

## REPORT ON THE COOMET ACTIVITIES

Reporting period: from 15 April 2023 to 25 May 2024

The activities of COOMET were performed in all main fields and subject areas of cooperation provided for in the Memorandum of Understanding.

The report was prepared based on the materials submitted by COOMET Committee members, Chairs of structural bodies and national secretariats of the countries, participating in the cooperation.

### 1. GENERAL CHARACTERISTICS OF THE ACTIVITIES

#### 1.1. COOMET members

Information about the membership of countries in COOMET and participation in the Metre Convention is given in the table below:

No	Country	Membership of the country in COOMET, year of signing of the Memorandum	Participation in the Metre Convention, year of signing
1.	Armenia	Full member, 2007	-
2.	Azerbaijan	Full member, 2007	Associate member of CGPM, 2015
3.	Belarus	Full member, 1992	Member of the Metre Convention, 2020
4.	Bosnia and Herzegovina	Associate member, 2013	Associate member of CGPM, 2011
5.	Bulgaria	Full member, 1991	Member of the Metre Convention, 1911
6.	China	Associate member, 2016	Member of the Metre Convention, 1977
7.	Cuba	Associate member, 1991	<del>Associate member of CGPM, 2000*</del>
8.	Germany	Associate member, 1991	Member of the Metre Convention, 1875
9.	Georgia	Full member, 2006	Associate member of CGPM, 2008
10.	Kazakhstan	Full member, 1998	Member of the Metre Convention, 2008
11.	Kyrgyzstan	Full member, 2000	-
12.	Moldova	Full member, 1997	Associate member of CGPM, 2007
13.	Russia	Full member, 1991	Member of the Metre Convention, 1875
14.	Slovakia	Full member, 1993	Member of the Metre Convention, 1922
15.	Tajikistan	Full member, 2009	-
16.	Turkiye	Associate member, 2014	Member of the Metre Convention, 1875
17.	Uzbekistan	Full member, 2004	Associate member of CGPM, 2018

\* Cuba was a CGPM Associate and participated in the implementation of the CIPM MRA since 2000, however Cuba has ceased to be a CGPM Associate since 01.01.2022, and the NMIs/DIs of Cuba have lost the status of signatories to those Arrangements.

Representatives of two COOMET member countries (Germany, China) are members of the International Committee for Weights and Measures (CIPM). The representative of Germany (Prof. J. Ullrich) chairs the CIPM Consultative Committee for Units (CCU), and the representative of China (Dr. Y. Duan) chairs the CIPM Consultative Committee for Thermometry (CCT).

#### 1.2. New COOMET Committee members

During the reporting period, new COOMET Committee members were appointed:

No	Country (date)	Name, position	email
1.	Georgia (31.10.2023)	<b>Mr. David Tkemaladze</b> Georgian National Agency for Standards and Metrology (GEOSTM) Director General	d.tkemaladze@geostm.ge
2.	Kazakhstan (10.01.2024)	<b>Mrs. Yerkezhan AMIRKHANOVA</b> RSE "KazStandard" General Director	info@ksm.kz
3.	Slovakia (08.04.2024)	<b>Mr. Tomas PETAK</b> Slovak Institute of Metrology (SMU) Deputy Director	petak@smu.gov.sk

### 1.3. Information on the implementation of the COOMET Work Program (COOMET projects)

There are totally **903** COOMET projects as of 25 May 2023.

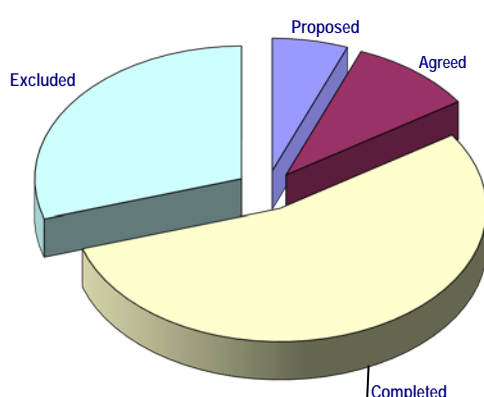
**24 new projects** were proposed during the reporting period: 1 in "Electricity and Magnetism" (EM), 2 in "General Metrology" (GM), 1 each in "Reference Materials" (RM), "Physical Chemistry" (QM), "Acoustics" (AUV), "Flow measurement" (F), 2 in "Photometry and Radiometry"(PR), 3 in "Information and Information Technology" (IT), 2 in "Mass and related quantities" (M), 7 in "Thermometry and Thermal Physics" (T), 3 in "Legal Metrology" (LM).

**14 of the proposed projects** are related to carrying out COOMET comparisons of measurement standards for physical units.

**5 projects** are aimed at the update of COOMET publications according to the Schedule of updates of COOMET publications for 2021-2024. This work is carried out by COOMET structural bodies.

The list of proposed COOMET projects (over the reporting period) is given in *Annex 1* to the report.

During the reporting period **11 projects** were agreed, **19 completed**, **5 excluded** (complete lists of the projects, the status of which changed during the reporting period, are also given in *Annex 1* to this report).



Project status	Number of projects
Proposed	24
Agreed	11
Completed	363
Excluded	144
<b>Total</b>	<b>903</b>

### 1.4 Holding of COOMET bodies meetings

During the reporting period, the following meetings of COOMET steering bodies were held:

- 34<sup>th</sup> meeting of the COOMET Committee (23-24 May 2023, Astana, Kazakhstan & online);
- 35<sup>th</sup> meeting of the COOMET Committee (19 September 2023, online);
- 36<sup>th</sup> meeting of the COOMET Presidential Council (6 February 2024, online);

- 37<sup>th</sup> meeting of the COOMET Presidential Council (4 April 2024, online);

In 2023-2024 meetings of the following **COOMET structural bodies** have been held:

- 26<sup>th</sup> meeting of the JCMS (26 October 2023, combined format: VNIIM, Russia, and online);
- TC 1.1 "General Metrology " (24 October 2023, online);
- TC 1.2 "Acoustics, Ultrasound, Vibrations" (11 May 2023, online)
- TC 1.3 "Electricity and Magnetism" (18-19 October 2023, online);
- TC 1.4 "Flow Measurement" (20 March 2024, online);
- TC 1.5 "Length and Angle" (5-6 March, 2023, combined format: VNIIM, Russia, and online);
- TC 1.6 "Mass and Related Quantities" (27-28 September, 2023, combined format: VNIIM, Russia, and online);
- TC 1.7 "Photometry and Radiometry" (15-16 November , 2023, combined format: UzNIM, Uzbekistan, online);
- TC 1.8 "Physicochemistry" (29-30 June, 2023, combined format: VNIIM, Russia, and online);
- TC 1.9 "Ionizing Radiation and Radioactivity" (21 February 2024, online);
- TC 1.10 "Thermometry and Thermal Physics" (28-29 November 2023, online);
- TC 1.11 "Time and Frequency" (9 November 2023, online);
- TC 1.12 "Reference Materials" (17 October 2023, combined format: Yekaterinburg, Russia and online);
- TC 2 "Legal Metrology" (2 November 2023, combined format: UzNIM, Uzbekistan, online);
- TC 3.1 "Quality Forum Technical Committee" (3 November 2023, online);
- TC 4 "Information and Training" (31 October 2023, combined format: UzNIM, Uzbekistan, online).

