Bureau International des Poids et Mesures

SEPTEMBER 2024 REPORT ON THE KCDB TO THE JCRB

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www.bipm.org/

KCDB

KCDB Report to the JCRB[1]

March 2024 to September 2024

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 to 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 the KCDB 2.0 in late 2019. The JCRB review duration has largely remained low at 85 (84 in March 2024) median days compared to 140 days with the old system.

The comparisons record is cumulative, so increases over time, but the rate of increase is also approximately stable, the majority of comparisons launched being repeats of outdated comparisons plus new supplementary comparisons within the RMOs.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 28 August 2024.

1. CIPM MRA Appendix C: Calibration and Measurement Capabilities

1.1. CMC statistics

Figure 1 shows the number of CMCs published in the KCDB as of 28th August 2024. There were[2] 26 029 (25 809) published CMCs of which 19 558 (19 669) are in Physics and 6 471 (6 140) in Chemistry and Biology. The total number of published CMCs remains almost the same over the previous year, which confirms the observed steady-state trend over the last five years. A 5 % increase in CMCs published in the field of Chemistry and Biology and a 1% decrease of CMCs published in the field of Physics were observed during the last year.

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 .

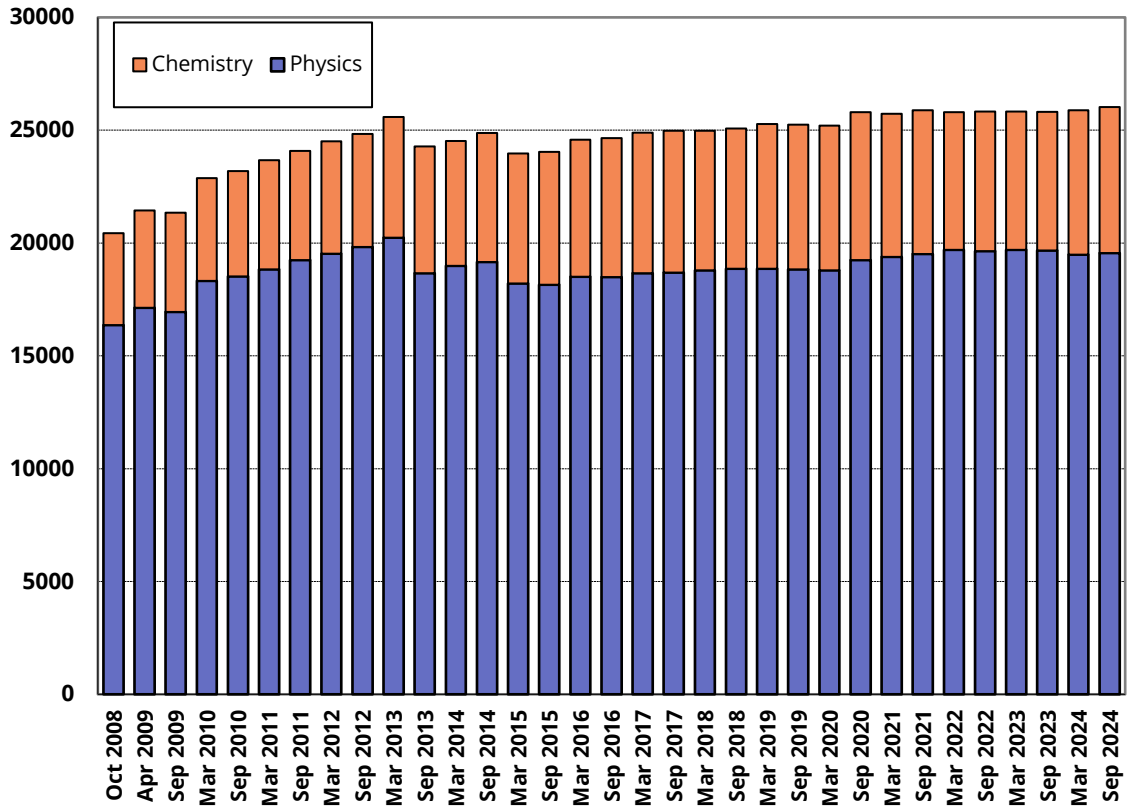

Figure 1 *Number of CMCs registered in the KCDB since September 2009.*

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

Table 1 shows the distribution of published CMCs by RMOs. The distribution of the overall number of published CMCs within RMOs remains stable over the last six months period. However, a slight decrease in CMCs from AFRIMETS was observed, attributed to the use of uncertainty tables rather than individual CMC lines.

RMO	Number of CMCs 2024-08-28	Number of CMCs 2024-03-04
AFRIMETS	758	766
APMP	6 716	6 629
COOMET	2 225	2 217
EURAMET	11 709	11 564
GULFMET	83	77
SIM	4 538	4 515
Total	**26 029**	**25 877**

Table 1 *Number of published CMCs in the KCDB per RMO on 28 August 2024 (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 3 179 unpublished CMCs as compared to 2 765 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 2024-08-28	Number of CMCs 2024-03-04
Draft	546	384
RMO: Submitted	596	533
RMO: Under Review	256	117
RMO: Review Completed	133	101
RMO: Accepted	21	51
RMO: Revision Requested	188	175
RMO: Revision Completed	171	38
Submitted to the JCRB	0	2
JCRB: Under Review	299	359
JCRB: Revision Requested	222	303
JCRB: Revision Completed	22	22
JCRB: Approved	149	4
JCRB: Waiting for VOTE	10	0
Greyed out	566	676
TOTAL	**3 179**	**2 765**

Table 2 Status of not yet published CMCs in the KCDB on 28 August 2024

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 decreased in comparison to the previous six-month period. In addition, 67 % of the overall published CMCs (1 017) were not subject to JCRB review but were submitted directly to the KCDB Office for editorial modification as per criteria 8.1 and 8.2 of document CIPM MRA G-13.

Metrology area	Published CMCs 2024-08-28	Published CMCs 2024-03-04
AUV	24	5
EM	31	61
L	3	1
M	33	35
PR	13	22
T	53	23
TF	13	28
QM	149	229
RI	18	2
TOTAL	**337**	**406**

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

1.2. Greyed out CMCs and reinstatements

There are presently 566 greyed out CMCs, compared to 676 CMCs six months earlier.
Table 4 displays all greyed-out CMCs with recent changes highlighted in yellow for increases and green for decreases.

As of August 2024, there were no greyed-out CMCs in the KCDB that will reach their maximum possible limit of 5 years as being greyed out within the next six months.
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							11			11
APMP	AU			3				14			17
APMP	CN							1			1
APMP	IN	34	74	44	54	14	1		4	11	236
APMP	KR		8				80				88
APMP	NZ		0			8				2	10
APMP	SG			4							4
APMP	VN			9	10					5	24
COOMET	RU				1		40				41
EURAMET	DE						4		1		5
EURAMET	ES						3	0			3
EURAMET	FI						0		7		7
EURAMET	FR		0		0		6				6
EURAMET	GB		5	0							5
EURAMET	HU		0	6				0			6
EURAMET	IT		3	0	0						3
EURAMET	LT		0	9	7						16
EURAMET	LV		4	0	0						4
EURAMET	NO			1	4						5
EURAMET	PL			1				0			1
EURAMET	PT			1			0				1
EURAMET	SK				0		10	0			10
EURAMET	UA			0	6			1			7
SIM	AR			1			6				7
SIM	BO		0		0		2				2
SIM	BR		1			0	0				1
SIM	CA		7		1	0			0		8
SIM	MX	0	0	0	0	4	7	0	0	0	11
SIM	US					20			6		26
	TOTAL:	34	102	79	83	46	159	27	18	18	566

Increased in number
Decreased in number

Table 4 Status of greyed out CMCs on 28 August 2024

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 28 August 2024 where 1 185 are key comparisons and 702 supplementary comparisons. This represents a total increase of 27 comparisons since 4 March 2024.

