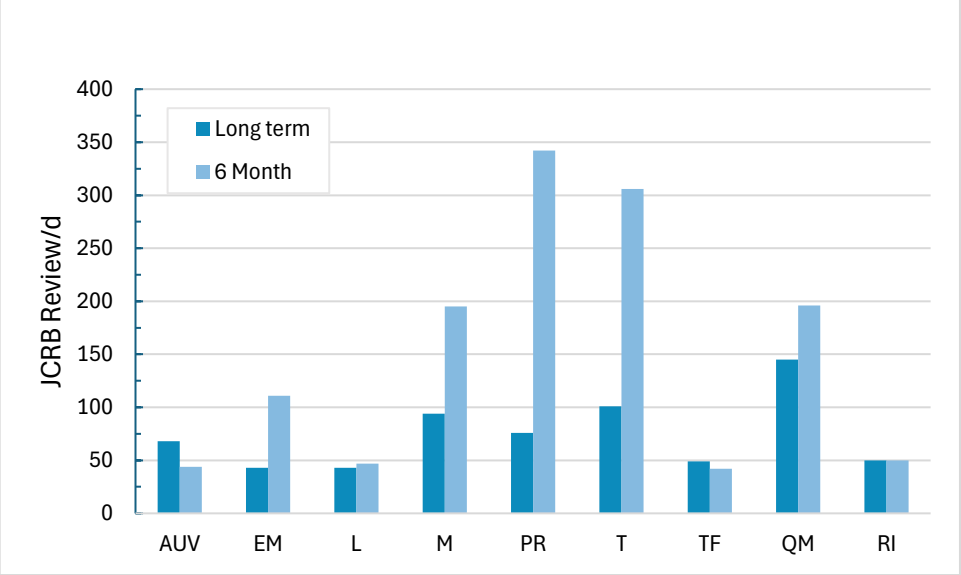

Figure 10b: Median JCRB review duration of CMCs. Light blue bars represent CMCs published during the last six months and dark blue since 2020 per metrology area.

QM applies a special approval process of the CCQM KCWG in the JCRB review results. However, the long-term trend from 2020 to March 2024 still reflects a great improvement in JCRB review durations for all metrology areas, as indicated by the dark blue bars compared to the old system.

Table 8 illustrates the review duration for the QM area in the longer-term perspective. For CMCs published in the last six months, the median JCRB review duration in QM has had a significant reduction of 55%, from 433 to 196 days. This is probably due to the CMCs being sent for revision. Finally, there has been a marginal increase from the last reporting period from a median duration of 139 days compared to 145 days for CMCs processed since April 2021.

Year	March 2024 – September 2024	September 2024 – March 2025	April 2021 – March 2025
JCRB duration / days	433	196	145

Table 8 : JCRB review durations for CMCs published in the QM area.

5. CMCs having the status 'JCRB: Revision Requested' for more than six months.

During JCRB review, institutes may be required to revise their CMCs based on reviewer comments. The revision process, guided by the document CIPM MRA-G-13, has no formal deadline with some submitting institutes taking longer to act on them. This creates a scenario where the CMCs "hang" at the JCRB review stage. This remains a concern and is still discussed by the JCRB. Of concern in future would be how upon attainment of 5 years with such status, how the CMCs will be handled.

Consequently, during the September 2023 to March 2025 reporting periods, analysis was conducted on CMCs with status "JCRB: Revision Requested". The analysis was based on the six-month cycle of the KCDB report.

Figure 11 depicts the comparative numbers from the September 2023 to March 2025 reporting period. It is worth noting that 72 % of the hanging CMCs were returned for revision before 2024. There is at least some reduction in the numbers from 2021. The 12 CMCs from 2020 remain unprocessed. The data is dynamic it is expected that the Institutes holding the CMCs will review them and return them for voting in the soonest time possible.