COOMET Secretariat maintains the Schedule of meetings of COOMET bodies on an ongoing basis. The information is posted and regularly updated on the COOMET website ([www.coomet.org](http://www.coomet.org)) and COOMET web portal ([www.coomet.net](http://www.coomet.net)).

The Schedule of meetings of COOMET bodies for 2024 and the List of planned training events under the auspices of COOMET for 2024 are given *Annex 2*.

*Note: owing to the current force-majeure situation, information about the dates, format (or venues) of a number of TC meetings is being specified.*

## 1.5 Holding of events under the auspices of COOMET

1) During the reporting period, the **following online events** were held under the auspices of COOMET:

- webinar "Evaluation of uncertainty in calibration" (25 October 2023); participants – AM, AZ, BY, BA, GE, KG, KZ, MD, RU, TR, UZ;
- webinar "Issues of metrological support of measurements using smart meters ("smart meters")" (1 November 2023); participants – AM, AZ, BY, KG, KZ, MD, RU, UZ;
- webinar "Practical application of CIPM MRA documents regulating NMI activities on the procedure for preparation of SMS strings and calculation of the uncertainty budget" (16 November 2023); participants – AM, AZ, BY, GE, KG, KZ, MD, RU, TJ, UZ.

More detailed information about the held events is available on the COOMET portal:

<https://www.coomet.net/activities/information-and-training/information-about-past-training-activities/>

## 2. STRATEGY AND DEVELOPMENT PROGRAM OF COOMET. AMENDMENTS TO THE FUNDAMENTAL DOCUMENTS

### 2.1 COOMET Strategy and Development Program

COOMET Secretariat prepared the updated version of COOMET Strategy and Roadmap for its implementation with introduction of information in the part of Task F "Conducting research in the field of metrology" and addition of new Task H "Digitalization in the field of metrology" (version 2.0).

The above documents are submitted for approval at the 36<sup>th</sup> COOMET Committee meeting.

### 3. CHANGES IN THE COOMET STRUCTURE. ESTABLISHMENT OF COOMET STRUCTURAL BODIES

#### 3.1 Changes in the COOMET structure

1) On the basis of the initiative of TC 1.4 and 1.6 it is proposed to merge TC 1.4 "Flow Measurement" to TC 1.6 "Mass and related quantities" as SC 1.6.6 "Flow Measurement".

The question is submitted for approval at the 36th COOMET Committee meeting.

#### 3.2 Establishment of COOMET structural bodies and their performance evaluation

1) In 2023-2024 within the framework of COOMET permanent project 274/BY-a/03 "Formation and organization of COOMET Structural Bodies' activity" the work on updating the membership of COOMET Structural Bodies was carried out.

At the 35th (extraordinary) COOMET Committee meeting the position of Acting Chairman of TC 4 was transferred to the new Head of COOMET Secretariat from KazStandard (term of office - from 19.09.2023).

Structural body	Chair (NMI, country)	Current situation and suggestion
TC 4 "Information and Training"	Nadezhda Liakhova (BelGIM, Belarus)	<p>In connection with the transfer of COOMET Secretariat from Belarus to Kazakhstan COOMET Committee appointed the <b>Head of COOMET Secretariat A. Rakhadinova as acting Chair of TC 4.</b></p> <p>Within the framework of TC 4 meeting (31.10.2023) the election of the new chairman was NOT held (due to the lack of proposals from TC members).</p> <p>The Presidential Council prolonged A. Rakhadinova's powers until the end of 2024. In the fall of 2024 re-elections will be held.</p> <p>The candidacy of the new Chair will be submitted to the Committee for approval in 2025.</p>

3) Candidates of new chairmen of a number of TCs are proposed for approval of the COOMET Committee in 2024 - see the table below.

Structural body	Chair (NMI, country), basis	Suggestion to the Committee
TC 1.7 "Photometry and Radiometry"	Anatol Bescupschi (NIM, Moldova) Initiative of early resignation. Election of a new Chairman was held (15.11.2023)	<p>It is proposed to approve the nomination of the new Chairperson of TC 1.7 (Alexander Dunaev, VNIIOFI, Russia).</p> <p>Term of office: 2024 - 2028 (maximum possible term of office, taking into account ONE extension of the term of office - 2032).</p>
TC 1.8 "Physical Chemistry"	Leonid Konopelko (VNIIM, Russia) Initiative on early resignation. Election of a new chairman was held (30.06.2023)	<p>It is proposed to approve the candidacy of the new Chair of TC 1.8 (Yury Kustikov, VNIIM, Russia)</p> <p>Term of office: 2024 - 2028 (maximum possible term of office, taking into account ONE extension of the term of office - 2032)</p>
TC 1.10 "Thermometry and Thermal Physics"	Pyotr Krivonos (BelGIM, Belarus) Initiative of early resignation. Election of a new Chairman was held (29.11.2023).	<p>It is proposed to approve the candidacy of the new Chairperson of TC 1.10 (Sergey Kondratyev, VNIIM, Russia)</p> <p>Term of office: 2024 - 2028 (maximum possible term of office, taking into account ONE extension of the term of office - 2032)</p>
TC 1.12 "Reference Materials "	Sergey Medvedevskikh (UNIIM branch of VNIIM, Russia) Completion of the term of office - 2024. Election of a new TC Chairman was held (17.10.2023)	<p>It is proposed to approve the candidacy of the new Chairperson of TC 1.12 (Egor Sobina, UNIIM Branch of VNIIM, Russia)</p> <p>Term of office: 2024 - 2028 (maximum possible term, taking into account ONE extension of the term of office - 2032)</p>

3) The candidatures of the new Chairs of some SCs are also suggested to the COOMET Committee for approval in 2023 – see the table below.

