



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



Quality Infrastructure Council for the Americas

# Quality Infrastructure of the Americas

## STRATEGIC ROADMAP



COPANT



InterAmerican  
Accreditation  
Cooperation

# Quality Infrastructure of the Americas

## STRATEGIC ROADMAP

The Strategic Roadmap aims at providing a high-level overview of the key topics that need to be addressed in order to leverage the collaborations between the regional standards, metrology and accreditation organizations and their constituent members. This will support inclusive and sustainable industrial development, and specifically (intra- and inter-regional) trade.

The 5 steps proposed provide a systematic and efficient approach to Quality Infrastructure (QI) development in line with national and regional needs. The steps proposed can be applied and can add value to countries that are at different stages on their QI journey.

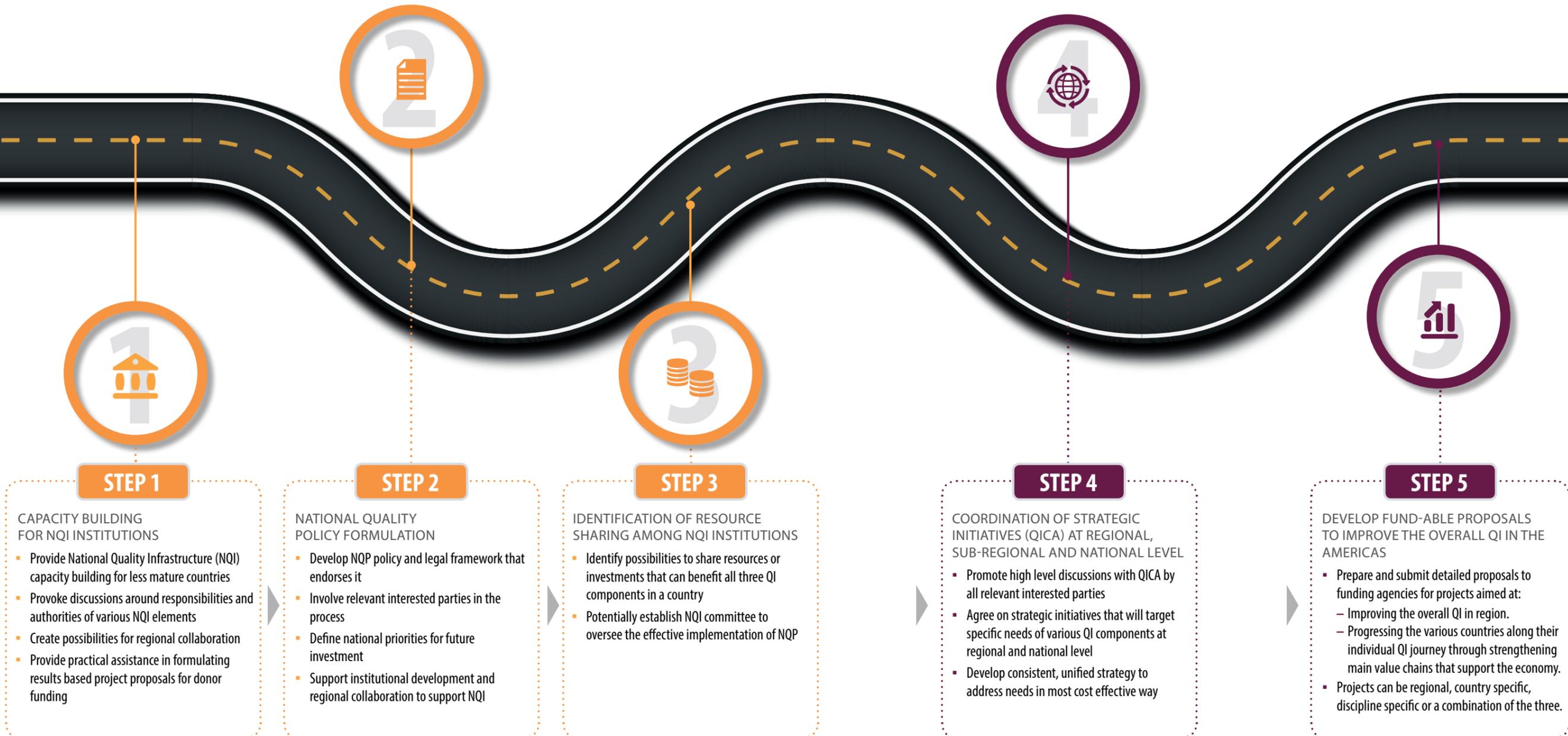
This roadmap should be considered as an evolving planning tool that is to be reviewed and updated periodically to reflect changing priorities, environment, contexts and the emergence of new challenges and opportunities.

ACCESS TO A QUALITY INFRASTRUCTURE IN THE AMERICAS THAT FURTHERS AND SUPPORTS PROGRESS TOWARDS THE 2030 SUSTAINABLE DEVELOPMENT GOALS



### National

### Regional



# Quality Infrastructure of the Americas

STRATEGIC ROADMAP



October 2017

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# FOREWORD

Setting up an effective and efficient Quality Infrastructure (QI) System is one of the most constructive steps that a developing nation can implement on the path towards establishing a thriving economy, building on growth, prosperity, health and well-being. A well designed QI system would be one that supports the achievement of SDG 9, “To build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”, and central in achieving a majority of the other SDGs.

Developing country exports and imports face an increasing number of restrictions in the form of increased standards or technical regulations that must be adhered to for products to cross borders. A quality infrastructure system is generally understood to be the totality of the institutional framework (public and private) needed to provide acceptable evidence that products and services meet defined requirements. It is centred around the three traditional components of standards, metrology and accreditation, that in turn support conformity assessment and market surveillance activities.

For a region as diverse as the Americas, which consists of countries with huge heterogeneity in their overall level of development and at different stages in their QI journey, there are various international, national and regional initiatives that are ongoing. It is important, therefore, to provide a high-level overview of key topics that must be addressed in order to leverage existing collaborations, in order to support inclusive and sustainable industrial development, specifically (intra- and inter-regional) trade.

