

SIM Metrology School

“The Quality Infrastructure (QI) and the role of the NMI”

SPEAKER

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Centro Nacional de Metrología de Panamá AIP
(CENAMEP AIP)

Bogotá, Colombia | August 2024




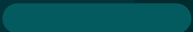
**SIM
METROLOGY
SCHOOL**

Organized by

INM Instituto Nacional
de Metrología
de Colombia

CONTENT



- I. QI Basic Knowledge
 - II. QI Definition
 - III. QI International & Regional Structure
 - IV. QI National Structure
 - V. QI Objectives & Impacts
- 
- 



CONTENT



- I. QI Basic Knowledge



Let us remember some concepts and test ourselves a little

1. ¿Are you part of the QI?

¿Eres parte de la IC?

2. ¿How many QI pillars are there?

¿Cuántos son los pilares de la IC?

3. ¿Can you name them?

¿Puedes nombrarlos?

4. ¿What do I understand for QI?

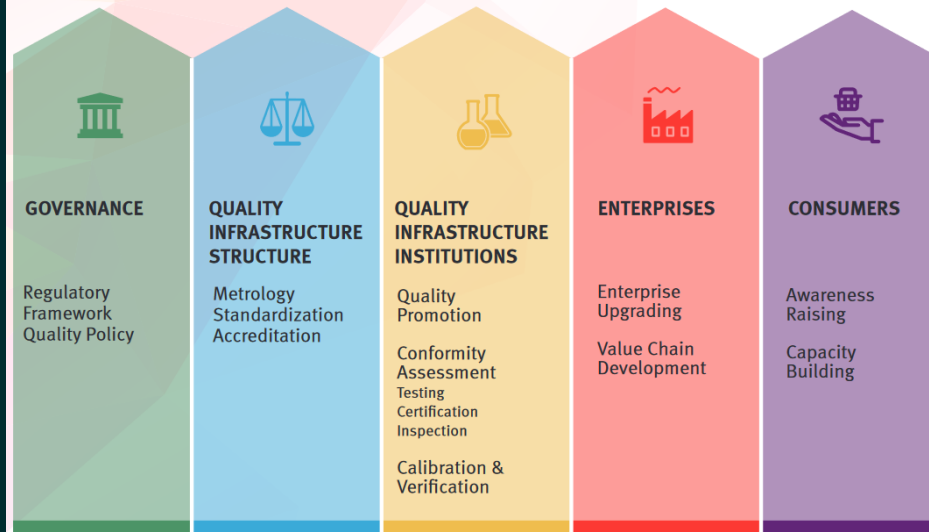
¿Qué entiendo por IC?



CONTENT

- II. QI Definition

QUALITY INFRASTRUCTURE SYSTEM



©UNIDO 2018

What is Quality Infrastructure (QI)

What we should know

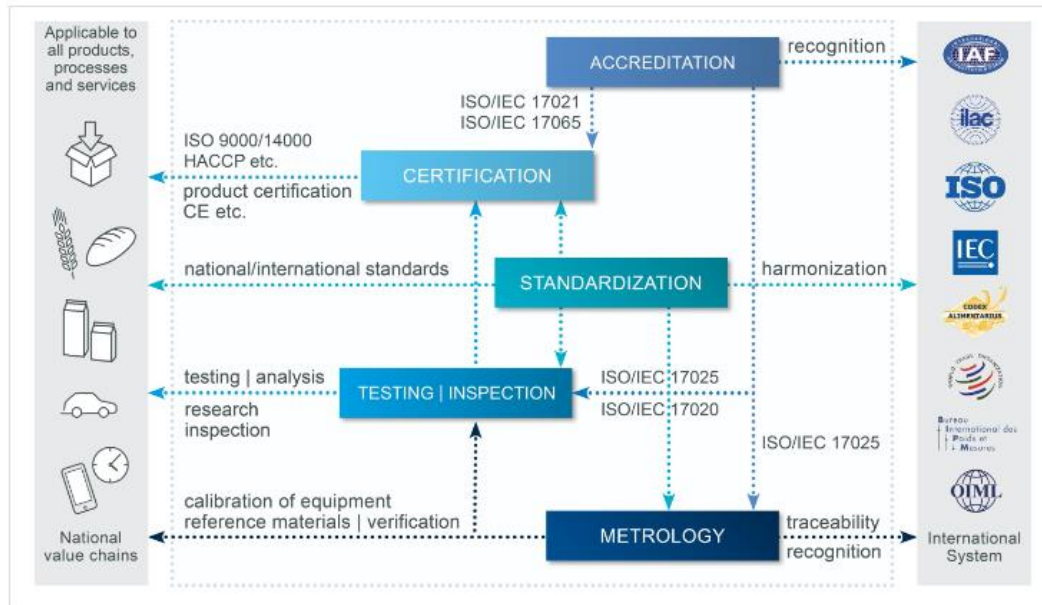
¿Is it new?

The term Quality Infrastructure is relatively new and has so far been familiar to experts only.

¿What is it?

The system comprising the organizations (public and private) together with the policies, relevant legal and regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods, services and processes.

The quality infrastructure is required for the effective operation of domestic markets, and its international recognition is important to enable access to foreign markets. It is a critical element in promoting and sustaining economic development, as well as environmental and social wellbeing.



QI contributes to policy objectives in areas such as:

- Science ,
- Industrial development,
- Trade competitiveness in markets,
- Efficient use of natural resources & food safety,
- Health, Environment and Climate Change.