Entity	KC	SC
BIPM	101	1
CC	587	36
AFRIMETS	8	37
APMP	155	126
COOMET	51	126
EURAMET	197	225
GULFMET	7	27
SIM	79	124
TOTAL	**1 185**	**702**

Table 5 Key and Supplementary Comparisons on 28 August 2024.

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. The annual increase of key comparisons seems to have stabilized at around 30, corresponding to an increase of 3 %. The ratio of supplementary comparisons, 20 % in 2006, has continuously progressed to constitute 37 % of all comparisons.

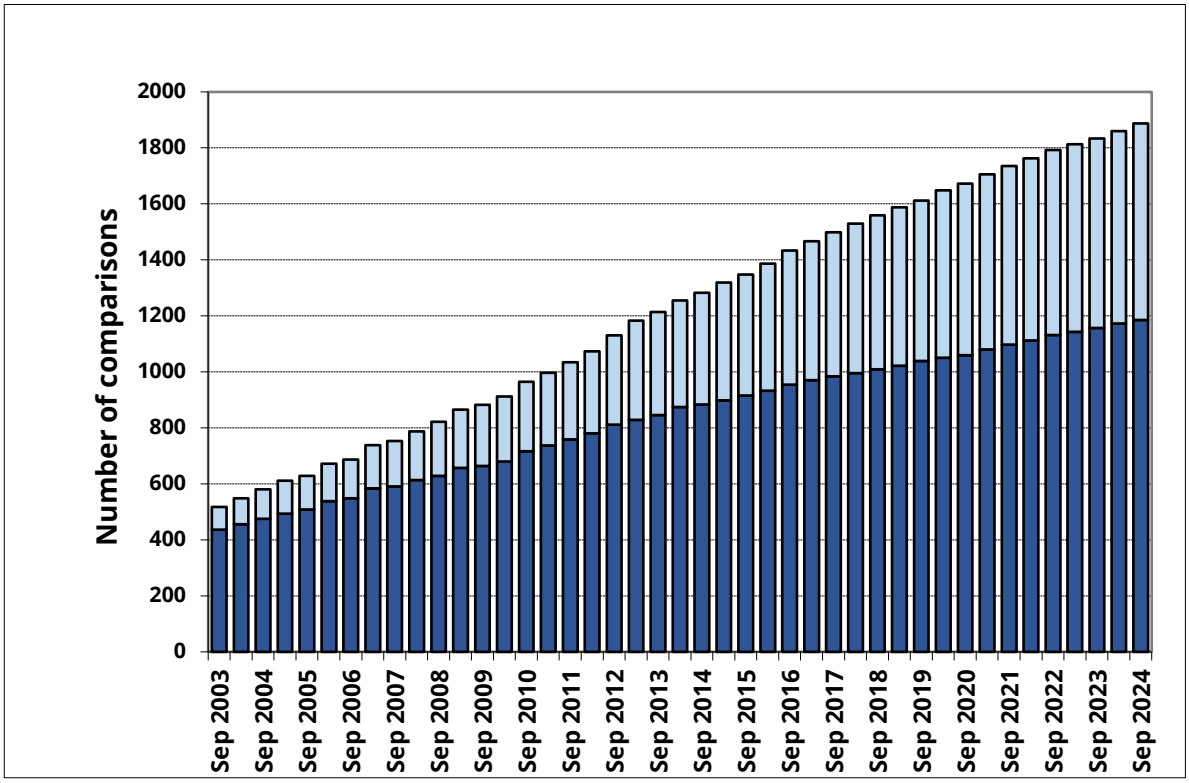

Figure 2 *Total number of key comparisons (dark blue) and supplementary comparisons (light blue).*

Figure 3 illustrates the number of new key and supplementary comparisons registered in the KCDB over the one-year period ending at the date indicated on the abscissa.

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

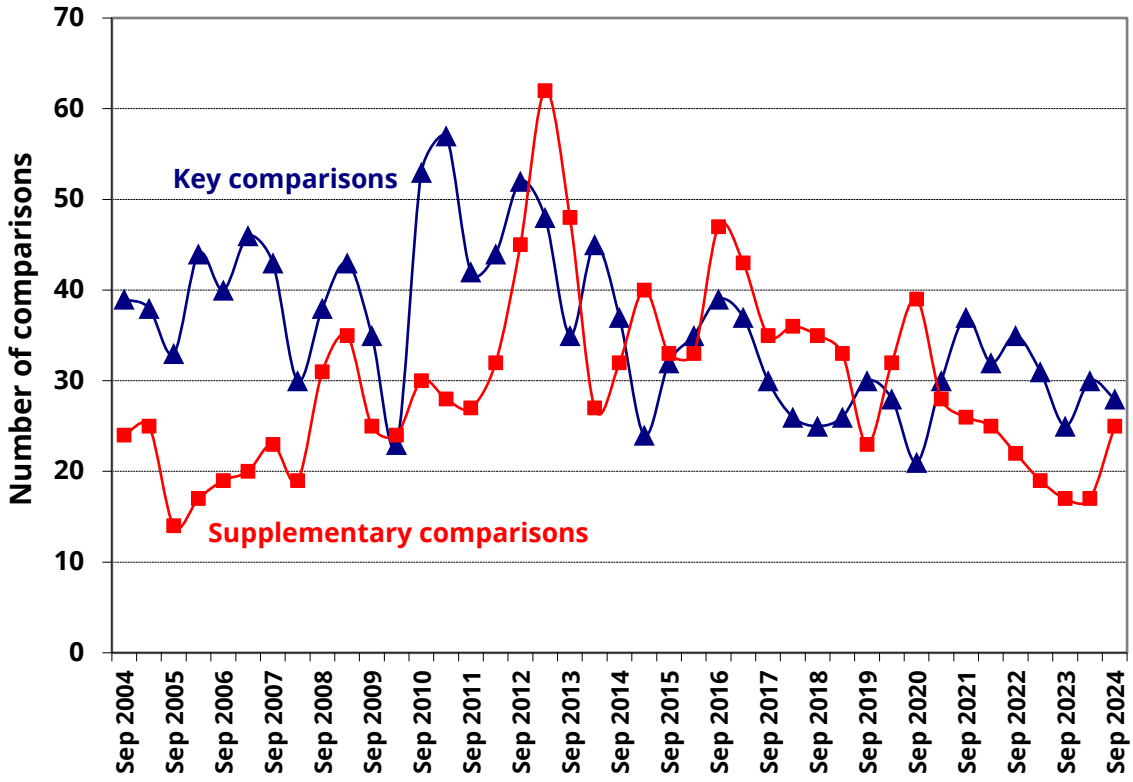

Figure 3 *Number of new comparisons registered in the KCDB over the one-year period.*

The following 32 comparisons were registered as new during the last 6 months:

APMP.M.FF-K6.2024	AFRIMETS.L-S6.1.n02	SIM.T-K9.4
APMP.T-K7.2021	APMP.L-S2.2.n01	AFRIMETS.L-S2.2.n01
CCM.FF-K1.2024	APMP.L-S4.2.n01	AFRIMETS.L-S2.2.n02
CCM.M-K2.2024	APMP.L-S5.4.n01.1	AFRIMETS.L-S2.4.n01
CCM.M-K8.2024	APMP.L-S6.6.n01	AFRIMETS.L-S6.1.n01
CCQM-K187	APMP.TF-S1	EURAMET.PR-S7
CCQM-K188	COOMET.M.FF-S12	EURAMET.QM-S16
CCQM-K93.2023	COOMET.M.M-S7	EURAMET.RI(I)-S19
COOMET.EM.BIPM-K10.b.1	COOMET.PR-S13	SIM.M.FF-S14
EURAMET.L-K4.n01	COOMET.T-K6.1	SIM.M.M-S21
EURAMET.RI(I)-K5.2	COOMET.T-S6	

The following 35 reports were published during the last 6 months:

BIPM.QM-K1 (EMPA 2023)	BIPM.RI(II)-K1.Co-57 (BEV 2023)
BIPM.QM-K1 (NMC, A*STAR 2022)	BIPM.RI(II)-K1.Lu-177 (CMI 2023)
AFRIMETS.AUV.V-K5 (NMISA 2024)	CCL-K11_2023
AFRIMETS.L-S2.2.n01	CCQM-K160
AFRIMETS.L-S2.2.n02	CCQM-K160
AFRIMETS.L-S2.4.n01	CCQM-K161
AFRIMETS.L-S6.1.n01	CCQM-K73.2018.2
AFRIMETS.L-S6.1.n02	CCQM-K91.2022
AFRIMETS.L-S6.1.n03	CCT-K10
APMP.AUV.V-S2	COOMET.EM-S21
APMP.EM-K12	COOMET.EM-S22
APMP.T-S15	COOMET.EM-S23
BIPM.EM-K11 (INRIM 2023)	COOMET.EM-S24
BIPM.EM-K11 (SASO 2023)	COOMET.EM-S7
BIPM.QM-K1 (CMS 2024)	COOMET.M.FF-S10
BIPM.QM-K1 (NPL 2022)	COOMET.PR-K1.a.2018
BIPM.QM-K1 (VSL 2024)	EURAMET.L-S2.3.n02
BIPM.RI(I)-K8 (VSL 2019)	

As of 28 August 2024, the number of abandoned (72) or superseded key and supplementary comparisons, stored in the KCDB archives is 153.

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 uncompleted 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 **Annex I**.

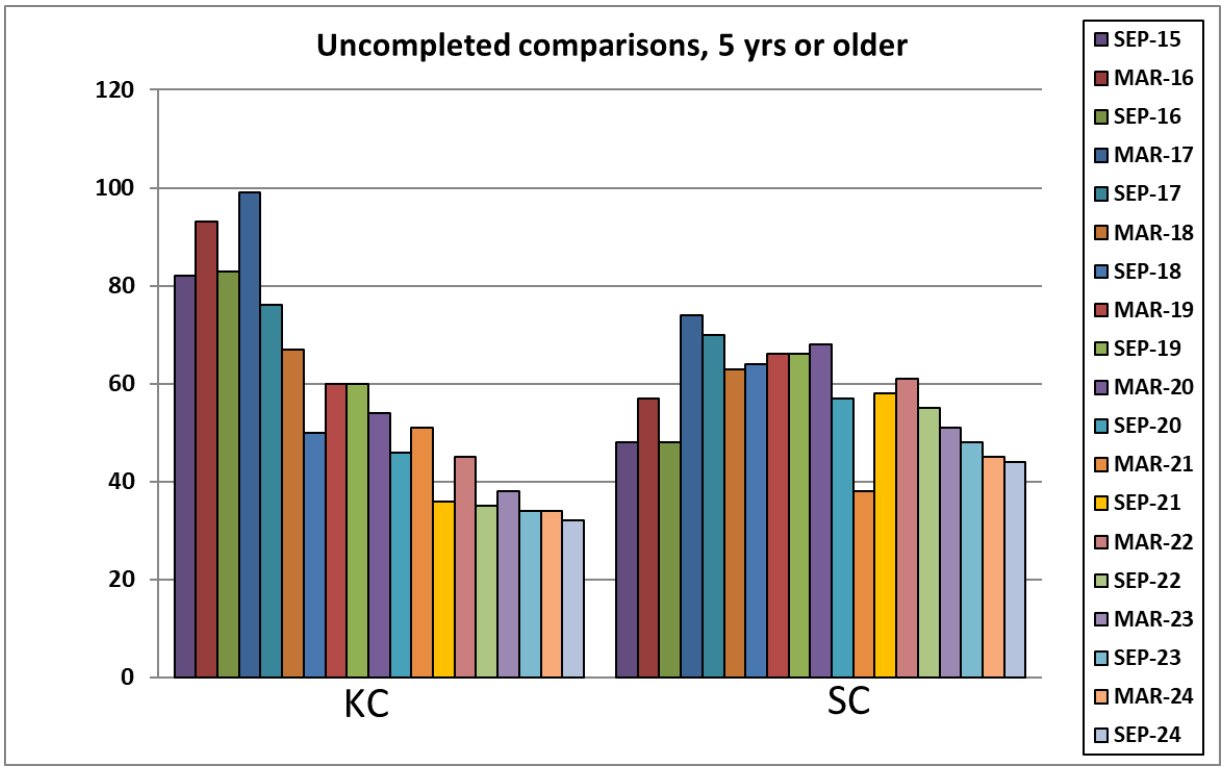

Figure 4 *Histogram showing the number of incomplete comparisons that started more than 5 years ago.*

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

Table 6 summarizes the participation of the 36 Associates of the CGPM in CIPM MRA activities as of 28 August 2024.[3]

The first five CMCs from Uzbekistan were published in May 2024 in the fields of photometry and radiometry, and ionizing radiation.

[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.

Associate	Published CMCs	Greyed out CMCs	Key Comparisons	Supplementary Comparisons
Albania	10		7	5
Azerbaijan	35		2	9
Bangladesh			3	3
Bolivia	22		12	35
Bosnia and Herzegovina	85		17	24
Botswana	3		1	11
Cambodia				0
CARICOM (Caribbean Community)	1		1	12
Chinese Taipei	397		116	53
Ethiopia	6			6
Georgia	65		7	18
Ghana			2	8
Hong Kong, China	311		113	31
Jamaica	22		7	12
Kuwait			3	6
Latvia	13	4	15	11
Luxembourg	10		5	3
Malta			3	3
Mauritius			2	8
Moldova, Republic of	84		6	19
Mongolia	23		6	4
Namibia	7			4
North Macedonia	21		10	12
Oman				1
Panama	38		8	24
Paraguay	14		2	20
Peru	113		32	44
Philippines	33		18	12
Qatar			3	4
Sri Lanka	2		10	2
Syrian Arab Republic			11	3
Tanzania				4
Uzbekistan	5		7	12
Viet Nam	7	24	39	8
Zambia	11		2	13
Zimbabwe	19		1	10
TOTAL	**1 338**	**28**	**471**	**454**

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

Figure 5 and **Figure** 6 illustrate the repartition of CMCs and comparisons among Associates respectively.