QI development was declared a priority issue for competitiveness, innovation, trade and consumer safety in the Americas (Action Plan 2012-2016, Panama 2011). This initiative to develop a high-level strategic roadmap for QI development and improvement in the Americas was conceived during the UNIDO General conference in 2013, with the leadership of three main regional entities, namely COPANT (Standards), SIM (Metrology) and IAAC (Accreditation). Subsequently, in 2014, the three entities created the Quality Infrastructure Council of the Americas (QICA) established to provide and promote effective deployment of QI in the Americas as well as collaboration between national and regional initiatives.

The roadmap is an evolving tool that aims to support the visions of the three members of QICA in terms of standardization, metrology and accreditation, and to ensure that all countries in the Americas have access to a QI system that, 1) expands and supports progress towards the 2030 Sustainable Development Goals, 2) is appropriate for the country needs, 3) is recognized internationally and 4) is part of the existing international, national and regional QI initiatives, as appropriate. It proposes 5 steps to improve the overall development of QI in the Americas as well as supporting the countries along their individual QI journey. The steps provide a systematic and efficient approach to QI development in line with national and regional needs.

This publication and the combined efforts that led to its development, clearly indicate the increasing desire of the region for a systematic collaboration and approach to QI development and improvement.

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# ACRONYMS

AB	Accreditation Body
CARICOM	Caribbean Community
CB	Certification Body
COPANT	Pan American Standards Commission
CROSQ	CARICOM Regional Organisation for Standards and Quality
DCMAS	Developing Countries Network on Metrology, Accreditation and Standardization
IAAC	Inter American Accreditation Cooperation
IAF	International Accreditation Forum
IDB	Interamerican Development Bank
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
NIST	(US) National Institute of Standards and Technology
MLA	Multi-lateral Recognition Arrangement
MOU	Memorandum of Understanding
NGO	Non-Governmental Organization
NMI	National Metrological Institute
NQI	National Quality Infrastructure
NQP	National Quality Policy
NSB	National Standards Body
OAS	Organization of American States
PTB	Physikalisch-Technische Bundesanstalt (German National Metrology Institute)
QI	Quality Infrastructure
QICA	Quality Infrastructure Council of the Americas
SDGs	(UN) Sustainable Development Goals for 2030
SIM	Interamerican Metrology System
SME	Small or medium enterprise
SPS	Sanitary / Phyto-sanitary Measures
TBT	Technical Barriers to Trade
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
WTO	World Trade Organization

# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>6</b>
<b>FOREWORD</b>	<b>7</b>
<b>ACRONYMS</b>	<b>8</b>
<b>TABLE OF CONTENTS</b>	<b>9</b>
<b>EXECUTIVE SUMMARY</b>	<b>10</b>
<b>INTRODUCTION</b>	<b>12</b>
<b>QUALITY INFRASTRUCTURE COMPONENTS</b>	<b>14</b>
<b>QUALITY INFRASTRUCTURE IN THE AMERICAS</b>	<b>15</b>
<b>ABOUT QICA</b>	<b>16</b>
<b>THE “ROAD MAP”</b>	<b>18</b>
<b>QI IN THE AMERICAS AT A GLANCE</b>	<b>28</b>
<b>ANNEXES</b>	<b>31</b>
Annex 1: Standardization	32
Annex 2: Metrology	34
Annex 3: Accreditation	36
Annex 4: Conformity Assessment Service providers	37
Annex 5: COPANT Strategic Plan 2016 – 2020	38
Annex 6: SIM Strategic Plan 2012 (Reaffirmed in Nov 2016)	40
Annex 7: IAAC Strategic Plan 2016 – 2020	46
Annex 8: Summary of National Quality Infrastructure Maturity Indicators in the Americas	56

# EXECUTIVE SUMMARY

This Strategic Roadmap has been developed in collaboration between UNIDO and QICA (the Quality Infrastructure Council of the Americas), and is aimed at providing a high-level overview of the key topics that need to be addressed in order to leverage the collaborations that already exist between the regional standards, metrology and accreditation organizations and their constituent members operating in the region.

The document begins with an explanation of the role of a sound quality infrastructure in promoting not only economic growth, but also in furthering progress towards the UN's 2030 Sustainable Development Goals. Each of the component parts of a quality infrastructure system is then examined in more detail, as well as the collaboration established in 2014 at the regional level, through the formation of QICA.

The specific objectives for this Road Map are:

*“To ensure that all countries in the Americas have access to a Quality Infrastructure (Standards, Metrology, Accreditation and Conformity Assessment) that furthers and supports*

*progress towards the 2030 Sustainable Development Goals, and in particular:*

- a. is appropriate for the country needs in terms of Trade, Innovation, Consumersafety and Sustainable Development,*
- b. is recognized internationally, and*
- c. takes advantage of, participates in, and contributes to existing International, Regional and Sub-regional Quality Infrastructure initiatives as appropriate.”*

It has to be recognized that there is a vast heterogeneity in the overall level of development in the countries that make up the region. QICA, as a regional organization, has an important role to play in promoting the effective deployment of a Quality Infrastructure in the Americas as a whole, but It is essential that similar collaborations are established and maintained at the National level. Otherwise, the different national entities involved can find themselves competing for scarce resources, and/or involved in situations that could generate conflicts of interest.

The key steps<sup>1</sup> that are proposed can be summarized as follows:

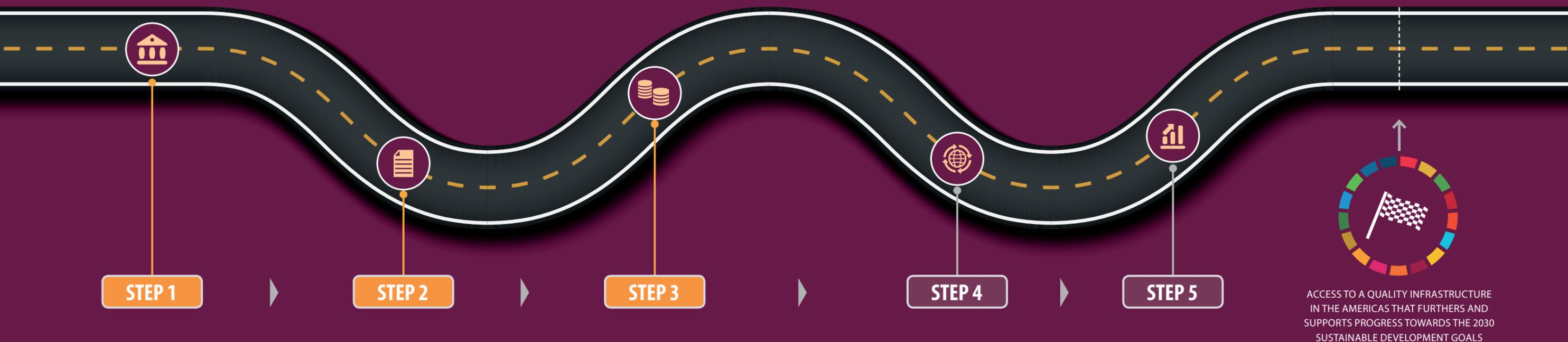
**STEP 1** is aimed at providing capacity-building for the less mature countries in the Americas to provoke discussions around the responsibilities and authorities for the various elements of the National Quality Infrastructure, including the possibilities for regional collaboration, and to provide practical assistance in formulating results-based project proposals in order to target donor funding.

**STEP 2** is to assist countries with no National Quality Policy to develop such a policy and a legal framework that endorses it, with the involvement of all relevant interested parties, to define the national priorities for future investments, institutional development and regional collaboration to support the National Quality Infrastructure.

**STEP 3** is to identify possibilities to share resources and/or investments that can benefit all three QI components in any specific country (for example, the provision of effective access to web-based meeting facilities and other essential IT infrastructure).

**STEP 4** is to promote high-level discussions with all the relevant interested parties (including, but not limited to COPANT, SIM, IAAC, CROSO, UNIDO, OAS, UNDP, PTB, NIST, IDB, and the World Bank) to agree on strategic initiatives that will target specific needs of the various QI components (at the regional, sub-regional and national level), and to develop a consistent, unified strategy to address those needs in the most cost-effective way.

**STEP 5** is for the relevant actors within the Americas to prepare and submit detailed proposals to funding agencies for projects aimed at improving the overall quality infrastructure in the region and progressing the various countries along their individual “quality infrastructure journeys” by promoting actions within the QI for the main value chains that support their economies. These projects might be region, sub-region or country-specific; discipline-specific (for example standards, metrology or accreditation), sector-specific (for example food; healthcare; agriculture etc), or a combination of these.



1) These are not necessarily sequential; some will be conducted in parallel.

# INTRODUCTION

**Q**uality Infrastructure is a term that is generally understood to be the totality of the institutional framework (public and private) needed to provide acceptable evidence that products and services meet defined requirements. These requirements are typically specified by government authorities (for example in the form of technical regulations), or implemented on a voluntary basis to meet the demands of the market place. The core components that have traditionally been considered to comprise the Quality Infrastructure are standardization, scientific, industrial and legal metrology, and accreditation. Conformity assessment services (inspection, testing, and product, system and personnel certification) are essential to support this core infrastructure, but these services are normally provided on a commercial basis by public or private (typically for-profit) organizations, and there is ongoing debate about whether or not they form part of the “core” infrastructure. Recent discussions around the formal definition of “Quality Infrastructure” among DCMAS members<sup>2</sup> do include Conformity Assessment, and indicate that Market Surveillance is also likely to be included as an important component. This roadmap concentrates primarily on the three core components (Standardization, Metrology and Accreditation) which are the object of the Quality Infrastructure Council of the Americas, whilst at the same time not ignoring the role to be played by conformity assessment and market surveillance activities.

In recent years, it has also become clear that a well-implemented Quality Infrastructure contributes to governmental policy objectives in areas other than trade of products and services, including industrial development, efficient use of natural and human resources, food safety, health, the environment, climate change, and other topics that are included in the UN’s 17 Sustainable Development Goals (SDGs) for 2030.

From UNIDO’s perspective Goal Number 9 – “To build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” is central to the viability and achievement of the 17 Sustainable Development

Goals, and in this context international standardization, metrology and accreditation have always played an important role. In more recent years, however, these Quality Infrastructure components have evolved to address more extensively other key elements of the sustainable development agenda, including not only economic considerations, but also the environmental and social dimensions in the so-called “Triple Bottom Line” approach. This has been done by incorporating sustainability-related issues into traditional core standards (for example by including life-cycle considerations into product standards) and by developing standards and conformity assessment methodologies that relate to specific sustainability issues, such as energy and environmental emissions.

The foundational parts of a Quality Infrastructure are the standards, metrology and accreditation organizations/institutions. The Quality Infrastructure can only function properly when these and other related parties act effectively and efficiently in a coordinated way, and the impact of these organizations/institutions will grow when they work in synergy. If any one of the component parts is absent or ineffective, the entire system will be compromised, thereby negatively impacting business, trade and sustainability-related objectives. Because of the importance of the standards, metrology and accreditation functions, it is imperative that governments play an active and continuous role in their establishment and long-term viability as a system.

This document provides a strategic roadmap for the development and improvement of the Quality Infrastructure in the Americas. It takes into consideration the vast differences in context and economic maturity of the nations involved, as well as the various regional and sub-regional initiatives that have already been or are being implemented. It is hoped that this will provide strategic direction for future investments and funding that will enable the region to prioritize its development projects and channel resources to the areas that will produce the most benefit according to the local needs.

## SUSTAINABLE DEVELOPMENT GOALS



2) DCMAS meeting; Vienna, June 30th 2017.

# QUALITY INFRASTRUCTURE COMPONENTS

A reliable Quality Infrastructure System (QIS) depends on the effective interactions between a number of initiatives, institutions, organizations, activities and people. It typically includes a national quality policy and institutions to implement it, a regulatory framework, quality service providers, enterprises, customers and consumers.

The Quality Infrastructure offers a complete package to provide confidence to a nation's citizens (including customers and consumers, enterprises and other organizations that provide products and services) and to international trading partners that the products and services provided will meet their needs and expectations. The quality infrastructure can also be used to provide confidence in the key indicators, goals and targets associated with sustainable development initiatives. It covers essential aspects such as policy, institutions, service providers, and the value-adding use of international standards and conformity assessment procedures. A reliable Quality Infrastructure System (QIS) depends on the effective interactions between a number of initiatives, institutions, organizations, activities and people. It typically includes a national quality policy and institutions to implement it, a regulatory framework, quality service providers, enterprises, customers and consumers (who include citizens as "consumers" of government services).