Subcommittee	Chair (NMI, country), basis	Suggestion
SC 1.6.3 "Pressure"	Alexander Chernyshenko (VNIIM, Russia) Election of the new PC Chairman was held (28.09.2023)	It is proposed to approve the nomination of the new Chairperson of SC 1.6.3 (Roman Teteruk, VNIIM, Russia) Term of office: 2024 - 2028 (maximum possible term, taking into account ONE extension of the term of office - 2032)
SC 1.6.4 "Hardness"	Andrey Aslanian (VNIIFTRI, Russia) Completion of the first term of office - 2024. Voting within TC on prolongation of powers (28.09.2023).	It is proposed to extend the term of office for 4 years (for a maximum possible period of 4 years, subject to ONE extension of the term of office - 2028)
SC 1.6.5 "Force"	Alexey Demyanov (VNIIM, Russia) Election of a new TC Chair was held (28.09.2023)	It is proposed to approve the nomination of the new Chairperson of SC 1.6.5 (Anastasia Neklyudova, VNIIM, Russia) Term of office: 2024 - 2028 (maximum possible term of office, taking into account ONE extension of the term of office - 2032)
SC 1.8.3 "Non-organic Analysis"	Egor Sobina (UNIIM branch of VNIIM, Russia) Election of a new PC Chairman was held (30.06.2023)	It is proposed to approve the candidacy of the new Chairperson of SC 1.8.3 (Alena Sobina, UNIIM Branch of VNIIM, Russia) Term of office: 2024-2028 (the maximum possible term of office, taking into account ONE MORE extension of the term of office - 2032)
SC 1.8.4 "Gas analysis"	Anna Kolobova (VNIIM, Russia) Completion of the first term of office - 2024. Voting within the TC on prolongation of powers was held (30.06.2023)	It is proposed to extend the term of office for 4 years (for a maximum possible period of 4 years, subject to one extension of the term of office - 2028)
SC 1.8.5 "Organic Analysis"	Anatoly Krylov (VNIIM, Russia) Completion of the first term of office - 2024. Voting within TC on prolongation of powers (30.06.2023).	It is proposed to extend the term of office for 4 years (for a maximum possible period of 4 years, subject to ONE extension of the term of office - 2028)
SC 1.8.6 "Bioanalysis"	Maxim Vonsky (VNIIM, Russia) Completion of the first term of office - 2024. Voting within the framework of the TC on prolongation of powers (30.06.2023)	It is proposed to extend the term of office for 4 years (for a maximum possible period of 4 years, subject to one extension of the term of office - 2028)

4) The Presidential Council of February 6, 2024 approved the nominees for Coordinators for a number of TCs - see table below

Name of structural or working body, chairperson	Current situation and proposal
TC 2 "Legal Metrology" Marat Yunusov (UzNIM, Uzbekistan)	On appointment of the coordinator of the direction "Measuring instruments and systems in the field of legal metrology": M. Denisova (Kyrgyzstandart, Kyrgyz Republic)
TC 1.3 "Electricity and Magnetism" Marina Yarmolovich (BelGIM, Belarus)	On appointment of the coordinator of the direction "High voltages": B. Kiselev, (VNIIMS, Russia) On appointment of the coordinator of the direction "Voltage and DC current strength, electrical resistance": A. Katkov, (VNIIMS, Russia)

Name of structural or working body, chairperson	Current situation and proposal
	On appointment of the coordinator of the direction "Large Currents": A. Akhmeev, (UNIIM, Russia)
	On appointment of the coordinator of the direction "Alternating Current Voltage and Force": B. Shevtsov, (VNIIM, Russia)
	On appointment of the coordinator of the direction "Radio Frequency Measurements": A. Galygo, (BelGIM, Belarus)
	On appointment of the coordinator of the direction "Electric and Magnetic Fields": C. Kolotygin, (VNIIFTRI, Russia)
	On appointment of the coordinator of the direction "Electric Power": G. Gubler (VNIIM, Russia)
	On appointment of the coordinator of the direction "Impedance": A. Ploshinsky (VNIIM, Russia)
TC 1.6 "Mass and related quantities" Ilya Shmigelsky (VNIIM, Russia)	Appointment of the coordinator of the direction "Gravimetry": L. Vitushkin (VNIIM, Russia)

5) In 2023-2024 work on the update of the Regulations on CSBs has continued. The following documents were submitted to the COOMET Committee for approval in 2024:

- document COOMET D5.9 "Regulations on the COOMET Technical Committee "Mass and related quantities (TC 1.6)" (replacing COOMET D5.9/2012);
- document COOMET D5.16 "Regulation on the COOMET Technical Committee " Technical Committee of the Quality Forum " (TC 3.1)" (replacing COOMET D5.16/2019);
- Annex 4 "Provision on Auditors" to COOMET Recommendation COOMET R/AQ/9:2019 "Recommendations for the assessment of QMS of NMI/NIM".

#### 4. DEVELOPMENT OF COOPERATION WITH CEEMS

In 2022-2023 active work on this direction was started, namely:

- 4 countries were identified, which are referred to CEEMS (Armenia, Kyrgyzstan, Tajikistan and Uzbekistan);
- COOMET Task Force on CEEMS support was established, the task of which is the formation of the Program of activities on rendering assistance to CEEMS and its implementation;
- survey of CEEMS countries to identify needs and survey of other COOMET member-countries to identify opportunities to assist CEEMS.

The first meeting of the Task Force (TG-CEEMS) was held in August 2023, where the draft Program of Activities for CEEMS assistance was discussed.

The Program of Activities on rendering assistance to CEEMS is submitted for approval of the COOMET Committee, also a new candidate from KazStandard for the position of the Chair of TF-CEEMS (Gulaikhan Suieubayeva) was presented.

At the same time, search of possible external sources of financing of working programs and projects for CEEMS countries is underway.

Information on the progress of works will be presented at the COOMET Committee in 2024 and in the following years.

