

## KCDB REPORT AS ON 01 SEPTEMBER 2011

At the occasion of each JCRB meeting the KCDB Office prepares a report on the status of the KCDB. Each report describes the work of the KCDB Office during the previous six-month period, and the compilation of these reports to the JCRB thus provides a complete record of the evolution of the KCDB.

The previous report (JCRB-26/06) was presented at the 26th meeting of the JCRB, held on 21-22 March 2011 at the BIPM, and reflected the situation as at 01 March 2010. The present report covers the six-month period from 01 March 2011 to 01 September 2011.

### Notes from the KCDB Office to the JCRB members

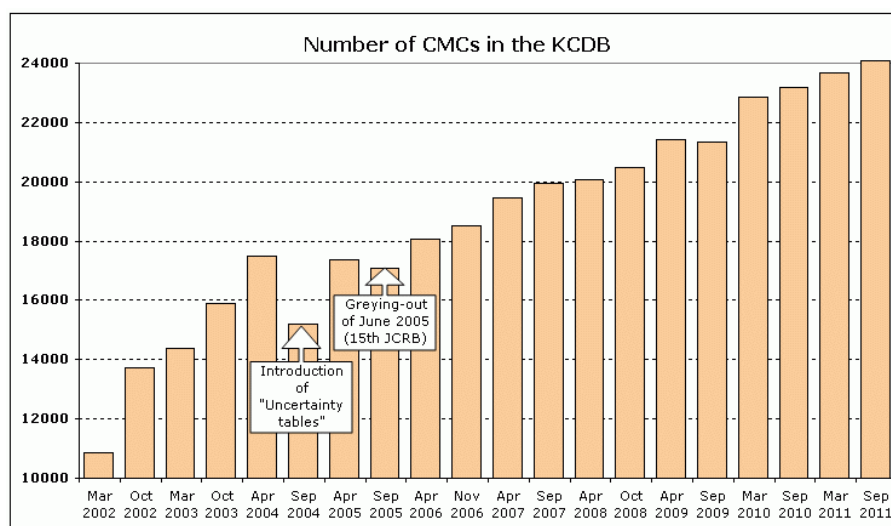
1. Statistics on the content of the KCDB are prepared by the KCDB Office and are available on-line from the [KCDB Statistics page](#). This includes the number of key and supplementary comparisons (updated in real-time), and PDF files showing the participation in key and supplementary comparisons (updated every six months, at the time of each new *KCDB Newsletter* issue) and the number of CMCs by metrology area and by country (updated in real-time).
2. The EXCEL files that are used to generate the PDF files displayed in the KCDB Statistics page are available from the [access-restricted JCRB CMC website](#) (link "[KCDB statistics](#)"). Note that these EXCEL files track all the changes (including greying-out and re-instatement of CMCs) and their dates, and thus allow some recollection of the history of the KCDB. In addition, many numbers that are not shown in the PDF files of statistics are given in the EXCEL files.
3. The KCDB Office provides on demand an additional EXCEL file containing the information of Appendix B of the KCDB, as a snapshot of the content of the database valid at a given date. This makes it possible to carry out statistical analysis using EXCEL functions or customized macro-functions. The file is compiled by the BIPM, using an SQL request named "Angela", and the delivery time is about two working days.
4. The full set of *KCDB Newsletters* is always available on-line from the [KCDB Statistics page](#) (bottom of the page).
5. Since February 2010, a box entitled "Related links" is provided on the left of each KCDB web page. It includes, among others, links to the KCDB Statistics page, to the KCDB FAQs page, and to the open-access CIPM MRA and JCRB documents (located on the main BIPM website).

## 1. The CMC database

### 1.1. Content of the CMC database

As at 01 September 2011, the KCDB included a total of 24 080 CMCs:

- 15 356 in General Physics,
- 3 883 in Ionizing Radiation, and
- 4 841 in Chemistry.



*Number of CMCs registered in the KCDB since March 2002*

Over the period covered by this Report, 15 newly approved sets of CMCs were published (see Section 1.2 below), corresponding to an additional 400 CMCs. There were also some movements related to temporary removal and re-instatement of CMCs (see Section 1.3 below).

Details on the number of CMCs currently published in the KCDB, per country and per metrology area, are openly available in real-time from the [Statistics page of the KCDB](#) (PDF file).