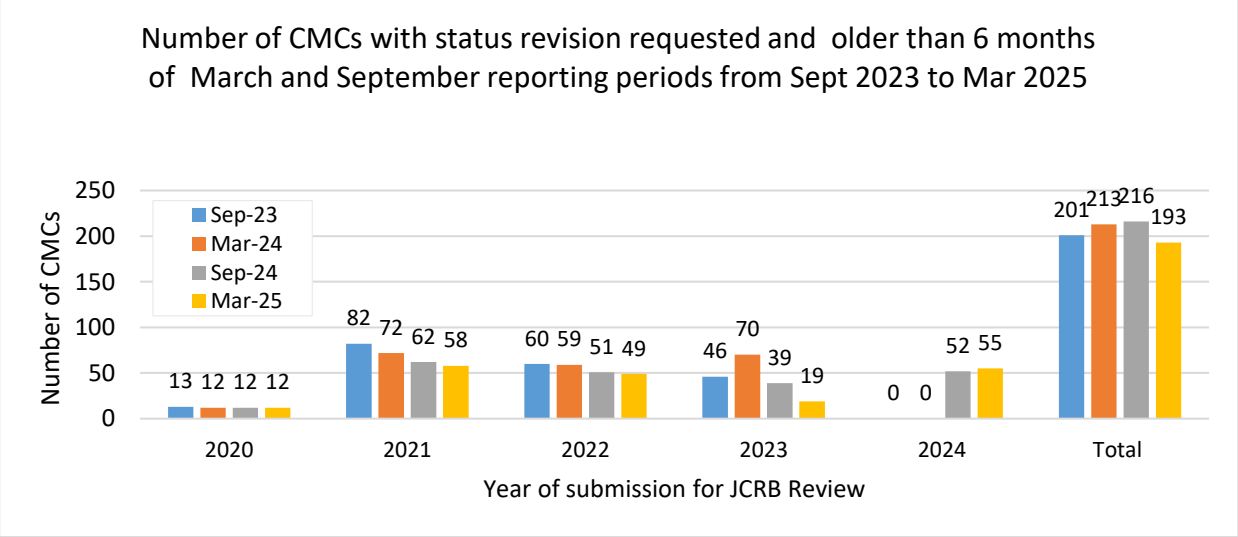

Figure 11: Number of CMCs older than 6 months with status JCRB Revision Requested by year of submission.

Figure 12 illustrates the analysis of the 193 CMCs that are hanging as of March 2025 per submitting RMO and the spread per year of submission for JCRB review. SIM had a significant contribution to the numbers in 2020, 2022 and 2024 while APMP had a significant contribution is in 2021 and 2023. EURAMET features highly in 2024 but has low numbers in 2021 and 2022 indicating good progress in processing the old CMCs.

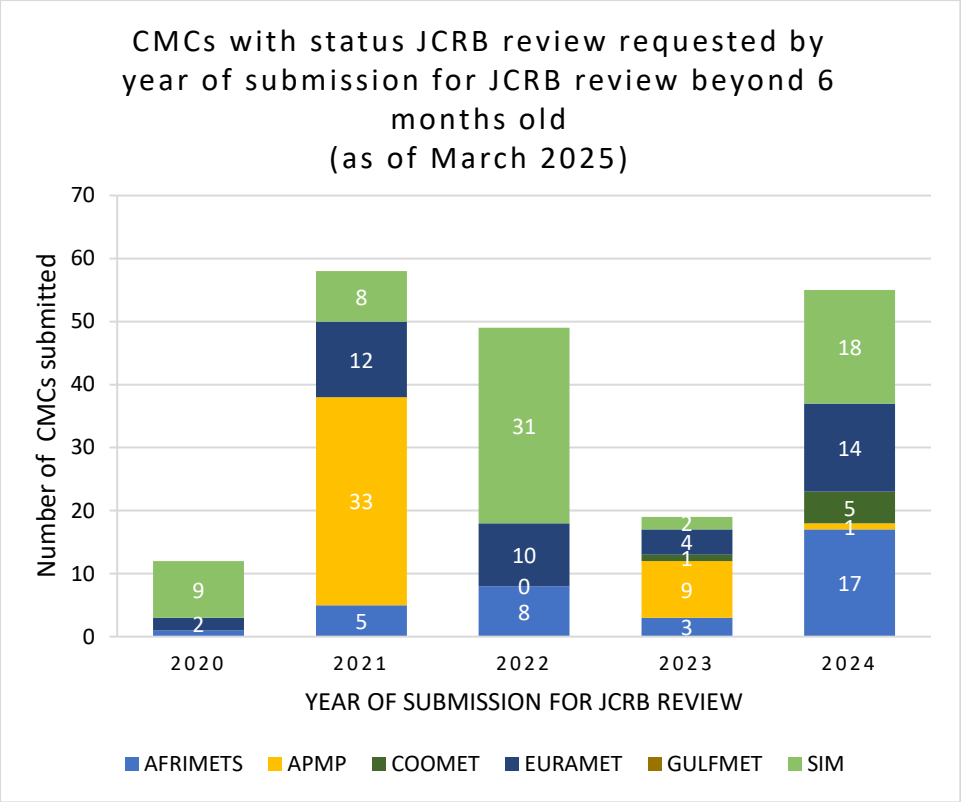

Figure 12: Number of CMCs with status JCRB Revision Requested by year of submission, from each submitting RMO and older than 6 months of reporting as of September 2024

