

CCQM 2021-2030 STRATEGY: EXECUTIVE SUMMARY

The document sets out the strategy to be followed by the Consultative Committee for Amount of Substance; Metrology in Chemistry and Biology (CCQM) in the period 2021-2030 to deliver its mission of advancing the global comparability of chemical and biological measurement standards and capabilities, and thereby enabling Member States and Associates to make measurements with confidence. In so doing, measurement science will also be progressed, and stakeholder engagement strengthened. In developing its strategy, the CCQM expert groups have identified nine key sectors that are expected to influence and drive the development on National Metrology Institutes' (NMI) and Designated Institutes' (DI) services within the 2021-2030 period and impact CCQM activities for achieving global comparability of chemical and biological measurements. Scientific, economic and social challenges which can be tackled through metrology at the CCQM level are described for the following sectors: Environment and Climate; Healthcare and Life Sciences; Food safety, trade and authenticity; Energy; Legal Metrology; Fundamental metrology and support of the SI; Forensic Sciences and Anti-doping; Advanced Manufacturing; Biotechnology and Drug Discovery.

The CCQM has set seven strategic aims to be progressed in the 2021-2030 period, notably: to contribute to the resolution of global challenges; to promote the uptake of metrologically traceable chemical and biological measurements; to progress the state of the art of chemical and biological measurement science; to improve efficiency and efficacy of the global system of comparisons for chemical and biological measurement standards it conducts; to continue the evolution of Calibration and Measurement Capabilities (CMCs) to meet stakeholders needs; to support the development of capabilities at NMIs and DIs with emerging activities; to maintain organizational vitality, regularly review and, if required, update the CCQM structure for it to be able to undertake its mission.

The strategy foresees contributions to progressing the state of the art in measurement science across all nine technical science areas covered by the Committee including Organic, Inorganic, Gas, Isotope Ratio, Surface, Electrochemical, Protein, Nucleic Acid and Cell analysis areas. Thirty-three activities have been identified where progress is expected, ranging from support for the development of new greenhouse gas, isotope ratio and microplastic standards, to the development of reference measurement systems for biomarkers, surface chemical composition, RNA quantification, food authentication, and cell counting as examples.

A more structured approach to stakeholder engagement is foreseen in the new strategy and considered as a key tool in promoting the activities and impact of the CCQM and of the Chemical and Biological Metrology community in general. A mid- and long-term plan for stakeholder engagement will be developed, including possible extension of the CCQM Liaison Membership, to better represent the expanded technical coverage of the committee, extended collaborations with other Consultative Committees and sector specific fora established by the CIPM, and further use of task and focus groups to deliver the CCQM mission.

A core capability/comparison strategy will be continued with the aim of not increasing overall resources required for comparisons for the 71 institutes worldwide maintaining over 6300 CMCs in the chemistry/biology field. Models for broad claim CMCs will continue to be developed, facilitating broader uptake of these, whilst meeting stakeholder needs, and potentially reducing the resources required to review and maintain CMC database entries.

Strong interaction will be maintained between the CCQM and RMOs, with continued coordination of linked, satellite and supplementary comparisons, and increased focus on capacity building and knowledge transfer including the initiation of mentoring programmes for NMIs coordinating comparisons for the first time.

The implementation of the strategy is supported by the BIPM Chemistry Department providing the CCQM Executive Secretary Role, coordination of comparisons in technical areas prioritized by the CCQM, laboratory-based knowledge transfer programmes for National Metrology Institutes with emerging metrology systems, the JCTLM database and support for engagement with stakeholder communities.