What is Quality Infrastructure (QI)

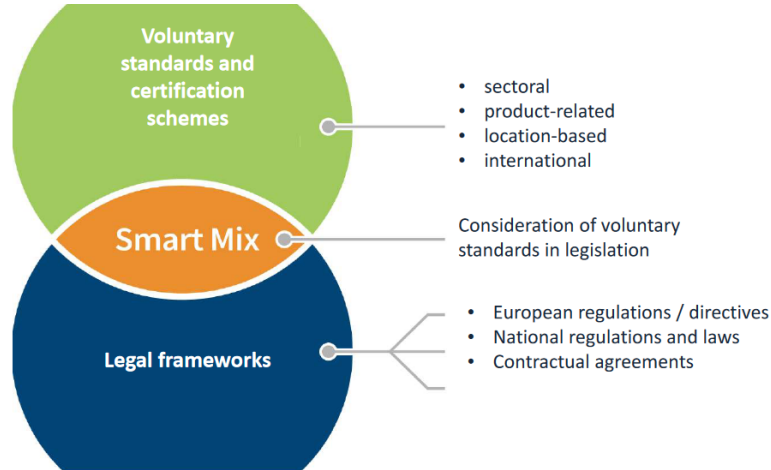
What we should know

¿How does it work?

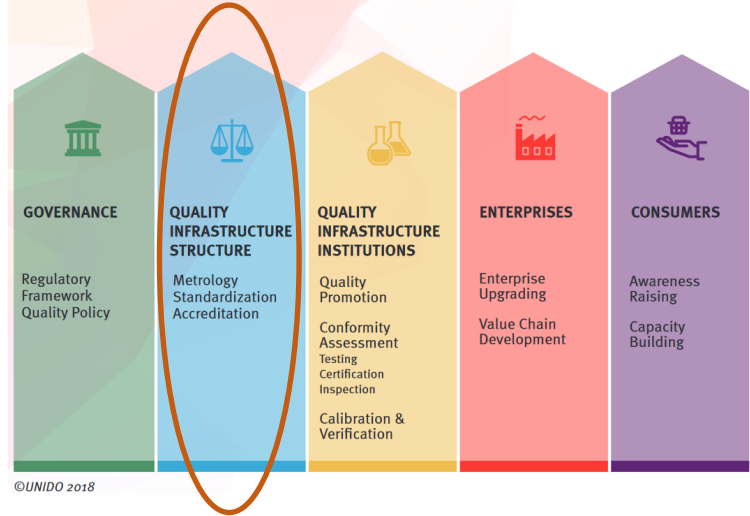
The concept of QI describes the system of Metrology, Standardization, Accreditation, and conformity assessment, which contributes to the safety and quality of products and supports international trade.

All exporting nations have a differentiated national quality infrastructure system.

Also included in this system are technical regulations and market surveillance.



QUALITY INFRASTRUCTURE SYSTEM



“Quality Infrastructure stimulates industrial development, trade competitiveness, innovation and efficient use of resources, while ensuring food safety and protecting human health and the environment.”

Li Yong, Director-General, UNIDO

CONTENT



- III. QI International & Regional Structure

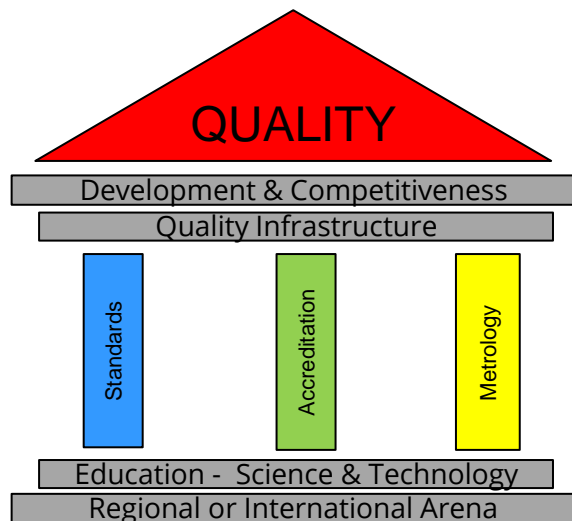


¿How can we implement the QI?

International & Regional work

¿How can we explain QI in simple words?

It is a national, regional and international network of entities and logical processes that guarantees the trust, confidence & "QUALITY" of the products and services we design, manufacture and consume.



¿And, how can we actually implement QI?

The QI is responsible for ensuring compliance with standards and regulations that guarantee a desired level of "QUALITY", through the verification or certification of products and services (Quality Stamp), issued by accredited Conformity Assessment Bodies (CAB), and based on exact measurements of their characteristics and competences.