When the CMCs are analysed per metrology area, there is general diversity in the numbers. Five metrology areas dominate in diverse years. CMCs submitted in 2020 are dominated by AUV, 2021 is dominated by PR with 25 and T and EM with 10 CMCs or more. QM and T have more than 10 CMCs in 2022. 2023 has low numbers with the affected metrology arear reporting less than 10 CMCs. Finally, 2024 by QM albeit the special review arrangement and M with both metrology areas having 10 CMCs or more, as illustrated by **Figure 13**.

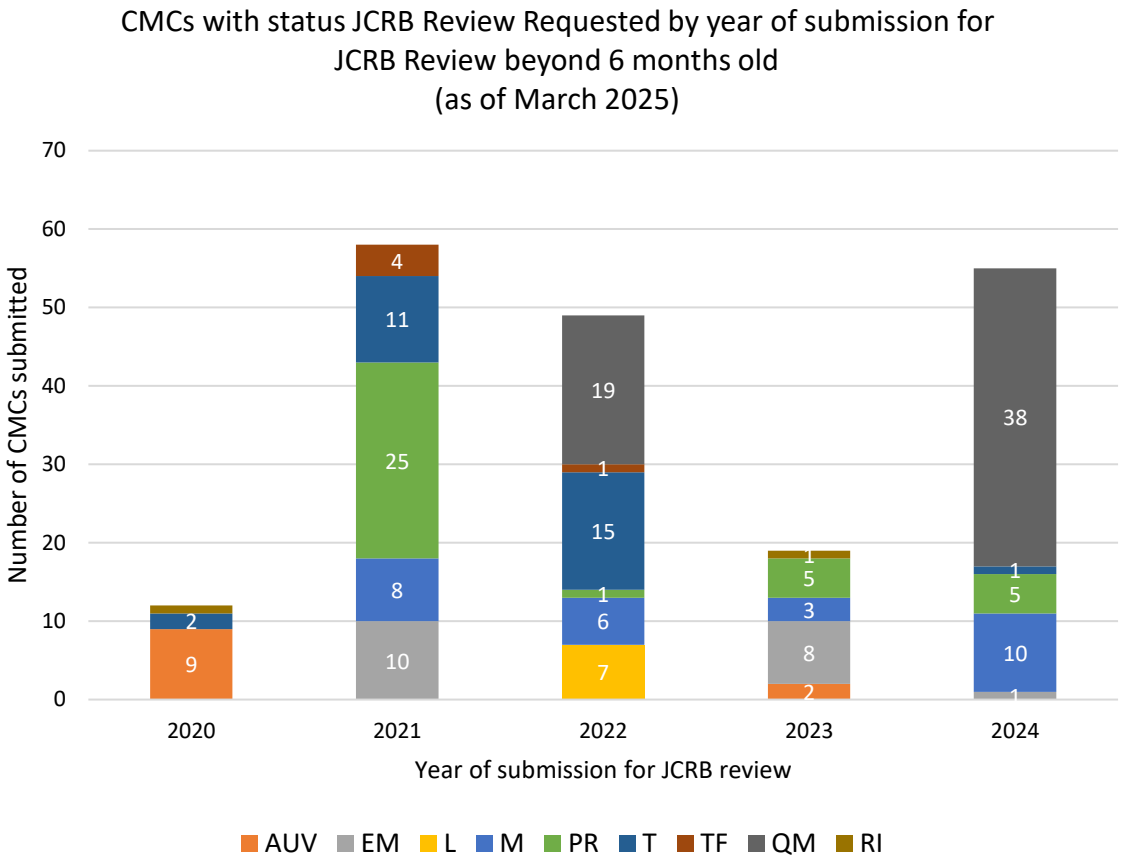

Figure 13: Number of CMCs with status JCRB Revision Requested by year of submission, per metrology area and older than 6 months of reporting as of March 2025.

A few CMCs were sampled to establish the reason behind the delay in action by the submitting institutes. It was established that most were caused by unresolved technical comments, with a few having editorial and missing evidence issues. The quality of intra-RMO reviews may be a contributing factor, since it influences the number and nature of queries raised at the JCRB review phase. The high number of technical comments may also be an indicator of the complexity of the metrology areas which have many hanging CMCs.