## 1.2. New CMCs publication – see also [“CMCs News”](#)

Since 01 March 2011 2010, the following sets of CMCs have been published in the KCDB:

- 25 March 2011; EURAMET.AUV.10.2011 (FR); +2 CMCs.
- 01 April 2011; EURAMET.AUV.9.2010 (IE); +4 CMCs.
- 04 April 2011; APMP.M.27.2010 (JP, Fluid Flow); +23 CMCs.
- 07 April 2011; APMP.T.5.2010 (AU, CN, HK, ID, IN, JP, KR, NZ, SG, TH, TW and ZA); +185 CMCs.
- 07 April 2011; COOMET.L.4.2011 (KZ); +1 CMC.
- 08 May 2011; APMP.L.18.2011 (IN); +9 CMCs.
- 17 May 2011; APMP.TF.10.2010 (SG); +9 CMCs.
- 27 May 2011; SIM.EM.4.2010 (BR, MX and PE); +52 CMCs.
- 28 May 2011; APMP.M.22.2009 (IN); +21 CMCs.
- 10 June 2011; APMP.RI.5.2010 (JP and KR); +14 CMCs.
- 11 June 2011; SIM.TF.6.2011 (US); +2 CMCs.
- 18 June 2011; APMP.TF.9.2010 (IN); +0 CMCs.
- 16 August 2011; EURAMET.TF.9.2011 (PL); +17 CMCs.
- 16 August 2011; EURAMET.TF.8.2011 (IT); +0 CMCs.
- 18 August 2011; EURAMET.L.10.2011 (CZ, GB, HR, IE, IT, PL, RO and SI); +16 CMCs.

In addition, the KCDB Office has dealt with numerous corrections:

- editorial changes,
- deletion of services that are no longer available [on 15 March 2011, NL (TF), -5 CMCs; and on 30 March 2011, EU (QM, Cat 10), -1 CMC and EU (QM, Cat 3); -4 CMCs].
- change in laboratory name and acronym for Spain: IFA became IO-CSIC (modification introduced in the KCDB on 31 March 2011).

### 1.3. CMCs: temporary removal and re-instatement

The situation regarding temporary removal (“greying-out”) and re-instatement of CMCs is available on-line from page 5 of the [Statistics page of the KCDB](#) (PDF file).

Since 01 March 2011, the following actions have been taken:

- 20 April 2011; MX (M, Fluid Flow); reinstatement; +8 CMCs.
- 03 May 2011; MX (RI); greying-out; -45 CMCs. This set of CMCs, SIM.RI.6.2005, was posted in the JCRB CMC website in 2005 and was approved by the JCRB three years later, exactly on 25 December 2008. At that time, this set of CMCs was not covered by an approved QS, so these CMCs were not published in the KCDB, but did not either enter in the grey zone. Following decision from the CCRI RMO WG on 02 May 2011, these CMCs entered in the grey zone on 03 May 2011 and thus have appeared in the KCDB Statistics as greyed-out CMCs since then.
- 27 May 2011; MX (EM); reinstatement; +35 CMCs; definitive deletion; -1 CMC.
- 30 May 2011; MX (M, Force, Torque, Pressure); reinstatement; +37 CMCs.
- 30 May 2011; AR (RI); reinstatement; +5 CMCs (confirmation that the 66 remaining CMCs that were greyed-out for more than five years should stay in the grey zone).
- 14 June 2011; MX (M, Hardness); definitive deletion; -6 CMCs.

As at 01 September 2011, 327 CMCs were temporarily removed from the KCDB, compared with 374 as at 01 March 2011 (see table below).

As at 01 September 2011, there remained only two CMCs greyed-out from the KCDB more than five years ago: MX (EM), 1 CMC and MX (RI, Neutron measurements), 1 CMC. Another 8 CMCs from GR in AUV were greyed-out on 06 September 2006 and will thus soon be subjected to the appropriate JCRB procedure.

This information is kept in the spreadsheet “Dates of CMCs greying-out” of the EXCEL file “CMCsNumber\_2011, available from the [access-restricted JCRB CMC website](#) (link “[KCDB statistics](#)”).

