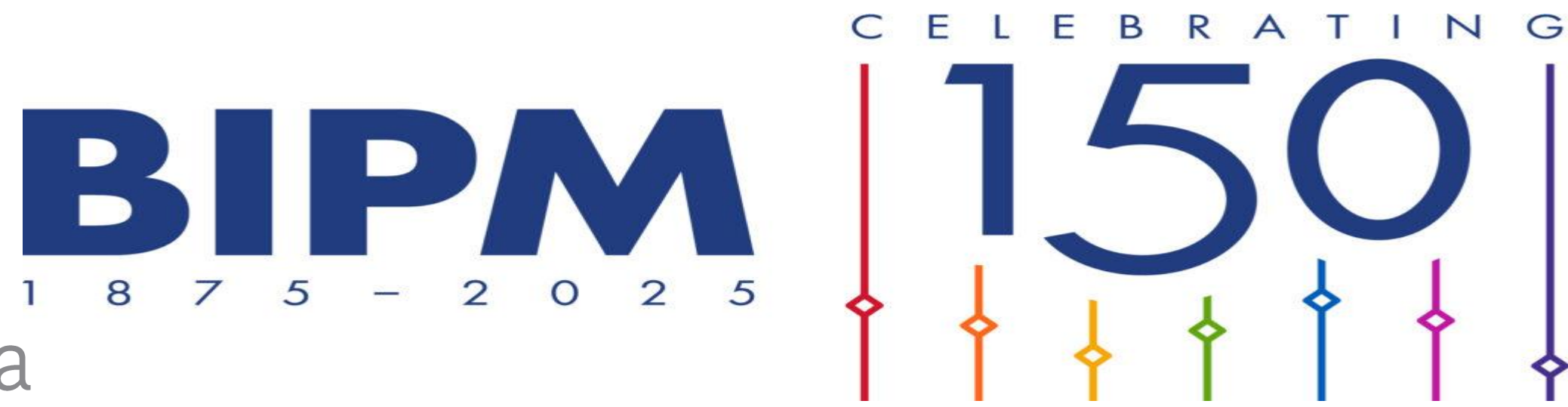


30 Years Story of SASO-NMCC for Supporting Local, Regional, and Global Metrology

المواصفات السعودية
Saudi Standards

Khaled M. Ahmed and Nasser M. AlQahtani
National Measurement and Calibration Center (NMCC), SASO,
PO Box 3437 Riyadh 11471 Saudi Arabia
Correspondence: k.abdeltah@saso.gov.sa / khaled55eg@gmail.com / n.Qahtani@saso.gov.sa