To address the problem, some mitigating actions were recommended by the JCRB. The first was for the JCRB Executive Secretary to continue monitoring the status of the CMCs and provide biannual analyses and report to the JCRB on a regular basis. It was also recommended that CBKT technical exchanges be continued to sensitize CMC Writers on requirements of CMCs for successful publishing. To complement the technical exchanges, a three-point checklist was developed and uploaded to the KCDB to guide writers. It was also recommended that RMOs conduct a thorough intra-RMO review to resolve issues before CMCs are submitted for JCRB review.

6. Present Status of the BIPM KCDB

6.1 Guidance

The KCDB is complemented by a variety of guidance material, cf. https://www.bipm.org/en/about-us/kcdb-help.html. During the last six months, the CBKT https://www.bipm.org/en/cbkt/ has organized several online demonstrations, focused on different user profiles or requested needs.

6.2 Development

The KCDB software is supported by an Application Management contract, allowing correction of anomalies and small adjustments to the software. During the last six months, the KCDB software has been updated at a number of occasions following correction of anomalies and requests for improvements reported by external users. Anomalies and suggestions for improvements may be communicated by the users by completing the form BIPM/ILC-F-1.

The recent updates are the display of KCDB CMC ID in CMC web advanced search and the iimplementation of a multi-factor authorization setting for KCDB Office user account. The KCDB Office is currently working on updating the module for the statistics on the JCRB review performance available from the KCDB web CMC statistic module and other requests requiring consultation with the Consultative Committees such as the inclusion of additional metadata for participants in comparison or implementation of a control menu for CMC parameters in the CMC submission form for harmonization purposes.

Furthermore, the workflow for publishing final comparison reports will have to be adapted, as the reports will no longer be published by IOPP as Technical Supplements of Metrologia from January 2026. The KCDB Office has been involved in developing technical specifications for implementing a new service for ensuring comparison reports are citable with assigned DOI.

6.3 Quality System

The Quality System underpinning the maintenance and operation of the KCDB has been updated. An internal audit internal audit of the KCDB is planned for 17-18 June 2025.

In response to last year customers' satisfaction survey, the KCDB Office is currently developing specifications for improving the accessibility and usability of the comment tool by writers to address reviewers' comments. The next customers' satisfaction survey is to be launched in April 2025.

7. BIPM KCDB and digitalization

Since the establishment of the Forum-MD the number of suggestions and requests for the KCDB office has increased, in line with the strategic objective of making the KCDB FAIR and eventually machine-actionable. Some of the suggestions require substantial work by the KCDB team and the external contractors. They were therefore prioritized in collaboration with the Forum-MD and JCRB and scheduled for 2025. The suggested improvements are as follows:

- Expansion of the e Application Programming Interface for the KCDB (API KCDB)query to the record of CMCs no longer published. The updated version of the KCDB API has been developed and is currently under validation.

- Expansion of the KCDB API for comparisons which will allow external users to query information on comparison and collect machine readable data. This work requires a consultation with the Consultative Committtees for defininig appropriate metadata.
- Working on the specification for a project to implement the PIDs of the SI Reference Point in the KCDB.

Acknowledgement

Many thanks to the BIPM IT team Laurent Le Mée and Thierry N'Guyen for their continued support.