Figure 1 shows a schematic representation of the interrelationship between various components of a Quality Infrastructure<sup>3</sup>.

Without a sound economic basis that allows a nation to generate wealth, other initiatives aimed at social and environmental concerns will falter. One key objective of international trade facilitation initiatives is to promote the harmonization and multi-lateral acceptance of test, calibration, inspection and certification results, thereby reducing the need for costly and wasteful multiple assessments, carried out by multiple conformity assessment bodies, according to multiple standards. This requires mutual confidence and

collaboration between the various actors involved at the international, regional and national levels. The same is true for other initiatives that are linked to the 2030 Sustainable Development Goals, where credible standards, testing, calibration and conformity assessment methodologies play an important role. A more complete description of the main components of a typical Quality Infrastructure are presented in the Annexes, as follows: Annex 1 – *Standardization*; Annex 2 – *Metrology*; and Annex 3 – *Accreditation*.



3) Taken from the UNIDO Publication "Guide for the Development of National Quality Policies" (United Nations Industrial Development Organization, Vienna, 2016).

# QUALITY INFRASTRUCTURE IN THE AMERICAS

The current project to develop a high-level strategic Road Map for Quality Infrastructure development and improvement in the Americas was conceived during the UNIDO General Conference in Lima, Peru, in December 2013, during a meeting with the leadership of the three main regional entities involved (COPANT, SIM and IAAC).

The Third Meeting of Ministers and High Authorities of Science and Technology of the Americas (Panama, 2011) adopted an Action Plan for 2012-2016 that identified National Quality Infrastructure (NQI) as a priority issue for competitiveness, innovation, trade and consumer safety in the Americas. It also created a Ministerial Working Group to strengthen national quality systems, promote the importance of NQI in the region and design and coordinate regional and hemispheric projects on the associated topics.

The current project to develop a high-level strategic Road Map for Quality Infrastructure development and improvement in the Americas was conceived during the UNIDO General Conference in Lima, Peru, in December 2013, during a meeting with the leadership of the three main regional entities involved (COPANT, SIM and IAAC).



Subsequently, on 29<sup>th</sup> August 2014, a Memorandum of Understanding among the three regional QI organizations was signed in Guatemala City, and the Quality Infrastructure Council of the Americas (QICA) was created. The shared goal of its members is to create a formal structure for joint projects, information sharing, and cross-functional training and development that, by acting collaboratively, exceeds the

abilities of any one organization acting alone. It is important to recognize that this collaborative philosophy also needs to be deployed at the national level, and applied to the various institutions and agencies that can provide funding, technical assistance and/or technical support in the region including, but not limited to UNIDO, OAS, UNDP, PTB, NIST, IDB, and the World Bank.

# ABOUT QICA

Building on the collaborative global relationships and MOUs established between organizations such as ISO, IEC and ITU (international standards bodies), the IAF and ILAC (international accreditation collaborations) and the BIPM and OIML (international metrology organizations), QICA promotes mutual collaboration and experience-sharing at the regional level in the Americas. This will benefit all countries, by promoting best practices among peer groups, and in particular will help those countries with less well-developed quality infrastructures to identify gaps and weaknesses, and overcome these.

**SIM** (The Inter American Metrology System) promotes international, Inter-American, and regional cooperation in metrology. SIM is committed to the implementation of a Global Measurement System within the Americas, in which all users can have confidence.

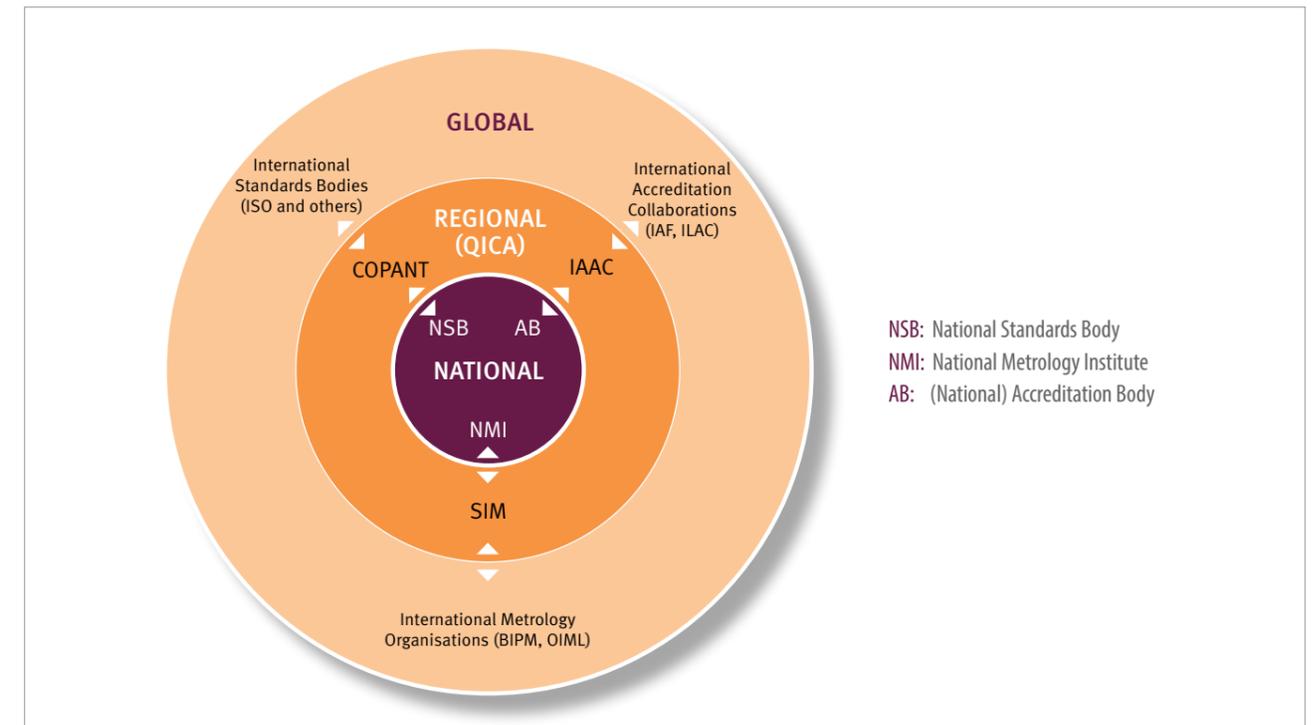


**COPANT** (The Pan American Standards Commission) is the reference for technical standardization and conformity assessment for the countries of the Americas for its members and international peers. It also promotes the development of its members' national standards activities.