Abstract

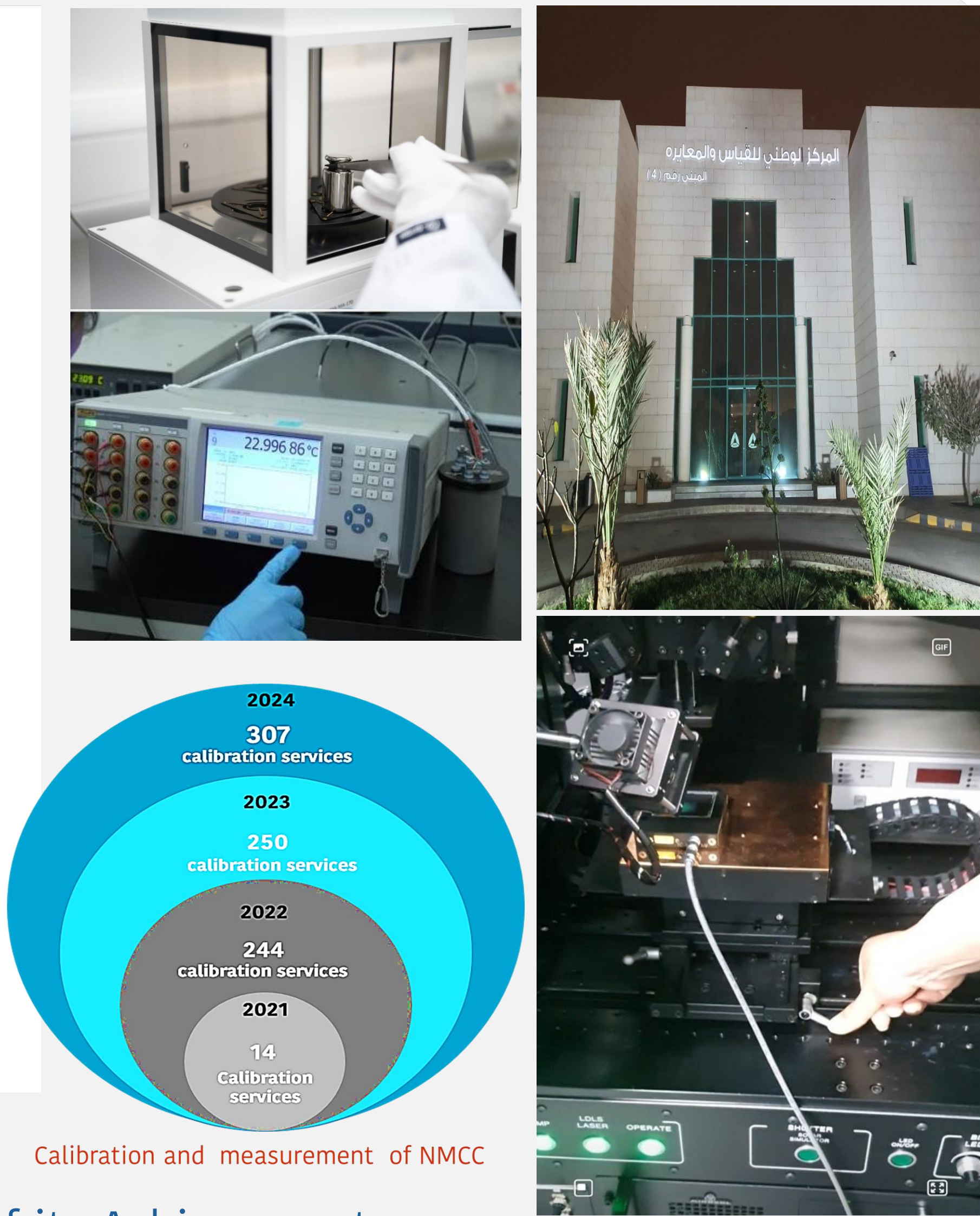
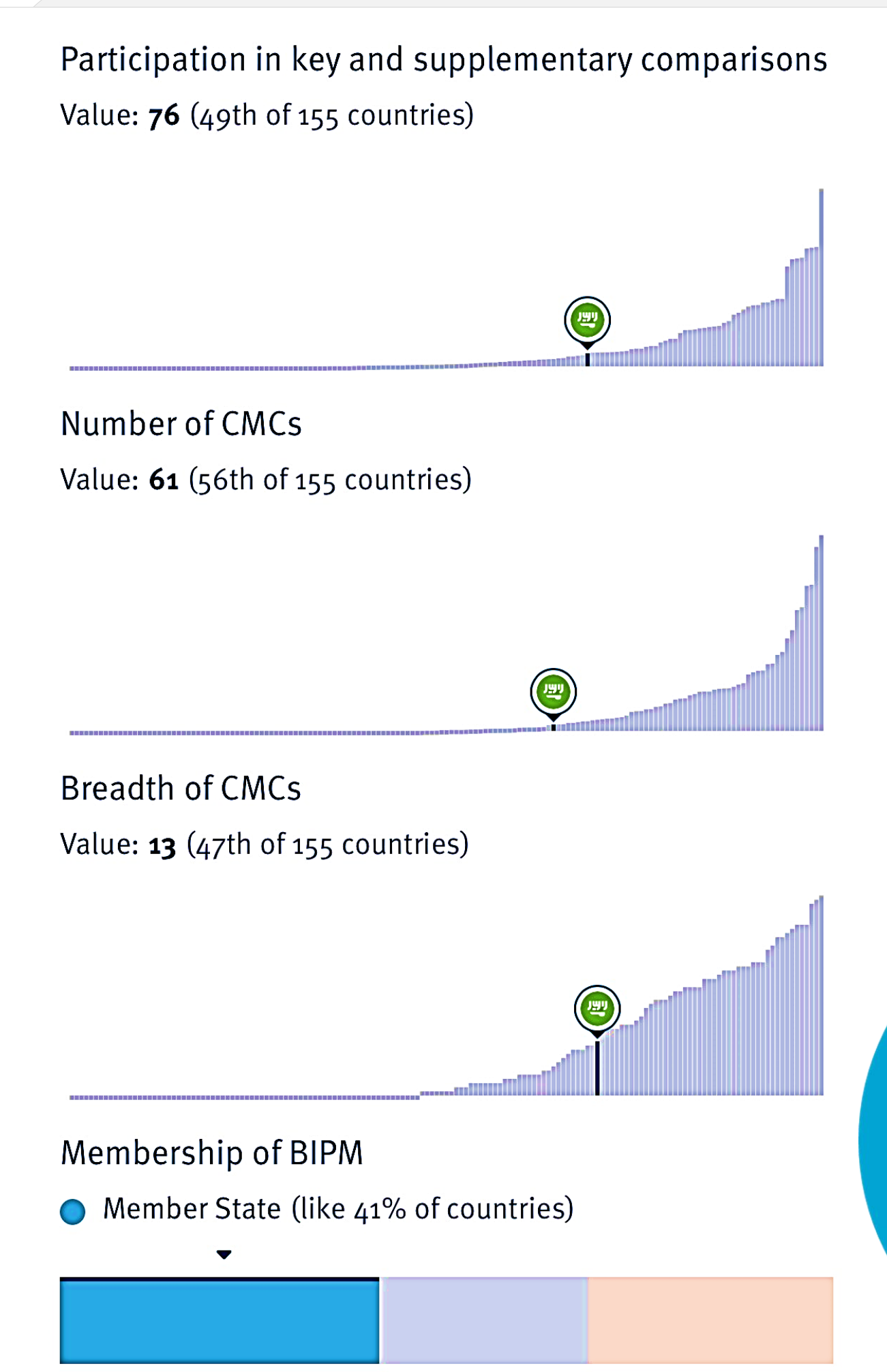
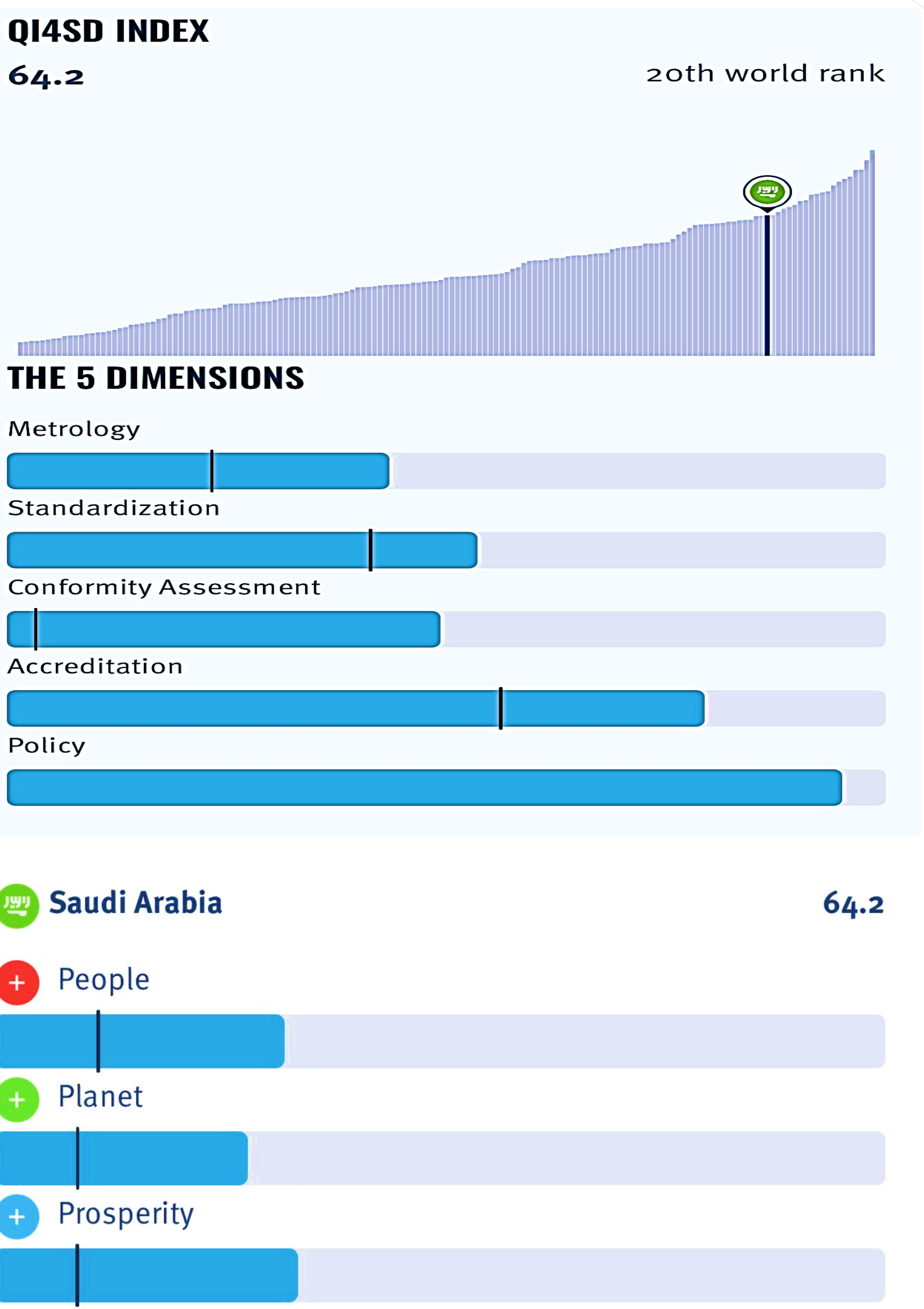
This paper examines the three-decade journey of the National Metrology Institute of Kingdom of Saudi Arabia named National Measurement and Calibration Center (SASO-NMCC) at Saudi Standards, Metrology and Quality Organization’s in developing and enhancing metrology capabilities at local, regional, and global levels. Established in 1986, SASO-NMCC has evolved into a distinguished scientific institution with thirty specialized laboratories supporting scientific, legal, and industrial metrology. Through alignment with international standards, comprehensive calibration services, and strategic collaborations, SASO-NMCC has significantly contributed to Saudi Arabia’s quality infrastructure development, economic diversification, and global metrology landscape.

