



GLOBAL QUALITY INFRASTRUCTURE INDEX



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# GLOBAL QUALITY INFRASTRUCTURE INDEX

## REPORT 2025

Insights and trends on  
economies using metrology,  
standards, accreditation and  
conformity assessment services

DR. ULRICH HARMES-LIEDTKE, MÓNICA MUÑOZ, EMILIANO WALTOS,  
ANN SARA RAMKISSOON AND CHRISTIAN SCHOEN

# GQII DATA & ANALYTICS PAPER, NO. 7

Insights and trends on economies using metrology, standards, accreditation and conformity assessment services

**TITLE:** GLOBAL QUALITY INFRASTRUCTURE INDEX REPORT 2025

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ANN SARA RAMKISSOON AND CHRISTIAN SCHOEN

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# FOREWORD

**Foreword by Annette Röttger, Member of the Presidential Board,  
Physikalisch-Technische Bundesanstalt (PTB)**

As PTB, we are proud to support the Global Quality Infrastructure Index (GQII) through our International Cooperation Department, thanks to funding from the Federal Ministry of Economic Cooperation and Development (BMZ). We warmly congratulate the authors on this initiative, which has made such comprehensive and comparable data on the maturity of quality infrastructure (QI) systems available across the globe. This information benefits not only the QI community itself, but also policymakers, researchers, and funding agencies, who increasingly rely on evidence-based decision-making.

At the same time, we are fully aware that the “measurement” of QI-maturity is, by its nature, an approximation only and consistently associated with uncertainty. And, believe me, as a metrology institute, we are experts when it comes to dealing with uncertainties! Beyond the global ranking, the GQII illustrates the links between QI performance and general development indicators such as competitiveness, economic complexity, export performance, and transparency. We are glad to learn that the GQII data has been referenced by the World Bank’s World Development Report 2025 – Standards for Development (World Bank Group, 2025), underlining the relevance of quality infrastructure for sustainable growth.

QI – encompassing standardization, accreditation, market surveillance and metrology - makes a decisive contribution to Germany’s economic strength. This is confirmed by a recent study (Blind et al., 2025) that analyses the influence of QI on our economy. Without the established quality infrastructure, Germany’s gross domestic product (GDP) would be almost eight per cent lower equivalent to around 320 billion euros. This impressive figure demonstrates that QI is not a technical niche topic, but a key enabling factor for prosperity and competitiveness.

Furthermore, a EURAMET report discloses the economic benefit resulting from recently finalized

metrology research programmes (Stacey et al., 2025). It reveals that every 1 million Euro of EU funding generated more than 4 million Euro of turnover for the economy from the sale of new or improved products and services powered by metrology.

However, it is not only the availability of data that matters. Interoperability of data formats is another essential prerequisite and goes hand in hand with the ongoing digitalisation efforts in the QI system. The digital transformation poses a significant challenge for all of us: To be able to continue guaranteeing the safety of (and confidence in) measured values, PTB has compiled all the necessary tools under the umbrella of a comprehensive digitalization strategy ranging from digital calibration certificates and digital conformity assessments to virtual measuring instruments to intelligent research data management and, in the future, AI-supported testing and approval processes. These developments will also help to make QI-related data more accessible, machine-readable, and reusable.

Let me close with a personal remark: as a genuine enthusiast of metrology and its impact, I could easily speak at length about its many benefits. Yet a foreword is not the place for a long speech. Instead, I would like to invite all readers of this report to join forces in harnessing the power of metrology and quality infrastructure for sustainable economic development – in Germany and worldwide.



# FOREWORD

**Foreword by Alejandro Rivera Rojas Chief, Division of MSME Competitiveness, Quality and Job Creation (UNIDO)**

Quality Infrastructure (QI) is a fundamental pillar of industrial development, trade competitiveness, innovation, and sustainable growth. Robust and well-functioning QI systems enable countries to integrate into global markets, support technological upgrading, and ensure that economic progress is inclusive, resilient, and environmentally responsible. For policymakers and development partners alike, reliable and comparable QI data is therefore indispensable.

In this context, the Global Quality Infrastructure Index (GQII) provides an important evidence base. By assessing the state and evolution of national QI systems across economies worldwide, the GQII offers valuable insights into strengths, gaps, and reform priorities. Such evidence supports more informed decision-making and allows resources to be directed where they can generate the greatest development impact. At UNIDO, we increasingly rely on analytical tools of this kind to design technical cooperation, support national strategies, and engage in policy dialogue with Member States.

The GQII is also highly complementary to UNIDO's QI4SD Index, which examines how QI systems contribute to sustainable development across economic, environmental, and social dimensions. Together, these tools provide mutually reinforcing perspectives that strengthen the global understanding of QI and its role in development. The constructive collaboration between PTB, Mesopartner, International Network on Quality Infrastructure (INetQI) members, and UNIDO, including data sharing for the second edition of the QI4SD Index, demonstrates the value of partnership in improving the quality, coherence, and transparency of QI measurement.

UNIDO and PTB have enjoyed a long-standing and fruitful cooperation based on complementary expertise. While UNIDO brings a systemic industrial development perspective and extensive country-level engagement, PTB contributes globally recognized technical excellence in metrology and QI capacity building. This cooperation extends across diagnostic tools, national and regional QI strategies, knowledge sharing, and digital transformation of QI systems, ensuring a holistic and forward-looking approach to strengthening QI worldwide.

Looking ahead, the demand for evidence-based QI reform will continue to grow. Digitalization, sustainability transitions, and increasingly complex global value chains require QI systems that are not only technically sound but also strategically aligned with national development objectives. Continued collaboration among international partners will be essential to ensure that QI data remains reliable, relevant, and actionable.

I congratulate PTB and Mesopartner on the publication of the GQII 2025 Report. UNIDO values our continued cooperation and remains committed to advancing data-driven approaches that support stronger national QI systems and sustainable, inclusive industrial development.



# FOREWORD

**Foreword by Philip Grinsted, Private Sector Specialist, Member of the Core Team of the World Development Report 2025, World Bank**

The 2025 edition of the Global Quality Infrastructure Index (GQII) marks an important contribution to ongoing efforts to better understand and strengthen quality infrastructure systems worldwide. I congratulate the Mesopartner team and its partners on this new release.

Quality infrastructure – metrology, standardization, accreditation, and conformity assessment – plays a central role in development. As highlighted in the World Development Report 2025: Standards for Development (World Bank Group, 2025), it underpins trust in markets, enables firms to compete, and supports public objectives such as safety, environmental protection, and good governance. Yet despite its importance, quality infrastructure often remains insufficiently measured and only partially reflected in policy debates.

The GQII helps address this gap by providing systematic, comparable, and time-series data on national quality infrastructure systems. Such data are essential for informing policy dialogue, benchmarking performance, tracking reform progress, and identifying priority areas for action. At the same time, evidence on quality infrastructure remains limited, and further analytical and empirical work is needed to deepen understanding across different country contexts. In this regard, the GQII represents an important step in expanding the available evidence base.

A key strength of the index is its emphasis on fitness for purpose rather than one-size-fits-all rankings. As the World Development Report 2025 (World Bank Group, 2025) underscores, effective QI systems are those aligned with a country's level of development, economic structure, and policy priorities. For many low and middle-income countries, this calls for careful sequencing of reforms and investments, as well as an appropriate balance between public oversight and private provision.

I hope that this new edition of the GQII will continue to inform policy discussions, support further research, and assist countries in building quality infrastructure systems that are credible, inclusive, and fit for purpose. Congratulations again to the team on the release of the 2025 edition of the index and this report.

# ACRONYMS

<b>AB</b>	Accreditation body	<b>ITU</b>	International Telecommunication Union
<b>AFRAC</b>	African Accreditation Cooperation	<b>INETQI</b>	International Network on Quality Infrastructure
<b>APAC</b>	Asia Pacific Accreditation Cooperation	<b>K&amp;SC</b>	Key and Supplementary Comparisons
<b>ARAC</b>	Arab Accreditation Cooperation	<b>KCDB</b>	Key Comparison Data Base
<b>ASOCEC</b>	Association of Conformity Assessment Bodies (Asociación Colombiana de Organismos de Evaluación de la Conformidad)	<b>KCRV</b>	Key Comparison Reference Value
<b>BIPM</b>	International Bureau of Weights and Measures (Bureau International des Poids et Mesures)	<b>MLA</b>	Multilateral Recognition Arrangement (the term used by the IAF)
<b>BMZ</b>	Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung)	<b>MRA</b>	Mutual Recognition Arrangement (the term used by BIPM and ILAC)
<b>CAB</b>	Conformity Assessment Body	<b>MS</b>	Management Standards
<b>CCQM</b>	Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (part of CIPM)	<b>NAB</b>	National Accreditation Body
<b>CIPM</b>	International Committee for Weights and Measures	<b>NMI</b>	National Metrology Institute
<b>CMC</b>	Calibration and Measurement Capabilities	<b>NQI</b>	National Quality Infrastructure
<b>CPI</b>	Corruption Perceptions Index	<b>NQP</b>	National Quality Policy
<b>DI</b>	Designated Institute (recognised by BIPM)	<b>NSB</b>	National Standards Body
<b>GAEI</b>	Global Accreditation Experience Index	<b>OECD</b>	Organization for Economic Cooperation and Development
<b>GCC</b>	Gulf Cooperation Council	<b>OIML</b>	International Organization of Legal Metrology (Organisation Internationale de Métrologie Légale)
<b>GAC</b>	Gulf Accreditation Centre	<b>ONAC</b>	Colombian National Accreditation Body (Organismo Nacional de Acreditación de Colombia)
<b>GATT</b>	General Agreement on Tariffs and Trade	<b>PTB</b>	German Federal Metrology Institute (Physikalisch-Technische Bundesanstalt)
<b>GDP</b>	Gross Domestic Product	<b>SADCAS</b>	Southern African Development Community Accreditation Service
<b>GQII</b>	Global Quality Infrastructure Index	<b>SDO</b>	Standard Development Organization
<b>GII</b>	Global Innovation Index	<b>SKNBS</b>	Saint Kitts and Nevis Bureau of Standards
<b>ECI</b>	Economic Complexity Index	<b>SOAC</b>	West African Accreditation System (Système Ouest Africain d'Accréditation)
<b>EURAMET</b>	European Association of National Metrology Institutes	<b>RAG</b>	Regional Accreditation Groups
<b>FAMI-QS</b>	Feed Additives and Pre-mixtures Quality System	<b>SDG</b>	Sustainable Development Goals
<b>HS</b>	Harmonized System	<b>QI</b>	Quality Infrastructure
<b>IAAC</b>	Inter-American Accreditation Cooperation	<b>QMS</b>	Quality Management System
<b>IAF</b>	International Accreditation Forum	<b>TC</b>	Technical Committee
<b>ICS</b>	International Classification of Standards (by ISO)	<b>UN</b>	United Nations
<b>IEC</b>	International Electrotechnical Commission	<b>UNIDO</b>	United Nations Industrial Development Organization
<b>IFA</b>	Integrated farm assurance (scheme of GlobalG.A.P.)	<b>WDR</b>	World Development Report (by the World Bank)
<b>ILAC</b>	International Laboratory Accreditation Cooperation	<b>WTO</b>	World Trade Organization
<b>ISO</b>	International Organization for Standardization		

# ACKNOWLEDGEMENTS

The creation of the Global Quality Infrastructure Index (GQII) was again a collective endeavour, and this report would not have been possible without the support and contributions of numerous organisations and individuals. It is therefore fitting to begin by expressing our gratitude to everyone who helped make the GQII 2025 a reality.

The GQII 2025 relies on publicly available data published by national, regional, and international quality infrastructure (QI) institutions. The GQII team's core task is to compile these diverse data, harmonise them, and make them comparable at country and economy level. This includes metrology, standards, accreditation and conformity assessment information from a wide range of sources.

A particular challenge is collecting accreditation data broken down by economy. To this end, we have further developed a data collection form. This was sent to all accreditation bodies worldwide, requesting that they enter the number of accredited bodies as published

on their websites. We want to thank the staff of more than a hundred accreditation bodies and accreditation focal points who completed and returned this form. We are also grateful to the accreditation bodies that validated the data we had compiled on their activities. The support of regional and international accreditation organisations in disseminating our data request to their members was crucial to achieving an excellent response rate. Special thanks go to Yolanda Vinicombe (African Accreditation Cooperation, AFRAC), Graeme Drake (Asia Pacific Accreditation Cooperation, APAC), Ferney Chaparro (Inter-American Accreditation Cooperation, IAAC), Brahim Houla (Arab Accreditation Cooperation, ARAC), Mariluz Quiróz López (International Accreditation Forum, IAF), and Ety Feller (International Laboratory Accreditation Cooperation, ILAC), who provided active support and constructive dialogue.

As in previous editions, Ulrich Harmes-Liedtke led the GQII 2025 team and wrote the report. Collecting accreditation data from websites is particularly time-consuming and requires great attention to detail. We would therefore like to thank Anett Matbadal, Ann Sara Ramkissoon, Annelien Cunningham, Beatriz Paniagua, Mónica Muñoz, Rózsa Ring and Christian Schoen for carefully compiling and verifying this information. Mónica Muñoz also coordinated communication on the index, particularly with accreditation bodies operating across multiple economies, and contributed to data visualization through the design of most of the report's graphics. Emiliano Waltos downloaded publicly available data from the internet for analysis, and Ann Sara Ramkissoon calculated the index. Christian Schoen was responsible for technical proofreading and consistency checks.

For this edition, we switched from the business intelligence and analytics software Tableau to the more versatile statistical software package Stata. This change increases the transparency and traceability of the calculations, enabling interested users to replicate or re-estimate the GQII using other software tools. However, this meant that the GQII 2023 ranking had to be recalculated to ensure complete methodological



consistency when analysing changes between 2023 and 2025.

Exchanging views with representatives of the International Network on Quality Infrastructure (INetQI) and participating in the UNIDO expert working group on the QI4SD ranking were essential for interpreting the data and positioning the GQII within the broader international QI landscape. One concrete outcome of the collaboration between UNIDO, PTB and Mesopartner is that the QI4SD Index 2024 utilized GQII accreditation data. Even closer cooperation is envisaged for 2026. We would particularly like to thank Alejandro Rivera (UNIDO) for his valuable cooperation and for his welcoming address at the launch of the GQII 2025 on 9 December 2025.

It was a fortunate coincidence for the GQII team that the launch of GQII 2025 coincided with the publication of the World Development Report (WDR), Standards for Development (World Bank Group, 2025). In his welcome address, Philip Grinstead of the World Bank noted that the data and insights provided by the GQII had significantly contributed to the empirical foundation of the WDR. This recognition emphasises

the increasing importance of QI statistics in global development discussions.

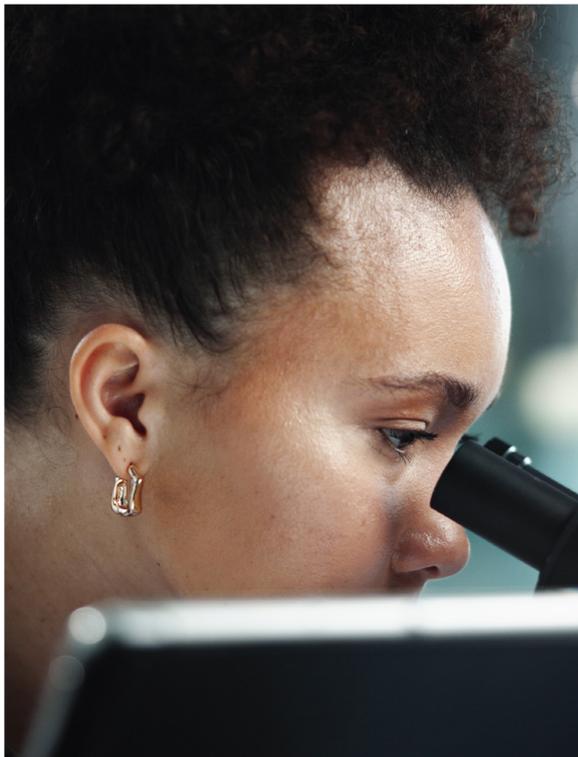
We want to express our sincere gratitude once again to the Physikalisch-Technische Bundesanstalt (PTB) and Annette Röttger, Member of the Presidential Board, for her kind words at the launch event. We would also like to thank the Trade Department of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the PTB's International Cooperation Department for their ongoing financial and institutional support. We would particularly like to acknowledge the guidance of Marion Stoldt and the technical support provided by Stefan Wallerath, who were instrumental in enabling this edition of the GQII.