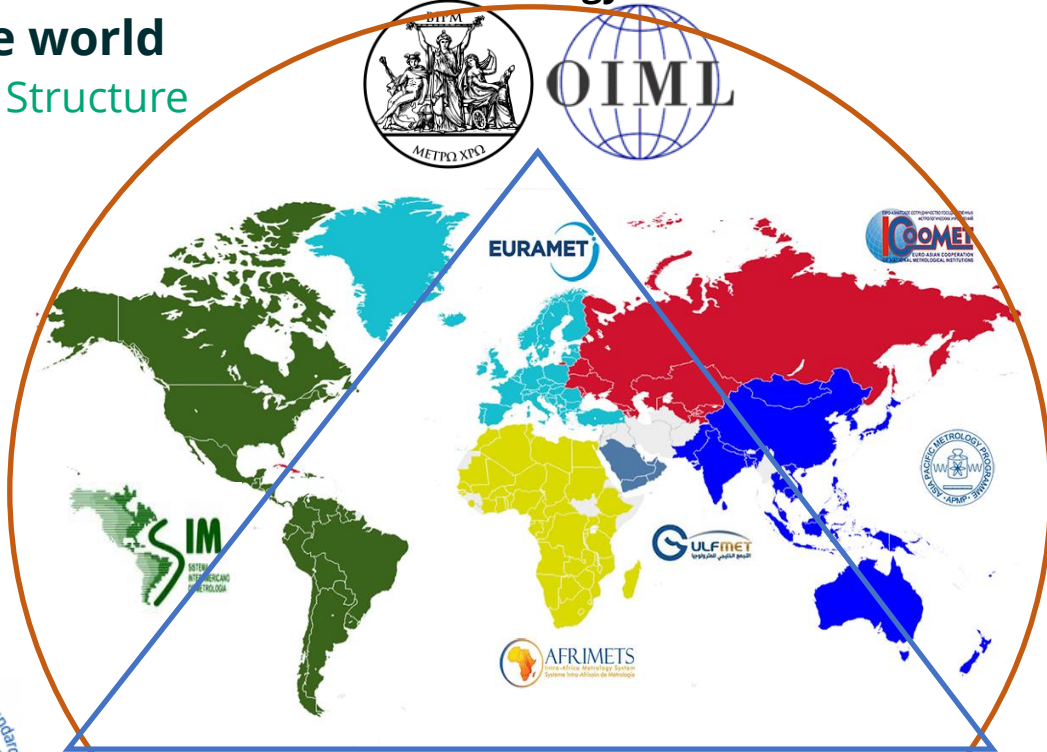




QI around the world

Intel & Regional Structure

Metrology



Standardization



Accreditation



QICA

Quality Infrastructure Council of the
Americas



History

Strategic Plan proposal

Quality Infrastructure Council
of the Americas

QICA website:

<http://qica.site/index.php/es/>



Pan-American Standards
Commission



Inter-American Accreditation
Cooperation



Inter-American Metrology
System

WHAT IS QICA?



The Quality Infrastructure Council of the Americas (QICA), comprises the three independent regional organizations involved in quality infrastructure in America: the Pan American Standards Commission (**COPANT**), the Inter-American Metrology System (**SIM**) and the Inter-American Accreditation Cooperation (**IAAC**).

QICA is a platform to develop joint projects, information sharing, and cross-functional training and development that, by acting collaboratively, exceeds the abilities of any single organization acting alone.

TIMELINE

2003-2015

PTB: Regional project for Environment and food in LAC
OAS: Regional project on Energy Efficient Products in LAC

2003

2011

Constitution of WG3 of OEA (QI)
Nov 17-18: Ministerial meeting of Science and Technology where the WG3 presented the idea of QICA to the ministers in Panama
March: Impact of QI in LAC, NU-CEPAL GIZ-PTB

QICA delegation attends 125 PTB anniversary

PTB: Project "Strengthen of QI for Energy Efficiency in LAC."

2012

Participation of QICA in OAS Ministerial meeting in Guatemala

Formal MOU signature of constitution of QICA in Guatemala

2012-2016

PTB: I Regional project EE & ER in LAC (COPANT, IAAC; SIM)



2014

Participation of QICA in TBT-WTO
QICA report in ExCom meeting and IAAC GA
PTB contracts Beatriz García

2014-2022

PTB: II Regional Project EE & ER in LAC

2014-2017

Project PRACAMS UE y SIECA (IC for sanitary and phytosanitary measures) 2015

Discussion and agreement SIM/IAAC on ILAC P10.
Workshops given by SIM to IAAC members on this topic.

Workshop ISO 17025, Dominican Republic.
Traceability of measurements 17025.



2014

2016

2016
Creation of QICA's logo

Active participation of QICA members
in all their GAs
Organization of Awareness events
associated to GA's

QICA events with national regulators
together with IAAC Assemblies
Workshops QICA in COPANT GA
(2016,2020,2022)

2016-2020
*PTB: Project Biodiversity and Climate
Change*

2016-2019
*PTB: Regional Project in Green
Economy for LAC*

December: Training ISO 17034, El Salvador
ONUDI Document- Roadmap for IC-QICA

Web page of QICA with COPANT support



2017

2018

2018
Asunción: Training ISO/IEC 17025 version 2017
Meeting with regulators in:
Argentina: March 2018
Jamaica: August 2018
Mexico: August 2019



Mexico, 2019
Publication of QICA Brochure (Spanish and English) 2018,2019,2020



2019

2020

2020
Virtual Workshops: Risk management, ILAC G 24
The OEC participated in QICA through IAAC Committee of interested parts.

2021

**QICA is included in IAAC (2021-2026)
Strategic Plan**

QICA Workshop about technical issues
IAAC-SIM

**Approval of reciprocal memberships of
QICA member organizations**

2021-2023

PTB: Project in Circular Economy

2023

February 1

QICA meeting with IAAC,
COPANT and SIM Chairs, Vice-
Chairs and Secretaries

2021

2022

2023

2022

CABUREK CE services
*Steering Committee Meeting in July to propose
Mission, vision and Strategic objectives of QICA.*

*IAAC is admitted as a member of the
Circular Economy Coalition
representing QICA.*





QI around the world

QI around the world

VISION

To be the facilitator recognized for its contribution to the widespread use of quality infrastructure **in the countries of America**, and an international benchmark for **regional collaboration**.

MISSION

QICA is made up of the regional accreditation, metrology and standardization organizations in the Americas, **focused on fostering regional cooperation and national collaboration** to promote the benefits and use of the Quality Infrastructure **in support of the sustainable development of the countries in the region**.



QI around the world

QI around the world

Strategic lines

Establish

Establish QICA presence and leadership in the region.