#### 5. IMPLEMENTATION OF THE CIPM MRA

##### 5.1 Preparation and publication of CMCs, including comparisons

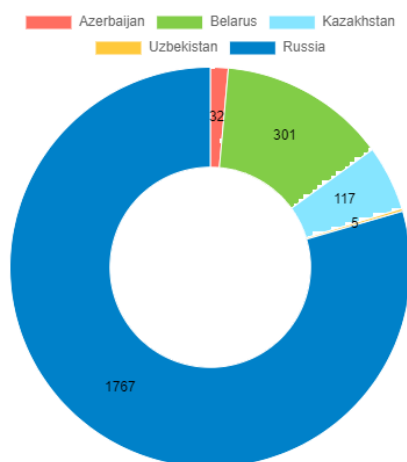
1) 5556 CMC entries of COOMET member countries were published in the KCDB as of 25 May 2023, including those by countries:



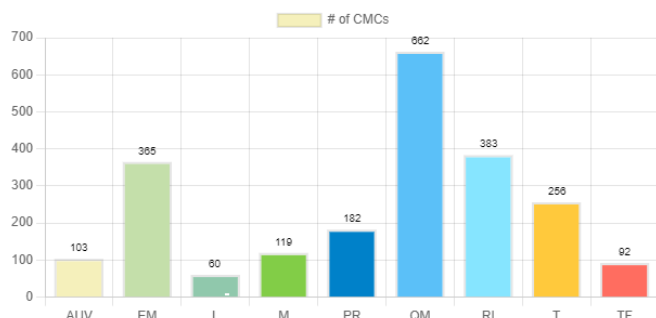
Country	CMCs
Azerbaijan	32
Belarus	301
Bulgaria	232
Bosnia and Herzegovina	85
Germany	1393
Georgia	65
Kazakhstan	117

Country	CMCs
China	2199
Cuba	0
Moldova	78
Russia	1767
Slovakia	379
Turkey	670
Uzbekistan	5

Distribution by countries submitting CMCs through COOMET



Distribution of CMCs according to the classification of measurement areas by Consultative Committees



2) Azerbaijan, Belarus, Kazakhstan, Cuba\*, Russia, Uzbekistan declare their CMCs through COOMET– a total of 2 222 CMCs were published. Other countries submit their CMCs through EURAMET or APMP.

\*Cuba has previously been a CGPM Associate and participated in the implementation of the CIPM MRA since 2000, however Cuban NMIs/DIs have lost the status of signatories to those Arrangements since 01.01.2022, hence the CMCs of Cuban NMIs/DIs were deleted from the KCDB.

3) All COOMET comparisons are given in **program COOMET P2/2023 "COOMET Program of Comparisons"** (approved as of 6 February 2024). All changes are made to the Program in real time through the DB of COOMET projects and are reflected on the COOMET website [http://coomet.org/tc\\_pri/2023/D9\\_RU.htm](http://coomet.org/tc_pri/2023/D9_RU.htm).

The COOMET Program of comparisons for year 2024 (as of 25.05.2024) contains **78 current projects**. Distribution of COOMET projects by the fields of cooperation is shown in the chart.

4) In 2023-2024 the COOMET Secretariat in conjunction with the Chairs of TC 1.2 – TC 1.11 has carried out work on the update of the list of COOMET technical experts on CMC review (under ongoing project 234/BY-a/01). The information was published on the pages of JCMS and TC 1.2 – TC 1.11.

5) Based on the proposals of the Joint Committee for Measurement Standards, an updated membership of the COOMET Appeal Board on Comparisons of National Measurement Standards and CMC Review is submitted for approval to the COOMET Committee in 2024.

6) In 2023 - 2024 the Joint Committee for Measurement Standards has monitored COOMET comparisons, lasting over 5 years. The results will be presented under item 5 of the agenda of the Plenary Session of the 36<sup>th</sup> COOMET Committee meeting.

## 5.2 Review and recognition of the QMS of COOMET NMIs/DIs

1) In February 2023 peer review of the QMS of AzMI (Azerbaijan) was conducted according to ISO/IEC 17025 in order to extend the validity period of the Confirmation of Recognition, and initial peer review of the QMS of

UzNIM (Uzbekistan) was conducted according to ISO/IEC 17025 in order to issue a COOMET Confirmation of Recognition for 5 years.

In 2023 INIMET, CENTIS and CPHR (Cuba) submitted written and oral presentations of their QMS according to ISO/IEC 17025 (peer reviews of the above institutes are scheduled for autumn 2023, provided that the status of a CGPM associate is resumed).

2) A notification was received from the JCRB of the transfer of activities of the NMIs/DIs of Georgia and Ukraine on the implementation of the CIPM MRA to EURAMET from 01.02.2023.

Information about the COOMET Confirmations of Recognition for the QMS of COOMET NMIs/DIs for compliance with the requirements of ISO/IEC 17025 is given below.

NMI/DI	Confirmation of Recognition	Date of issue	Period of validity	Types of measurements
VNIIM (Russia)	QSF-R79	04.03.2021	04.03.2026	AUV, EM, L, RI, T, M, QM
VNIIOFI (Russia)	QSF-R76	04.03.2021	04.03.2026	PR, QM
VNIIFTRI (Russia)	QSF-R78	04.03.2021	04.03.2026	AUV, EM, RI, T, M, QM, TF
VNIIMS (Russia)	QSF-R75	04.03.2021	04.03.2026	L, EM
BelGIM (Belarus)	QSF-R82	30.09.2021	30.09.2026	AUV, EM, RI, T, M, QM, TF, L, PR
INIMET (Cuba)	QSF-R67	20.11.2020	04.10.2023	M, L, QM, T, TF
CENTIS-DMR (Cuba)	QSF-R66	20.11.2020	04.10.2023	RI
CPHR (Cuba)	QSF-R65	20.11.2020	04.10.2023	RI
KazStandard (Kazakhstan)	QSF-R81	12.04.2021	12.04.2026	EM, M, L, PR, QM, T, TF
GeoSTM (Georgia)	QSF-R74*	28.01.2021	04.10.2023	EM, M, T, RI, L
AzMI(Azerbaijan)	QSF-R88	10.03.2023	10.03.2028	T, RI, EM, M
UzNIM (Uzbekistan)	QSF – R89	10.03.2023	10.03.2028	EM, L, M, PR, RI, T

*\*Note: Given that the NMIs/DIs of Georgia and Ukraine have transferred the activities on the implementation of the CIPM MRA to EURAMET, it is not planned to extend the validity periods of their COOMET Confirmations of Recognitions.*

Information about the COOMET Confirmations of Recognition for the QMS of COOMET NMIs/DIs for compliance with the requirements of ISO 17034 is given below.