	M	PR	EM	T	RI	L	AUV	QM	TF	Total
<b>APMP</b>										
NZ			5							5
										Total APMP: 5
<b>AFRIMETS</b>										
ZA		5								5
										Total AFRIMETS: 5
<b>EURAMET</b>										
BG						1				1
FR	3									3
GR							8			8
LV					143					143
										Total EURAMET: 155
<b>SIM</b>										
MX			1		46			7		54
AR					66					66
JM	22									22
CA		9				11				20
										Total SIM: 162
<b>Total: 327 greyed-out</b>										

*Number of CMCs temporary removed (“greying-out”) from the KCDB, by country and by metrology area, as at 01 September 2011*

**Follow-up of Action 17/1 from the 17th JCRB meeting**

"Future KCDB reports to the JCRB are to include the information on CMC statistics (per RMO) thus avoiding the inclusion of this information in the RMO reports to the JCRB".

Status as at 01 September 2011

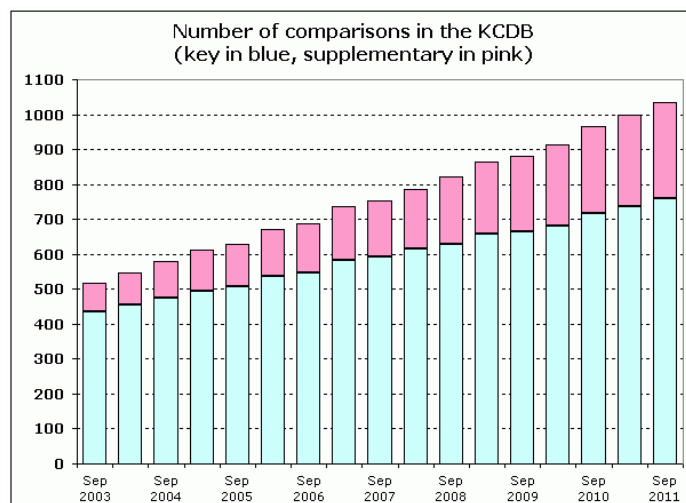
APMP:	5 174 CMCs
COOMET:	1 771 CMCs
EURAMET:	11 886 CMCs
AFRIMETS:	380 CMCs
SIM:	4 609 CMCs
IAEA:	13 CMCs
IRMM:	247 CMCs
WMO:	0 CMCs

## 2. Key and supplementary comparisons database

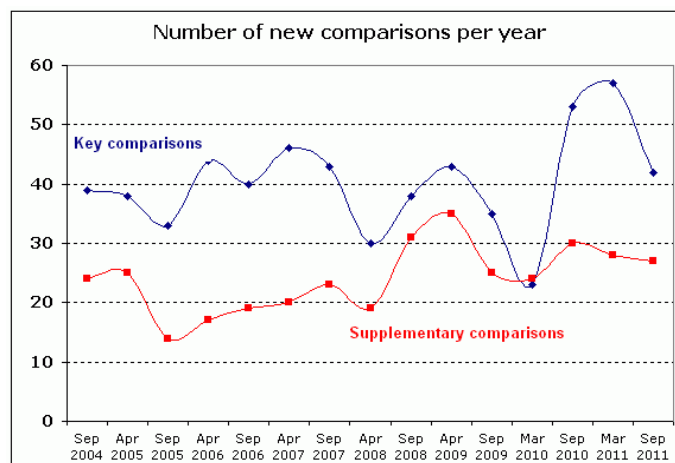
### 2.1. Content of the database

As at 01 September 2011, the database covered 759 key comparisons (84 from the BIPM, 380 from the CCs, 2 from AFRIMETS, 103 from APMP, 30 from COOMET, 118 from EURAMET, and 42 from SIM), and 275 supplementary comparisons.

Graphs showing the evolution since September 2003 of the total number of key comparisons and of supplementary comparisons registered in the KCDB, and the number of new key and supplementary comparisons registered in the KCDB over the one-year period ending at the date indicated on the x-axis are given below.



*Total number of key comparisons and supplementary comparisons registered in the KCDB: evolution since September 2003*



*Number of new comparisons registered in the KCDB over the one-year period ending at the date indicated on the x-axis*

On average, 40 new key comparisons and 24 new supplementary comparisons are registered each year in the KCDB.

Updated graphs (PDF files) illustrating the participation in [key](#) and [supplementary](#) comparisons were made available from the [Statistics page of the KCDB](#) on 16 May 2011.