Finally, we would like to thank all the colleagues in QI institutions, partner organisations, and research institutions who use, discuss, and critically review the GQII data. Their feedback helps us improve the index, refine the methodology, and strengthen the empirical basis for understanding quality infrastructure as a driver of sustainable economic and social development.



# INTRODUCTION

This report, which utilises data collected during the year 2025, is the fourth in a series documenting the global development of QI. The previous reports are based on data from 2020, 2021 and 2023. Meanwhile, UNIDO has compiled the QI4SD index for 2022 and 2024 for INetQI (UNIDO, 2024). Our work began over 15 years ago, when we published the inaugural global QI ranking (Harmes-Liedtke & Oteiza Di Matteo, 2011). Overall, continuous growth in QI can be observed. This growth is reflected in two ways: first, an increasing number of countries are using QI services in their private and public institutions; and second, the range of QI services offered in each economy is growing. However, the number of national bodies for metrology (NMI), standardization (NSB) and accreditation (AB) has remained essentially unchanged. At the same time, the constituent areas of QI — metrology, standardization, accreditation, and conformity assessment — and the range of services on offer are becoming increasingly diverse. This is demonstrated by the growing number of areas covered by metrology and accreditation, as well as the increasing number of internationally recognised standards.



The scope of QI is also expanding in terms of content. While it was initially primarily concerned with promoting international trade in the manufacturing sector, including the food industry, QI is now also increasingly used in the service sector, such as in healthcare, finance, and education. In particular, the issue of sustainability requires trust and evidence, which the QI offers. Finally, QI provides the basis for data security through standards and conformity assessments, contributing significantly to the compatible and reliable digitalisation of the economy and society.

At GQII, it is important to distinguish between the ranking by economies / countries and the underlying database: The ranking undoubtedly guarantees the greatest public attention. Those responsible for quality infrastructure, as well as policymakers, are always interested in their country's position in the global index. Does the ranking correspond to the qualitative assessment or the expectations of experts? Is a country rising or falling in the rankings, and what are the reasons for this? How does a country compare to its neighbours, within its own region or globally? Does a country's current ranking call for more QI investments or justify previously made investments? These questions are all relevant and encourage discussion about necessary improvements and investments.

Previous editions of the GQII have warned against viewing a rise in the ranking as an end in itself. A country's QI should meet the current and future needs of its national economy and society. While large, trade-intensive countries can afford to develop QI services in many areas, smaller, developing economies should focus on key areas and cultivate greater cooperation with service providers from other countries. Against this backdrop, correlations between the GQII and other key development indicators, such as GDP, imports and exports, and composite indicators for economic complexity, innovation, and perceived corruption, are particularly important. This enables us to assess whether a country's QI ranking aligns with the size and structure of its economy.

## Textbox 1: Countries or economies – what are the basic units of the GQII?

The GQII covers 185 countries and economies. Of these, 180 are recognised by the United Nations as independent states, while five are not UN member states for political or constitutional reasons but are nevertheless relevant for QI analysis.

These five are treated as economies rather than sovereign states:

- Hong Kong (HKG) and Macao (MAC) are Special Administrative Regions of the People’s Republic of China with their own economic and legal systems under the “one country, two systems” framework; they enjoy a high degree of autonomy but are not sovereign states.
- Taiwan (TWN), Province of China, operates as a de facto independent jurisdiction with its own government and QI institutions but is claimed by the People’s Republic of China and is not a UN member due to the “One China” policy.
- The Palestinian Territories (PSN) are the West Bank and Gaza Strip, which are partly governed by Palestinian institutions but remain under significant external control; “Palestine” holds UN non member observer status rather than full membership.
- Kosovo (XKX) declared independence from Serbia (SRB) in 2008 and is recognised by many states but not by others; it is not a UN member, and its international status is therefore formally disputed.

In line with UN practice and ISO 3166 style treatment of “countries and territories”, the GQII adopts a neutral “states and economies” approach. This allows all relevant jurisdictions, including partially recognised ones, to be included in the index without implying any political position on questions of sovereignty.

A few sovereign UN members, such as the European microstates (Andorra, Monaco, San Marino), small Pacific Island states (Nauru, Marshall Islands, Micronesia, Palau, Tuvalu, Kiribati) and São Tomé and Príncipe – a small island state in the Gulf of Guinea – have not yet been included in the GQII.

Each country or economy in the GQII is assigned a consistent alphanumeric code. Kosovo is not mentioned in the ISO 3166, and we use the code XKX with the numerical value 926, a convention also used in various international statistical datasets. Throughout the report, the mention of country or economy names is strictly technical and statistical and must not be interpreted as a constitutional judgment on their statehood or diplomatic status.

The GQII database offers much more than a simple ranking. This becomes clear when we consider that the GQII formula is based on 14 indicators — five for metrology, four for standardisation, and five for accreditation and conformity assessment — whereas the database contains 31 datasets on metrology, 28 on standardisation, and 49 on accreditation and conformity assessment. The values of up to 185 economies that make up the GQII sample were recorded for each of these indicators. The GQII

therefore covers virtually all countries and economies worldwide with a certain level of QI. In total, the GQII database comprises approximately 29,000 data points for the reporting year 2025.

By recording cross-border accreditation activities (Harmes-Liedtke & Matta, 2021), the use of conformity assessment in countries without their own accreditation body is also made visible. The activities of national and multinational accreditation service providers were



also recorded. The GQII therefore provides the most accurate representation of the current state of QI worldwide, particularly in developing and emerging countries and economies.

We are therefore pleased that leading international institutions such as the World Bank explicitly refer to the GQII in their latest World Development Report (WDR) (World Bank Group, 2025). The topic of QI is becoming increasingly popular in economics and the social sciences, with the GQII being used as a database. The interaction between the GQII ranking and the database is helpful in this respect. While the ranking provides a general classification of national QI, the database offers empirical data for in-depth and comparative analyses.

# GLOBAL QUALITY INFRASTRUCTURE DEVELOPMENT

## 2.1 What does the GQII measure?

The GQII is a composite index that exclusively measures the QI components. For this reason, it is referred to as a “pure” QI index. This distinguishes it from the QI4SD, which focuses particularly on the relationship between QI and its contribution to the Sustainable Development Goals (SDGs).

The usefulness of the GQII depends heavily on the availability of data and the provision of data by national QI organisations and their regional and international partnerships. However, the willingness to make existing data publicly available for statistical purposes is growing only slowly. Despite intensive digitisation efforts in recent years, machine readability and the availability of time series data are still in their infancy.

Nevertheless, the GQII is a pioneering attempt to demonstrate the development status and dynamics of national QI systems, enabling them to be compared. Additionally, QI serves to support indepth impact analyses and empirically based studies. The GQII relies exclusively on public, freely accessible data created and

published by QI organisations. These organisations are responsible for the quality and availability of the data. In this respect, the GQII also promotes the principle of open data in QI. This should benefit the QI organisations themselves, not least by enabling them to make decisions based on comparable data. At the same time, the GQII increases the visibility of QI and significantly improves its “investigability”, will say, making the state or condition of QI to be an object of socio-economic research.

## 2.2 GQII Methodology

The GQII is based on various methodological decisions that are necessary when creating composite indicators. These choices must be made explicit in order to interpret the results of the GQII correctly and to highlight opportunities for further development. Our considerations are based on the Handbook on Constructing Composite Indicators by the Organisation for Economic Co-operation and Development (OECD) and the European Commission’s Joint Research Centre (JRC) (OECD & JRC European Commission, 2008).

### Textbox 2: Updating the GQII Calculation Method

For the 2025 edition of the GQII, the calculation of the index was migrated from a business intelligence tool to a statistical software environment. Earlier editions (up to 2023) relied on Tableau, which is highly effective for exploratory analysis and interactive inspection of data distributions but less suitable as the definitive engine for a composite index, because key calculation steps are embedded in workbooks that are difficult to version, replicate and document consistently when samples or country coverage change.

The 2025 edition therefore uses Stata, a statistical package widely employed in academia that facilitates data exchange among researchers. In Stata, percentile calculations and other transformations are written

explicitly in do files, allowing precise control over ranking rules, treatment of ties, weighting, and the use of empirical cumulative distribution functions or grouped quantiles. This scripted approach makes it straightforward to document the exact formulas used, to rerun the code on updated datasets and to test alternatives (for example weighted percentiles, or sensitivity checks), which is essential for ensuring transparency and reproducibility in a composite index such as the GQII.

The transition between software environments revealed that country rankings are sensitive to technical details in the percentile calculations and aggregation procedures. To ensure full comparability over time, the GQII team therefore recalculated the 2023 ranking using the new Stata based methodology, which led to changes in the positions of some economies. Of the 185 economies covered, 153 moved by 0 to 5 ranks, 23 changed by up to 10 positions, and only a small number shifted by more than 10 places; the largest adjustments occurred for the Syrian Arab Republic and Saint Kitts and Nevis (22 and 20 ranks, respectively).

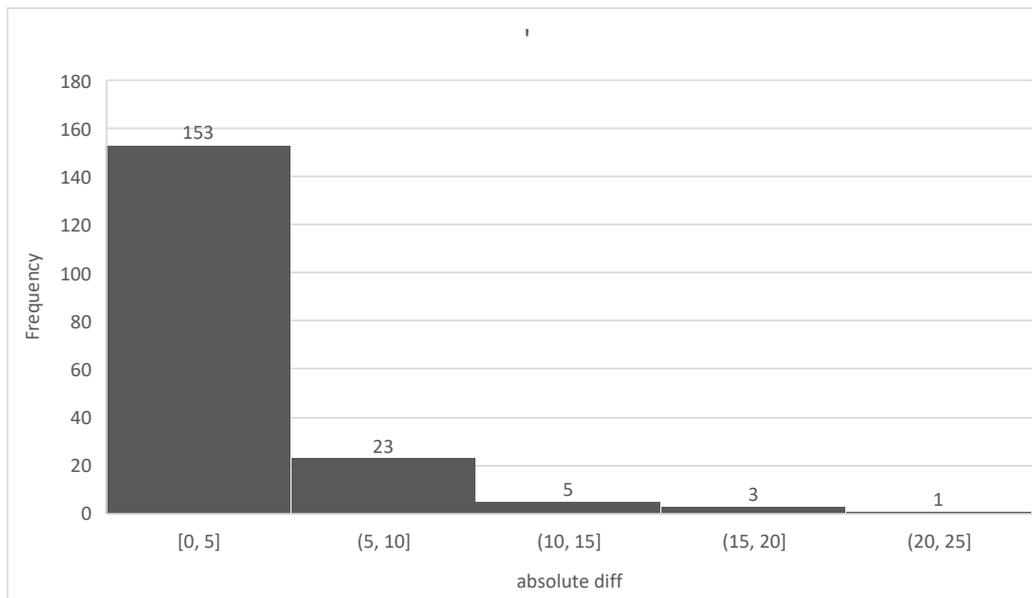


Figure 1: Rank changes in the recalculation of the GQII 2023 rankings (in 2025)  
Source: Own calculations

This experience underlines the methodological challenges of constructing time series for QI indicators. Looking ahead, the team plans to explore the use of the open source COINr toolkit for composite indicators, which, like Stata, offers full control over percentile algorithms, weighting and documentation, while also enabling closer alignment and joint use of GQII and QI4SD results within a freely available software environment.

Our starting point is the theoretical understanding that QI is a phenomenon combining various subsystems, such as metrology, standardisation, accreditation, and conformity assessment, into an overall system. Unlike the recognised QI definition adopted by INetQI members (INetQI, 2017), the GQII does not contain any data on market surveillance. This is because no comparable data on economies worldwide is currently available. Further action is therefore required from the institutions responsible for market surveillance.

We begin with the premise that the individual QI services are interdependent. This is based on an internationally recognised, standardised metrology system that can be traced back from industry to the most precise measuring facilities in each country. Standardisation provides the necessary internationally harmonised language and disseminates good practices. Testing laboratories, inspection bodies and certification bodies are then needed to verify compliance with standardisation requirements. Their technical competence and independence are guaranteed by accreditation.

The GQII is intended to determine the effectiveness of QI on key economic indicators, such as GDP and trade. However, the general understanding of how QI components interact with each other, let alone individual services, is still very limited. In this respect, the GQII and its database aim to improve understanding of the interrelationships within various national QI systems. We assume that institutional and cultural conditions in different countries and economies significantly influence the effectiveness of QI in different places and at different times.

The next step is to select the indicators. Initially, the range of possible indicators is limited by data availability. It is notable that availability tends to decrease the closer the indicators are to users of QI-services. For instance, we have data on membership of international standardisation organisations such as ISO and IEC, as well as the number of members in their technical committees. However, we have no data on the number of standards sold. This creates a supply bias in the GQII.

When selecting the data, we took care to choose

indicators that were as independent as possible for each of the three areas: metrology, standardisation, and accreditation. At the same time, data from certain QI areas was omitted if it would have produced contradictory performance measurement results. For this reason, we decided not to include data on OIML's legal metrology (Ramkissoon, 2025). The same applies to the number of accredited inspection bodies, as operating procedures vary greatly between countries. Mexico, for example, has a high number of one-person inspection bodies.

However, the selection of our supply and demand indicators has been questioned, as some components are the result of a quality infrastructure system themselves, such as the number of certificates issued, rather than being a measure of capability. This makes it difficult to distinguish the specific impact of QI from the influence of other factors, such as market demand. Furthermore, the index cannot take into account the interaction effects between the different functions of QI (WDR 2025, p. 132).

When normalising the data, we opted for percentile ranks to enable us to consider both very large, economically powerful countries and small developing economies. Absolute figures for large countries, such as the People's Republic of China and the United States of America, would lead to extreme deviations. Overall, this approach also maintains consistency in the ranking.

In the GQII, we gave equal weighting to all QI components. The subcomponents remained equally weighted within the components. We refrained from relating certain QI services to population size or economic output. Consequently, large countries and economies tend to rank higher in the GQII.

Based on GQII data from 2023, we conducted various analyses concerning weighting, sensitivity, and central components (Harmes-Liedtke, Pietrobelli, et al., 2025). These analyses demonstrated the robustness of the GQII rankings. However, they also showed that countries with very different developments in individual QI components can significantly improve overall system performance by promoting weaker components.

## 2.3 The GQII formula

The GQII is computed as the average of three components — metrology, standardization, and accreditation — where each underlying indicator is first transformed into a percentile rank and then aggregated with equal weights.

**GQII<sub>i</sub> =**

$$\begin{aligned} & \{ [\text{Metrology MS}_i + \text{CIPM CC}_i + \text{CMC Coverage}_i + \text{K\&SC}_i + \text{CABs (ISO/IEC 17025 Calibration)}_i] \times 1/5 \\ & + [\text{Standardization MS}_i + \text{ISO TCs}_i + \text{IEC TCs}_i + \text{ISO Survey}_i] \times 1/4 \\ & + [\text{Accreditation MS}_i + \text{CAB Coverage}_i + (\text{CABs (ISO/IEC 17065)}_i + \text{CABs (ISO/IEC 17021)}_i + \text{CABs} \\ & \text{(ISO/IEC 17025 Testing)}_i / 3] \times 1/3 \} \times 1/3 \end{aligned}$$

**Notes:** All values in the formula are expressed in percentile ranks; CABs (ISO/IEC 17025) distinguish calibration and testing laboratories as indicated.