Generate

Generate links of integration and communication among all QI stakeholders within America.

Analyze

Analyze new trends (market intelligence)

&

Develop new competences (DSG, DT, Governance, ..)

Assure

Assure QICA's financial sustainability



QI around the world
 QI around the world

QICA CONTACTS



COPANT

Mauricio Céspedes, President CRC
Kory Eguino, Ex. Secretary BOL
 keguino@copant.org



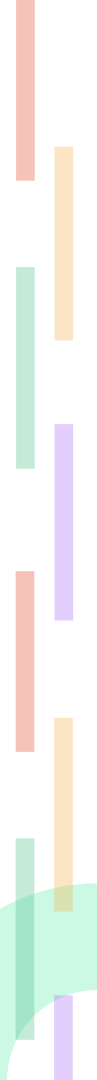
IAAC
 INTER-AMERICAN ACCREDITATION COOPERATION

Andrea Melo, President BRA
Ferney Chaparro, Ex. Secretary COL
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SIM
 SISTEMA INTERAMERICANO DE METROLOGIA

Javier Arias, President PMA
Claudia Santo, Ex. Secretary UGY
 secretariat.sim.org@gmail.com



CONTENT



- IV. QI National Structure



QI National Structures



Areas of interest for National development:
Production,
Sustainability,
Competitiveness, R&D+i