## 2.2. Key and supplementary comparisons: registration, suppression and modification

Since 01 March 2011, the following actions were taken:

- 09 March 2011; registration of [AFRIMETS.RI\(I\)-S1](#).
- 15 March 2011: registration of [SIM.T-S2](#).
- 17 March 2011: registration of [APMP.M.P-S3](#).
- 18 March 2001: registration of [SIM.T-S3](#) and [SIM.T-S4](#).
- 31 March 2011: suppression of EUROMET.AUV.U-K2.
- 31 March 2011: registration of [EURAMET.RI\(I\)-S9](#).
- 11 April 2011: registration of [COOMET.PR-S5](#).
- 02 May 2011: registration of [COOMET.EM-S9](#), [APMP.EM-S8](#) and [EURAMET.QM-K12](#).
- 09 May 2011: registration of [EURAMET.M.G-K1](#) and [AFRIMETS.QM-K27](#).
- 11 May 2011: registration of [CCM.H-K3](#).
- 13 May 2011: suppression of CCM.H-S1.a, CCM.H-S1.b, CCM.H-S1.c, CCM.H-S1.d, CCM.H-S1.e and CCM.H-S1.f.
- 01 June 2011: registration of [APMP.T-S8](#) and [APMP.T-K3.4](#).
- 01 June 2011: change of EURAMET.QM-K4.2 in [EURAMET.QM-K4.1](#).
- 07 June 2011: registration of [CCM.FF-K2.1.2011](#), [CCM.FF-K3.2011](#), [CCM.FF-K4.1.2011](#), [CCM.FF-K4.2.2011](#), [CCM.FF-K5.2011](#) and [CCM.FF-K6.2011](#).
- 09 June 2011: registration of [SIM.M.M-S8](#).
- 17 June 2011: registration of [CCM.M-K7](#).
- 20 June 2011: registration of [CCL-K1.2011](#).
- 27 June 2011: registration of [COOMET.EM.BIPM-K11](#).
- 01 July 2011: registration of [CCM.P-K14.1](#).
- 07 July 2011: registration of [COOMET.RI\(I\)-S1](#).
- 18 July 2011: registration of [APMP.RI\(III\)-S1](#).
- 21 July 2011: registration of [EURAMET.RI\(I\)-S3.1](#).
- 10 August 2011: registration of [APMP.EM-K2](#) and [SIM.M.M-S9](#).
- 11 August 2011: registration of [CCRI\(II\)-S9](#).
- 24 August 2011; registration of [APMP.RI\(I\)-S3](#).
- 25 August 2011; suppression of CCQM-K17.1.
- 25 August 2011; registration of [COOMET.QM-K36](#), [CCQM-K93](#), [CCQM-K94](#), [CCQM-K95](#), [CCQM-K96](#), [CCQM-K97](#), [CCQM-K98](#), [CCQM-K99](#), [AFRIMETS.QM-S1](#), [APMP.QM-S3](#), [APMP.QM-S4](#) and [APMP.QM-S5](#).

This resulted in an additional 22 key comparisons and 15 supplementary comparisons registered in the KCDB over the six-month period covered by this report.

Eight comparisons previously registered were suppressed, and one existing identifier was modified over the same time.

## 2.3. Published results of key and supplementary comparisons

As at 01 September 2011, among the 759 key comparisons that were registered:

- 88 corresponded to exercises prior to the implementation of the CIPM MRA, and will never have results published in the KCDB; they have been "Approved for provisional equivalence";
- 74 of the 84 ongoing BIPM key comparisons had results published in the KCDB; these are regularly extended as new data become available (14 new results were published since 01 March 2011); and
- another 352 CC and RMO key comparisons had their final reports approved and posted in the KCDB website, and corresponding tables of numbers and graphs entered in the database.

All together, the KCDB currently displays a total of 1 670 graphs of equivalence, including more than 50 new graphs of equivalence published over the last six months.

The results of 143 RMO key comparisons (compared with 133 at the time of the 26th JCRB meeting) - 52 conducted by APMP, 16 by COOMET, 60 by EUROMET, and 15 by SIM - are published in the KCDB: see [“Comparisons News”](#) for the list of the most recent publications.

Linkage has also been carried out for 40 bilateral key comparisons subsequent to full-scale CC key comparisons; their results are included in the appropriate graphs of equivalence.

We now have one example of a family of eight key comparisons linked together: [M.M-K1](#) (1 kg stainless steel standards), including 82 degrees of equivalence relative to the CCM.M-K1 key comparison reference value. These results span over more than 10 years and a new central CIPM key comparison, [CCM.M-K4](#), will soon be launched with the BIPM acting as the pilot laboratory, then restarting the whole exercise. A number of similar examples gathering seven or six key comparisons linked together can be found in the KCDB.