APPENDIX I List of uncompleted comparisons older than 5 years

a) Key Comparisons

KC identifier	Indicated measurement date		Status as of 03 March 2025
	Start year	End year	
APMP.AUV.U-K3	2018	2019	Measurements completed
APMP.EM.RF-K8.CL	2012	2013	Measurements completed
APMP.EM-K5.1	2010	2013	Waiting for approval
APMP.M.FF-K6.2018	2018	2019	Report in progress, draft B
APMP.M.F-K2.1	2018	2018	Report in progress, draft B
APMP.M.F-K3.a	2013	2017	Measurements completed
APMP.M.F-K3.b	2019	2020	Measurements completed
APMP.M.P-K15	2013	2014	Report in progress, draft A
APMP.M.P-K4	2015	2016	Report in progress, draft A
APMP.PR-K3.a.1	2006	2006	Measurements completed
APMP.QM-K90	2018	2019	Measurements completed
APMP.T-K4.2	2018	2019	Report in progress, draft B
APMP.T-K9	2017	2018	Measurements in progress
CCEM.RF-K5.c.CL	2012	2015	Measurements in progress
CCEM-K5.2017	2018	2020	Measurements in progress
CCL-K4.n01	2015	2017	Report in progress, draft B
CCM.FF-K2.2011	2013	2015	Report in progress, draft B
CCM.F-K2.a.2	2019	2019	Measurements completed
CCM.F-K3.1	2017	2018	Measurements completed
CCM.P-K4.2012.1	2019	2019	Protocol complete
CCPR-K2.a.2016	2017	2019	Measurements in progress
CCPR-K2.b.2016	2016	2017	Measurements completed
CCPR-K4.2017	2017	2018	Report in progress, draft A
CCPR-K5.2019	2019	2020	Protocol complete
CCQM-K144	2018	2019	Report in progress, draft A
CCQM-K26.b.2019	2019	2019	Measurements in progress
CCRI(II)-K2.Pa-231	2017	2017	Report in progress, draft B
CCRI(II)-K2.Tc-99	2012	2013	Report in progress, draft B
CCT-K1.1	2006	2014	Report in progress, draft A
CCT-K6.1	2008	2010	Report in progress, draft A
COOMET.T-K9.1	2018	2019	Measurements in progress
EURAMET.EM-K5.2018	2019	2020	Report in progress, draft A
EURAMET.M.P-K4.2020	2019	2020	Waiting for approval
EURAMET.PR-K6.2015	2016	2018	Measurements in progress
EURAMET.PR-K6.2015.1	2018	2019	Measurements in progress
GULFMET.T-K9	2017	2017	Measurements in progress
SIM.M.FF-K6.2017	2017	2018	Report in progress, draft A
SIM.M.M-K6	2015	2017	Report in progress, draft B

b) Supplementary Comparisons

SC identifier	Indicated measurement date		Status as of 03 March 2025
	Start year	End year	
AFRIMETS.T-S7	2018	2020	Measurements in progress
APMP.EM.RF-S5.CL	2013	2015	Protocol complete
APMP.L-S5.2.n01	2019	2019	Waiting for approval
APMP.M.FF-S2.2016	2016	2017	Report in progress, draft B
APMP.M.M-S2	2019	2019	Protocol complete
APMP.PR-S5	2008	2009	Measurements in progress
APMP.PR-S8	2015	2017	Report in progress, draft B
APMP.T-S11	2013	2016	Report in progress, draft A
APMP.T-S12	2013	2019	Report in progress, draft A
APMP.T-S13	2014	2016	Measurements in progress
APMP.T-S14	2017	2017	Measurements in progress
APMP.T-S17	2018	2019	Measurements in progress
APMP.T-S8	2011	2015	Measurements in progress
APMP.T-S9	2013	2013	Measurements in progress
CCRI(II)-S15	2019	2020	Measurements in progress
CCRI(II)-S9	2011	2011	Report in progress, draft A
CCT-S3	2007	2008	Report in progress, draft B
COOMET.AUV.A-S3	2019	2020	Protocol complete
COOMET.EM-S10	2010	2012	Waiting for approval
COOMET.EM-S19	2015	2017	Report in progress, draft A
COOMET.L-S20	2016	2016	Report in progress, draft A
COOMET.L-S23	2019	2020	Waiting for approval
COOMET.L-S24	2019	2020	Report in progress, draft B
COOMET.M.FF-S6	2018	2019	Measurements in progress
COOMET.M.FF-S7	2018	2019	Measurements completed
COOMET.M.H-S2	2014	2016	Report in progress, draft A
COOMET.M.M-S3	2016	2017	Measurements in progress
COOMET.M.P-S3	2017	2018	Measurements in progress
COOMET.PR-S10	2016	2017	Report in progress, draft A
EURAMET.M.F-S2	2012	2013	Measurements in progress
EURAMET.M.T-S4	2015	2015	Report in progress, draft B
EURAMET.PR-S4	2012	2013	Measurements completed
EURAMET.QM-S13	2019	2020	Report in progress, draft A
EURAMET.T-S7	2018	2019	Report in progress, draft B
GULFMET.T-S1	2017	2018	Report in progress, draft A
SIM.M.F-S2	2012	2012	Report in progress, draft A
SIM.M.F-S6	2017	2017	Report in progress, draft A
SIM.M.F-S7	2018	2019	Measurements completed
SIM.M.F-S8	2018	2018	Measurements completed

(continued…)

SC identifier	Indicated measurement date		Status as of 03 March 2025
	Start year	End year	
SIM.M.M-S18	2018	2018	Report in progress, draft A
SIM.M.M-S19	2019	2019	Report in progress, draft B

Bureau
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Bureau International des Poids et Mesures
BIPM - Pavillon de Breteuil F-92312 Sèvres Cedex FRANCE