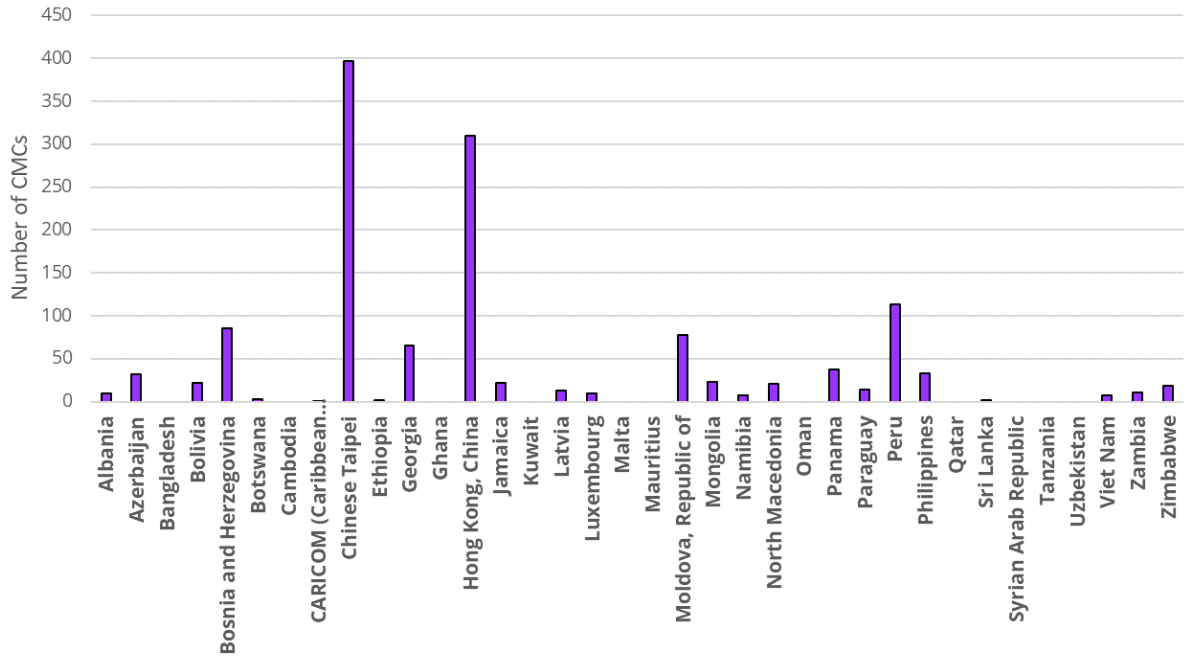

Figure 5 *Graph showing the number of CMCs declared by Associates of the CGPM.*

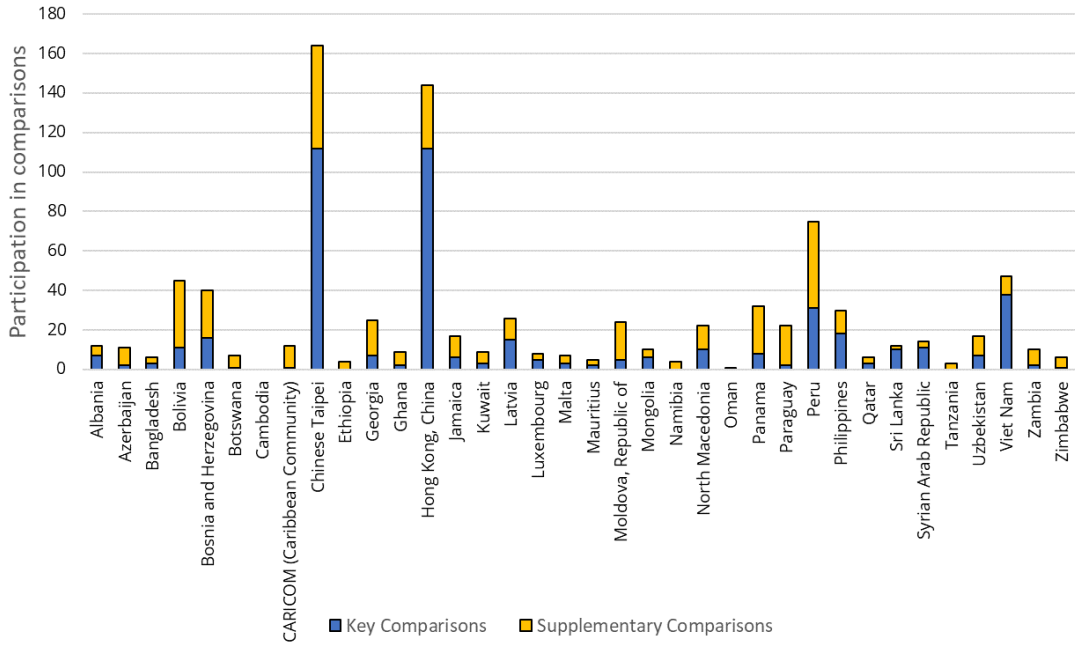

Figure 6 *Graph showing the participation of Associates of the CGPM in key and supplementary comparisons.*

4. KCDB 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 September 2024 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.

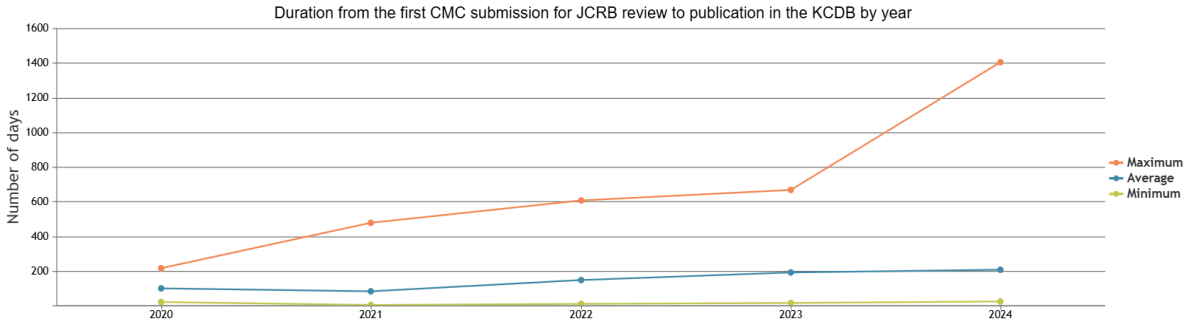

Figure 7 : *A graph giving a snapshot on 28 August 2024 of the duration of the CMC approval for JCRB review as retrieved from the statistics on the CMC's menu of the KCDB.*

Table 7 summarizes the JCRB review durations compared to the more recent data of CMCs processed on the KCDB platform. The median and mean days for the current reporting period, column Sep. 2024, have almost doubled compared to the Mar. 2024 reporting period. The maximum JCRB review duration for the CMCs published within the last 6 month has reduced by 236 days. The median review duration for all CMCs processed in the KCDB 2.0 has also remained fairly constant (85 days for the September 2024 reporting period versus 84 days for the March 2024 reporting period), maintaining a reduced duration compared to the old KCDB system.

	Mar. 2023	Sep. 2023	Mar. 2024	Sep. 2024'	KCDB* From 2020
minimum	43	22	20	25	0
median	147	71	69	144	85
mean	126	131	100	225	124
maximum	214	665	1 305	1 069	1 305

'Computed for CMCs published from March 2024 to September 2024
*Computed from the KCDB menu 'Statistics on review performance' for the whole period since 1 January 2020

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 March 2024 and September 2024. The lower graph with green bars shows the Intra-RMO review durations per submitting RMOs. Three of the RMOs have median durations of more than 100 days from initial CMC submission to submission for JCRB review with one over 300 days. The top graph shows the median JCRB review durations. Three of the RMOs have review durations of less than 100 days. However, three have durations comparable to the old KCDB system.