### Acronyms:

MS	membership
CMC	calibration and measurement capabilities
CC	consultative committees
K&SC	key and supplementary comparisons
CABs	conformity assessment bodies
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
i	Prefix for the data of each of the 185 economies recorded

### Metrology component:

The metrology component consists of five indicators:

1. Metrology membership: Countries are scored 1 for BIPM Member States, 0.75 for Associates of the CGPM, 0.5 for members of a Regional Metrology Organization (RMO), and 0.1 otherwise; membership information is taken from the list of Member States and associates at the BIPM website.
2. CIPM Consultative Committees (CCs): Participation in ten international metrology consultative committees is scored as 1 for full members, 0.5 for observers, and 0 for non-members, using the information on consultative committee

membership at the BIPM website.

3. CMC coverage: The breadth of calibration and measurement capabilities is captured by counting coverage in nine technical areas (Acoustics, Ultrasound, Vibration (AUV), Electricity and magnetism (EM), Length (L), Mass and related quantities (M), Photometry and radiometry (PR), Chemistry and biology (QM), Ionizing Radiation (RI), Thermometry (T) and Time and frequency (TF)), assigning 1 if the country has at least one CMC in the area and 0 otherwise, based on CMC statistics by country in the BIPM Key Comparison Database (KCDB) which support the CIPM MRA.
4. Key and supplementary comparisons (K&SC): Counts the number of key and supplementary comparisons in which the country participates during the reference period, using BIPM KCDB statistics on key comparisons by state or economy.
5. Calibration laboratories (CABs – ISO/IEC 17025): Counts accredited calibration laboratories in the country, using information on accredited calibration labs from national accreditation bodies and IAF/ILAC signatory data for the corresponding website.

All five indicators are transformed into percentile ranks and then averaged to obtain the metrology component.

### Standardization component:

The standardization component consists of four indicators:

1. Membership in international standardization bodies (ISO and IEC): Evaluates a country's membership status in ISO, and IEC using their respective membership directories from the organization's websites. We deliberately chose the membership figures of the International Telecommunication Union (ITU), as it comprises all 194 member

states and this data therefore contributes little to the differentiation of the data.

2. ISO technical committees: Measures participation in ISO technical committees based on ISO committee data from the ISO website.
3. IEC technical committees: Measures participation in IEC technical committees using the IEC information on national committees and affiliates from the IEC website.
4. ISO MS certificates: Counts ISO management system certificates issued in each country, using the ISO Survey of valid certificates from the ISO Survey and IAF Cert Search websites.

All four indicators are transformed into percentile ranks and then averaged to obtain the standardization component.

#### Accreditation component:

The accreditation component uses percentile ranking of indicators that describe the national accreditation body and accredited CABs:

1. IAF membership: Captures participation in the IAF MLA based on the list of recognised accreditation bodies and MLA scopes from the IAF website.
2. ILAC membership: Captures participation in the ILAC MRA using the ILAC list of MRA signatories from the ILAC website
3. RAO membership: Measures participation in Regional Accreditation Organisations (IAAC, APAC, AFRAC, ARAC, SADCA, EA) using membership lists from each RAO from the corresponding websites.
4. CAB coverage: Captures whether an economy has at least one recognised accreditation body, drawing on IAF and ILAC information on recognised ABs and signatories. In 2023, we calculated the accreditation coverage values at Levels 3 and 5, based on the following 15 scopes: ISO/IEC 17024; ISO/IEC 17029; ISO 14065; ISO 15189; ISO/IEC 17020; ISO/IEC 17043; ISO/IEC 17034; ISO 20387; ISO 22000 FSMS; ISO 9001 QMS; ISO 14001 EMS; ISO/IEC 27001 ISMS; ISO 50001 EnMS; ISO 13485 MDMS; and ISO 45001 OHSMS. By 2025, this had increased to 17 scopes. The ISO 37001 ABMS and ISO 37301 CMS schemes were added.
5. Product certification CABs (ISO/IEC 17065): Counts accredited product certification bodies using IAF data on accredited bodies and scopes.
6. Management system certification CABs (ISO/IEC 17021): Counts accredited management system certification bodies using IAF data on accredited bodies and scopes.

7. Testing laboratories (ISO/IEC 17025): Counts accredited testing laboratories using ILAC signatory data on accredited labs.

The accreditation score is calculated from three equally weighted components: membership of international and regional accreditation organisations (indicators 1–3), coverage by the domestic accreditation body or bodies (indicator 4), and the number of accreditations for three representative areas (indicators 5–7).

Cross-border accreditations are also included when calculating accreditation coverage (indicator 4) and the number of accreditations in the three representative areas (indicators 5–7). For example, if a country's own accreditation body is not yet a signatory to an MRA or MLA in a given scope, but conformity assessment bodies in that country hold accreditations from foreign accreditation bodies, these cross-border accreditations are added to the country's score.

The same logic applies to the number of accredited certification bodies and testing laboratories: the figures reflect the total number of bodies accredited to operate in the country, regardless of whether the accreditation is domestic or foreign. In this way, indicators 1–3 primarily capture the domestic accreditation supply, while indicators 4–7 reflect the demand for accreditation services within each economy.

Percentile ranking is used to harmonise indicators with different scales and types (binary memberships versus counts of laboratories or certificates), enabling meaningful comparison and aggregation across countries.

## 2.4 General development and by components

To better assess development in the GQII ranking, we will first examine the aggregated QI data, paying particular attention to its development from 2023 to 2025.

As can be seen in the Figure 2, the number of QI services has increased in all QI areas over the last two years. Growth was particularly strong in the management certification area. The number of ISO management system certificates increased by 24%, as did the number of accredited certification bodies for management systems (+ 19%). There was also significant growth in the number of accredited testing laboratories (+14%) and accredited product certification bodies (+10%).

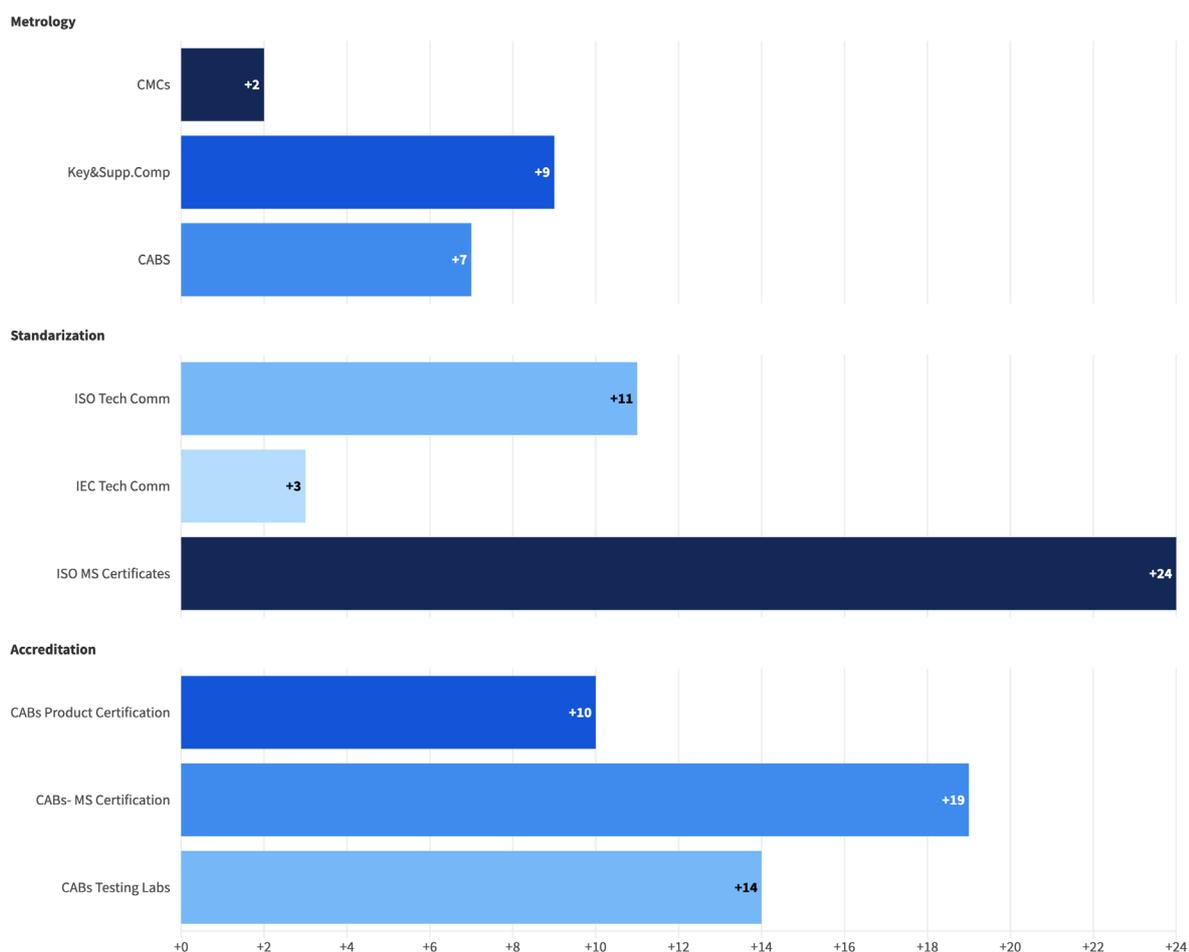


Figure 2: QI evolution by area (2023-2025)

These trends are consistent with long-term developments: Table 1 shows that the number of management system certificates has more than doubled since 2000. One reason for this increase is that ISO has continuously introduced new types of management system certification. Over time, these certifications become part of the IAF Multilateral Agreements (MLA) and gain international recognition.

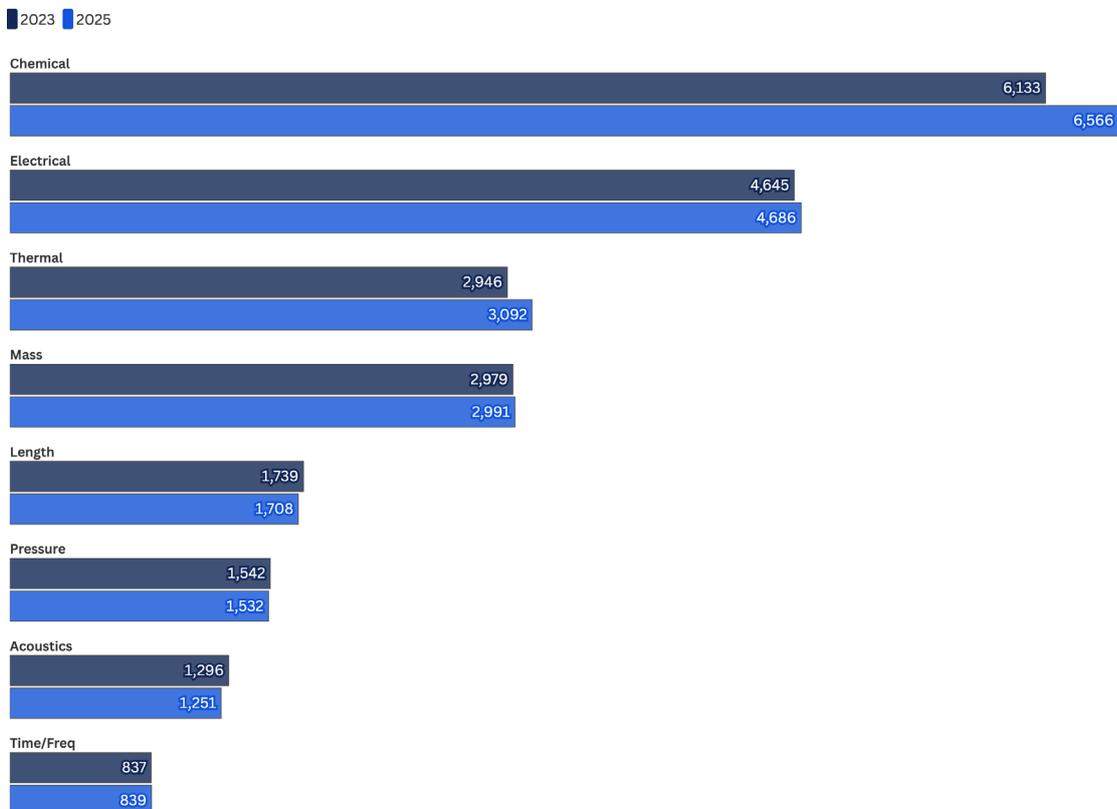
Table 1 also provides information on the number of units involved in the various QI services. In metrology, for instance, there were 26,362 calibration and measurement capabilities, as well as 14,992 accredited calibration laboratories, in 2025. In the field of accreditation, a total of 70,353 testing laboratories and 4,151 product certification bodies were counted in 2025. There were 4,069 certification bodies for management systems, a figure similar to that for product certifications.

QI Areas	2020	2021	2023	2025
<b>Metrology</b>				
CMCs	25,536	25,944	25,832	26,362
Key & Supplementary Comparisons	11,883	12,671	13,174	14,332
CABS	10,828	12,381	13,957	14,992
<b>Standardization</b>				
ISO Tech Comm	21,504	21,960	21,872	24,299
IEC Tech Comm	n.d.	5,576	5,690	5,835
ISO MS Certificates	1,345,381	1,578,961	2,366,186	2,927,317
<b>Accreditation</b>				
CABs Product Certification	3,572	3,987	3,786	4,151
CABs- MS Certification	2,330	3,061	3,407	4,069
CABs Testing Labs	60,655	57,652	61,696	70,353

Table 1: QI evolution by areas (2020 – 2025)

### Metrology

In the field of metrology, the number of calibration and measurement capabilities (CMCs) has long been considered an indicator of the metrological competence of a national metrology institute (NMI) or designated institution (DI). The granularity of the CMCs varies across the different metrology fields, meaning that the total number of CMCs per country is not particularly significant.



Source: GQII 2025

Figure 3: Evolution of Calibration and Measurement Capabilities (CMCs) by metrology areas (2023/ 2025)

As shown in the Figure 3, the field of chemical and biological metrology (QM) is expected to have 6,566 CMCs by 2025. This is followed by the electricity and magnetism (EM) field with 4,686 CMCs, thermometry (T) with 3,092, mass (M) with 2,991, length (L) with 1,708, pressure (P) with 1,532, acoustics (AUV) with 1,251, and time and frequency (TF) with 839. While the number of CMCs in chemical metrology increased by 7% between 2023 and 2025, the number in the other fields remained essentially constant. In some



fields, the number of CMCs decreased, which can be explained by the following factors:

1. Policy and guidance changes under the CIPM MRA encourage rationalisation rather than inflation of CMCs. CIPM MRA G 13 states that CMCs must reflect services available to customers under normal conditions and “shall not be artificially subdivided,” and it explicitly allows institutes to voluntarily update CMCs by reducing their range or increasing their uncertainties when they scale back activities or no longer wish to maintain very fine grained claims. G 13 also foresees modification, temporary withdrawal (“greying out”) or deletion of CMCs when comparison results reveal significant deviations, or when methods change and older CMCs are no longer appropriate, which can directly reduce the published count (CIPM, 2024).
2. Several KCDB reports to the JCRB note that apparent decreases

are linked to the introduction of “broad scope” or “broad claim” CMCs and to the transition to KCDB 2.0, particularly in chemistry and biology. In these areas, a single broader CMC now often replaces multiple narrow entries, so the total number of CMCs falls even though the underlying service coverage is maintained or expanded. BIPM emphasises that the overall number of CMCs is now approximately stable, with reductions in some areas offset by richer information and wider scope CMCs, and that KCDB 2.0 changed counting and presentation in ways that make time series comparisons of raw counts “only conditionally comparable” (Harmes-Liedtke, 2020).