**IAAC** (The Inter American Accreditation Cooperation) is an association of accreditation bodies in the Americas and other organizations interested in conformity assessment. Accreditation provides confidence in the competence and impartiality of conformity assessment activities such as testing, inspection and certification of products, services, processes, systems and persons.

The three members of QICA have close links with and contribute extensively to the work of the international organizations, and are also able to coordinate and deploy similar initiatives within the Americas. The synergies

between the three organizations and their constituent members are useful to help face common challenges, taking into consideration different regional and national cultures and policies.



NSB: National Standards Body  
NMI: National Metrology Institute  
AB: (National) Accreditation Body

Some of the expected benefits that will be derived from this collaboration include:

	Harmonization and multi-lateral collaboration among relevant actors in the Quality Infrastructure of the Americas.
	Better alignment with international standards and conformity assessment processes, including measurements services.
	Enhanced confidence that products and services comply with requirements and thus facilitate trade.
	Greater confidence in the monitoring and measurement of progress against sustainable development goals.
	Provision of conformity assessment results and certificates that are accepted without the need for costly repeat assessments.
	Decreased costs of doing business for the private sector, making products more competitive and organizations more sustainable.
	Increased access to international markets.
	Improved quality of products and services available to citizens.
	Potential funding for targeted activities at the regional and subregional levels.

Each member of QICA has its own Strategic Plan, and these are shown in Annexes 5 – 7 as follows:

- Annex 5 – COPANT Strategic Plan 2016 – 2020
- Annex 6 – SIM Strategic Plan 2012 (Reaffirmed in Nov 2016)
- Annex 7 – IAAC Strategic Plan 2016 – 2020

# THE "ROAD MAP"

Although the Road Map is based on the specific philosophies and experiences of UNIDO in the development of Quality Infrastructures in numerous developing countries, it is hoped that it can provide a high-level basis for the coordinated provision of technical assistance programmes by UNIDO and others in a consistent and efficient manner, in order to maximise the impact of the limited financial resources available.

This Road Map aims to stimulate discussion among the three main regional organizations (COPANT, SIM and IAAC) and relevant interested parties to agree on a high-level, systematic, long-term strategy for the further development and improvement of the Quality Infrastructure in the Americas. Wherever possible, the text has followed the theme of a "Road Map" to facilitate better understanding among the various (technical and non-technical) interested parties.

This roadmap should be considered as an evolving planning tool that is reviewed and updated periodically to reflect changing priorities, environment, contexts and the emergence of new challenges and opportunities.

The extent to which implementation of each of the priority areas will be possible is likely to depend on the overall resources available to fund the strategic roadmap from national, regional and international programmes.

## Why are we going on this journey?

The long-term development objective for this Roadmap is to:

-  A. GENERATE CONFIDENCE IN PRODUCTS AND SERVICES PROVIDED TO ALL CITIZENS IN THE AMERICAS (INCLUDING SERVICES PROVIDED BY GOVERNMENTS),
-  B. IMPROVE CAPABILITIES OF DEVELOPING COUNTRIES IN THE AMERICAS TO PARTICIPATE IN INTERNATIONAL TRADE;
-  C. DEFINE, MONITOR AND MEASURE ACTIONS NEEDED TO ACHIEVE THE UN'S 2030 SDGS.

Although the Road Map is based on the specific philosophies and experiences of UNIDO in the development of Quality Infrastructures in numerous developing countries, it is hoped that it can provide a high-level basis for the coordinated provision of technical assistance programmes by UNIDO and others in a consistent and efficient manner, in order to maximise the impact of the limited financial resources available. The Road Map has been prepared taking into consideration the Results-Based Project Management methodology developed by the Centre for International Development and Training (CIDT) of the University of Wolverhampton, UK, which can be used for its subsequent implementation.

## What is the destination?

The specific objectives for this Road Map are as follows ("Expected Outcomes"):

*"To ensure that all countries in the Americas have access to a Quality Infrastructure (Standards, Metrology, Accreditation and Conformity Assessment<sup>4</sup>) that furthers and supports progress towards the 2030 Sustainable Development Goals, and in particular":*

-  A. IS APPROPRIATE FOR THE COUNTRY NEEDS IN TERMS OF TRADE, INNOVATION, CONSUMER SAFETY AND SUSTAINABLE DEVELOPMENT,
-  B. IS RECOGNIZED INTERNATIONALLY, AND;
-  C. TAKES ADVANTAGE OF, PARTICIPATES IN, AND CONTRIBUTES TO EXISTING INTERNATIONAL, REGIONAL AND SUB-REGIONAL QUALITY INFRASTRUCTURE INITIATIVES AS APPROPRIATE."

## Who is going on the journey?

This Road Map is intended for all countries in the Americas, and advocates the active involvement of their governments, the relevant national actors in the Quality Infrastructure arena, as well as the three regional cooperation bodies (COPANT, SIM and IAAC) that make up QICA.