The final reports of 154 of the 275 supplementary comparisons registered in the KCDB were also posted in the KCDB as at 01 September 2011.

All together 65 % of the comparisons registered in the KCDB are ended and have their final reports posted in the KCDB, and also generally published in the [Metrologia Technical Supplement](#). This percentage has now been stable since several years.

### 3. Visits to the KCDB website

As reported previously, the average number of monthly visits to the KCDB website remained roughly constant over the year 2010, at the level of about 7 200. The average number of pages consulted during each visit had increased significantly, compared to the year 2009, as has the average duration of each visit.

The log-on statistics recorded for the period January – July 2011 indicates a slight increase of the average number of monthly visits, at the level of 7 800, and a constant average number of about 100 000 KCDB web pages opened each month.

We do believe that the KCDB website continues to attract our key communities: National Metrology Institutes, regulators, accreditors, commercial and industrial companies.

As already observed, all pages are equally visited, including the News page, the Statistics page, and the Newsletters; and PDF files of comparison reports and of CMC lists are regularly downloaded. Visitors come from all over the world, and reach the KCDB website from links proposed in other websites (especially NMI websites) for 31 % of them, a percentage slightly superior to what was observed over year 2010. Internet search engines (Google, Yahoo, etc.) lead about 9 % of our visitors to the KCDB website, the remaining 60 % reach our web page via personal bookmarking, direct URL address typing or using links given in e-mails.

### 4. The KCDB system

The KCDB web system was modified on 31 August 2011. This concerns the KCDB website on CMCs in Chemistry. The acronym “QM” and the expression “Amount of substance”, generally not familiar to the industrial community, are now suppressed and replaced by the word “Chemistry”.

The CMCs covering Physics and Chemistry are also clearly separated.

Some new functionality is offered to the users in order to facilitate access to information in this area. The BIPM free-text search engine is now inserted in the pages of CMCs in Chemistry and makes it possible for a direct search of services linked to a given CRM.

### 5. Publicity

[Issue 15](#) of the *KCDB Newsletter* was published on 15 June 2011.

We took the opportunity of 2011 being the International Year of Chemistry to produce a special issue on "Chemistry and the KCDB". Dr Robert Wielgosz, Director of the BIPM Chemistry Department, acted as co-editor. Issue 16 is scheduled for December 2011.

The *KCDB Newsletter* No 15 was successfully sent from the BIPM to 2 500 e-mail addresses around the world. It was posted on the KCDB website and was also advertised (with a web link) in a number of regular e-Bulletins, such as the NCSLI and CFM Bulletins, and also in some RMO websites.

We are pleased to report that we regularly receive positive feedback from the readers of the *KCDB Newsletter*. The short summaries of feedback from the JCRB meetings, produced by the JCRB Executive Secretary and published in the successive issues of the *KCDB Newsletter*, are greatly appreciated by our colleagues in NMIs.

## 6. Participation of Associates of the CGPM in CIPM MRA activities

The following table summarizes the participation of NMIs of Associates of the CGPM in CIPM MRA activities as at 01 September 2011.