NMI/DI	Confirmation of Recognition	Date of issue	Period of validity	Types of measurements
VNIIM (Russia)	QSF-R80	04.03.2021	04.03.2026	Gases, Non-organic solutions, Organic solutions, Electrolytic conductivity, High purity chemicals, Food, Advanced materials, Surfaces, Films and Nanomaterials
VNIIOFI (Russia)	QSF-R77	04.03.2021	04.03.2026	Non-organic solutions, Metals and alloys, Biological fluids and materials
BelGIM (Belarus)	QSF-R83	30.09.2021	30.09.2026	Gases, pH, Electrolytic conductivity, radionuclides



KazStandard (Kazakhstan)	QSF-R87	09.12.2022	09.12.2027	Gases, pH
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3) In 2023 COOMET Secretariat together with the Chairpersons of TC 1.2-TC 1.12 and TC 3.1 carried out the work on updating the list of COOMET technical experts on QMS assessment of COOMET NMIs/NIMs (within the framework of the permanent project 234/BY-a/01). The information will be published on the pages Quality Forum/TC 3.1.

COOMET workshop/webinar for COOMET auditors and TEs on assessment of QMSs of NMIs/NIMs of COOMET member-countries is planned in 2025.

## 6. OTHER ISSUES OF COOPERATION IN THE FIELD OF MEASUREMENT STANDARDS

1) In 2023 the works are carried out in the implementation of the COOMET P6 program "COOMET Roadmap for the implementation of decisions related to the redefinition of the basic units of the International System of Units SI for 2020-2025". Within TC 1.6 the project on carrying out additional comparisons in the field of mass measurement in the range from 1 mg to 5 kg is proposed. Also the COOMET workshop "Current status of the redefinition of the kilogram and progress in primary implementations" is planned for 2024.

2) In 2023-2024 the works on the implementation of COOMET P5/2022 "Program of joint development of reference materials within COOMET" were carried out (CRM development is carried out within the proposed and agreed COOMET projects); the detailed information is presented in the Annual Report of TC 1.12 "Reference Materials".

At the 36th COOMET Committee meeting proposals on updating the information material COOMET//RM/2 "Register of certified reference materials of composition and properties of substances and materials developed within COOMET" will be presented.

## 7. DIGITALIZATION IN METROLOGY

1) The **COOMET Concept for the Issues of Digital Transformation in Metrology** and the Roadmap for the implementation of the COOMET concept for the issues of digital transformation in metrology were confirmed in 2023, which covers the following aspects:

- review of electronic documents in metrology and formulation of requirements to their formats and structure;
- use of FAIR+T data;
- use of digital technology in COOMET activities;
- use of cloud and grid technology in metrology in COOMET member countries;
- development of recommendations on the structure of and requirements for the objects of
- digitalization which are constituent parts of the digital platforms of COOMET member countries;
- development of common approaches to the creation and maintenance of national information funds in the field of ensuring the uniformity of measurements in COOMET member countries/

According to the Roadmap, COOMET recommendations are being developed for such digitalization facilities as:

- repositories of digital documents;
- digital directories (codifiers, rubricators etc.);
- digital MI group card descriptions;
- digital calibration and verification certificates for MIs;
- digital certificates, type descriptions for MIs, digital certificates for RMs;

as well as for description of requirements for information and communication e-infrastructure of NMIs of member countries to ensure information security when transferring data to the COOMET digital platform.

## 8. JOINT RESEARCH

At the 36th meeting of the Presidential Council (February 6, 2024) Evgeny Lazarenko stated the suspension of works on Task F implementation due to COOMET lack of financial resources and proposed to resume the works next year.

## 9. LEGAL METROLOGY

1) Updating of activities of TC 2 work program for 2024-2026 (program COOMET P3/2021) was carried out - information on implementation is presented in the Annual Report of TC 2.

2) COOMET Plan on translation of OIML publications into Russian language is being continued (these activities are taken into account in TC 2 Work Program for 2021-2023 (COOMET P3/2021)). In 2023 the translations of five OIML publications (OIML D1, OIML D30, OIML D31, OIML D32, OIML G14) were completed.

A special page has been created on the COOMET portal, where translations of OIML publications are placed.

3) A list of publications of regional legal metrology organizations with summaries was posted on the COOMET web portal in 2023.

<https://www.coomet.net/publications/translations-into-russian-of-documents-of-regional-organizations/>

At the TC 2 meeting in 2023, the following questions were discussed: "Which ROML documents would be useful for the COOMET countries?".

## 10. INFORMATION ACTIVITIES

### 10.1. Preparation and publication of the COOMET Directory

During 2023-2024 the Secretariat has updated information in the COOMET Directory on an ongoing basis. The current version of the Directory (as of 19 April 2024) can be found on [www.coomet.net](http://www.coomet.net) and [www.coomet.org](http://www.coomet.org).

### 10.2. Preparation and registration of COOMET publications

1) The following COOMET publications (new and updated) were prepared by the Secretariat and CSBs along with the COOMET publications, which are submitted to the COOMET Committee for approval in 2024:

No	Title	COOMET project status/number	Developer
1.	COOMET document D11 "Procedure for use of COOMET logo"	Replacing COOMET D11/2016	Secretariat
2.	COOMET Recommendation R/RM/22:2024 "Form and content of COOMET certificate for standard samples of composition and properties of substances and materials".	Replacing COOMET R/RM/22:2020 (subject 893/RU/23)	TC 1.12
3.	COOMET Recommendation R/TR/XX:2024 "COOMET training activities. Needs assessment, planning and organization of training events. Monitoring of participation and evaluation of satisfaction"	new (subject 829/BY-a/21)	TC 4
4.	COOMET Recommendation R/TR/27:2023 "Programs of COOMET training events. Requirements for content and design. Procedure of development" (clarification of the name and designation of the thematic area)	replacing SOOMET R/IT/24:2014, (subject 860/RU/22)	TC 4
5.	COOMET Recommendation R/GM/20:2024 "State System for Ensuring Uniformity of Measurements. Scales of measurements. Terms and definitions"	replacing COOMET R/GM/20:2009, (subject 868/RU/23)	JCMS
6.	COOMET Recommendation R/GM/21:2024 "Use of the concepts "error of measurement" and "uncertainty of measurement". General principles"	replacing COOMET R/GM/21:2011, (subject 869/RU/23)	JCMS
7.	COOMET Recommendation R/GM/31:20XX "Calibration methods. Basic Provisions"	replacing COOMET R/GM/31:2016 (subject 866/RU/23)	JCMS
8.	COOMET Recommendation R/F/XX:202Y "Volume and mass flow transducers, flow meters and liquid meters. Calibration methods"	new	JCMS

3) The works continue in accordance with the Schedule of updates of COOMET publications for 2021-2024, approved by the COOMET Committee in 2021.