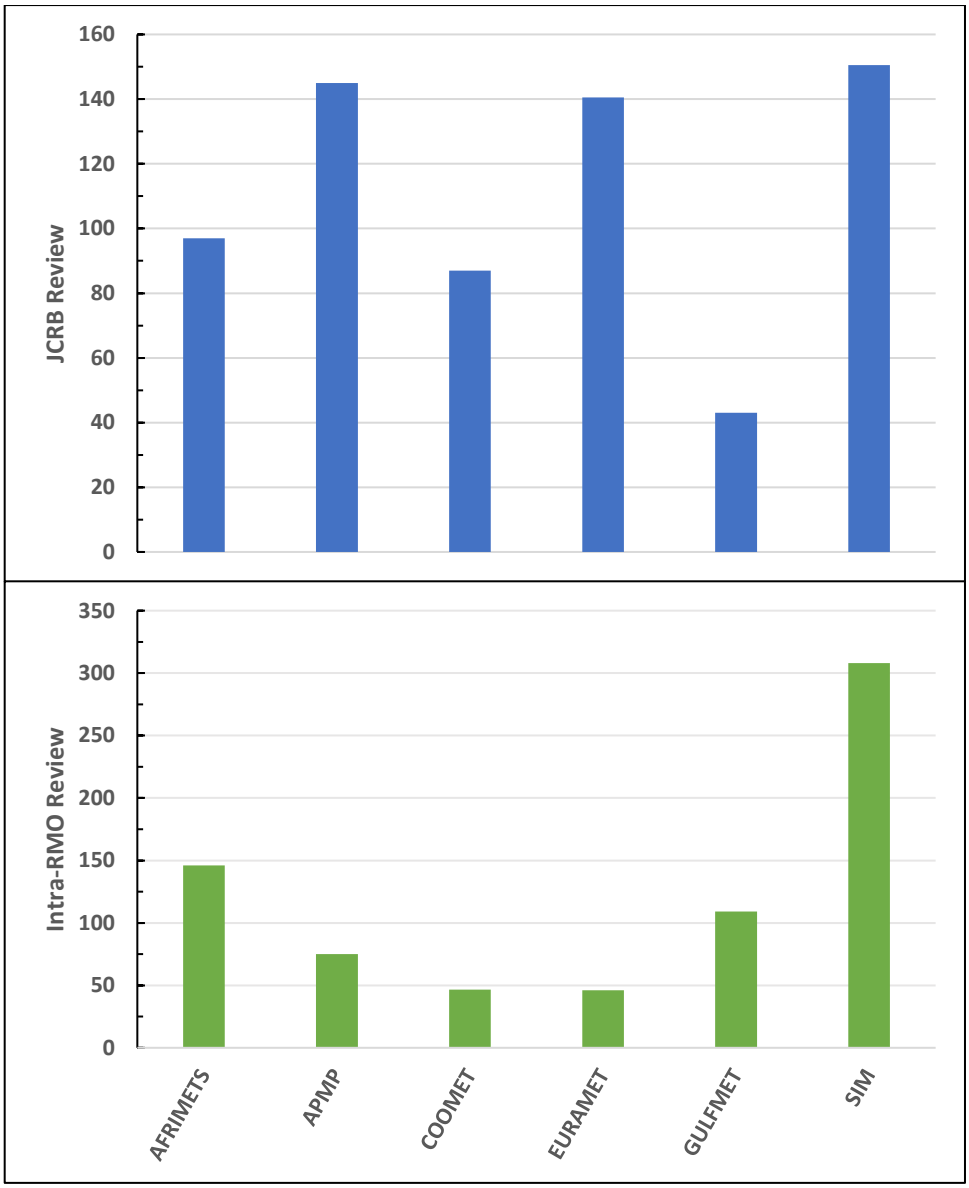

Figure 8 : *Review durations for CMCs published in the KCDB between March 2024 and September 2024. The bars reflect median intra-regional review in the bottom panel and median JCRB review durations in the upper panel for CMCs submitted by the RMOs indicated on the x axis.*

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

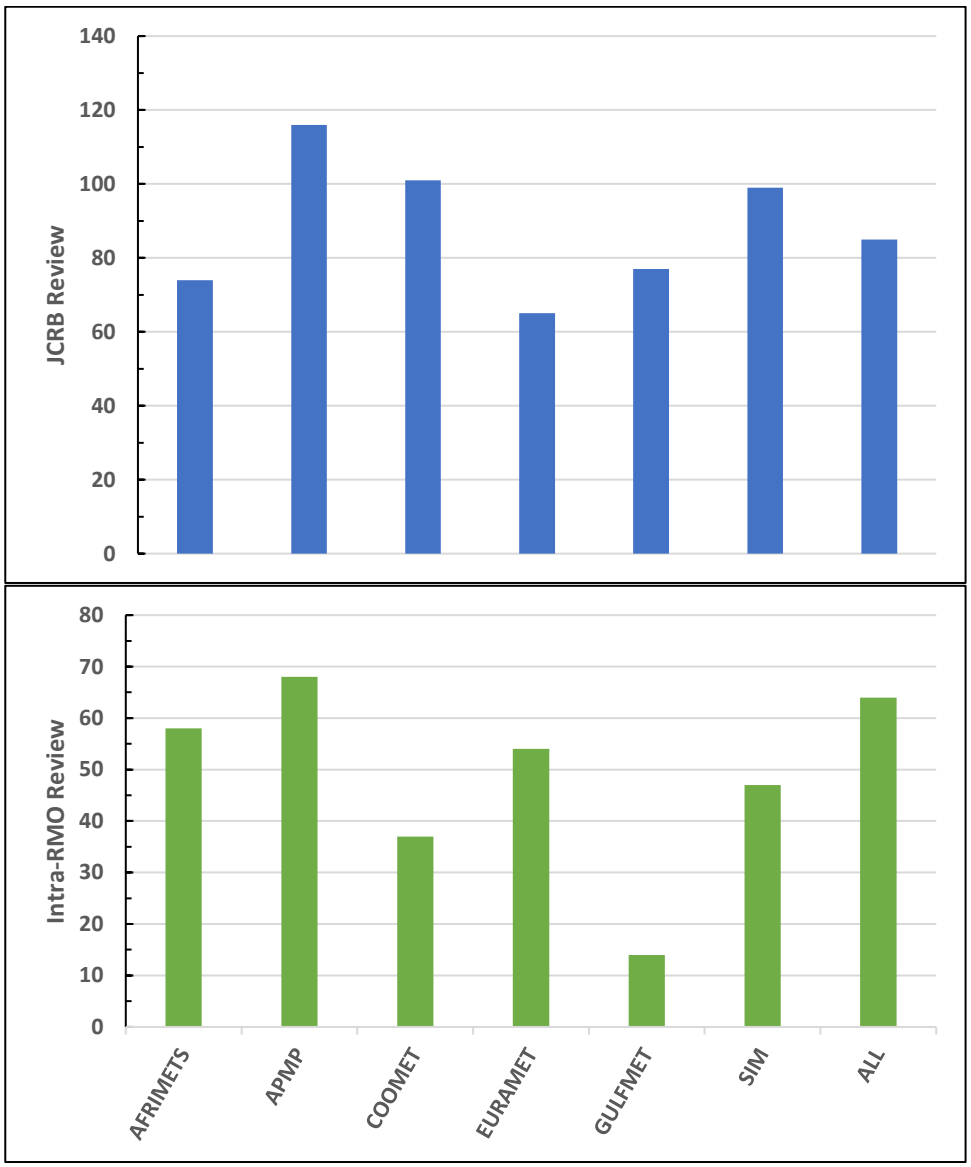

Figure 9 : *Median review durations computed on CMCs processed in the KCDB platform since 2020. Bottom, the intra-RMO review for all RMOs submitting the CMCs. Top, JCRB review on the same CMCs. Median data on both review stages averaged across all RMO submissions in the right column.*

Figure 10 illustrates the review durations across metrology areas. For intra-RMO reviews, EM, L, M, PR and T have review durations greater than 200 days for CMCs published within the last six months.