Associate of the CGPM	Date of becoming an Associate	Date of signature of the CIPM MRA	Total number of published CMCs	Total number of greyed-out CMCs	Date of publication of the first CMC	Number of key comparisons*	Number of supplementary comparisons*
Albania	10 September 2007	10 October 2007	0	0	-	2	0
Bangladesh	29 March 2010	25 March 2011	0	0	-	0	2
Belarus	05 May 2003	14 October 2003	152	0	07 April 2004	24	20
Bolivia	04 April 2008	16 May 2008	0	0	-	4	6
Bosnia and Herzegovina	24 May 2011	15 June 2011	0	0	-	4	1
CARICOM	10 October 2005	12 October 2005	0	0	-	0	7
Chinese Taipei	26 April 2002	04 June 2002	392	0	21 October 2003	64	32
Costa Rica	29 January 2004	06 October 2004	78	0	26 November 2008	16	8
Cuba	19 December 2000	18 June 2001	63	0	02 May 2005	4	10
Ecuador	20 November 2000	15 April 2001	0	0	-	4	6
Estonia	27 January 2005	23 March 2005	0	0	-	7	5
Georgia	01 January 2008	17 June 2008	0	0	-	0	1
Ghana	17 September 2009	24 February 2010	0	0	-	0	1
Hong Kong (China)	08 April 2000	31 May 2000	322	0	13 December 2000	49	14
Jamaica	15 September 2003	21 July 2004	0	22*	24 August 2006	8	4
Latvia	11 January 2001	13 March 2001	59	143**	23 March 2005	13	6
Lithuania	12 March 2001	12 April 2001	91	0	11 December 2003	14	10
Macedonia, the FYR of	10 October 2006	14 November 2007	0	0	-	2	1
Malta	11 April 2001	20 June 2001	0	0	-	2	1
Mauritius	05 October 2010	09 March 2011	0	0	-	2	3
Moldova, Rep. of	01 January 2007	14 November 2007	0	0	-	1	1
Panama	03 August 2003	16 September 2003	26	0	11 September 2006	9	8
Paraguay	06 May 2009	27 October 2009	23	0	31 January 2011	2	6
Peru	28 May 2009	17 November 2009	25	0	03 August 2010	8	13
Philippines	01 June 2002	19 December 2002	0	0	-	10	4
Seychelles	10 September 2010	12 November 2010	0	0	-	1	1
Slovenia	02 June 2003	23 June 2003	254	0	11 May 2004	29	9
Sri Lanka	03 August 2007	14 November 2007	0	0	-	4	2
Tunisia	23 October 2007	14 November 2007	0	0	-	1	0
Ukraine	19 August 2002	14 October 2003	123	0	10 January 2005	28	33
Viet Nam	10 October 2003	16 September 2004	20	0	21 July 2010	22	6
Zambia	10 December 2010	3 February 2011	0	0	-	1	3
Zimbabwe	14 September 2010	14 January 2011	0	0	-	1	4

### *CIPM MRA activity of the NMIs of Associates of the CGPM: important dates, number of published CMCs and participation in key and supplementary comparisons*