## What kind of transport is available?

As mentioned previously, each country faces its own reality in terms of its economic and cultural situation, the needs and expectations of its citizens and the role it plays within the regional and international communities. The Table in Annex VIII provides a summary of the following parameters:

- **Population**
- **Gross Domestic Product**
- **GDP/ Capita**
- **Official Language**
- **Maturity indicators for the National Standards Body**
  - Existence of a NSB
  - Membership of COPANT
  - Year of NSB formation
  - Membership of ISO
  - Involvement in ISO Technical Committees
  - Membership of IEC
  - Membership of Codex
- **Maturity of National Metrological Institution**
  - Existence of NMI
  - Membership of SIM
  - Qualitative assessment of NMI Maturity<sup>5</sup>
  - Membership of BIPM / MRA Signatory status
  - Membership of OIML / MRA signatory status
- **Maturity of Accreditation Body**
  - Existence of AB
  - Membership of IAAC / MLA signatory status
  - Membership of ILAC / MRA signatory status
  - Membership of IAF / MLA signatory status

4) For the purposes of this Roadmap, we have included Conformity Assessment as a component of the Quality Infrastructure, whilst at the same time recognizing that it is not one of the three traditional "core elements".

5) Source: SIM.

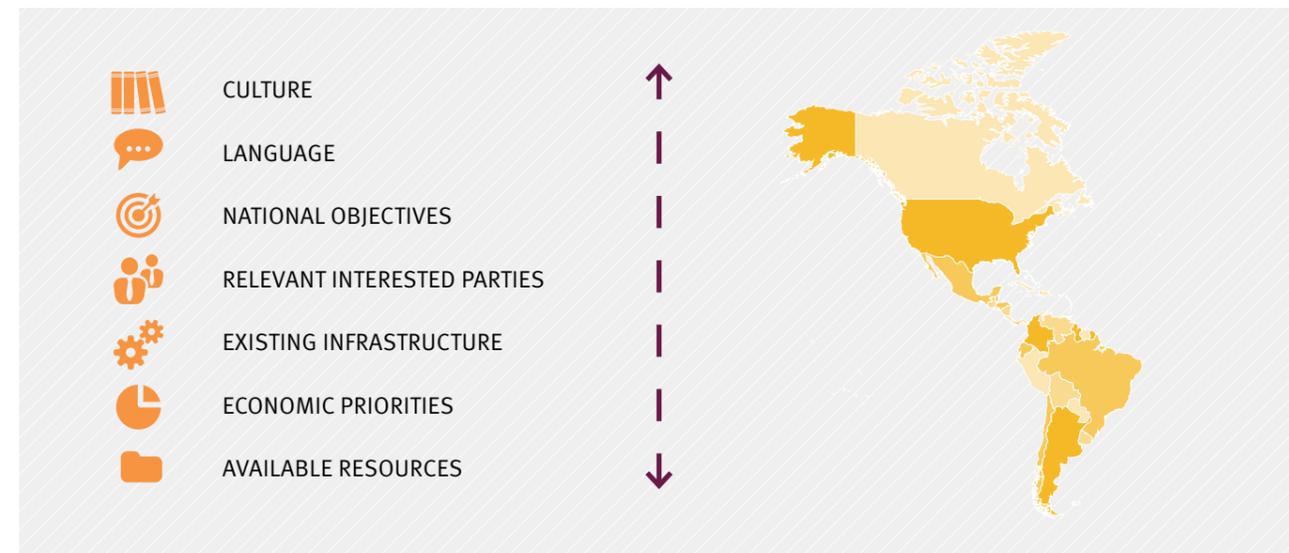
Based on a qualitative analysis of these National Quality Infrastructure data, we have identified three categories of country as follows:

1. **“LOW MATURITY”** – COUNTRIES WITH LITTLE OR NO EFFECTIVE QUALITY INFRASTRUCTURE.
2. **“MEDIUM MATURITY”** – COUNTRIES THAT HAVE SOME QUALITY INFRASTRUCTURE COMPONENTS IN PLACE AND ARE ACTIVELY PARTICIPATING IN REGIONAL INITIATIVES.
3. **“HIGH MATURITY”** – COUNTRIES WITH QI COMPONENTS THAT ARE ACTIVELY INVOLVED IN REGIONAL AND INTERNATIONAL STANDARDIZATION, METROLOGY AND ACCREDITATION INITIATIVES.

The distribution of the low, medium and high maturity countries is shown on the map of the Americas on Page 25. QICA, as a regional organization, has an important role to play in promoting the effective deployment of a Quality Infrastructure in the Americas, but it is essential that similar collaborations are established and maintained at the national level. Otherwise, the different national entities involved can find themselves competing for scarce resources, and/or involved in situations that could generate conflicts of interest.

### The “Starting points” for the journey

It has to be recognized that there is a vast contextual heterogeneity in the various countries that constitute the Americas, in terms of culture, language, national objectives, relevant interested parties, existing infrastructure, economic priorities and available resources.



This means that there is no single uniquely-defined “starting point” or “route to the destination” that applies for all countries, and this will depend on the maturity of their National Quality Infrastructure and national priorities.

An important challenge is to ensure that the NQI is appropriate for the reality of the country, and that it can be used as a building block for future development. Policy objectives need to be related to the overall maturity of the specific country, and avoid being too ambitious for its current stage of development. In some countries agriculture is of key importance; in others it might be fisheries, or tourism. Some countries have easy access to international accreditation on a regional basis; others not. Some may

have technical regulations that are restricted to a small number of regulatory bodies, whilst in others these could be spread over a large number of independent agencies. This is particularly true in the Food sector.

Conceptually, it is convenient to think in terms of a “Hierarchy of Needs” and adapt/apply these to the various stages of the evolution of a National Quality Infrastructure that is appropriate to the needs of the specific country. Recognizing the asymmetries of the countries in the region, which stand at very different levels of access to economic and social indicators, health, education, which are global macro indicators, this suggests a “national quality infrastructure journey” that begins with a focus on the very basic needs of society, and that progresses cumulatively through the various levels, with examples as follows<sup>6</sup>:

LEVEL	DESCRIPTION
1	Focus on quality Infrastructure aspects that address issues such as water purity, food safety and health care. Examples may include the need for technical regulations (preferably based on international, regional or national standards), testing and medical laboratories and the associated metrological capabilities.
2	Initiatives aimed at achieving the legitimate objectives of government; protection of the health and safety of citizens, supported by appropriate standards, technical regulations and conformity assessment processes. Quality infrastructure to include basic legal metrology to provide confidence in local trade, and conformity assessment to verify conformity (local production and imports) with technical regulations.
3	Initiatives aimed at promoting exports and facilitation of international trade. Participation in regional and international standards development; availability of internationally-recognized conformity assessment facilities (with a minimum of a national focal point with access to a recognized accreditation body), and an NMI focused on the scientific metrology that guarantees the traceability of standards used in legal metrology and the calibration chain in industrial metrology as well as the development of measurement methods inherent to them (prioritized according to the national needs).
4	QI initiatives aimed at providing confidence in initiatives other than trade, that will contribute to Sustainable Development (energy efficiency; water efficiency; greenhouse gas emissions, IT compatibility and interoperability, etc). Awareness-building of the role of standards and technical regulations; development of metrological capabilities in these areas, and international recognition of conformity assessment activities (access to regionally recognized accreditation services).
5	Innovative QI initiatives aimed at emerging technologies (nanotechnology; biomedical technologies etc), with the associated capabilities in scientific metrology.