3. Operational decisions by NMIs and DIs can lead to fewer CMCs in specific areas. CIPM MRA-G-13 explicitly notes that institutes may reduce or withdraw CMCs when they “want to reduce their engagement in a particular measurement activity,” and KCDB reports show increasing numbers of greyed out CMCs awaiting revision or formal withdrawal. This can reflect strategic focusing of resources on core capabilities, the closure or reorganisation of laboratories, or shifts towards emerging fields where new CMCs have not yet been fully established. In summary, BIPM, CIPM and KCDB documents make clear that a decline in CMC counts usually reflects methodological streamlining, broader scope claims, quality control following comparisons, or deliberate refocusing of NMI activities, rather than a simple loss of competence - another reason why they now recommend using coverage of services instead of the raw number of CMCs as the main indicator of metrological capability (CCQM, 2021).

As part of the review of the CIPM MRA and the introduction of KCDB 2.0 in 2019, the BIPM and the advisory committees began explicitly advising against using the raw number of CMCs as a performance indicator. Instead, they recommended using the percentage of services covered by CMCs. The CIPM MRA-G-13 guide, ‘Calibration and measurement capabilities within the CIPM MRA’ (CIPM MRA-G-13), states that ‘institutes are encouraged to use the percentage of coverage of their services by CMCs as a performance indicator rather than the number of CMCs’ (CIPM). This change was implemented gradually from around 2019 to 2021, in parallel with KCDB 2.0

and the advisory committees’ strategy documents (e.g. the CCM Strategy 2022–2032 mentions reducing and rationalising CMCs, as well as revising CMC uncertainty equations for the new KCDB format). In practice, this means that, in some areas, we now see fewer, more aggregated CMC entries. The focus is on how well they cover the NMIs’ services rather than on using a large number of narrowly defined CMCs to signal performance.

In the GQII, we therefore use CMC coverage in a country as a key metrology indicator.

Years	2020	2021	2023	2025
CMC's	25,536	25,944	25,832	26,362
K&SC	11,883	12,671	13,174	14,332

Table 2: Evolution of CMCs and K&SC (2020 – 2025). Source GQII based on KCDB

Additionally, we consider the number of key and supplementary comparisons (K&SC). Key comparisons refer to the principal measurement techniques and methods in each field. These compare the highest-level standards of participating NMIs and generate a key comparison reference value (KCRV) and degrees of equivalence for each participant. Additionally, supplementary comparisons provide further evidence of performance in specific measurement quantities or techniques.

### Standardization

By 2025, ISO had 174 members and the “IEC family” had 165 countries (89 national committee members and 85 developing and emerging countries and have access to the standards as part of the Affiliate Country Programme. Overall, the membership figures of the international standards organisations have remained stable over time. One of the few changes during the review period was St. Kitts and Nevis (St. Kitts and Nevis Bureau of Standards, SKNBS) becoming a full ISO member body.

With regard to the participation of country representatives in standards committees, only snapshots can be taken. Neither ISO nor IEC have published any time series to date showing the development of participation. Essentially, there is a distinction between active participation as a P-member (participant) and passive participation as an O-member (observer).

End of Year	Total membership	P-Memberships	O-Memberships	Secretariats
2023	7,337	4,049	3,288	194
2025	7,532	4,137	3,395	199
Diff	2.7%	2.2%	3.3%	2.6%

Table 3: IEC Technical Committees Secretariats and members (2023 and 2025)

End of Year	Total membership	P-Memberships	O-Memberships	Secretariats
2023	29,488	15,839	13,649	758
2025	31,246	16,945	14,301	786
Diff	+6.0%	+7.0%	+4.8%	+3.7%

Table 4: ISO Technical Committees Secretariats and members (2023 and 2025)

In 2025, ISO had 786 technical committees, significantly more than its sister electro-technical organisation. Between 2023 and 2025, we saw a 6% increase in TC memberships, with P memberships growing by 7.0% compared to 4.8% for O memberships. Overall, P memberships account for 54%, slightly more than half of all TC memberships. The number of TC secretariats grew at a relatively slower rate of 3.7%, indicating that each secretariat must, on average, serve more members.

The number of ISO management certificates is also included in the standard component of the GQII. This is an indicator of standard usage and a product of conformity assessment.

However, criticism has been levelled at the fact that this outcome factor of the QI system should not be used to measure its own effectiveness (World Bank Group, 2025, p. 132).



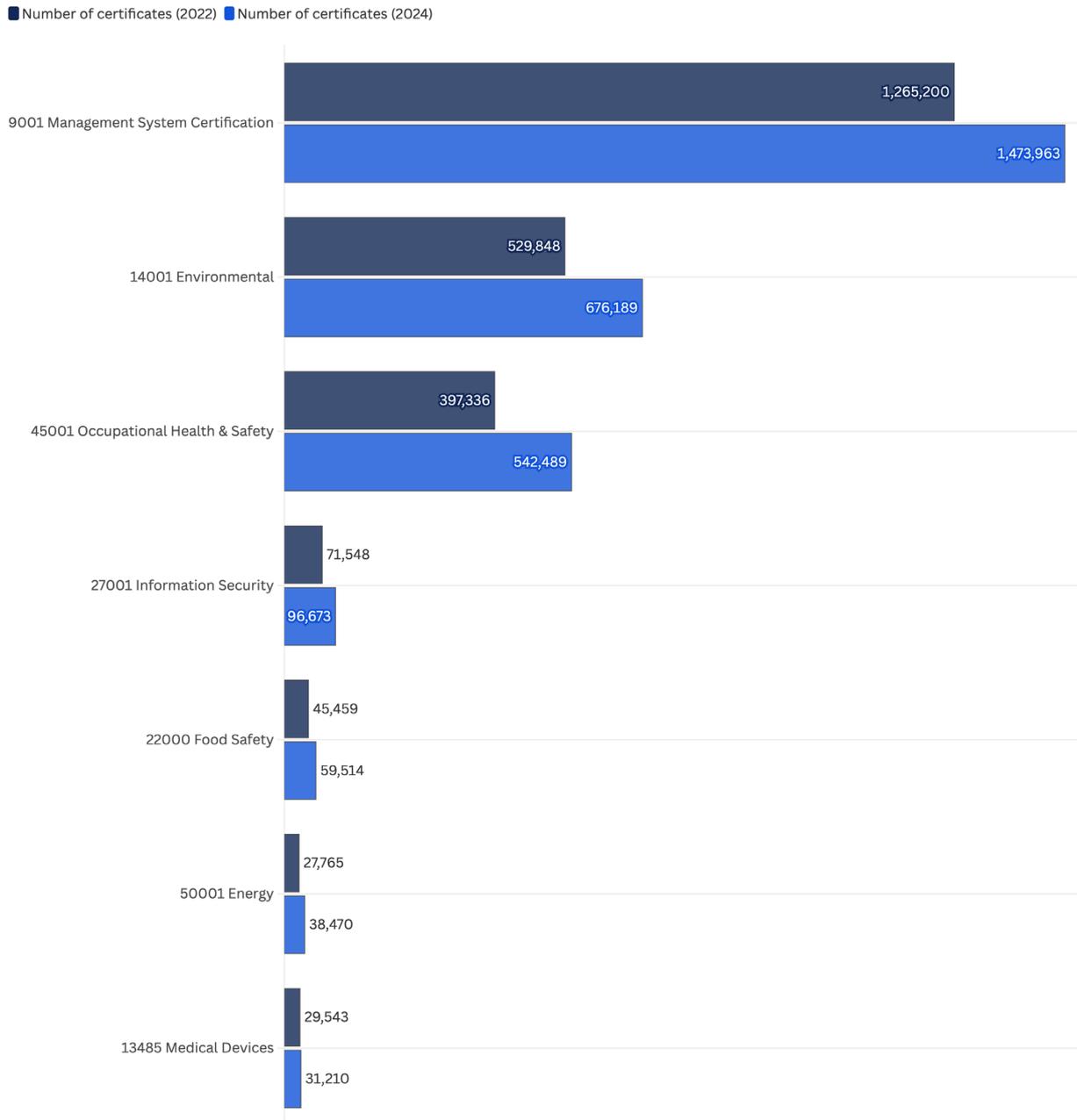


Figure 4: Number of ISO Management system certificates 2022/ 2024.  
Source: GQII based on ISO Survey

The ISO Survey (ISO & IAF, 2025), which records the number of ISO management certificates for 2024, was first published in 2025 by IAF Cert Search. However, comparing the 2024 data with that from 2023 revealed significant fluctuations in individual countries. For instance, Colombia had 6,546 ISO 9001 certificates in 2024 compared to 10,231 in 2023. Neither the Association of Conformity Assessment Bodies (ASOCEC) nor the Colombian Accreditation Body (ONAC) could explain this 36% decline when we asked

about it. Therefore, the data from the ISO Survey should be interpreted with utmost caution.

Despite these technical irregularities, the number of certificates recorded by the ISO Survey increased from 2,425,858 in 2022 to 2,991,246 in 2024 (a 23.3% increase). The figure also shows that the strongest growth is for the three most widely used management system certificates (ISO 9001, ISO 14001 and ISO 45001).

## Accreditation

The GQII is based on data from more than a hundred accreditation bodies worldwide, including bi-national<sup>1</sup> and regional accreditation services<sup>2</sup>. Although international and regional accreditation cooperations also publish data on the development of the main accreditation scopes, the GQII is the only statistic that disaggregates this data by country or economy.

Until now, there have been two international accreditation cooperations: the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF). Both cooperations will merge on 1 January 2026 to form the newly founded Global Accreditation Cooperation Incorporated. This merger offers new opportunities for the provision of data.

Here we present the data we collected in mid-2025. At that time, ILAC members had accredited 110,421 CABs. The largest group was 68,431 testing laboratories (ISO/IEC 17025), followed by 15,325 inspection bodies (ISO/IEC 17020), 14,351 calibration laboratories (ISO/IEC 17025), 10,991 medical laboratories (ISO 15189), 868 providers of interlaboratory testing services (ISO/IEC 17043), 392 producers of reference materials (ISO 17034) and 63 biobanks (ISO 20387).

Overall, between 2023 and 2025 the number of ILAC-accredited CABs grew by 10%, with all areas recording increases. However, the largest increases were in the newer, smaller areas such as biobanking (+186%) and reference material producers (+28.1%).

Total: 110421 CABs

ISO/IEC 17025 Testing ISO 15189 Medical Laboratories ISO/IEC 17025 Calibration ISO/IEC 17020 Inspection  
 ISO/IEC 17043 Proficiency Testing ISO 17034 Reference Material Production ISO 20387 Biobanking

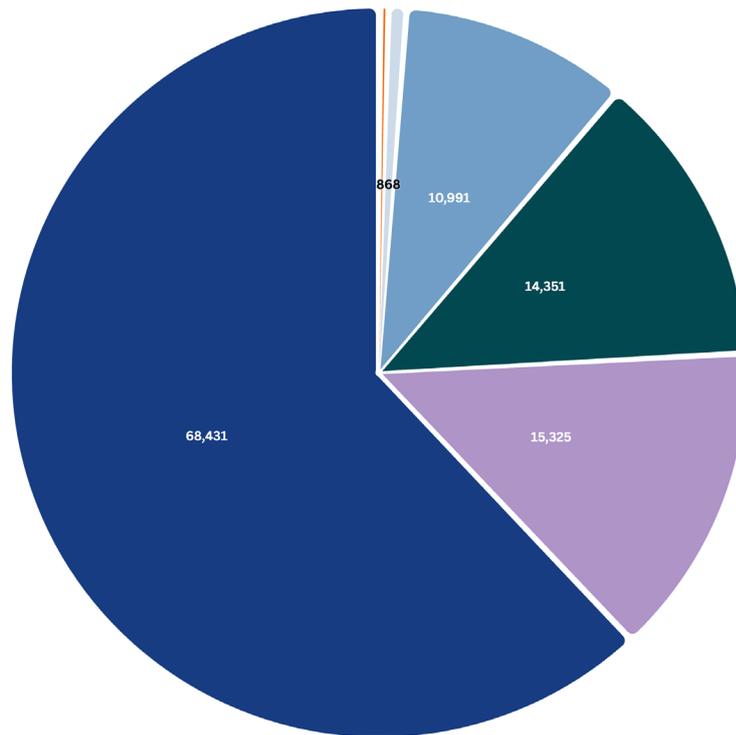


Figure 5: Number of accredited bodies by ILAC members (2025)

<sup>1</sup> Bi-national accreditation services are accreditation bodies that are jointly established and governed by two countries to serve both of their markets under a single system. JAS-ANZ is the only example: it is the Joint Accreditation System of Australia and New Zealand, created by an international treaty between the two governments in 1991 to provide a common accreditation authority for certification and inspection bodies in both countries.

<sup>2</sup> Regional accreditation services (RAS) are accreditation bodies that provide services to multiple economies within a region rather than being confined to a single country. They are usually created or mandated by a regional economic community or cooperation framework and often accredit conformity assessment bodies (CABs) in countries that do not yet have their own national accreditation body. In the QI context, these regional bodies are assessed through the international peer-evaluation system of the IAF and ILAC and recognised as regional accreditation bodies. Examples are SADCAS (Southern African Development Community Accreditation Service), the GCC Accreditation Centre (GAC) and SOAC (West African Accreditation System).

By contrast, Regional Accreditation Organisations (RAO) such as AFRAC, APAC, IAAC, EA, ARAC and SADCA do not normally provide accreditation directly. Instead, they coordinate regional mutual recognition arrangements (MRAs/MLAs), organise peer evaluations of accreditation bodies, support harmonisation of practices and foster cooperation among national and regional accreditation bodies. In short, RAS deliver accreditation services to CABs, while RAOs provide the governance and coordination framework for accreditation bodies within a region.

At the mid-year count, the number of bodies accredited by IAF members stood at 9,161 CABs. The largest group was the 3,856 product certification bodies (ISO/IEC 17065), followed by the 3,591 management certification bodies (ISO/IEC 17021-1), the 1,209 personnel certification bodies (ISO/IEC 17024), and the 505 validation and verification bodies (ISO/IEC 17029). Overall, the number of accredited certification bodies increased by 11.8%. Growth was particularly significant in the relatively new validation and verification scheme (294.5%), as well as in management system certification (16.4%).

Total: 9161 CABs

- ISO/IEC 17065 Product
- ISO/IEC 17021-1 MSC
- ISO/IEC 17024 Person Certification
- ISO/IEC 17029 Validation & Verification

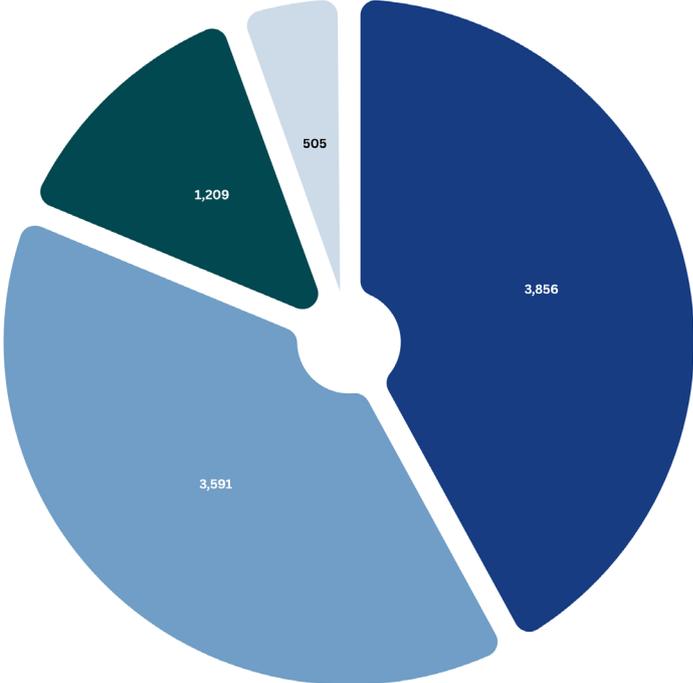


Figure 6: Number of accredited bodies by IAF members (2025)

Our data also enables us to calculate the average number of management system certificates issued by a certification body. For example, the table shows that the 616 accredited certification bodies issued 1,473,963 ISO-9001 certificates in 2025. This corresponds to an average of 2,392 certificates per body. For other types of management system certificates, this figure is significantly lower. Accredited bodies for information security according to ISO 27001, for instance, issue an average of 864 certificates, while bodies for energy efficiency according to ISO 50001 issued an average of 515 certificates. However, it should be noted that this is only an average and that there is a large variance in the number of certificates per body.