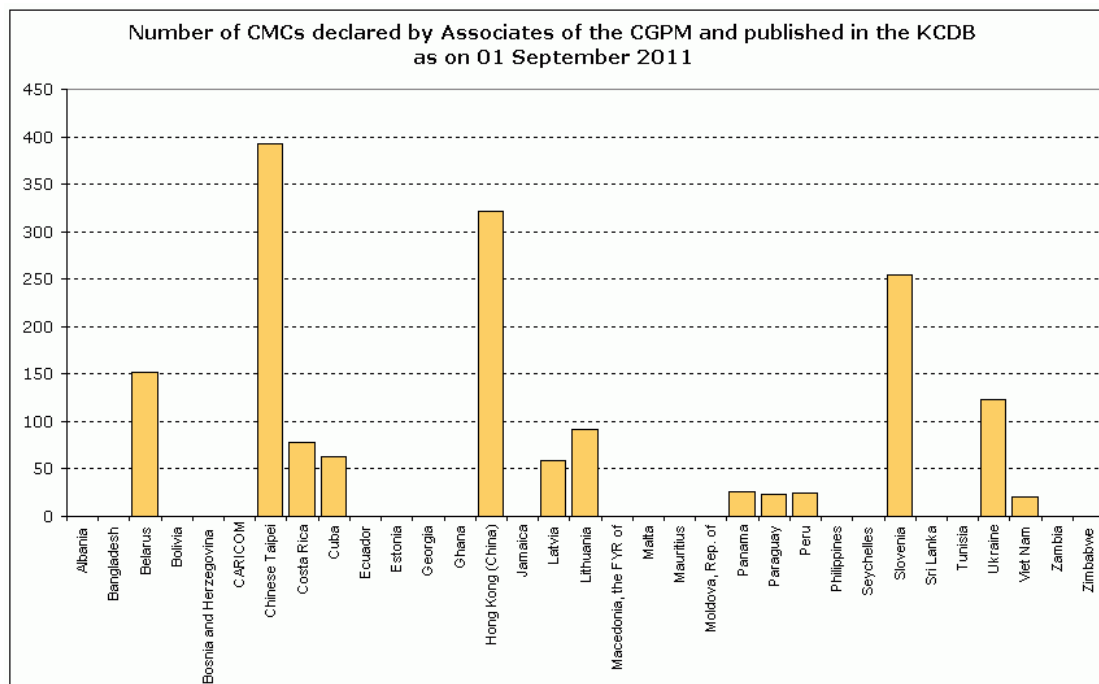
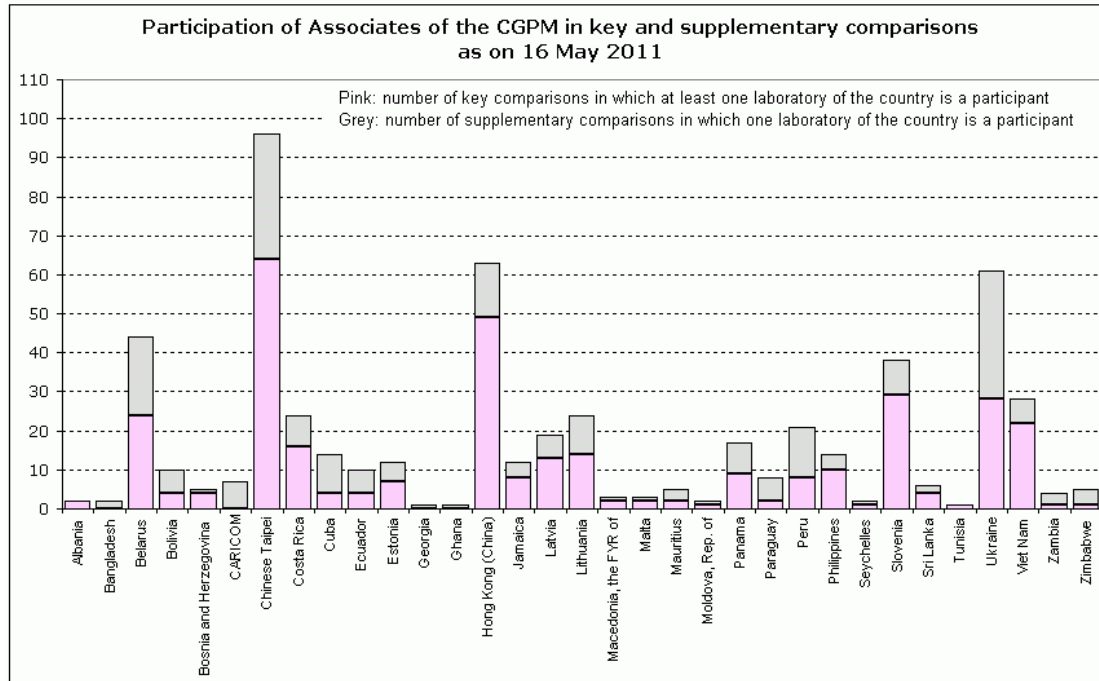
\*These numbers take into account all comparisons registered in the KCDB, whatever their statuses are, for which at least one laboratory of the Associate is listed in the participants list.

#### Notes:

- As the numbers on participation in key and supplementary comparisons change only slowly with time, the corresponding KCDB statistics are updated every six months at the time of preparation of the *KCDB Newsletter* (typically May and December of each year). The numbers given here show the situation as at 16 May 2011. However, as the numbers of CMCs published in the KCDB can vary quickly, they are updated in real-time in all KCDB Statistics files. The numbers of CMCs given here show the situation as at 01 September 2011.
- Montenegro became an Associate of the CGPM on 01 August 2011, but has not yet signed the CIPM MRA, the reason why Montenegro does not appear in the table above.



One observes that all of the Associates who participate in the CIPM MRA have at least one of their metrology institutes listed as participant in a key or a supplementary comparison, whereas only 13 of the 32 currently have CMCs published in the KCDB, as shown on the graphs below. This reveals how long and difficult the effort is to complete the whole CIPM MRA scheme.



## 7. The KCDB and the BIPM QMS

A total number of 13 QMS Procedures cover all the KCDB work: registration of comparisons, publication of comparison results and of CMCs, creation of news, of the issues of the *KCDB Newsletter* series, updating of all Statistic files, etc. Most of these Procedures are confidential and are not even made available on the BIPM Intranet pages.

Claudine THOMAS  
BIPM KCDB Office

We are glad to report that the KCDB QMS was successfully audited by the BIPM Quality Manager on 18 August 2011. He identified no non-conformities and made three minor observations for improvement in the documentation. These will be implemented at next update of the texts of the Procedures and no later than February 2012.