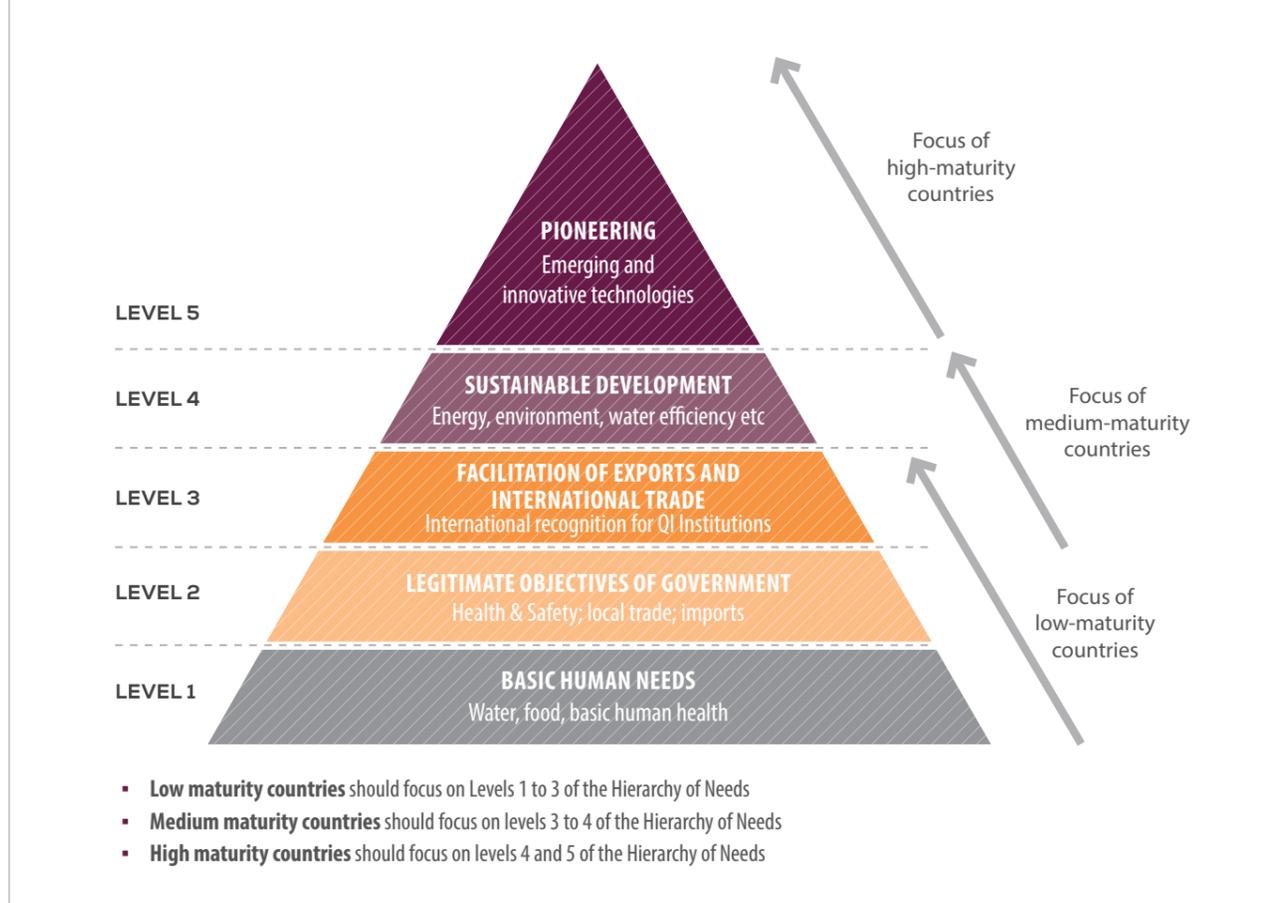
It is important to recognize, though, that the impact of each of the main components of the National Quality Infrastructure is wider than its own technical field. For example, establishing a proper basis for industrial metrology could help to create more jobs and thus improve the achievement of “Basic needs”.

When considering the current level of maturity of each country’s Quality Infrastructure, in broad terms we can foresee the following priorities, as shown in Figure 2:

- Low maturity countries should focus on Levels 1 to 3 of the Hierarchy of Needs
- Medium maturity countries should focus on levels 3 to 4 of the Hierarchy of Needs
- High maturity countries should focus on levels 4 and 5 of the Hierarchy of Needs

<sup>6</sup> Note that these levels are intentionally not clearly defined. They are merely concepts, aimed at providing a means for countries to establish priorities for the various stages of their “quality infrastructure journey”.

Figure 2 Progression along the Hierarchy of needs



While it is recognized that not all countries with a mature Quality Infrastructure have a formally-adopted National Quality Policy, it is recommended that less mature economies develop such a policy at an early stage of their journey, in order to define the national priorities and assign resources accordingly. Following an approach based on the above “Hierarchy of Needs” will facilitate the allocation of resources where they will be most beneficial, rather than deciding priorities solely based on the availability of international funding. While international funding initiatives are of course to be welcomed, these may not always align with the current level of maturity of the individual country, thereby diverting national counterpart resources from where they may be better utilized.