Year	ISO 22000	ISO 9001	ISO 14001	ISO 27001	ISO 50001	ISO 13485	ISO 45001
CABs	72	616	366	112	75	92	344
Certificates	59,514	1,473,963	676,189	96,673	38,470	31,210	54,2489
Certificates / CAB	826	2,392	1,845	864	515	338	1577

Table 5: Number of Certification bodies and certificates for Management systems. Source: GQII and ISO Survey

In the context of the IAF, an important trend is the increase in 'private system' conformity assessment systems. These systems are owned by private or non-governmental organisations (rather than ISO, IEC or a regulatory authority) and are recognised as sub-areas of the IAF MLA.

Global G.A.P. is a pioneer in this area, having accredited 156 certification bodies under its Global G.A.P. IAF CPCCs standard by 2025. This represents a 19.1% increase compared to the previous count in 2023.

The chart in Figure 7 lists 18 schemes whose certification bodies use IAF accreditation. By accrediting private schemes, the IAF is expanding its customer base in the area of private and sustainability standards.

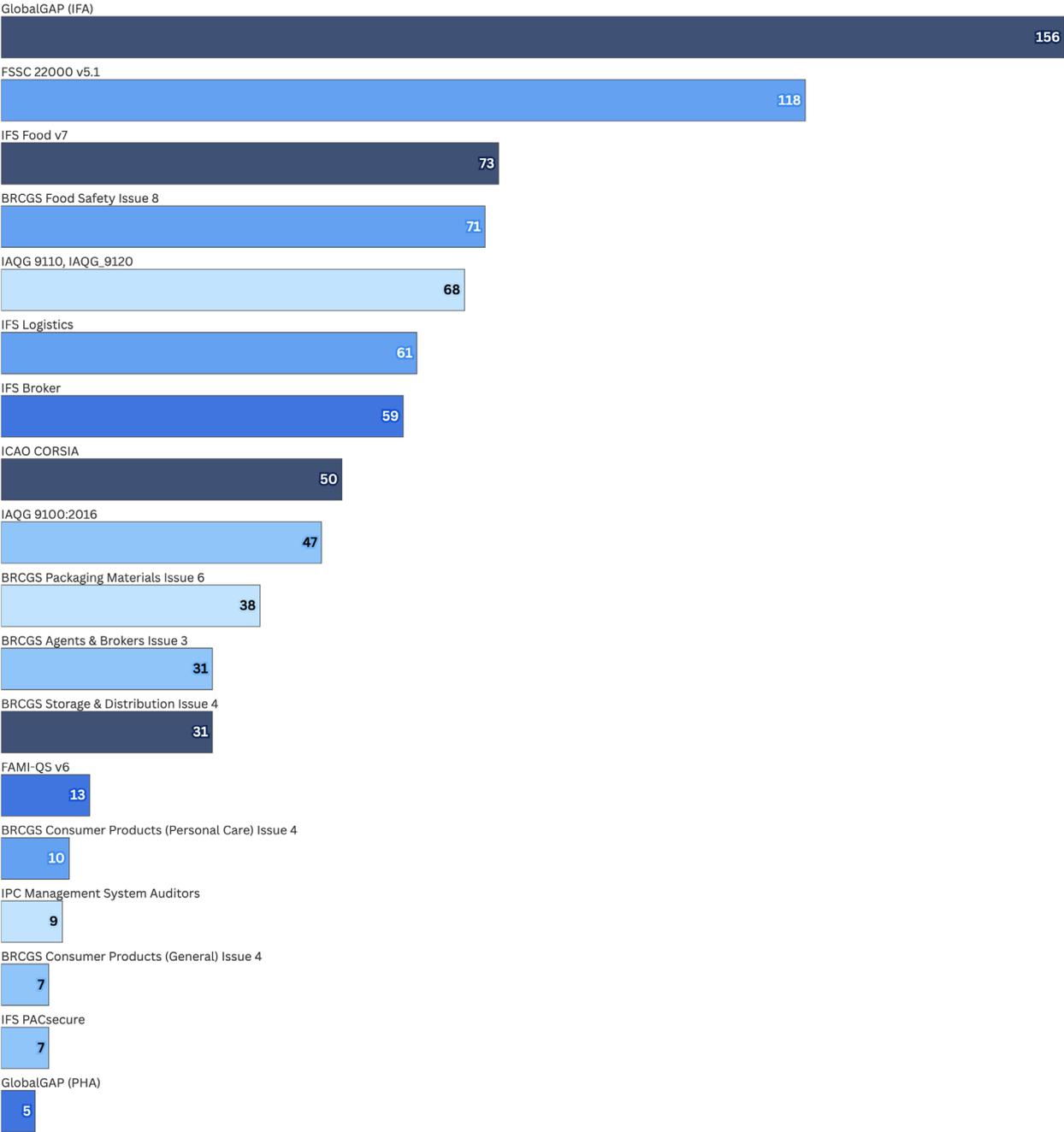


Figure 7: Number of accredited bodies of private schemes by IAF (2025). Source: GQII

Another special feature of the GQII is the recording of cross-border accreditations. This means that an accreditation body assesses the competence of a conformity assessment body abroad. This may be the case if the target country in question lacks its own accreditation body or an existing accreditation body does not have the relevant international recognition. However, it may also be the case that a conformity assessment body prefers accreditation from abroad over or in addition to the domestic offer. In this respect, there is a certain degree of international competition among accreditation bodies, although the spirit of cooperation generally prevails.

In Figure 8, for each country, a circle representing foreign countries where the national accreditation body or bodies are active. Within each circle are

further circles representing countries that use foreign accreditation. The USA is clearly the country whose accreditation bodies are particularly active abroad. This phenomenon can be interpreted as an export of QI services.

In total, 4,101 cross-border accreditations were recorded in 2025. Almost half of these, 1,939, relate to testing laboratories (ISO/IEC 17025). The remaining accreditation schemes show similar patterns.

For the GQII, recording cross-border accreditation is significant because it allows the QI competence of smaller countries to be recorded. Most of these countries do not have their own accreditation bodies, but they do have their first accredited conformity assessment bodies operating and offering services.

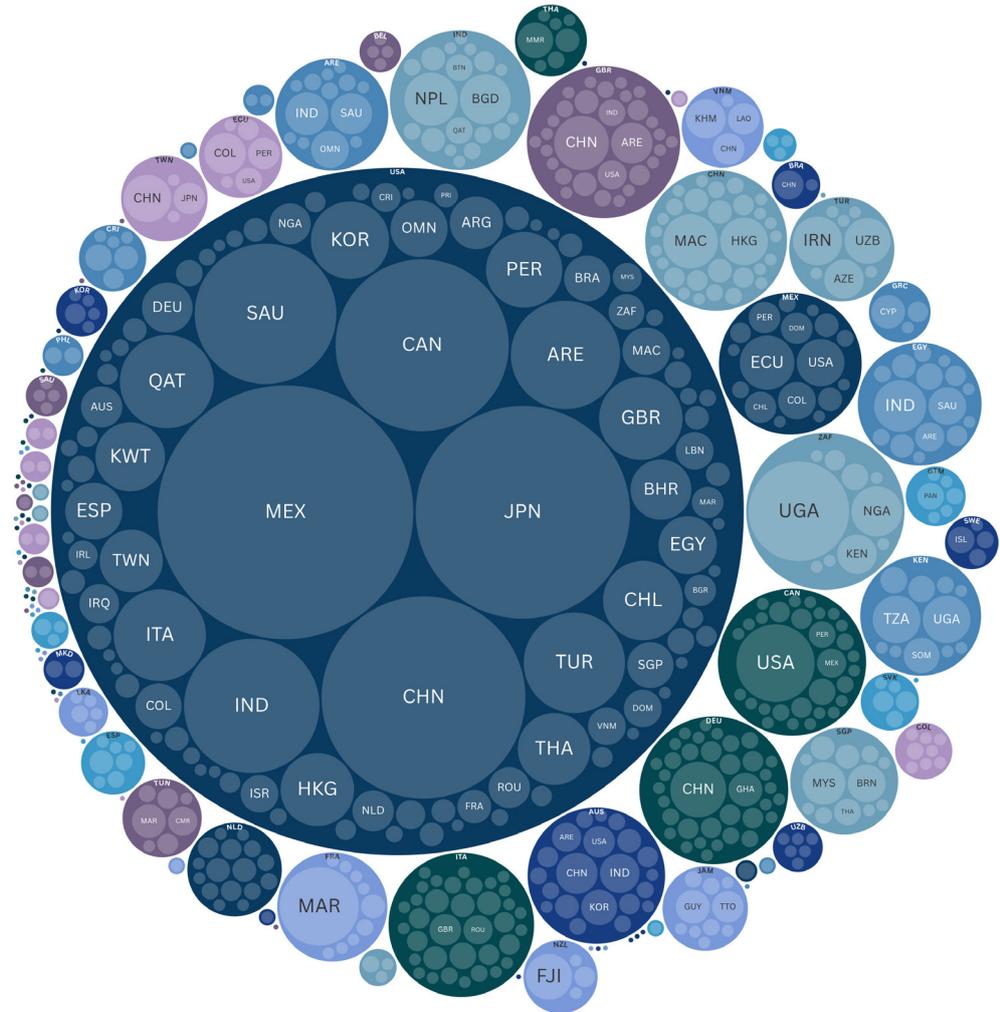


Figure 8: Cross-border Accreditation (2025)

As in the field of metrology, we have also developed a coverage indicator for accreditation. This measures the proportion of accreditation scopes covered by all accreditation bodies in a country. We consider internationally recognised accreditation scopes under the ILAC MRA or the IAF MLA. In 2025, there were six ILAC MRAs at Level 3 (Calibration Laboratories [ISO/IEC 17025], Testing Laboratories [ISO/IEC 17025], Medical Testing Laboratories [ISO 15189], Inspection Bodies [ISO/IEC 17020], Proficiency Testing Providers [ISO/IEC 17043] and Reference Material Producers [ISO 17034]) and four IAF MLAs (Product Certification [ISO/IEC 17065], Management Systems Certification [ISO/IEC 17021-1], Certification of Persons [ISO/IEC 17024] and Validation and Verification [ISO/IEC 17029]).

Coverage can be expanded further if accredited management standards and private certification schemes at Level 5 are also considered.

Based on this, we have developed a new indicator to measure a country's experience in accreditation. The Global Accreditation Experience Index (GAEI) measures the number of accreditation scopes covered over time (Ramkissoon & Harmes-Liedtke, 2025). It is based on signature dates published by the IAF and ILAC, which can be traced back to 2000. For each year, the maximum number of scopes that can be achieved is recorded, and then the number of scopes covered by domestic accreditation bodies in each country is determined.

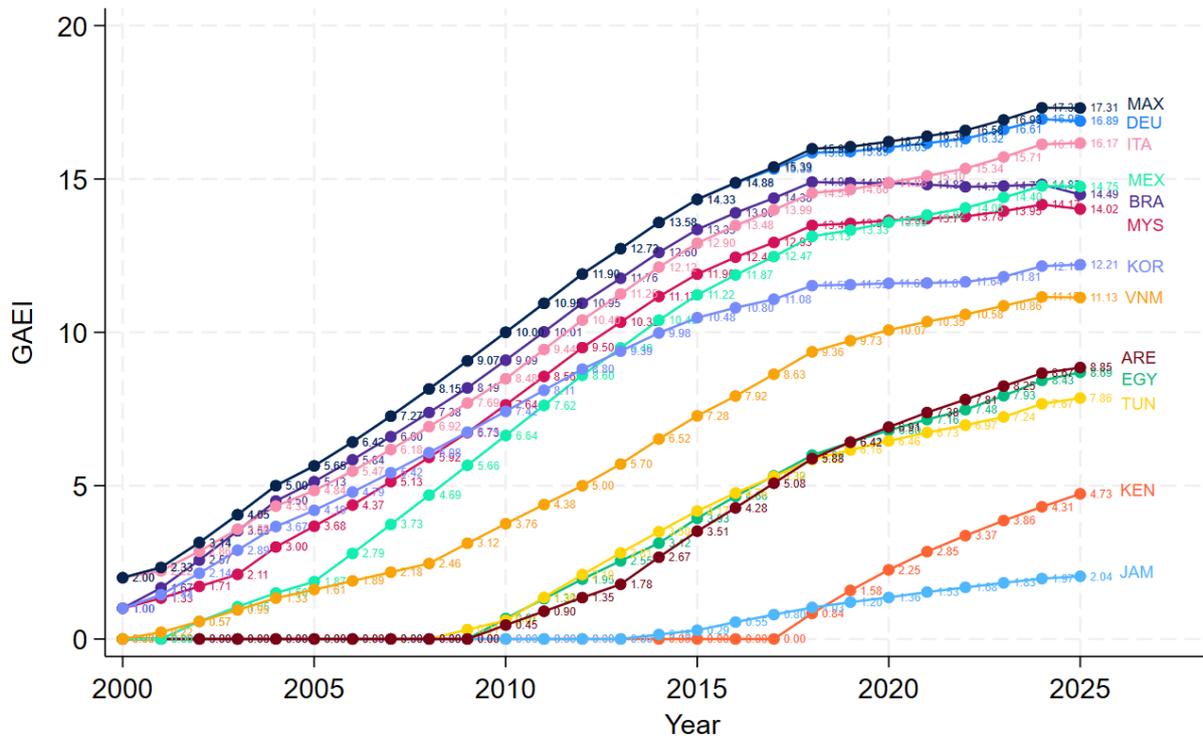


Figure 9 GAEI – Version 3 - 2000-2025 - Selected Countries

Figure 8 illustrates the development of the GAEI for the selected economies. Germany is the current leader in this index. However, as the number of accreditation scopes increases, different dynamics are also becoming apparent. While accreditation scope development in Brazil and Italy was similar for a long time, Italy has adopted many new scopes since 2017, whereas Brazil has lost relative importance. Kenya's dynamic development of accreditation since 2018 is also impressive, with the number of scopes more than doubling compared to Jamaica, which started from the same position.

The GAEI provides a means of reconstructing longer time series on the development of QI systems. These data could be used to both understand QI trajectories (Harmes-Liedtke, Ramkissoon, et al., 2025) and produce cross-country QI impact studies.

## 2.5 GQII ranking

The GQII's core offering is its ranking of quality infrastructure in 185 countries and economies. Figure 10 presents a world map that provides an overview of the current state of quality infrastructure development worldwide. In this figure, countries are ranked according to a colour scale ranging from dark blue to purple and grey to brown and orange. Leading countries in the field of QI can be found in all regions of the world, with Europe, North America, and parts of Asia standing out. Africa remains the continent with the least developed QI. Overall, the situation has barely changed from 2023 to 2025. This demonstrates that it takes a comparatively long time for a country to fundamentally change its QI equipment.