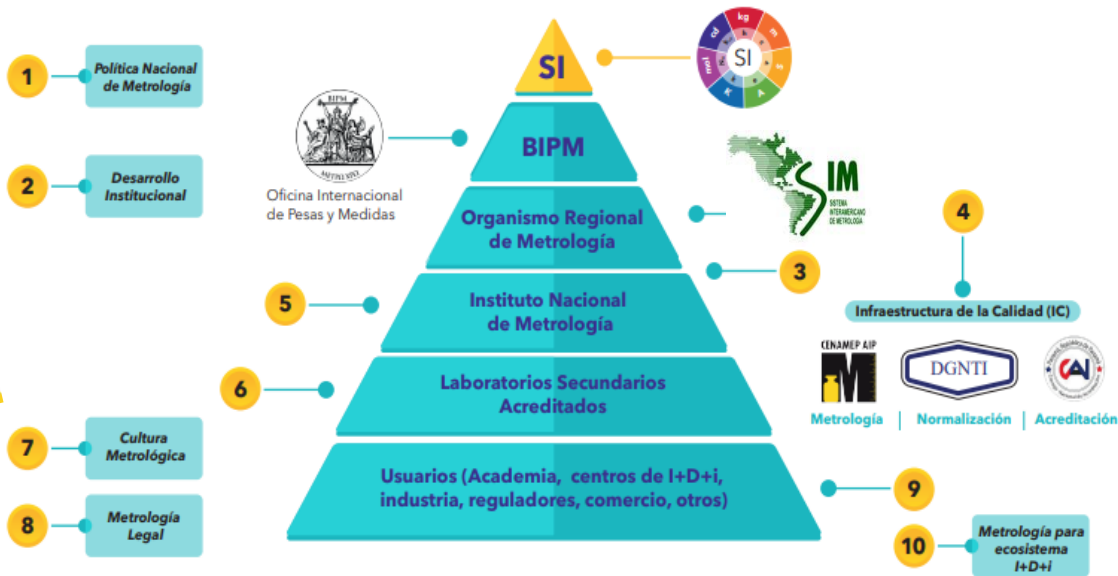


QI National Structure

Intel & Regional Structure

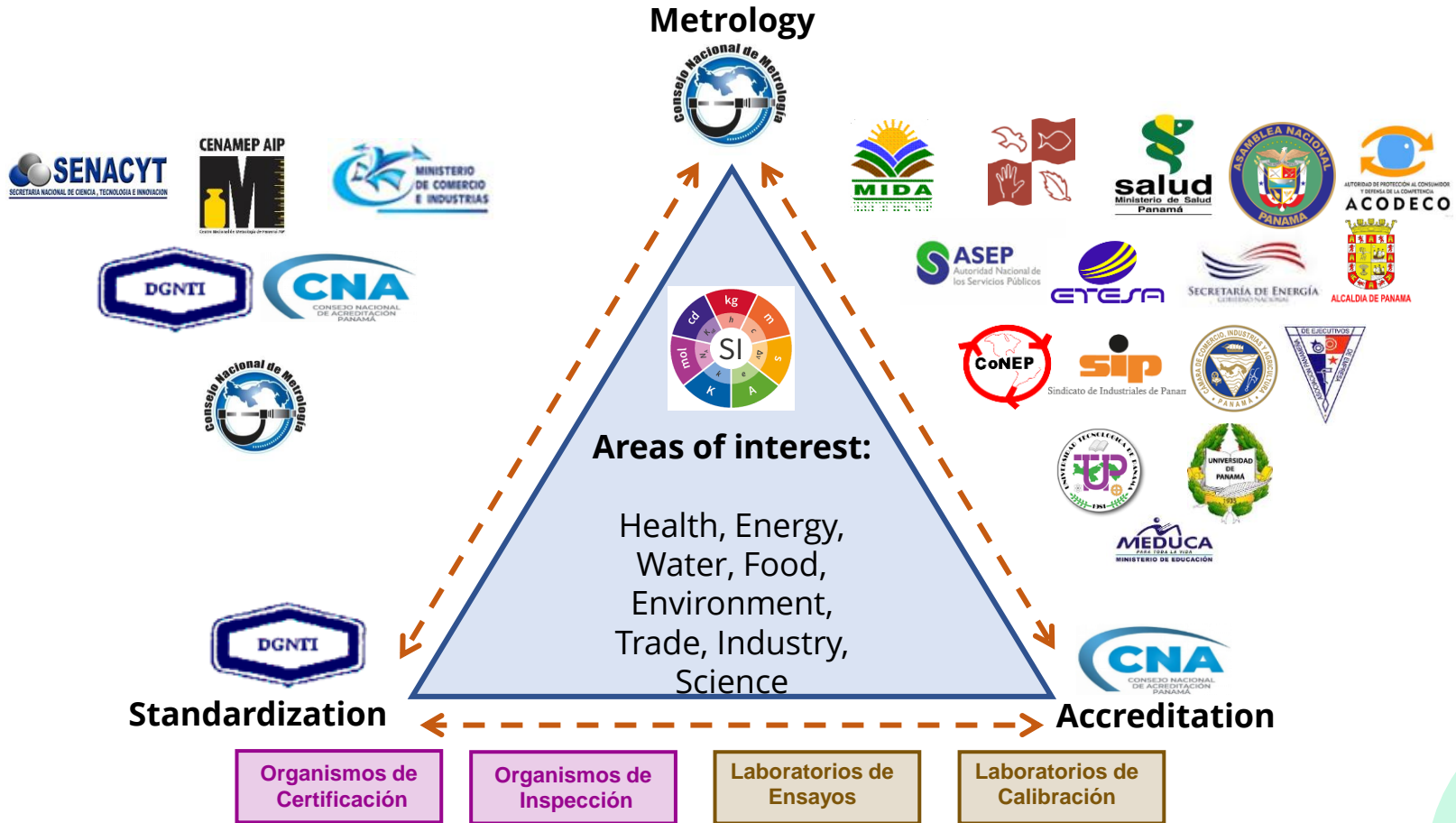


Elementos de la Estrategia Nacional de Metrología



- 1 Política Nacional de Metrología (ver A.1)
- 2 Desarrollo institucional a nivel de referencia (INM y ID) (ver A.2)
- 3 Relación regional e internacional del INM (ver A.3)
- 4 Relación entre los componentes de la Infraestructura de la Calidad (ver A.4)
- 5 Desarrollo de la competencia técnica a nivel de referencia (INM y ID) (ver B.1)
- 6 Desarrollo de laboratorios secundarios (ver B.2)
- 7 Promoción de la cultura metrológica (ver B.3)
- 8 Metrología para la Reglamentación Técnica (Metrología Legal) (ver C.1)
- 9 Metrología para la productividad y competitividad (ver C.2)
- 10 Metrología para el ecosistema de I+D+i (ver C.3)

QI National Structures



CONTENT



- V. QI Objectives & Impacts

- a) SDG Achievement
- b) Strategic Alliances & Indicators
- c) Knowledge Transfer
- d) Support for New Technologies & DT
- e) Tool for Local Governance

QI and SDG Achievement

Some history on them

- ¿What is the origin of the SDG?

The SDGs replaced the Millennium Development Goals (MDGs), which started a global effort in 2000 to tackle the indignity of poverty.

- ¿What International Organization proposed the SDG agenda & How many SDG are there?

¿Do we know?

- ¿What is the timeframe for the SDG agenda?

The SDG were born at the UN Conference on Sustainable Development in Rio de Janeiro in 2012. The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing our world.

- ¿Is there any relationship between the SDG & the QI?

¿What do we think?



QI and SDG Achievement

Objetives & Impacts

1. QI helps to build Economic Prosperity, improves the lifes of people & protect the planet, thereby contributing to the achievement of the 17 SDG



QI and SDG Achievement

Objetives & Impacts

1. QI helps to build Economic Prosperity, improves the lifes of people & protect the planet, thereby contributing to the achievement of the 17 SDG



CONTENT

- V. QI Objectives & Impacts

b) Strategic Alliances & Indicators



Strategic Alliances

Objetives & Impacts



Strategic Alliances

Objetives & Impacts



OAS More rights for more people



CIRCULAR ECONOMY COALITION
Latin America and the Caribbean



Agri-Food



Photo by m-elizabethblair at Morguefile.com



Construction



Photo by quicksandale at Morguefile.com



Plastics



Photo by Pan karjun at AFP Image Forum



¿Can we think of any other area or sector?



Regional & National Indicators

Objetives & Impacts

History: The formula has been evolving through the years

- 2010
- 6 components formula
- Weighting with population
- Normalisation with max values

$$\text{Index}(QI/\text{Pop}) = \frac{\text{Index} \left(\frac{CMC_i}{\text{Pop}_i} + \frac{K\&S\&C_i}{\text{Pop}_i} + \frac{ISO_i}{\text{Pop}_i} + \frac{\text{Tech. Comm.}_i}{\text{Pop}_i} + \frac{\text{Member}_i}{\text{Pop}_i} \right) \times \text{Index}(K\&S\&C\&C\&M\&P)}{2}$$

- 2018
- 7 components formula
- Weighting with population
- Normalisation with max values
- Same weights for each pillar