Introduction

Metrology (the science of measurement) is the cornerstone in developing quality infrastructure in any country, representing the fundamental pillar upon which accurate and reliable measurement processes are based across various scientific, industrial, and legal fields. In this context, SASO-NMCC has emerged as key players in developing and enhancing metrology at local, regional, and global levels over three decades.

The National Measurement and Calibration Center (NMCC) was established in 1406 AH (1986 AD) as a national entity responsible for developing, maintaining, and implementing national measurement standards and ensuring metrological traceability of measurement results in the Kingdom according to the International System of Units (SI). Since then, the SASO-NMCC has witnessed continuous development to become today a distinguished scientific institution comprising thirty specialized national laboratories that contribute to supporting scientific, legal, and industrial metrology in both public and private sectors.

To understand the importance of SASO-NMCC’s role in developing metrology, one must first recognize the historical and global context of measurement science. The International Bureau of Weights and Measures (BIPM) was established on May 20, 1875, under the Metre Convention, to serve as the global center for the international measurement system. Eighty years later, the International Organization of Legal Metrology (OIML) was established on October 12, 1955, as an intergovernmental organization working to develop legal metrology systems and standardize measurements globally. Within this global framework, the establishment of NMCC represented Saudi Arabia’s commitment to keeping pace with global developments in metrology and actively contributing to them.