### 10.3. COOMET web resources

1) Ilya Krasavin, Head of the Monitoring and Forecasting Center of VNIIMS ([admin\\_coomet@vniims.ru](mailto:admin_coomet@vniims.ru)), was appointed a new administrator of the COOMET website.

2) Maintenance of the COOMET webportal ([www.coomet.net](http://www.coomet.net)) is carried out by the COOMET Secretariat and online editors of the pages of COOMET technical committees.

In view of the changes in CSB chairpersonship, a webinar was held for online editors of the pages of technical committees (TC 1.2, TC 1.5, TC 1.6, TC 1.8, TC 1.10, TC 2) on the COOMET web portal to train how to work on the typo3 platform (on 28 and 30 March 2023).

3) In 2023-2024 ongoing update of the information has been carried out, which is provided on the COOMET web resources (information about COOMET Committee members, Chairs of CSBs and SCs, COOMET publications, newsfeed, COOMET data server: database of COOMET projects, DB of COOMET comparisons, DB of COOMET CRMs, COOMET Program of Comparisons etc.).

4) Within the framework of WG-Web (Chair – Aleksandr Kuzin, VNIIMS, Russia), the implementation of the draft terms of reference for the creation of a new unified COOMET web resource continues, including with the participation of representatives of TG-DigTr (due to the need to synchronize the actions and ideas of WG-Web and TG-DigTr to create a digital COOMET platform).

Description of the architectural model of a new COOMET web resource, including proposals on the structure of the external and internal web portal, will be submitted to COOMET Committee members and CSB Chairs for review in early June 2024 (the website ([www.coomet.org](http://www.coomet.org)) and web portal ([www.coomet.net](http://www.coomet.net)) will function until a new web resource of COOMET is created).

### 10.4. Reports and information about COOMET activities

1) In 2023-2024 **presentations and reports on COOMET activities were prepared** to the following meetings:

- 47<sup>th</sup> JCRB meeting (September 2023, Costa Rica & online);
- Round table of Regional Legal Metrology Organizations (27 September 2023, online);
- 39<sup>th</sup> APMP General Assembly (1 December 2023, online);

### 10.5. Translations

1) In 2023 the CIPM MRA Brochure by the BIPM "National Metrology Systems" was translated into Russian. The translation is available on the COOMET web portal:

[https://www.coomet.net/fileadmin/user\\_upload/01-National-Metrology-Systems.pdf](https://www.coomet.net/fileadmin/user_upload/01-National-Metrology-Systems.pdf)

The original brochures in English and their translation were sent to COOMET countries.

2) In 2022 pages were created on the COOMET web portal, where the existing translations of documents of international and regional metrology organizations were posted (and are planned to be posted in the future):

*2.1) Translations into Russian of documents of international organizations*

<https://www.coomet.net/publications/translations-into-russian-of-documents-of-international-organizations/>

COOMET Secretariat arranged negotiations and received confirmation from the BIMP and BIPM regarding the possibility of posting of translations of OIML publications on the COOMET information resources (taking into account the rules and procedures given in OIML B11:2007), as well as documents of CIPM, BIPM, CIPM CC, published on website [www.bipm.org](http://www.bipm.org) in open access, correspondingly.

*2.2) Translations into Russian of documents of regional organizations*

<https://www.coomet.net/publications/translations-into-russian-of-documents-of-regional-organizations/>

In 2023 a list of documents of WELMEC, SIM, APLMF with summaries was posted on the webpage (the information was prepared by TC2), as well as translation of WELMEC Guide 7.2 (version 2019) in view of the

previously received permission from that RMO. Posting of translations of other documents from the list, which are of interest to COOMET member countries, is also planned (for documents of SIM, APLMF subject to official permission).

## 11. PARTICIPATION OF COOMET REPRESENTATIVES IN INTERNATIONAL METROLOGICAL EVENTS

1) In 2023 official representatives of COOMET took part in the meetings of the following international and regional organizations, working in the field of metrology, where they presented information about COOMET activities:

- 47<sup>th</sup> JCRB meeting (12-13 September 2023, Costa Rica & online):  
*COOMET representatives – N.Zviagin, Chair of JCMS (Russia), A.Rakhadinova, Head of COOMET Secretariat (Kazakhstan);*
- Round table of Regional Legal Metrology Organizations (27 September 2023, online);  
*COOMET representatives – M.Yunusov, Chair of TC 2(Uzbekistan), A.Rakhadinova, Head of COOMET Secretariat (Kazakhstan);*
- 39<sup>th</sup> APMP General Assembly (1 December 2023, China);  
*COOMET representative – N.Zviagin, Chair of JCMS (Russia), A.Rakhadinova, Head of COOMET Secretariat (Kazakhstan);*
- 58<sup>th</sup> BIML meeting (17-19 October 2023, Thailand);  
*COOMET representative – A.Rakhadinova, Head of COOMET Secretariat (Kazakhstan).*

## 12. ACTIVITIES TO PROVIDE TRAINING AND ADVANCED TRAINING FOR SPECIALISTS IN METROLOGY

1) During the reporting period, representatives of CSBs and NMIs of COOMET member countries participated in various training international and national seminars/programs, as well as in a number of training events under the CBKT, namely:

- KCDB 2.0 - TC Chairs in Chemistry and Biology - 19 January 2023, online (participants - RU);
- KCDB 2.0 - Comparisons - 8 February 2023, online (participants - AZ, GE, KG, KZ, RU, UA, UZ);
- KCDB 2.0 - CMC-Writers-GP - 23 March 2023, online (participants - AZ, GE, KG, KZ, RU, UZ);
- KCDB 2.0 - TC Chairs - 16 June 2023, online (participants – RU, BY);
- CBKT-RMO-Forum - 27-29 September 2023 (participants – COOMET Secretariat, KazStandard);
- TÜBİTAK UME Project Placement, June-November 2023 (participants – Ms Yekaterina Andryuchshenko (KazStandard), Mr Zhuldyz Saden (KazStandard), KZ);
- KCDB 2.0 – TC Chairs in Chemistry and Biology, 15 February 2024, online;
- KCDB 2.0 – CBKT-BIPM-KCDB-2.0-comparisons, 26 March 2024, online;
- KCDB 2.0 – CMC Writers/Reviewers, 04 April 2024, online.