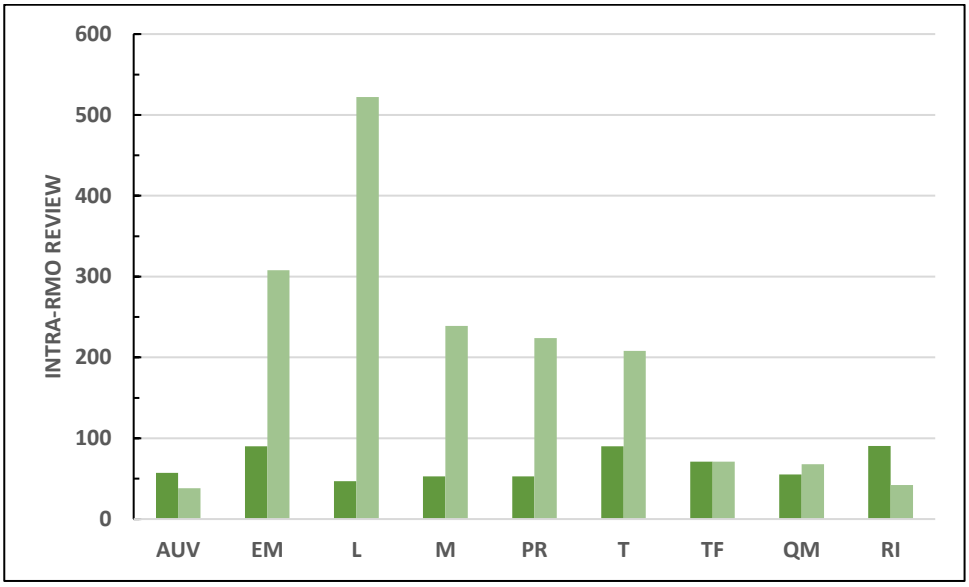

Figure 10a : *Median Intra-RMO review duration of CMCs. Light green bars represent CMCs published during the last six months and dark green since 2020 per metrology area.*

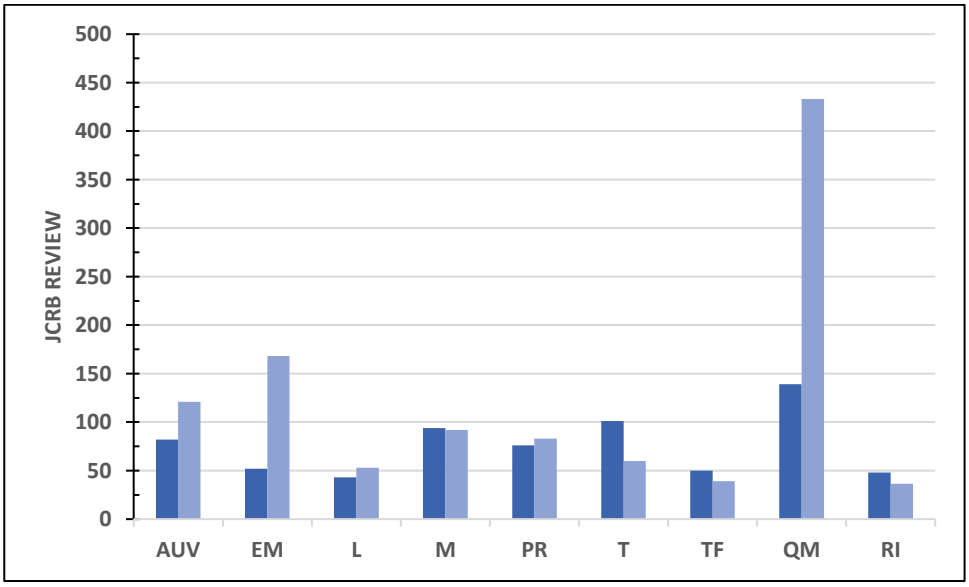

Figure 10b : *Median JCRB review duration of CMCs. Light blue bars represent CMCs published during the last six months and dark blue since 2020 per metrology area.*

The QM area 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 areas, as indicated by the dark blue bars compared to the old system.

Table 8 illustrates the review duration for the QM area over the longer-term perspective. For CMCs published in the last six months, the median JCRB review duration in QM has increased from 189 to 433 days. Finally, there has been a marginal increase from the last reporting period from a median duration of 128 days compared to 139 days for CMCs processed since April 2021.

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

Year	September 2023 – March 2024	March 2024 – September 2024	April 2021 – September 2024
JCRB duration / days	189	433	139

5. CMCs with JCRB status: Revision Requested and exceeding the six month KCDB reporting period

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. This creates a scenario where the CMCs "hang" at the JCRB review stage. This matter was raised by TC Chairs, discussed in CC meetings and subsequently escalated to the JCRB.

Consequently, during the September 2023 to 2024 reporting period, analyses 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 September 2024 reporting period. It is worth noting that 76 % of the hanging CMCs were returned for revision before 2024. Whereas a few old CMCs have already been published, the numbers have increased marginally.

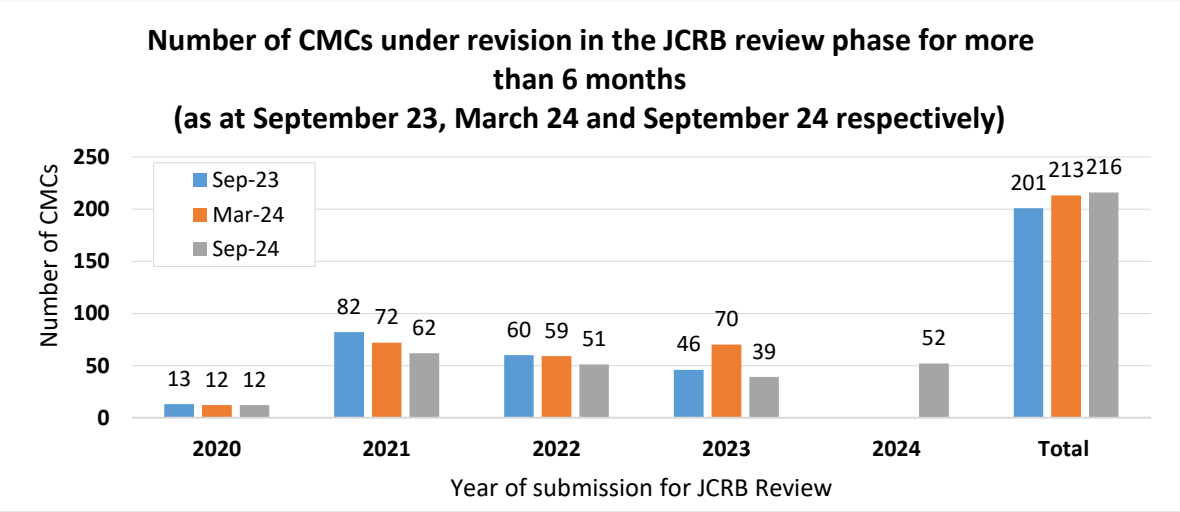

Figure 11: *Number of CMCs older than the 6 month reporting period with status JCRB Revision Requested by year of submission.*

Figure 12 illustrates the analysis of the 216 CMCs that are hanging as of September 2024 per submitting RMO and the spread per year of submission for JCRB review. SIM had a significant contribution to the number of CMCs submitted in 2020, 2022 and 2024 while APMP made significant contribution is in 2021 and 2023. Lastly, EURAMET features highly in 2024 but still has large numbers in 2021 and 2022.