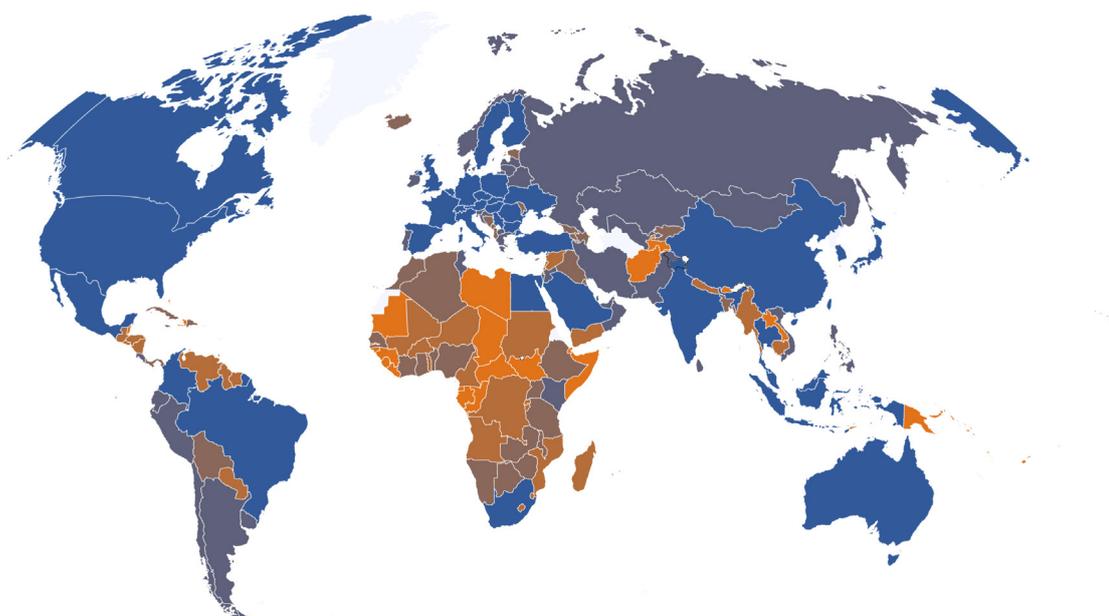


Figure 10: Global QI development map. Source: GQII

The actual ranking of the 185 economies can be viewed in table form. For a better overview, we have divided the ranking into three groups: 1-60, 61-120 and 120-185. We have used the 3-digit ISO 3166 country codes to name the economies. In addition to the general QI ranking, we have included the rankings for the three components (standardisation, metrology and accreditation), as in previous years.

Country Name	Country code	GQII	Standardization	Metrology	Accreditation
Germany	DEU	1	2	2	2
United States of America (the)	USA	2	9	1	1
China	CHN	3	1	3	9
United Kingdom of Great Britain and Northern Ireland (the)	GBR	4	5	4	6
Italy	ITA	5	4	10	5
Korea, Republic of	KOR	6	6	6	13
Japan	JPN	7	3	5	17
France	FRA	8	7	7	21
Spain	ESP	9	10	14	10

Poland	POL	10	12	18	8
India	IND	11	8	31	7
Czechia	CZE	12	15	16	12
Türkiye	TUR	13	21	12	11
Mexico	MEX	14	44	8	3
Australia	AUS	15	14	17	26
Canada	CAN	16	31	13	14
Brazil	BRA	17	21	8	34
Hungary	HUN	18	19	20	16
South Africa	ZAF	19	30	11	27
Netherlands (Kingdom of the)	NLD	20	16	22	18
Switzerland	CHE	21	17	15	39
Sweden	SWE	22	11	19	38
Indonesia	IDN	23	38	32	4
Malaysia	MYS	24	28	25	19
Romania	ROU	25	12	32	36
Egypt	EGY	26	40	24	15
Slovakia	SVK	27	36	29	24
Ukraine	UKR	28	39	25	29
Thailand	THA	29	36	21	37
Finland	FIN	30	24	25	43
Singapore	SGP	31	45	28	25
Bulgaria	BGR	32	27	39	35
Belgium	BEL	33	23	45	31
Saudi Arabia	SAU	34	34	44	27
Austria	AUT	35	18	22	58
Serbia	SRB	36	29	36	46
Colombia	COL	37	48	38	20
Portugal	PRT	38	26	36	50
Norway	NOR	39	33	49	33
Denmark	DNK	40	31	40	49
Argentina	ARG	41	41	30	52
New Zealand	NZL	42	47	42	44
Greece	GRC	43	34	64	41
United Arab Emirates (the)	ARE	44	52	47	42
Ireland	IRL	45	42	54	53
Chile	CHL	46	54	51	48
Slovenia	SVN	47	51	46	54

Kazakhstan	KAZ	48	70	43	32
Viet Nam	VNM	49	63	65	23
Peru	PER	50	55	58	55
Belarus	BLR	51	53	34	80
Uzbekistan	UZB	52	57	72	29
Kenya	KEN	53	64	48	57
Philippines (the)	PHL	54	50	67	59
Russian Federation (the)	RUS	55	20	34	117
Pakistan	PAK	56	46	70	64
Croatia	HRV	57	49	49	86
Taiwan (Province of China)	TWN	58	111	41	22
Lithuania	LTU	59	69	53	60
Ecuador	ECU	60	90	57	40

Table 6: GQII 2025 Top 60 Ranks

At the top of the rankings are Germany (DEU), the United States of America (USA) and the People’s Republic of China. DEU occupies first place overall, although the country only ranks second in all components. The USA leads the ranking in metrology and accreditation but only ranks 9th in standardisation. The latter can be explained by the fact that the ‘industry standards’ published by large US-based standards developing organisations (SDOs) are frequently used. Still, unlike formal international standards from ISO and IEC, they are not taken into account in the GQII. China leads the ranking in the field of standardisation, ranks third in metrology and ninth in accreditation.

The top 60 includes countries from all continents. Europe, particularly the member states of the European Union, carries significant weight. The top 60 also include populous countries such as India (11th), Brazil (17th) and Indonesia (23rd), as well as emerging markets, such as Saudi Arabia (34th), Colombia (37th) and Vietnam (49th).

While some countries, such as Hungary, Malaysia and New Zealand, have similar rankings in all areas, others, such as Mexico, Austria, the Russian Federation and Taiwan, have significantly lower rankings in certain areas. There are usually plausible explanations for this asymmetrical QI development. For instance, Mexico uses a relatively large number of US-based standards, and the accreditations of the Russian Federation are currently not fully recognised internationally due to economic sanctions imposed as a result of the war of aggression against Ukraine.

Country Name	Country code	GQII	Standardization	Metrology	Accreditation
Tunisia	TUN	61	65	61	62
Iran (Islamic Republic of)	IRN	62	24	62	106
Uruguay	URY	63	72	55	65
Sri Lanka	LKA	64	67	83	51
Israel	ISR	65	43	60	104
Costa Rica	CRI	66	100	52	56
Latvia	LVA	67	88	75	45
Luxembourg	LUX	68	60	92	66

Qatar	QAT	69	62	86	68
Hong Kong, China	HKG	70	116	56	46
Oman	OMN	71	59	93	69
North Macedonia	MKD	72	79	77	67
Jordan	JOR	73	78	74	78
Mongolia	MNG	74	80	95	63
Estonia	EST	75	77	63	91
Morocco	MAR	76	68	59	105
Albania	ALB	77	94	87	61
Moldova (the Republic of)	MDA	78	92	81	71
Cyprus	CYP	79	71	122	70
Kuwait, the State of	KWT	80	66	90	90
Georgia	GEO	81	95	80	73
Tanzania, the United Republic of	TZA	82	87	98	72
Azerbaijan	AZE	83	89	72	85
Nigeria	NGA	84	56	122	99
Iraq	IRQ	85	57	76	123
Bahrain	BHR	86	84	107	75
Zimbabwe	ZWE	87	96	91	74
Algeria	DZA	88	60	103	109
Bangladesh	BGD	89	73	85	101
Montenegro	MNE	90	84	66	108
Bosnia and Herzegovina	BIH	91	73	69	118
Mauritius	MUS	92	97	93	79
Côte d'Ivoire	CIV	93	86	127	77
Zambia	ZMB	94	111	95	76
Namibia	NAM	95	107	95	81
Botswana	BWA	96	110	89	83
Ethiopia	ETH	97	80	84	115
Bolivia, Plurinational State of	BOL	98	98	78	102
Ghana	GHA	99	76	99	121
Senegal	SEN	100	105	132	82
Panama	PAN	101	91	78	125
Armenia	ARM	102	102	124	96
Iceland	ISL	103	82	105	124
Jamaica	JAM	104	113	87	111
Malta	MLT	105	83	100	128
Cuba	CUB	106	115	68	126

Malawi	MWI	107	129	132	84
Uganda	UGA	108	75	127	130
Kyrgyz Republic	KGZ	109	163	71	100
Benin	BEN	110	118	127	94
Dominican Republic (the)	DOM	111	106	109	116
Congo (the Democratic Republic of the)	COD	112	124	144	89
Togo	TGO	113	128	144	88
Eswatini	SWZ	114	140	132	87
Mali	MLI	115	122	144	93
Trinidad and Tobago	TTO	116	100	102	131
El Salvador	SLV	117	109	108	120
Guatemala	GTM	118	108	109	122
Mozambique	MOZ	119	134	144	92
Burkina Faso	BFA	120	132	132	103

Table 7: GQII 2025 Ranks 61 to 120

Tunisia leads the second group, ranked 61 to 120. The country also has a reasonably balanced QI development across all components. This second group includes several medium-sized economies with corresponding quality infrastructure. Some African and Caribbean countries benefit from being involved in subregional cooperation.

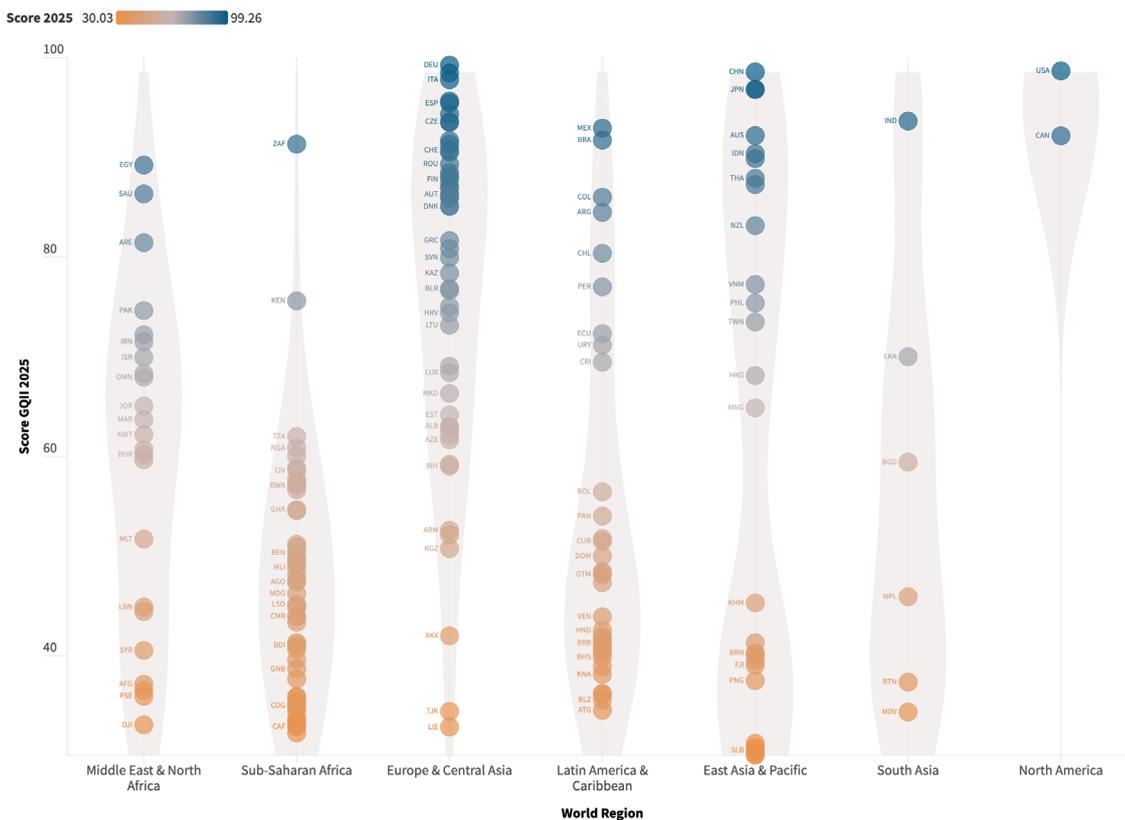
Country Name	Country code	GQII	Standardization	Metrology	Accreditation
Angola	AGO	121	147	132	94
Paraguay	PRY	122	122	82	137
Madagascar	MDG	123	150	144	97
Nepal	NPL	124	99	132	134
Cambodia	KHM	125	127	101	132
Lesotho	LSO	126	161	144	97
Lebanese Republic	LBN	127	93	171	136
Seychelles	SYC	128	156	127	107
Yemen	YEM	129	121	174	112
Cameroon	CMR	130	104	132	143
Rwanda	RWA	131	102	132	145
Venezuela (Bolivarian Republic of)	VEN	132	151	106	127
Niger (the)	NER	133	159	144	110
Honduras	HND	134	138	125	133
Kosovo	XKX	135	145	172	119
Guyana	GUY	136	144	111	138
Nicaragua	NIC	137	154	125	128

Sudan (the)	SDN	138	119	132	150
Myanmar	MMR	139	120	144	142
Barbados	BRB	140	129	111	154
Burundi	BDI	141	116	144	149
Saint Lucia	LCA	142	137	111	150
Comoros	COM	143	180	144	112
Suriname	SUR	144	142	111	150
Syrian Arab Republic (the)	SYR	145	126	104	170
Grenada	GRD	146	140	111	153
Brunei Darussalam	BRN	147	153	127	140
Macao, China	MAC	148	146	144	135
Bahamas (the)	BHS	149	133	144	146
Somalia	SOM	150	149	144	139
Lao People's Democratic Republic	LAO	151	139	144	144
Fiji	FJI	152	125	144	157
Haiti	HTI	153	135	111	170
Guinea-Bissau	GNB	154	180	174	112
Saint Kitts and Nevis	KNA	155	147	111	162
Mauritania	MRT	156	155	144	147
Papua New Guinea	PNG	157	136	144	160
Bhutan	BTN	158	152	173	141
Afghanistan	AFG	159	114	174	170
Libya	LBY	160	143	144	170
Dominica	DMA	161	163	111	162
Saint Vincent and the Grenadines	VCT	162	162	111	170
Palestine, State of	PSE	163	131	174	159
Gambia (the)	GMB	164	165	144	154
South Sudan	SSD	165	166	144	154
Belize	BLZ	166	172	111	162
Chad	TCD	167	157	144	162
Congo	COG	168	169	132	160
Sierra Leone	SLE	169	160	144	170
Antigua and Barbuda	ATG	170	179	111	170
Gabon	GAB	171	170	132	170
Tajikistan	TJK	172	173	132	162
Maldives	MDV	173	166	174	147
Cabo Verde	CPV	174	171	144	170
Guinea	GIN	175	174	144	170

Liberia	LBR	176	176	144	162
Djibouti	DJI	177	158	174	170
Central African Republic (the)	CAF	178	176	144	170
Liechtenstein	LIE	179	166	174	158
Equatorial Guinea	GNQ	180	183	144	170
Vanuatu	VUT	181	175	174	170
Timor-Leste	TLS	182	178	174	170
Solomon Islands	SLB	183	182	174	162
Samoa	WSM	184	185	174	162
Tonga	TON	185	184	174	170

Table 8: GQII2023 Ranks 121 to 185

The third group comprises countries with relatively weak QIs. Some of these countries do not have their own metrology institute or accreditation body, for example. The capabilities within the group vary widely. Also here, some countries benefit from regional services, such as the Southern African Accreditation Service (SADCAS) and the Gulf Cooperation Council Accreditation Centre (GCC GAC). There are particular gaps at the bottom of the ranking, as evidenced by the last ranking numbers, which applies to ten countries in the accreditation area at rank 174.



The width of each curve corresponds with the approximate frequency of data points in area of the graph. The classifications of Economies and Regions are in accordance with World Bank's classification.