2) TC 4 "Information and Training" jointly with COOMET Secretariat prepared the Plan of training activities under the auspices of COOMET for 2024 (the plan is published and constantly updated on the main page of the website [www.coomet.org](http://www.coomet.org) and on the web portal page (see COOMET Activities/Calendar):

<https://www.coomet.net/ru/deyatelnost/kalendar-koomet/translate-to-russian-schedule-of-training-activities/>

Information about the training events is available on COOMET portal at the link <https://www.coomet.net/ru/deyatelnost/informaciya-i-obuchenie/informaciya-o-proshedshikh-obuchajushchikh-meroprijatijakh/>.

COOMET training events held in 2023 are listed in 1.4 of the report.

3) Implementation of the activities of TC 4 work program for 2021-2023 (COOMET P4/2021 program) was carried out - information on the implementation is presented in the Annual Report of TC 4. In particular, development and updating of COOMET publications on training issues was carried out (two recommendations COOMET R/TR/XX:2024 and COOMET R/TR/27:2023 are submitted for approval to COOMET Committee in 2024).

5) In early 2022 a Practical Arrangement between the BIPM and COOMET was signed on cooperation in delivering capacity building and knowledge transfer activities using the BIPM e-learning platform.

A COOMET page has been launched on the BIPM e-learning platform (<https://e-learning.bipm.org/>) since June 2022, where COOMET courses are made available.

The platform is intended to facilitate the process of e-learning and to enhance cooperation on capacity building and knowledge transfer in metrology.

COOMET Secretariat has published:

- a training course, containing information about COOMET activities (in Russian and in English);
- a training course "Mutual Recognition Arrangement (CIPM MRA) (in Russian)";
- a training course "Evaluation of the results of comparisons of national measurement standards. Rules, approaches and experience of COOMET (in Russian)".

See <https://e-learning.bipm.org/course/index.php?categoryid=8> (user pre-authorization on the platform is required).

In view of the above mentioned capabilities of the BIPM e-learning platform, the COOMET Presidential Council supported the initiative of TC 4 "Information and Training" to issue COOMET certificates for the participants of courses, who have successfully passed the tests (in accordance with the form provided for in draft recommendation COOMET R/TR/27:2023). To date 28 certificates have been issued to the participants of the course "CIPM MRA".

The COOMET team is actively working on the creation of other training courses under the auspices of our RMO.

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Further details on separate fields of cooperation is provided in the reports of COOMET structural bodies.

## Annex 1

### CHARACTERIZATION OF THE COOMET WORK PROGRAM

#### 1. List of proposed COOMET projects (for the period from 15 April 2023 to 25 May 2024)

No	Project number	Field	Project title
1.	876/RU/23	LM	Translation of the International Vocabulary of Terms in Legal Metrology (VIML)
2.	877/RU/23	PR	Spectral transmittance in the wavelength range from 380 nm to 1000 nm
3.	878/RU/23	PR	Wavelength of spectrally-selective transmitting material, from 250 nm to 2500 nm
4.	882/RU/23	T	Comparisons of triple point of water cells
5.	884/RU/23	GM	Update of Recommendation COOMET R/GM/32:2017 "Calibration of measuring instruments. Algorithms of processing measurement results and uncertainty evaluation".
6.	885/BY/23	T	Pilot comparisons in the field of calibration of glass thermometers
7.	886/RU/23	IT	Development of a COOMET recommendation "Structure and Requirements for Digital Document Repositories in COOMET Member Countries"
8.	887/RU/23	IT	Development of a COOMET recommendation "Structure and Requirements for the Digital Classifier of Measuring Instruments in COOMET Member Countries" and COOMET recommendation "Structure and Requirements for Digital Descriptions of Cards of Measuring Instrument Groups in COOMET Member Countries"
9.	888/RU/23	IT/GM	Development of a COOMET recommendation "Structure and Requirements for Digital Calibration Certificates for Measuring Instruments in COOMET Member Countries"
10.	889/RU/23	IT	Preparation of a COOMET recommendation "Requirements for the Information and Communication Infrastructure to Ensure the Information Security of the COOMET Digital Platform"
11.	890/KZ/23	T	Pilot comparisons of digital thermometers
12.	891/KZ/23	LM	Development of a COOMET recommendation on the application of OIML D 23:1993 "Principles For Metrological Control Of Equipment Used For Verification"
13.	893/RU/23	RM	Revision of the COOMET Recommendation R/RM/22:2020 "Form and Content of COOMET Certificate for Reference Materials for Composition and Properties of Substances and Materials"
14.	894/RU/23	QM	Pilot comparisons in the field of measuring low gas permeability of rocks
15.	895/TR/23	AUV	"Supplementary comparison on calibration of microphones between TÜBİTAK UME (Türkiye) and UzNIM (Uzbekistan)".
16.	896/RU/23	M	Pilot comparison in the field of torque in the range from 0.1 N·m to 1.0 N·m
17.	897/RU/24	T	Comparisons in the field of combustion energy of high-purity benzoic acid
18.	898/KZ/24	T	Calibration of industrial platinum resistance thermometers in thermostats
19.	899/KZ/24	T	Bilateral supplementary comparisons of measurement standards of national metrological institutes of dew point temperature
20.	900/RU/24	F	Supplementary comparisons of national standards in the field of water flow
21.	901/RU/24	T	Bilateral supplementary comparisons of measurement standards of dew point temperature
22.	902/KG/24	LM	Development of guidelines for use OIML R-111: 2004 Weights of classes E1, E2, F1, F2, M1, M1.2, M2, M2.3 и M3. Part 1: Metrological and technical requirements.
23.	903/BY/24	EM	Supplementary comparisons of Josephson Voltage Standard

Total: 23 new projects



**2. List of agreed COOMET projects**  
(for the period from 1 January 2022 to 15 April 2023)

No	Project number	Field	Project title
1.	543/RU-a/11	RM	Development and administration a database of RM of COOMET
2.	764/RU-a/18	M	Supplementary comparisons in the field of mass measurements
3.	822/GE-a/20	M	Pilot comparisons in the small volumes
4.	855/RU-a/22	EM	Pilot comparisons in the field of high DC current measurements
5.	864/RU-a/22	QM	Key comparisons "Automotive exhaust gases"
6.	873/RU-a/23	T	Comparisons in the field of measuring the combustion energy of pure organic substances
7.	879/RU-a/23	QM	Pilot comparisons in the field of measuring the nutritional value of chocolate
8.	880/RU-a/23	QM	Pilot comparisons in the field of measuring the nutritional value of milk powder
9.	881/RU-a/23	QM	Pilot comparisons in the field of measuring the nutritional value of soy flour
10.	883/UZ-a/23	TF	Bilateral pilot comparison of the UTC (UME) Türkiye and UTC (UzNIM) Uzbekistan time scales
11.	892/RU-a/23	M	Supplementary comparisons in the field of mass measurements in the range from 1 mg to 5 kg