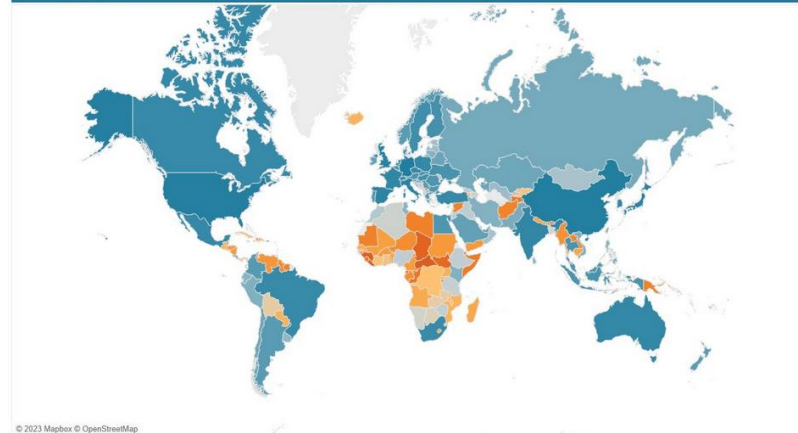
$$GQII_i = \left(\frac{CMC_i}{\beta_1 \times \text{max. value}} + \frac{K\&S\&C_i}{\beta_2 \times \text{max. value}} + \frac{ISO_i}{\beta_3 \times \text{max. value}} + \frac{\text{Tech. Comm.}_i}{\beta_4 \times \text{max. value}} + \frac{\text{Member}_i}{\beta_5 \times \text{max. value}} + \frac{CABs(9081)_i}{\beta_6 \times \text{max. value}} + \frac{CABs(17025)_i}{\beta_7 \times \text{max. value}} \right) \times \frac{\text{Member}_i}{\text{max. value}}$$

- 2020
- 13 components formula
- No weighting factors
- Size effect attenuation improvement
- Normalisation with Rank percentiles

- Data collection improvement
- Data validation with original source
- Expert validation



Quality Infrastructure World Overview: GQII 2023 over 185 economies



© 2023 Mapbox © OpenStreetMap



We want to make Quality Infrastructure data available to users, providers, experts and researchers.

Dr. Ulrich Hermes-Liedtke, Mesopartner



The National Quality Infrastructure is visible and comparable with the GQII at a glance.

Juan José Oleiza Di Matteo, Analyticar



The GQII 2023 ranks 185 countries according to the relative development of their QI. A formula calculates a score for each country based on its position in the sub-rankings for metrology, standards and accreditation.



Source: <https://gqii.org/>.

Global Quality Infrastructure Index - GQII

Global Ranking and Subrankings (data 2023)



GQII 2023: Global Ranking and Subrankings by QI area

| Economy Name | Economy Code | GQII Rank 2023 |
|--------------------|--------------|----------------|
| Germany | DEU | 1 |
| China | CHN | 2 |
| United States | USA | 3 |
| United Kingdom | GBR | 4 |
| Japan | JPN | 5 |
| Italy | ITA | 6 |
| Spain | ESP | 7 |
| Korea, Republic of | KOR | 8 |
| France | FRA | 9 |
| India | IND | 10 |
| Australia | AUS | 11 |
| Poland | POL | 12 |
| Canada | CAN | 13 |
| Czech Republic | CZE | 14 |
| Mexico | MEX | 15 |
| Switzerland | CHE | 16 |
| Brazil | BRA | 17 |
| Türkiye | TUR | 18 |
| Netherlands | NLD | 19 |
| South Africa | ZAF | 20 |

| | | | | | |
|----------------------------------|-----|------|-----|-----|-----|
| Algeria | DZA | 90 | 99 | 59 | 108 |
| Bahrain, Kingdom of | BHR | 91 | 104 | 77 | 86 |
| Montenegro | MNE | 92 | 65 | 90 | 112 |
| Namibia | NAM | 93 | 89 | 116 | 81 |
| Bangladesh | BGD | 94 | 82 | 82 | 107 |
| Botswana | BWA | 95 | 93 | 109 | 85 |
| Zambia | ZMB | 96 | 90 | 134 | 78 |
| Bolivia, Plurinational State of | BOL | 97 | 77 | 98 | 110 |
| Jamaica | JAM | 98 | 85 | 93 | 109 |
| Panama | PAN | ★ 99 | 76 | 91 | 124 |
| Ghana | GHA | 100 | 91 | 75 | 130 |
| Kyrgyz Republic | KGZ | 101 | 107 | 150 | 73 |
| Malta | MLT | 102 | 94 | 85 | 120 |
| Côte d'Ivoire | CIV | 103 | 146 | 76 | 104 |
| Democratic Republic of the Congo | COD | 104 | 133 | 103 | 92 |
| Armenia | ARM | 105 | 120 | 109 | 98 |
| Malawi | MWI | 106 | 130 | 122 | 89 |
| Dominican Republic | DOM | 107 | 106 | 106 | 106 |
| Cuba | CUB | 108 | 96 | 103 | 116 |
| Eswatini | SWZ | 109 | 122 | 141 | 83 |
| Iceland | ISL | 110 | 133 | 84 | 131 |
| Paraguay | PRY | 111 | 81 | 133 | 115 |
| Guatemala | GTM | 112 | 110 | 112 | 111 |
| Mozambique | MOZ | 113 | 124 | 136 | 91 |
| Uganda | UGA | 114 | 124 | 73 | 138 |
| Senegal | SEN | 115 | 133 | 107 | 113 |
| El Salvador | SLV | 116 | 108 | 114 | 123 |
| Trinidad and Tobago | TTO | 117 | 100 | 99 | 135 |
| Seychelles | SYC | 118 | 130 | 144 | 93 |
| Angola | AGO | 119 | 148 | 139 | 96 |
| Lebanese Republic | LBN | 120 | 124 | 94 | 136 |

Source: <https://gqii.org/>.