Figure 11: GQII score distribution by world region

Figure 11 illustrates the distribution of rankings across various regions worldwide. Except for North America, a wide dispersion of rankings can be seen across all regions. High-ranking economies dominate in Europe and Central Asia, as well as in East Asia and the Pacific region. The reverse is true in Sub-Saharan Africa, Latin America and South Asia. In the Middle East and North Africa, rank values are almost evenly distributed.

## 2.6 Risers and fallers in the GQII ranking

Although the QI is relatively stable in a country and generally develops slowly, it is interesting to look at the changes in ranking. The figure shows the risers and fallers among the 60 leading economies from 2023 to 2025.

As already mentioned in Textbox 2, we have recalculated the GQII ranking for 2023 to make the values comparable with the GQII for 2025. The reason for this was the change in the software used (previously, we had used Tableau, and this time we used STATA). The advantage of STATA is that the ranking can also be calculated with other programmes, e.g., R /COINr (Becker, n.d.). Major changes are particularly evident in the middle and lower part of the first group (ranks 1 to 60). The developments in Uzbekistan (+16 ranks), Malaysia (+9), Egypt (+9) and Saudi Arabia (+9) were particularly positive. Some EU member states, such as Austria (-9) and Denmark (-6), have suffered significant losses.

GQII Rankings 2025 vs 2023: dispersion at the top 60th

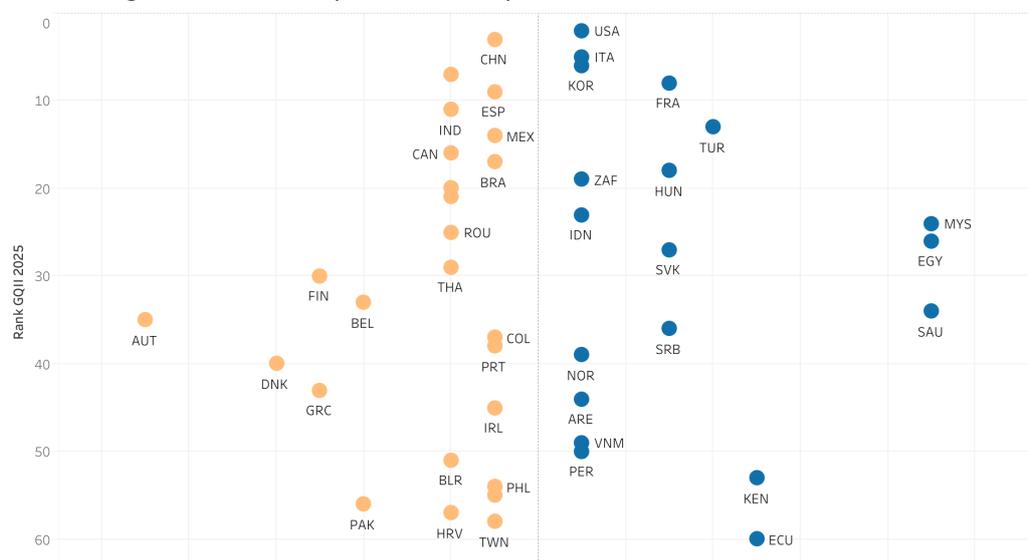


Figure 12: Variation in GQII Ranking 2023/ 2025 in the top 50

In the second group (ranks 61 to 120), Senegal (+18), Kosovo (+16) and North Macedonia (+15) show the most significant increases, while Hong Kong (-10) and Lebanon (-10) show the largest declines. The greatest variations were seen in the last group (ranks 121–185). Here, Togo (+27) and Grenada (+22) show the largest increases, while Palestine (-30), Gabon (-24) and Eswatini (-23) showed the biggest losses.

In principle, an improvement in ranking position indicates above-average development of the QI during the review period. Since the number of QI services increased overall during the period under review, a

minor loss in ranking positions can only represent a relative deterioration, while a country's QI may even have maintained its previous level.

If there is a higher number of ranking losses, a decline in the QI can be assumed.

However, to avoid hasty judgments, we recommend taking a closer look at the development of the 13 individual indicators of the GQII formula for a given economy. Generally, only a few indicators change their values significantly. In a few cases, errors in data availability and provision could also occur:

Compared to the ISO Survey 2022, the ISO Survey 2024 reveals jump in some economies that cannot be attributed to local actors. One example is Colombia, where the number of certifications recorded according to ISO management standards fell from 17,492 to 12,225. We also observe isolated irregularities in the recording of the number of accredited bodies by the ABs. For example, the Greek accreditation body added 465 testing laboratories in 2023, whereas in 2025, it did not provide any information, despite our request. As the website did not distinguish between testing and calibration laboratories under ISO/IEC 17025, we were unable to determine the exact number of accredited testing laboratories. We were only able to record two testing laboratories for Greece that were accredited by foreign AB's.

These problems underscore the need for improvement in data collection by QI bodies, as well as their regional and international cooperation. However, the presentation of time series in the GQII makes these errors detectable, and they can be corrected in future editions.

Nevertheless, we consider these errors to be marginal and do not call into question the fundamental

statement of the GQII regarding the development status and performance of national QI systems.

### 2.7 Correlations

Correlation analyses are a core element of the GQII reports, where GQII scores are systematically compared with key development indicators and international rankings. These graphs must be interpreted with care: correlations are statistical relationships and do not, on their own, demonstrate causation. Instead, they are used in the GQII as a starting point to explore how quality infrastructure might relate to broader economic, social and institutional outcomes, and to motivate more detailed empirical research drawing on the full GQII database.

#### Size of the economy

The consistently strong positive correlations between GQII scores and indicators such as the Gross Domestic Product (GDP), trade intensity, innovation metrics and lower perceived corruption suggest that economies with more developed quality infrastructure also tend to be more prosperous, more deeply integrated into global markets and institutionally more sophisticated. These patterns support the view that well-functioning systems for metrology, standards, accreditation and conformity assessment help create

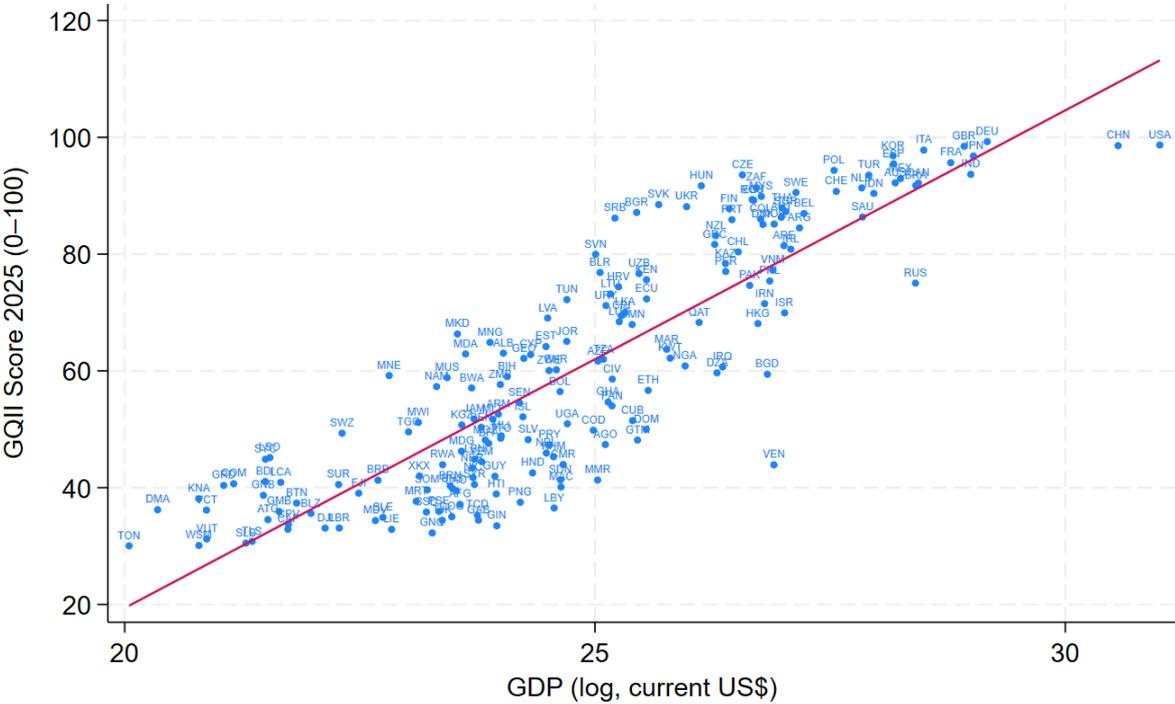


Figure 13 Correlation between the GQII and GDP

favourable framework conditions for competitiveness, diversification and trust in economic transactions, without implying that QI alone is sufficient to deliver these outcomes. Higher GQII values, therefore, should not be read as proof that upgrading QI will automatically increase income, exports, innovation or governance quality, but rather as evidence that QI forms an important pillar within a broader set of mutually reinforcing policies, institutions and capacities that shape development trajectories.

The correlation graph in Figure 13 between GQII scores and GDP (log, current US\$) shows a strong positive association, with a correlation coefficient of 0.8702, meaning that richer economies tend to have more advanced QI systems. Most countries are distributed tightly around the regression line, indicating that differences in GDP explain a large share of the variation in GQII scores, even though individual trajectories and policy choices still create visible deviations from the trend.

One notable outlier is Venezuela (VEN), which appears below the regression line and thus has more GDP than would be expected from its GQII level, pointing to relatively weak QI development given its income

level. This discrepancy can plausibly be related to the country's prolonged international isolation and its historically oil-dependent economic structure, in which export revenues and measured GDP were less tightly linked to diversified production, broad-based industrial capabilities and the institutional investments in metrology, standards, accreditation and conformity assessment that the GQII captures.

### Trade

The development of QI is closely linked to the development of world trade and globalisation. The following two graphs, Figure 14 and Figure 15, illustrate how strongly the level of QI, measured by the GQII, is associated with a country's participation in world trade. On both the export and import side, higher trade values (in logarithmic current US dollars) go hand in hand with higher GQII scores, which reflect the deep structural link between QI development, globalisation and the reduction of technical barriers to trade. This is consistent with the logic of the WTO TBT Agreement, where transparent regulation, harmonised standards and mutual recognition - all core QI functions - facilitate market access and reduce friction for internationally active firms.



Figure 14: Correlation between the GQII and exports

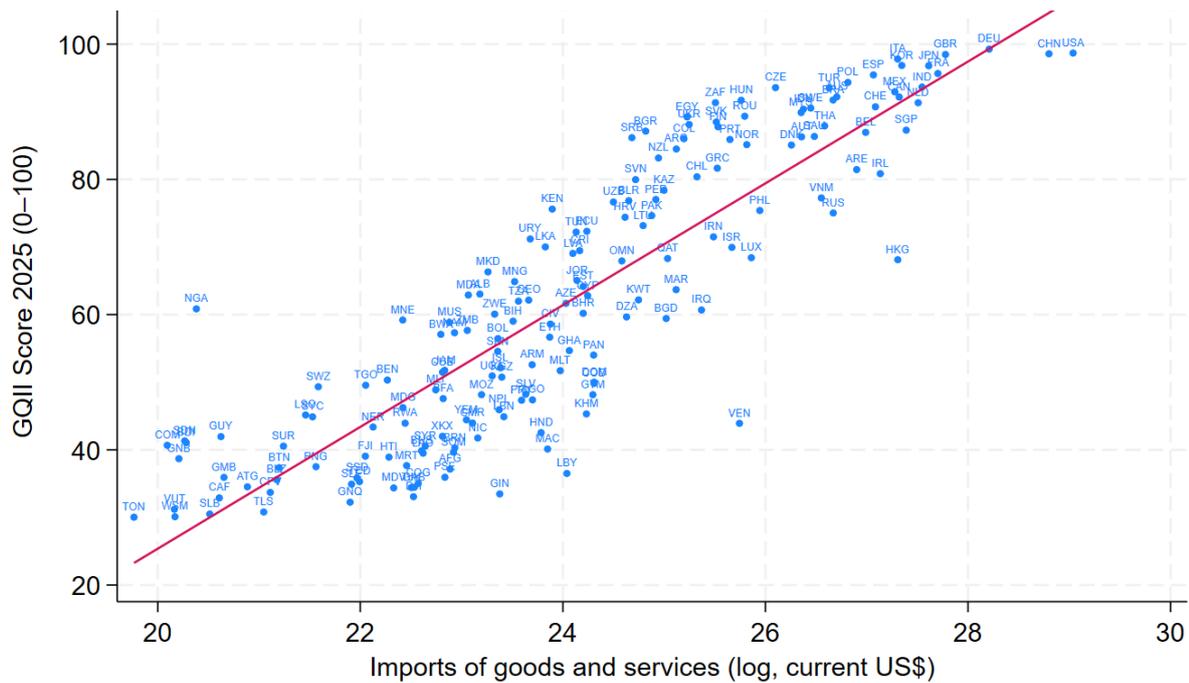


Figure 15: Correlation between the GQII and imports

Figure 15 illustrates an even stronger relationship between GQII scores and imports of goods and services, with a correlation coefficient of 0.8791. This indicates not only that trading countries generally invest in stronger QI, but also that robust QI systems are essential to protect domestic consumers and producers when importing foreign products, for example, through testing, certification and market surveillance. In both graphs, Nigeria (NGA), Hong Kong (HKG), Venezuela (VEN) and Libya (LBY) appear as outliers, meaning that their trade volumes are relatively high or low compared to what would be expected from their QI development level, which points to country-specific factors such as resource dependence, economic structure or particular integration into regional trade that cannot be fully captured by GQII alone.

#### Economic complexity

Figure 16 compares GQII scores with the Economic Complexity Index (ECI), suggesting a clearly positive relationship: countries with more sophisticated and diversified export structures - those that score higher on ECI- also tend to have more advanced QI systems (Hausmann, Ricardo et al., 2013). This is intuitive, because exporting many complex products that few others can supply requires dense networks of capabilities, including reliable metrology, standards, accreditation and conformity assessment to coordinate value chains, meet technical regulations in multiple markets and manage quality risks across a broad product portfolio.



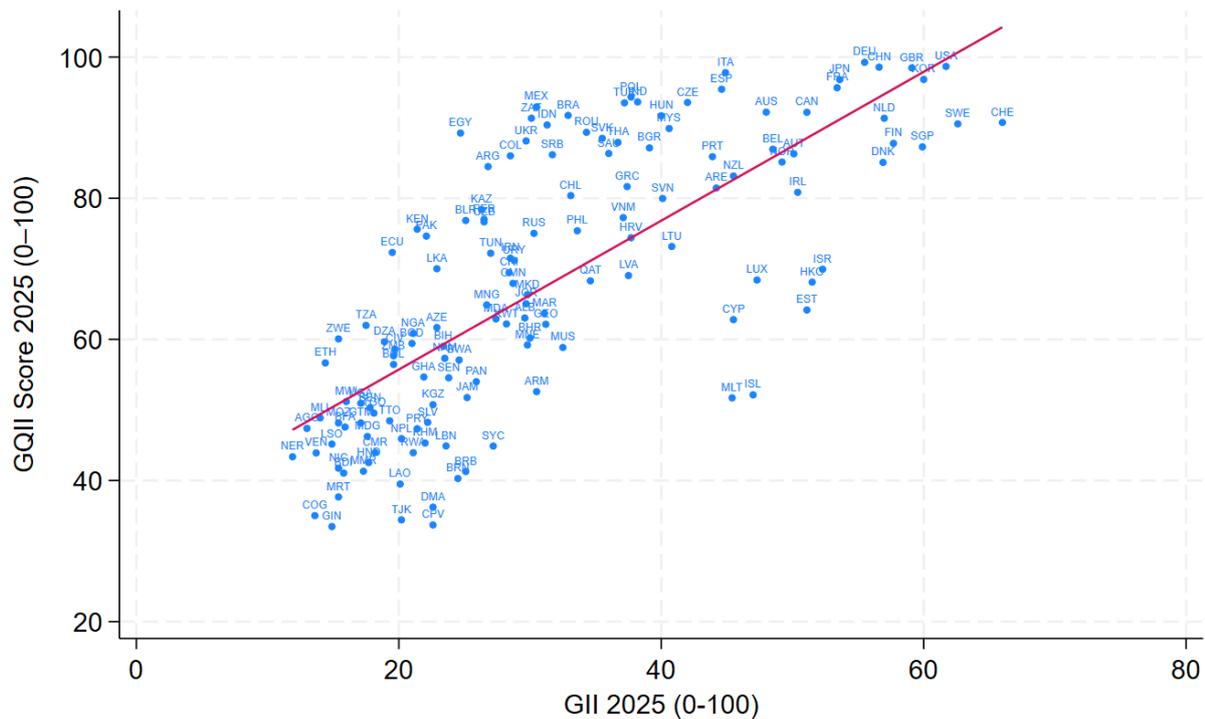


Figure 17: Correlation between the GQII and GII

### Transparency

The relationship between a country’s QI development and its level of transparency appears to be positive but modest. Figure 18 compares GQII scores with the Corruption Perceptions Index (CPI) 2024<sup>4</sup>, showing that countries perceived as less corrupt (higher CPI values) tend on average to have more developed QI systems, but the data points are relatively widely dispersed around the regression line, and the correlation coefficient of 0.4847 is clearly lower than for GDP or

trade. This suggests that an open, rules-based public sector environment and a culture of integrity generally provide more fertile ground for effective metrology, standards, accreditation, and conformity assessment. Yet many countries with similar CPI scores display quite different QI development levels, indicating that transparency is only one of several factors shaping QI performance.