**Total: 11 agreed projects**  
**(0 of them completed)**

### Ongoing agreed COOMET projects

No	Project number	Field	Project title
1	<b>230/GE-a/01</b>	AQ	Interpretation, implementation and application of a quality management system by COOMET national metrology institutions in compliance with ISO/IEC 17025 and ISO 17034
2	<b>234/BY-a/01</b>	AUV	Drawing up and update of the lists of COOMET technical experts on CMC review and COOMET technical experts on evaluation of quality management systems of COOMET NMIs/DIs
3	<b>302/RU-a/04</b>	GM	Development and update of the COOMET Recommendation "Guideline on COOMET supplementary comparison evaluation" (COOMET R/GM/19)
4	<b>336/RU-a/05</b>	GM	Development and update of the COOMET Recommendation "Guidelines for Data Evaluation of COOMET Key Comparison" (COOMET R/GM/14)
5	<b>274/BY-a/03</b>	IT	Establishment and organization of work of COOMET structural and working bodies
6	<b>168/MD-a/98</b>	PR	The state of the measurement standard base of COOMET member countries in the field of photometry and radiometry
7	<b>175/RU-a/99</b>	RI	A status of a measurement standard base in the field of ionizing radiation and radioactivity for the countries - members of COOMET
8	<b>543/RU-a/11</b>	RM	Development and administration a database of RM of COOMET
9	<b>186/RU-a/99</b>	RM	Development of the Programme of RM joint production within COOMET
10	<b>398/RU-a/07</b>	TF	Key comparisons of national standards of time and frequency with the Russian UTC (SU) scale

**3. List of completed COOMET projects**  
(for the period from 1 January 2022 to 15 April 2023)

No	Project number	Field	Project title
1.	638/UA-a/14	M	The comparison of the national hardness standards of Super-Rockwell scales.
2.	641/BY-a/14	RI	Comparison of the national standards of air kerma for x-radiation qualities used in radiation protection and diagnostic radiology
3.	711/TR-a/16	M	Comparison of absolute pressure in the range 0,3 mPa to 0,9 Pa
4.	744/RU-a/18	T	Comparisons in the field of measurements of combustion energy of coals with different sulphur content
5.	770/RU-a/18	EM	<b>Supplementary comparison of national standard instruments in the field of magnetic flux density and magnetic flux measurements by sensing coils</b>
6.	775/RU-a/19	QM	Pilot comparisons to determine the electrical conductivity of potassium chloride solutions of 25 Cm/m and 10 $\mu$ m/cm
7.	778/RU-a/19	LM	Development of COOMET Recommendation "Metrological control of measuring information systems. The main provisions"
8.	780/RU-a/19	T	Comparisons of national reference gas calorimeters using samples of gas mixtures
9.	824/RU/21	QM	Pilot comparisons «Determination of sulfur in isooctane»
10.	827/RU/21	LM	Translation of the UNIDO-OIML Brochure "Certification of measuring instruments"
11.	832/UZ/21	LM	Translation of Recommendation OIML R 75-3:2006 "Heat meters. Part 3: Test Report Format"
12.	834/RU/21	LM	Translation of OIML D1:2020 "National metrology systems – Developing the institutional and legislative framework"
13.	836/RU/21	LM	Translation of OIML D31:2019 "General requirements for software controlled measuring instruments"
14.	840/BY/21	LM	Translation of Guide OIML G 14:2011 "Density measurement".
15.	845/KG/21	LM	Translation of Document ILAC-G24/OIML D 10:2007 "Guidelines for the determination of calibration intervals of measuring instruments".
16.	857/RU-a/22	RM	Revision of recommendation COOMET R/RM/4:2008 "Procedure for Joint Development, Recognition and Registration of Certified Reference Materials within COOMET"
17.	861/BY/22	IT	<b>Update of Recommendation COOMET R/IT/27:2015 "Procedure for preparing certificates of training, study visits and up-skilling within the framework of COOMET"</b>
18.	862/RU-a/22	EM	Pilot comparisons of reference instruments measuring AC high voltage of power frequency
19.	875/BY-a/23	LM	Translation of Document OIML D5:2022 "Principles for the establishment of hierarchy schemes for measuring instruments"

**Total: 19 completed projects**

**4. List of excluded COOMET projects**  
(for the period from 1 January 2022 to 15 June 2023)

No	Project number	Field	Project title
1.	492/DE/10	<b>ННР</b>	Development of a concept for joint metrological research in COOMET member countries
2.	546/UA-a/11	<b>M</b>	Key comparisons of submultiply and multiply units of kilogram
3.	665/UA-a/15	<b>M</b>	Supplementary bilateral comparison in the field of mass measurements
4.	846/RU/21	<b>AUV</b>	Regional key comparisons in the field of ultrasound power measurement in water
5.	850/DE21	<b>GM</b>	Development of a harmonized approach to use digital calibration certificates in COOMET member countries

**Total: 5 excluded projects**

## PLANNED TRAINING ACTIVITIES OF COOMET IN 2024

№	Proposed subject of the training activity	Venue/format	Timeframe
1.	The procedure for verification and calibration of medical measuring instruments	ONLINE	2024
2.	Digital thermohygrometers and electronic medical thermometers calibration (online course)	ONLINE	2024
3.	Digital Transformation in Metrology	ONLINE	2024
4.	Metrological support for gas analyzers	ONLINE	2024
5.	COOMET seminar "Current state of the kilogram redefinition and progress in starting its implementation"	ONLINE	2024
6.	Digitalization during registration of measurement results (database, calibration certificate, verification certificate, electronic seals, measurement protocols)	specified	2024
7.	Joint COOMET-APLMF-WELMEC seminar on sharing the experience in market surveillance	ONLINE	2024
8.	New methods for low frequency vibration calibration	China & ONLINE	September 2024 within TC 1.2
9.	Optical method for microphone calibration	China & ONLINE	September 2024 within TC 1.2
10.	COOMET seminar/webinar for COOMET auditors and TEs on peer review of QMS of COOMET NMIs/DIs	specified	2025
11.	OIML Certification System	ONLINE	2024
12.	Seminar on dosimetry	specified	2024