Global Quality Infrastructure Index - GQII



| | | | | | | | | |
|----------------------------------|-----|-----|--|-----|----|----|-----|-----|
| Algeria | DZA | 90 | | 99 | 59 | | 108 | |
| Bahrain, Kingdom of | BHR | 91 | | 104 | 77 | | 86 | |
| Montenegro | MNE | 92 | | | | | | |
| Namibia | NAM | 93 | | | | | | |
| Bangladesh | BGD | 94 | | | | | | |
| Botswana | BWA | 95 | | | | | | |
| Zambia | ZMB | 96 | | | | | | |
| Bolivia, Plurinational State of | BOL | 97 | | | | | | |
| Jamaica | JAM | 98 | | | | | | |
| Panama | PAN | 99 | | | | | | |
| Ghana | GHA | 100 | | | | | | |
| Kyrgyz Republic | KGZ | 101 | | | | | | |
| Malta | MLT | 102 | | | | | | |
| Côte d'Ivoire | CIV | 103 | | | | | | |
| Democratic Republic of the Congo | COD | 104 | | | | | | |
| Armenia | ARM | 105 | | | | | | |
| Malawi | MWI | 106 | | | | | | |
| Dominican Republic | DOM | 107 | | | | | | |
| Cuba | CUB | 108 | | | | | | |
| Eswatini | SWZ | 109 | | | | | | |
| Iceland | ISL | 110 | | | | | | |
| Paraguay | PRY | 111 | | | | | | |
| Guatemala | GTM | 112 | | | | | | |
| Mozambique | MOZ | 113 | | | | | | |
| Uganda | UGA | 114 | | | | | | |
| Senegal | SEN | 115 | | | | | | |
| El Salvador | SLV | 116 | | | | | | |
| Trinidad and Tobago | TTO | 117 | | | | | | |
| Seychelles | SYC | 118 | | | | | | |
| Angola | AGO | 119 | | | | | | |
| Lebanese Republic | LBN | 120 | | | | | | |
| Colombia | COL | | | | 39 | 41 | 44 | 31 |
| Argentina | ARG | | | | 40 | 31 | 43 | 51 |
| Norway | NOR | | | | 41 | 43 | 35 | 42 |
| New Zealand | NZL | | | | 42 | 35 | 50 | 45 |
| Ireland | IRE | | | | 43 | 54 | 36 | 50 |
| Saudi Arabia, Kingdom of | SAU | | | | 44 | 47 | 41 | 54 |
| United Arab Emirates | ARE | | | | 45 | 50 | 52 | 41 |
| Slovenia | SVN | | | | 46 | 44 | 54 | 55 |
| Belarus | BLR | | | | 47 | 37 | 47 | 71 |
| Kazakhstan | KAZ | | | | 48 | 46 | 66 | 28 |
| Chile | CHL | | | | 49 | 60 | 53 | 48 |
| Russian Federation | RUS | | | | 50 | 26 | 17 | 105 |
| Pakistan | PAK | | | | 51 | 67 | 48 | 59 |
| Viet Nam | VNM | | | | 52 | 66 | 62 | 37 |
| Croatia | HRV | | | | 53 | 48 | 49 | 84 |
| Peru | PER | | | | 54 | 64 | 55 | 58 |
| Iran | IRN | | | | 55 | 61 | 31 | 87 |
| Kenya | KEN | | | | 56 | 51 | 64 | 64 |
| Philippines | PHL | | | | 57 | 69 | 51 | 60 |
| Lithuania | LTU | | | | 58 | 57 | 70 | 57 |
| Israel | ISR | | | | 59 | 53 | 33 | 99 |
| Taiwan (Province of China) | TWN | | | | 60 | 52 | 118 | 15 |

GQII 2023: Global Ranking and Subrankings by QI area (185 Economies)

| Economy Name | Economy Code | GQII Rank 2023 | Rank Metrology 2023 | Rank Standardization 2023 | Rank Accreditation 2023 |
|--------------|--------------|----------------|---------------------|---------------------------|-------------------------|
| Ecuador | ECU | 61 | 55 | 87 | 53 |
| Tunisia | TUN | 62 | 58 | 67 | 62 |
| Costa Rica | CRI | 63 | 49 | 88 | 56 |
| Uruguay | URY | 64 | 56 | 81 | 65 |

2020 Ranking 87 = Met 78 Nor 82 Acr 109
2021 Ranking 98 = Met 75 Nor 89 Acr 117
2023 Ranking 99 = Met 76 Nor 91 Acr 124

Source: <https://gqii.org/>.