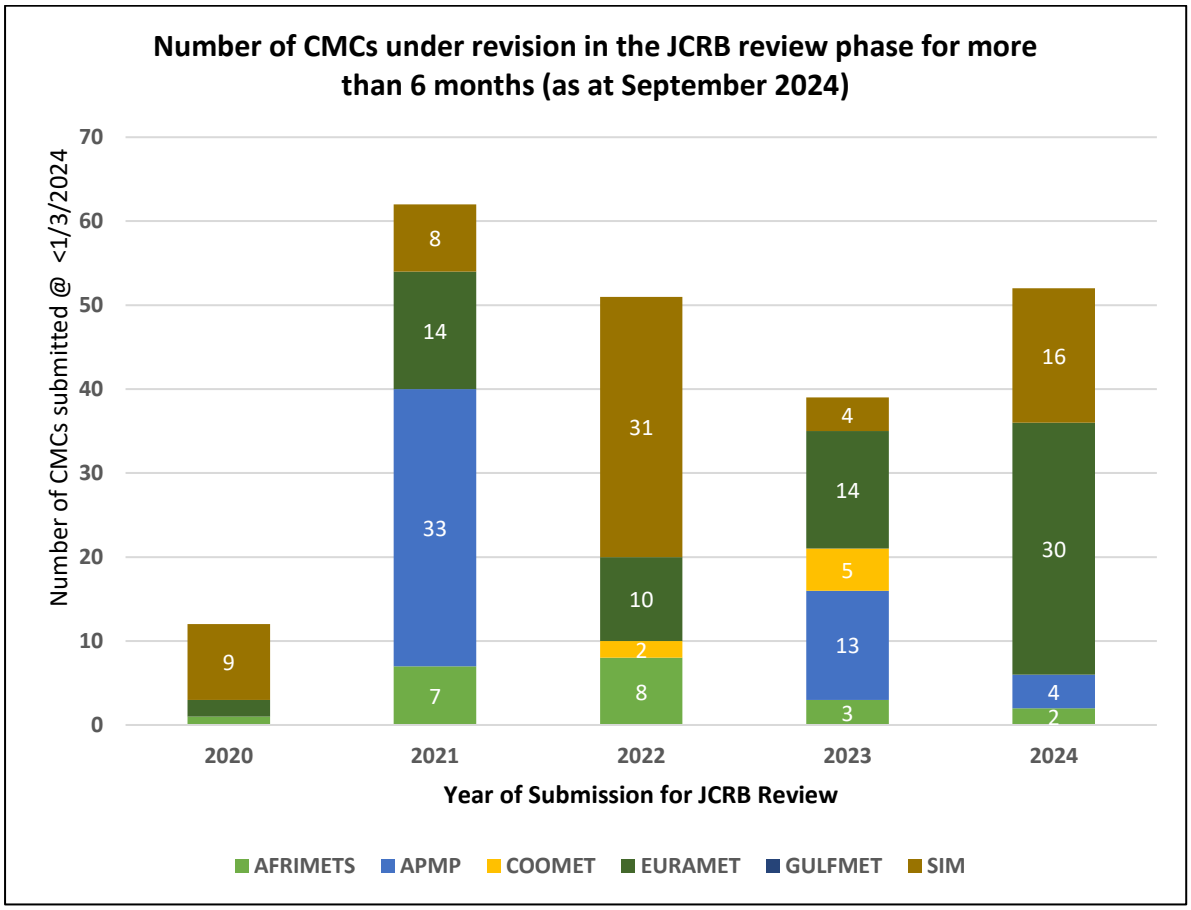

Figure 12: *Number of CMCs with status JCRB Revision Requested by year of submission, from each submitting RMO and older than 6 months of reporting period as of September 2024*

When the CMCs are analyzed 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 by EM, PR and T, 2022 by QM and T and finally 2024 by QM, which has reduced the 2023 numbers from 43 to 5 as illustrated by **Figure 13**.

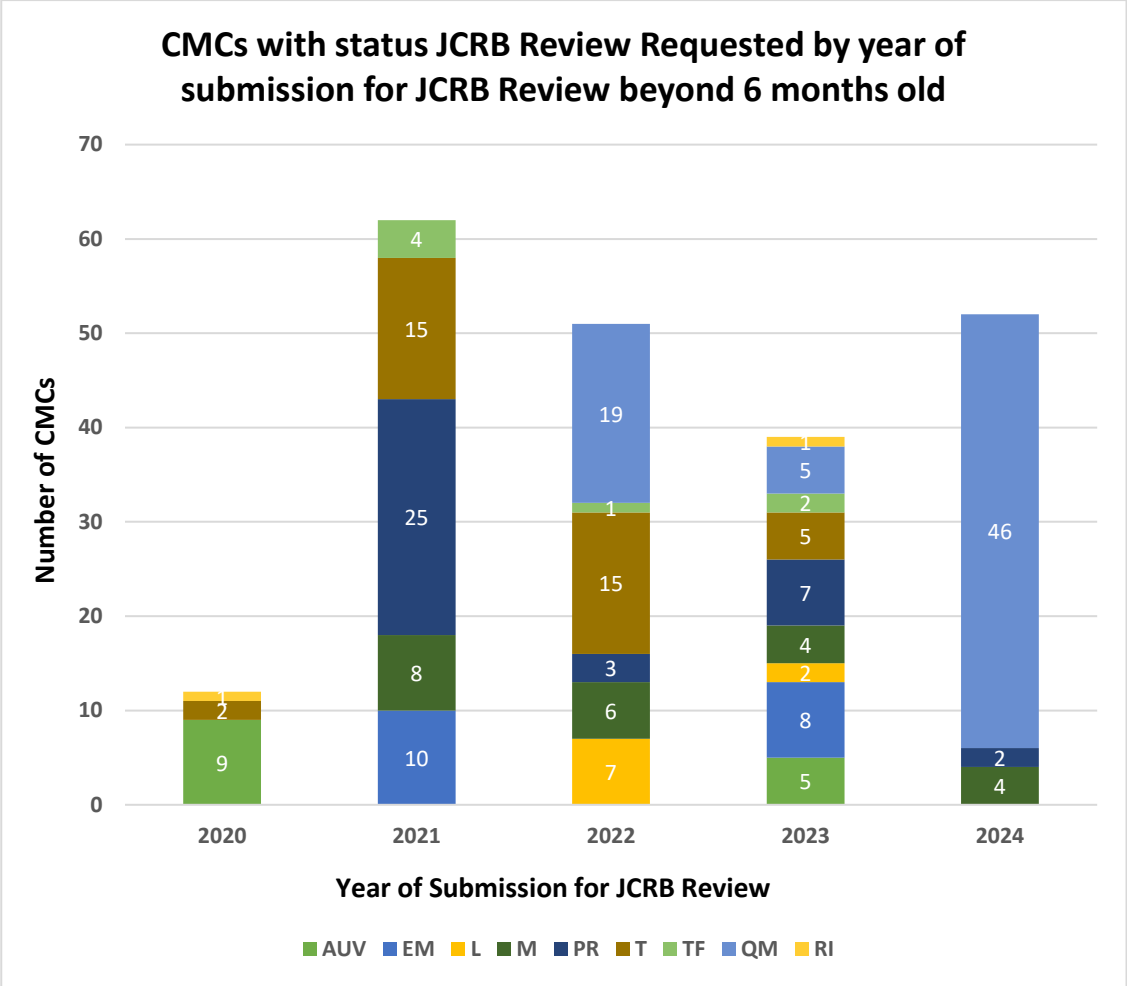

Figure 13: *Number of CMCs with status JCRB Revision Requested by year of submission, per metrology area and older than 6 months of reporting period as of March 2024.*

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 the CBKT technical exchanges be continued to provide guidance to CMC Writers on requirements for successful publishing of CMCs. To complement the technical exchanges, a three-point checklist has been developed and uploaded to the KCDB to guide the 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

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.