<sup>4</sup> <https://www.transparency.org/en/cpi/2024> (accessed 31/12/25)

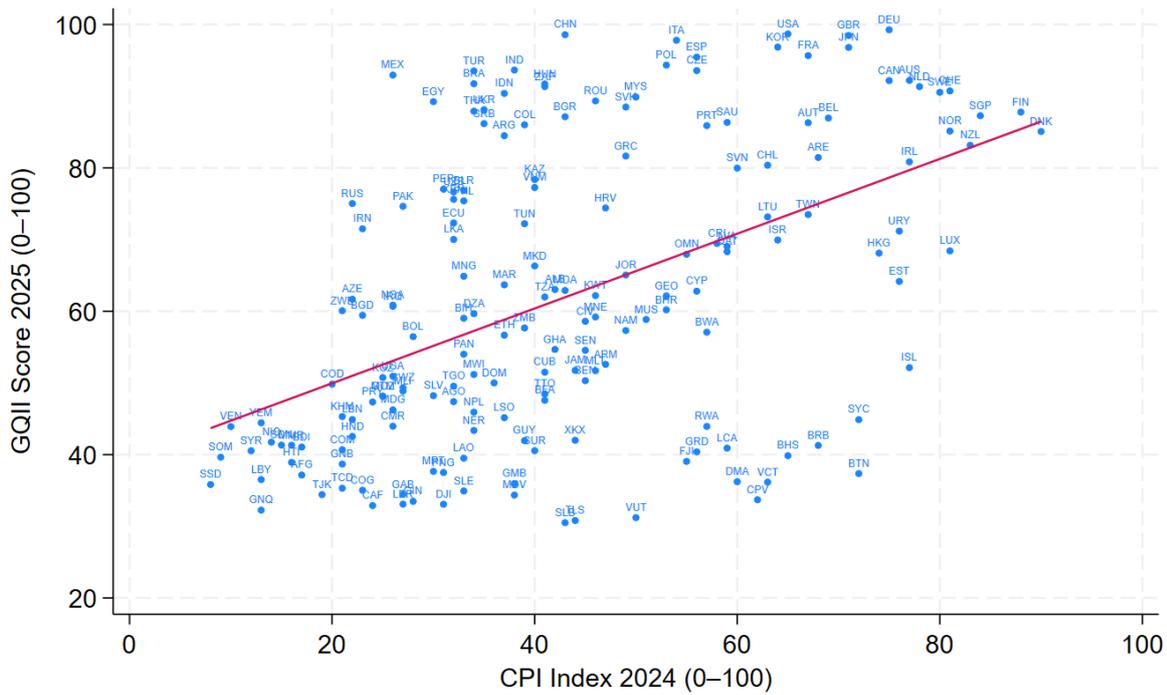


Figure 18: Correlation between the QII and CPI

At the same time, QI can itself be used as a tool to strengthen integrity and reduce corruption risks. ISO 37001 on anti-bribery management systems offers a concrete instrument for QI bodies, enterprises and public organisations to formalise controls against bribery, and its recent inclusion under the IAF MLA reinforces the credibility of accredited certification in this field. Likewise, the systematic use of accreditation - together with rigorous peer evaluation of accreditation bodies - introduces external oversight, documented procedures and traceability into conformity assessment, which can help limit discretionary decision-making and create more transparent, auditable processes within the QI system.

**SDGs**

From a development policy perspective, it is crucial to examine how the QII relates to countries' progress towards achieving the Sustainable Development Goals (SDGs). The analysis uses the Sustainable Development Index 2025<sup>5</sup>, which ranks all 193 UN member states according to their overall SDG performance. The composite score, scaled from 0 to 100, indicates how close each country is to fully achieving the 17 SDGs and can be interpreted as a percentage of SDG achievement. Plotting this SDG Index against the QII shows a clear upward trend: countries with higher SDG scores tend to have more developed QI systems, and vice versa.

<sup>5</sup> <https://dashboards.sdgindex.org> (accessed 31/12/25)



Figure 19: Correlation between the GQII and SDGs

The correlation coefficient of 0.7054 points to a strong positive association between QI development and SDG performance, albeit with noticeable dispersion around the regression line. This suggests that robust arrangements for metrology, standards, accreditation and conformity assessment are an important enabling factor for implementing sustainability policies - by supporting, for example, safe water and energy systems, low-carbon technologies, food safety, health services and responsible production - without implying that QI alone is sufficient to deliver SDG outcomes. Rather, the results indicate that countries which invest in QI tend, on average, to be better positioned to design, monitor and enforce the technical and regulatory measures needed to advance their sustainability agendas.

#### QI4SD

Establishing an explicit link between QI and SDGs is the goal of the Quality Infrastructure for Sustainable Development (QI4SD) Index<sup>6</sup> developed by UNIDO in collaboration with INetQI. QI organisations see themselves as pioneers in achieving the Sustainable Development Goals (SDGs), which are essential for protecting the planet, ensuring a dignified life for all and achieving inclusive economic growth and prosperity (UNIDO, 2024).

<sup>6</sup> <https://hub.unido.org/qi4sd/?year=2024> (accessed 14/01/2026)

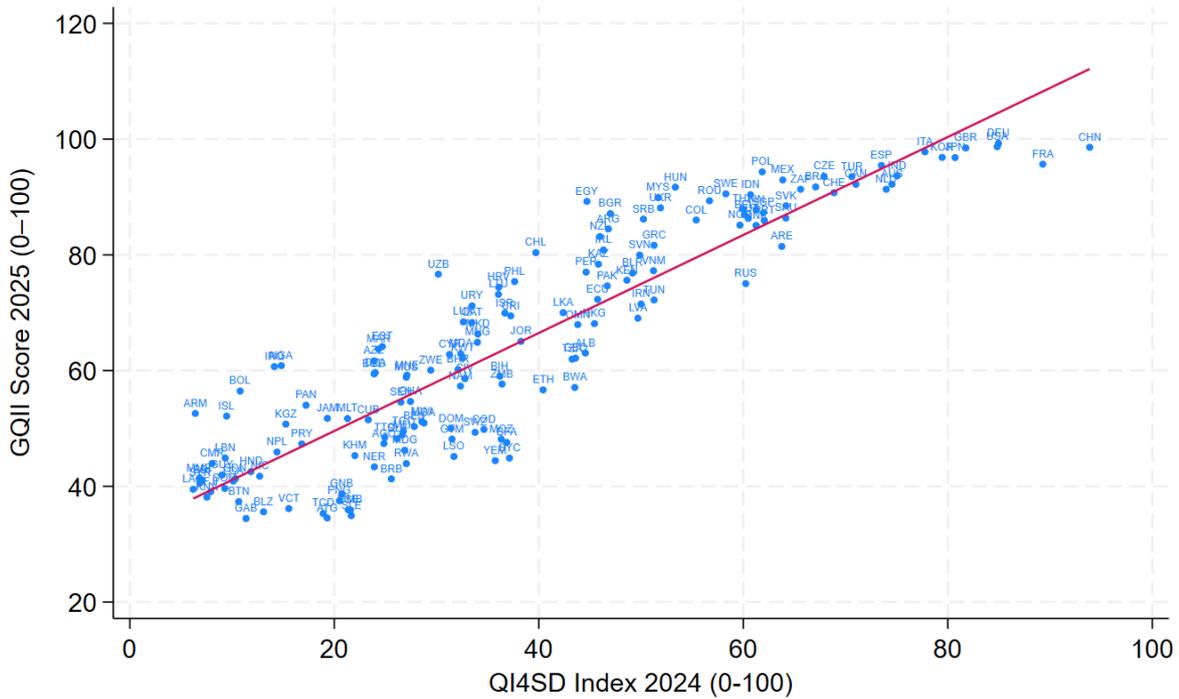


Figure 20: Correlation between GQII 2025 and QI4SD 2024

The QI4SD assigns the 17 SDGs to the so-called '3 Ps': People, Planet and Prosperity. Aggregation at this level allows for a more accurate analysis based on the canonical 'pillars' of sustainable development: social (people), environmental (planet) and economic (prosperity). Each country is given a score that reflects the status of the QI in the pillars of people, planet and prosperity, using data on social, environmental and economic issues. These scores are calculated using indicators for metrology, standards, accreditation and conformity assessment.

Figure 20 shows the close correlation between the ranking positions of countries in the GQII and the QI4SD. The correlation coefficient between GQII 2025

and QI4SD 2024 is 0.9063. The very high correlation is to be expected, as both indices cover a large number of common indicators, and QI indicators change only slowly. The most important reason for the deviation in results is that the QI4SD also records qualitative information on Quality Policy, which ISO members record in a questionnaire.

#### Correlation profile comparison

The correlation profile shows that GQII scores are most strongly associated with core economic variables, with correlation coefficients around 0.87 for GDP and for the logarithm of exports and imports, indicating that countries that trade more and are wealthier tend to have significantly more developed QI.

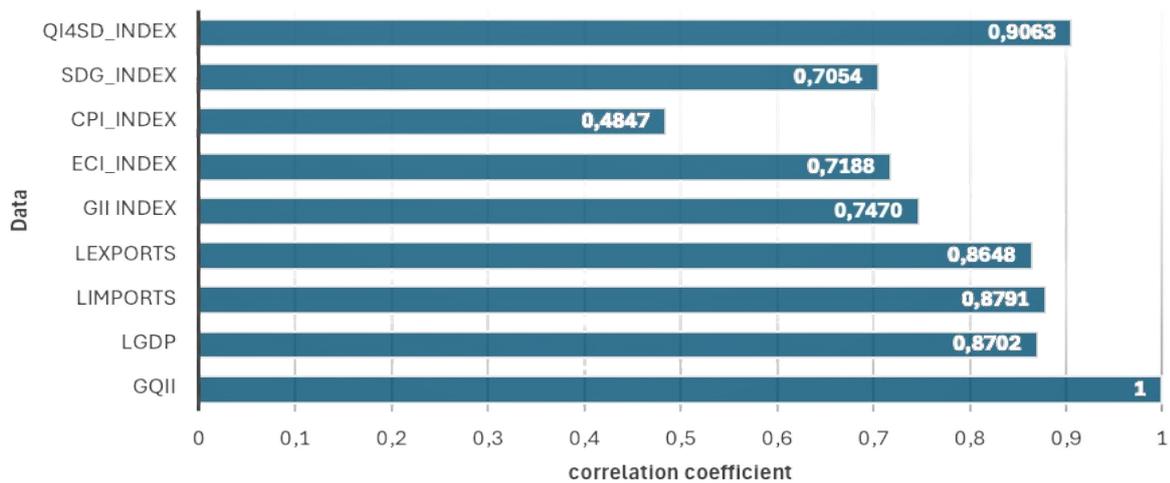


Figure 21: Comparison of correlation coefficients

The QI4SD index, which combines QI with SDG-related policy dimensions, is even more closely aligned with the GQII (correlation 0.9063), suggesting that both indices capture a broadly consistent picture of global QI development. By contrast, the link between QI and perceived corruption, measured by the CPI, is positive but comparatively weak (0.4847). At the same time, correlations with innovation performance (GII), economic complexity (ECI) and progress towards the SDGs lie in the intermediate range (around 0.71–0.75), underlining that advanced QI tends to go hand in hand with more complex, innovative and sustainability-oriented economies, even though many other factors are also at play.

# CONCLUSIONS AND OUTLOOK



The GQII Report 2025 provides a current overview of the global development of QI. Mesopartner has published this report every two years since 2021, enabling us to track QI development.

During the intervening years of 2022 and 2024, UNIDO published the QI4SD, drawing on data collected by us in the field of accreditation in the latest edition. Cooperation between the two teams has intensified in recent years, and the aim for the near future is to work on a joint global QI index.

Data from the GQII and QI4SD reports are essential for monitoring national QI systems. In many countries, those responsible for QI institutions use the indices to plan system development and report on progress to their supervisory authorities. At the same time, both indices serve as crucial benchmarking tools that

encourage learning from successful countries and healthy competition between systems. The data from the indices provide a reliable empirical basis for the development of national and regional quality policies, in particular.

Data from the indices is also increasingly being used in shaping development policy measures. For instance, the GQII has been employed in World Bank projects to estimate the impact of investments in QI through loans. Returns on investment in QI can be calculated based on the correlation with the trade variable. The GQII has also been used as a reliable source of data for various analyses in the 2025 World Development Report, 'Standards for Development' (World Bank Group, 2025) and other publications (Aronov et al., 2024, 2025; Khakifirooz & Tavakoli Golpaygani, 2023; Rab & Brown, 2023; Santos Da Silva et al., 2024). Furthermore, an increasing number of economic and social science publications are based on GQII data.

Despite intensive work and growing recognition, the empirical basis of QI is still in its infancy. For now, it is crucial that institutions responsible for QI, at all levels of economy and national and international cooperation, recognise the value of QI data and make it available openly and transparently. Much of the existing QI data that could contribute to understanding its impact is held within organisations but is not shared. Examples include the number of harmonised standards; the number of standards sold per country and the number of certified products.

Furthermore, QI institutions must overcome their 'time blindness' and provide comparable data in time series over longer periods. The GAEI index that we have developed demonstrates how such an undertaking can be achieved with minimal effort.

Another challenge is disaggregating QI data by economic sector and product. The International Classification of Standards (ICS), developed by ISO, could be a helpful tool in this regard. However, this classification system dates from 2015 and urgently needs to be updated to align with other economic statistics, such as the International Standard Industrial Classification (ISIC) and the Harmonised System (HS). Accreditation bodies would also need to make their services available for more detailed statistical analysis.

A globally uniform code for certification bodies and a sectoral classification of accreditation certificates would be extremely helpful. The ongoing process of digitalisation of QI would make it possible to add such classifications with minimal effort. This would contribute to the interoperability, productivity and transparency of QI.

The authors of this report are committed to collaborating with other stakeholders to establish an empirical basis for QI. Readers of this report are also invited to use the empirical material from the GQII for further analysis; this material can be downloaded from <https://gqii.org>. While this report provides an overview of QI development, the data could be used for specific applications. Finally, we welcome comments and suggestions from readers regarding the further development of QI indices, as well as the use of the data to improve understanding of QI and its future prospects.

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