SASO-NMCC & Figures of its Achievements

SASO-NMCC’s Alignment with International Standards

Over thirty years, SASO-NMCC has worked diligently to align its metrology services with international standards, ensuring that its calibrations and measurements are recognized worldwide. This alignment has helped facilitate international trade by ensuring the accuracy of measurements and enhancing the credibility of Saudi products in global markets. The SASO-NMCC has also actively participated in the activities of the International Bureau of Weights and Measures (BIPM) and the International Organization of Legal Metrology (OIML), providing a solid foundation for accurate and globally accepted measurement standards.

NMCC offers a comprehensive range of calibration and testing services that meet international standards, including electrical measurements, temperature, pressure, mass, time, frequency standards, and radiometric and photometric measurements. Through continuous investments in state-of-the-art facilities, the center has been able to provide precise measurement solutions for industries across diverse sectors such as energy, manufacturing, healthcare, and telecommunications.

International Collaboration & Knowledge Exchange:

The NMCC has also established strong collaborations with international metrology institutes, enhancing its knowledge base and facilitating expertise exchange. For example, bilateral agreements with leading metrology organizations ensure that SASO-NMCC’s calibration techniques meet global accuracy standards, while international training programs in metrology offer Saudi experts and stakeholders opportunities to learn from leading global scientists and engineers.

Vision 2030 and Future Directions

Within the framework of Saudi Vision 2030 and its commitment to achieving sustainable development goals, SASO-NMCC is investing in expanding its metrology infrastructure, including modern facilities that provide accurate calibration and measurement services, research and development opportunities, and specialized services for emerging industries such as renewable energy and smart cities. This strategic investment aims to strengthen Saudi Arabia’s position in the global metrology community.

It is worth noting that Saudi Arabia ranked first in the Arab world and twentieth globally in the Quality Infrastructure for Sustainable Development (QI4SD) Index for 2024, which is issued biennially by the United Nations Industrial Development Organization (UNIDO). This significant achievement reflects the Kingdom’s diligent efforts in developing its quality infrastructure, of which SASO-NMCC is one of the most important pillars.

Supporting Sustainable Development Goals (SDGs)

Additionally, SASO-NMCC supports energy efficiency to help achieve the Sustainable Development Goals (SDGs) through precise energy consumption measurement and optimization of energy production systems. It also contributes to enhancing healthcare quality by ensuring the accuracy of medical equipment, such as radiation therapy devices, diagnostic equipment, and temperature sensors.

NMCC is a key player in Saudi Arabia’s economic diversification strategy, enhancing the quality of local production and facilitating exports. Its services enable Saudi industries to improve product development cycles, reduce production costs, and innovate new products. The center is also working to become a global hub for metrology knowledge exchange, offering training, workshops, and seminars for professionals worldwide.

Conclusion

In conclusion, SASO-NMCC’s continued growth and unwavering commitment to excellence in metrology make it a vital player in the global metrology landscape. By expanding its services, collaborating with international organizations, adopting new technologies, and supporting sustainable practices, NMCC is paving the way for global metrology standards that support industries, promote economic growth, and contribute to a sustainable future.

This research paper aims to review and analyze SASO-NMCC’s success story over thirty years in supporting local, regional, and global metrology, highlighting its pivotal role in enhancing quality infrastructure in Saudi Arabia, contributing to achieving sustainable development goals, and strengthening the Kingdom’s position in the global metrology community.

[1] International Bureau of Weights and Measures (BIPM). (2025). Official website. Retrieved from <https://www.bipm.org/en/> {Accessed in 13 Feb. 2025}

[2] International Organization of Legal Metrology (OIML). (2025). What is the OIML? Retrieved from <https://www.oiml.org/en/about/about-oiml/what-is-oiml> {Accessed in 13 Feb. 2025}

[3] Saudi Standards, Metrology and Quality Organization (SASO). (2025). About Center. Retrieved from <https://www.saso.gov.sa/en/sectors/measurement/pages/about.aspx> {Accessed in 13 Feb. 2025}

[4] United Nations Industrial Development Organization (UNIDO). (2024). Quality Infrastructure for Sustainable Development (QI4SD) Index. Retrieved from <https://hub.unido.org/qi4sd/> {Accessed in 13 Feb. 2025}