The KCDB software is supported by an Application Management contract, allowing small adjustments to the software. Anomalies and suggestions for improvements may be communicated by the users by completing the form https://www.bipm.org/utils/common/pdf/KCDB_2.0/Form_for_declaring_an_anomaly_or_request.docx.

7. BIPM KCDB and digitalization

Within the framework of the Digital SI Framework, work is progressing towards interoperability of the CMC data.

A new project on the integration of the Digital SI Reference point[4] into the KCDB as a first step to meet the FAIR principles is being organized in collaboration with the BIPM Digital Team. The aim of this work is to integrate the digital SI references or persistent identifiers for the units, kind of quantities and services of the CMCs.

In addition, development is progressing for updating the Application Programming Interface for the KCDB (API KCDB), which will allow external users to make CMC queries for any statuses and to collect machine readable data.

Acknowledgement

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

[4] The SI Reference Point is a set of tools designed to provide an authoritative digital reference for the International System of Units (SI), traditionally published by the BIPM in the form of the SI Brochure. The SI Reference Point is designed to be fully FAIR* and machine-actionable. The digital resource is currently based on five pillars - units, prefixes, decisions, constants and quantities, and a beta version is accessible at: https://si-digital-framework.org/

ANNEX I List of uncompleted comparisons older than 5 years

a) Key Comparisons

KC identifier	Indicated measurement date		Status as of 28 August 2024
	Start year	End year	
APMP.EM.BIPM-K11.2	2004	2004	Report in progress, draft B
APMP.PR-K3.a.1	2006	2006	Measurements completed
CCT-K1.1	2006	2014	Report in progress, draft A
CCT-K6.1	2008	2010	Report in progress, draft A
EURAMET.T-K8	2008	2012	Waiting for approval
APMP.EM-K5.1	2010	2013	Waiting for approval
APMP.EM.RF-K8.CL	2012	2013	Measurements completed
APMP.PR-K3.a	2012	2014	Report in progress, draft A
CCEM.RF-K5.c.CL	2012	2015	Measurements in progress
CCQM-K110	2012	2012	Postponed
CCRI(II)-K2.Tc-99	2012	2013	Measurements in progress
APMP.M.F-K3.a	2013	2017	Measurements in progress
APMP.M.P-K15	2013	2014	Report in progress, draft A
CCM.FF-K2.2011	2013	2015	Waiting for approval
APMP.M.P-K4	2015	2016	Measurements completed
APMP.M.P-K7.2	2015	2016	Report in progress, draft B
APMP.M.T-K1	2015	2016	Planned
CCL-K4.n01	2015	2017	Report in progress, draft B
SIM.M.M-K6	2015	2017	Report in progress, draft B
CCPR-K2.b.2016	2016	2017	Measurements completed
CCT-K8	2016	2017	Report in progress, draft A
EURAMET.PR-K6.2015	2016	2018	Measurements in progress
APMP.T-K9	2017	2018	Measurements in progress
CCM.F-K3.1	2017	2018	Measurements completed
CCPR-K4.2017	2017	2018	Report in progress, draft A
CCQM-K133	2017	2017	Planned
CCRI(II)-K2.Pa-231	2017	2017	Report in progress, draft B
GULFMET.T-K9	2017	2017	Measurements in progress
SIM.M.FF-K6.2017	2017	2018	Report in progress, draft A
CCM.V-K4.A	2018	2018	Report in progress, draft B
CCM.V-K4.B	2018	2018	Report in progress, draft B
CCQM-K144	2018	2018	Planned

b) Supplementary Comparisons

SC identifier	Indicated measurement date		Status as of 28 August 2024
	Start year	End year	
APMP.M.P-S1	2003	2005	Measurements completed
CCT-S3	2007	2008	Report in progress, draft B
COOMET.M.F-S1	2008	2010	Report in progress, draft B
APMP.PR-S5	2008	2009	Measurements in progress
SIM.T-S4	2008	2008	Report in progress, draft B
COOMET.EM-S10	2010	2012	Waiting for approval
APMP.T-S8	2011	2015	Measurements in progress
APMP.M.H-S4	2011	2011	Report in progress, draft A
CCRI(II)-S9	2011	2011	Report in progress, draft A
EURAMET.M.F-S2	2012	2013	Measurements in progress
SIM.QM-S3	2012	2012	Report in progress, draft A
SIM.QM-S4	2012	2012	Report in progress, draft A
EURAMET.PR-S4	2012	2013	Measurements completed
APMP.M.G-S1	2012	2012	Report in progress, draft A
APMP.M.MM-S1	2012	2013	Measurements in progress
SIM.M.F-S2	2012	2012	Report in progress, draft A
APMP.EM.RF-S5.CL	2013	2015	Protocol complete
APMP.T-S11	2013	2016	Report in progress, draft A
COOMET.EM-S18	2013	2016	Waiting for approval
APMP.T-S9	2013	2013	Measurements in progress
APMP.T-S10	2013	2013	Planned
APMP.T-S13	2014	2016	Measurements in progress
SIM.T-S8	2014	2014	Report in progress, draft A
COOMET.M.H-S2	2014	2016	Report in progress, draft A
APMP.PR-S8	2015	2017	Report in progress, draft B
APMP.M.P-S7	2015	2015	Report in progress, draft B
COOMET.EM-S19	2015	2017	Report in progress, draft A
EURAMET.M.T-S4	2015	2015	Report in progress, draft A
COOMET.L-S20	2016	2016	Report in progress, draft A
APMP.M.FF-S2.2016	2016	2017	Report in progress, draft B
COOMET.PR-S10	2016	2017	Protocol complete
COOMET.M.M-S3	2016	2017	Measurements in progress
EURAMET.M.P-S16	2016	2016	Protocol complete
APMP.T-S14	2017	2017	Measurements in progress
SIM.T-S9	2017	2017	Planned
COOMET.M.P-S3	2017	2018	Measurements in progress
APMP.T-S16	2017	2018	Report in progress, draft B
SIM.M.F-S6	2017	2017	Report in progress, draft A

(continued…)

SC identifier	Indicated measurement date		Status as of 28 August 2024
	Start year	End year	
GULFMET.T-S1	2017	2018	Report in progress, draft A
APMP.M.F-S2.1	2018	2018	Report in progress, draft B
SIM.M.F-S8	2018	2018	Measurements completed
SIM.M.M-S18	2018	2018	Measurements completed

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