CONTENT

- V. QI Objectives & Impacts

c) Knowledge Transfer

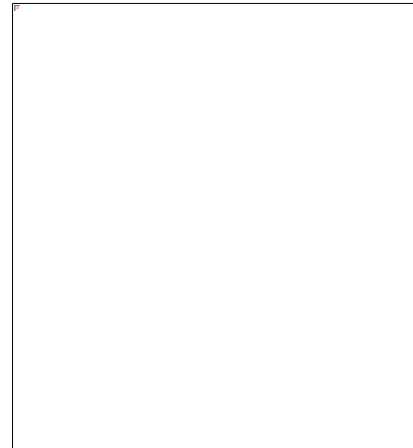




Quality Medical Tourism: Webinar on Best Practices and Standardization



**Thursday, August 29, 2024
14:00 - 16:00 UTC**



SIM WEEK
NOV 18-22, Panama



International Quality Day
WED, NOV 20



PANAMA | SIM WEEK

★ nov. 2024 ★

45th
ANNIVERSARY

1979 - 2024



Quality Infrastructure Council of the Americas

10th
ANNIVERSARY

2014 - 2024

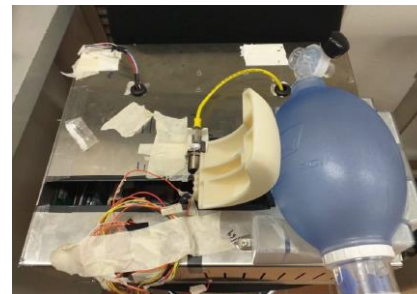
CONTENT

- V. QI Objectives & Impacts

d) Support for New Technologies & DT



SIM Projects



DEVELOPMENT OF BASIC METROLOGY INFRASTRUCTURE TO SUPPORT PANDEMIC

- 13 Participating NMIs & about 30 participants
- Period: NOV 2020 up to NOV 2022
- Develop a Low-cost Flowmeter for mechanical ventilators (INMETRO, BRA)
- Build a Lung Simulator for testing of mechanical ventilators (CENAM, MEX)
- Strengthen the micro-volume calibration processes (LNM-INEN, ECU)
- Virtual workshops on micro volume & low-pressure gas flow measurements
- Training and Awareness event



CABUREK

DIGITAL TRANSFORMATION

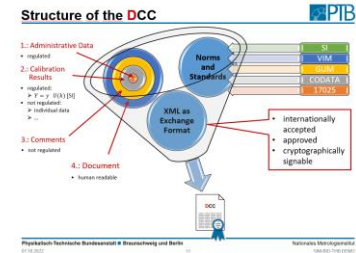
A4DT - M4DT – S4DT

GOAL: Develop metrology services that address the needs of users using Digital Transformation tools.

USERS: industry, value chains, private and public actors

SERVICES:

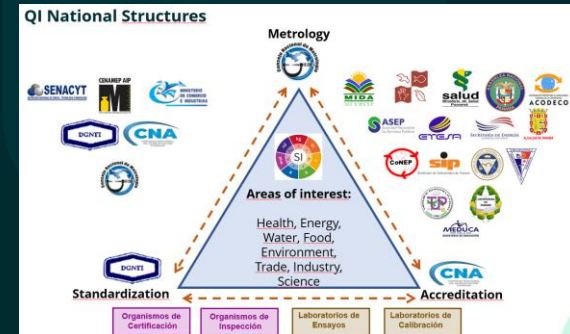
- DCC
- LABORATORY AUTOMATION
- REMOTE CALIBRATION
- AUTOMATION OF NMI CUSTOMER SERVICES



CONTENT

- V. QI Objectives & Impacts

e) Tool for Local Governance





Regional & Local Governance Objectives & Impacts

Contact with other QI regional Organizations: PAQI





Regional & Local Governance

Objectives & IMpacts



Quality Infrastructure Council of the Americas

→ QI as a tool to achieve SDGs in the SIM countries →

- Academy
- Ministries
- Government Agencies
- Regulators
- Industry
- International Org



National Laws
Road Maps
Government Policies
Regulations
Global Sustainability



COPANT



Standardization

Accreditation

Metrology

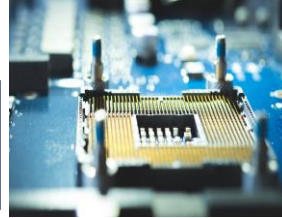


Articulation with Local & Regional Actors



Trade Sector: (Innovation, Logistics, R&D)

2. Inspection Bodies (ISO/IEC 17020)
3. Test & Calibration Laboratories (ISO/IEC 17025)
4. Reference Material Manufacturers (ISO 17034)
5. Conformity Assessment Providers (ISO/IEC 17043)
6. Product Certification (ISO/IEC 17065 -05)
7. Management System Certification (ISO/IEC 17021-1)



Health Sector:

1. Clinical Laboratories (ISO 15189)
2. Inspection Bodies (ISO/IEC 17020)
3. Test & Calibration Laboratories (ISO/IEC 17025)
4. Reference Material Manufacturers (ISO 17034)
5. Conformity Assessment Providers (ISO/IEC 17043)
6. Product Certification (ISO/IEC 17065 -05)
7. Management System Certification (ISO/IEC 17021-1)

Laboratories
Medical Equipment



Prepackage & Scales
Oil stations pumps
Water & Gas
Measures
CHIPs Act



Energy & Environmental Sector: (Electricity, Green Energies, Mobility)

2. Inspection Bodies (ISO/IEC 17020)
3. Test & Calibration Laboratories (ISO/IEC 17025)
4. Reference Material Manufacturers (ISO 17034)
5. Conformity Assessment Providers (ISO/IEC 17043)
6. Product Certification (ISO/IEC 17065 -05)
7. Management System Certification (ISO/IEC 17021-1)



Security Sector: (Food, IT, Labor)

1. Clinical Laboratories (ISO 15189)
2. Inspection Bodies (ISO/IEC 17020)
3. Test & Calibration Laboratories (ISO/IEC 17025)
4. Reference Material Manufacturers (ISO 17034)
5. Conformity Assessment Providers (ISO/IEC 17043)
6. Product Certification (ISO/IEC 17065 -05)
7. Management System Certification (ISO/IEC 17021-1)



Food Safety
Scales
Alcohol Meters
Data



Electric Meters
Vehicle Gas Emissions
Quality of Energy
Air & Water quality





**LET US TEST OUR
KNOWLEDGE AGAIN**



Let us remember some concepts and test ourselves a little

1. ¿Are you part of the QI?

¿Eres parte de la IC?

2. ¿How many QI pillars are there?

¿Cuántos son los pilares de la IC?

3. ¿Can you name them?

¿Puedes nombrarlos?

4. ¿What do I understand for QI?

¿Qué entiendo por IC?

5. ¿How has the QI impacted my NMI & Country?

¿Cómo ha impactado la IC mi NMI y mi país?



**Merci.
Thanks.
Gracias.
Obrigado.**

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