### The journey

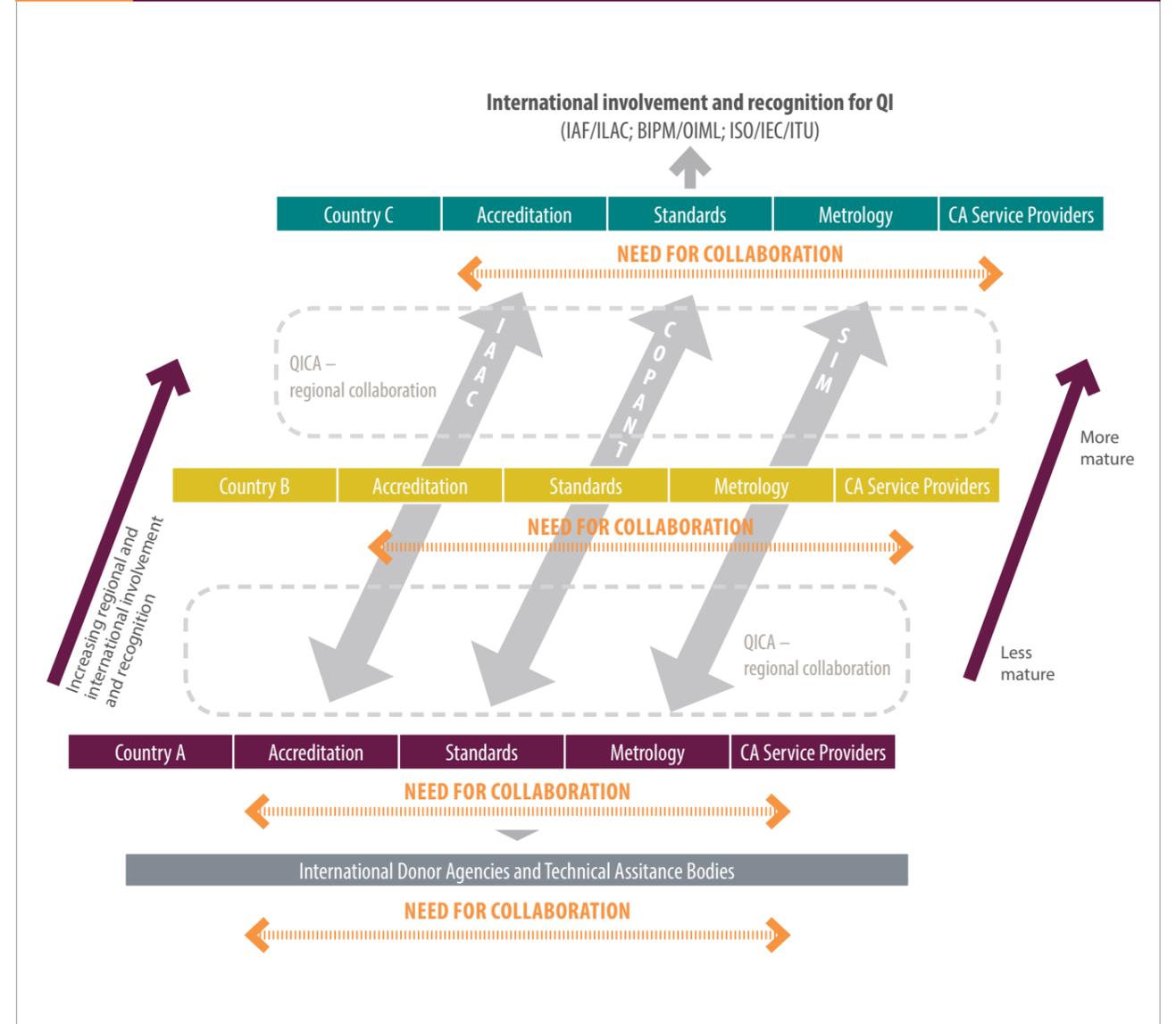
The aim is to leverage existing collaboration between the different Quality Infrastructure institutions at the regional level, and to stimulate similar collaboration at the sub-regional and national level in order to take full advantage of any international funding that becomes available.

This funding may be:

- Targeted thematic funding (energy; environmental; trade facilitation etc)
- Region or Sub-region-specific
- Country-specific

Figure 3 shows the strategic direction for the development of an internationally-recognized quality infrastructure. Countries with little or no formal QI (for example “Country A, shown in red) can start on the journey, with assistance and mentoring being provided by their more mature neighbours. QICA and its constituent members have an important role to play by engaging with and nurturing the institutions in such countries (with probable funding assistance from international donor agencies), and in particular by encouraging their collaboration at the national level. As the QIs of the individual countries develop and mature (Countries B and C), so they can expand beyond the basic internal (national) needs towards a greater involvement in regional and international collaborations, and subsequent recognition by their regional and international peers.

Figure 3 Progression for countries along the “QI Journey”



In order to obtain funding, it is vital that viable, results-based project proposals are developed, and one objective of this Strategic Road Map is to provide a framework under which such proposals can be developed in a consistent, coherent manner that avoids waste, sub-utilization or repetition of the resources available. In this context, QICA and its component members (COPANT, SIM and IAAC) have an important role to play in terms of coordination and the promotion of regional collaboration in order to leverage these resources.

## “Ride-sharing” - Resource utilization and optimization

One of the recommendations for the first stages of the implementation of this road map is to make a systematic inventory of national capabilities, to identify areas of expertise that might be shared, and gaps where it may be appropriate to apportion and share responsibilities among several different countries in the region to develop appropriate capabilities. In the metrological arena, SIM has conducted surveys of this kind among its members in 2013, and COPANT conducts similar periodic surveys in the standardization arena, both of which could form a basis for such an analysis. The concept of resource sharing could apply to all four components of the Quality Infrastructure, as in the following examples (not exhaustive):

### STANDARDS

- Investments in web-meeting and video-conferencing facilities to allow for virtual participation in training courses and/or conferences for capacity-building. Such facilities could be shared among the other components of the NQI (metrology and accreditation). SIM has indicated that it already has significant experience in this, and could provide advice and assistance if needed. This option should, however, be considered circumspectly due to the different nature and business model of the several NQI components (governmental organizations, private non-for-profit organizations, commercial societies, etc)
- Filing of presentations made by international experts in one country for further dissemination, and subsequent use by other countries
- Remote participation in international meetings (for example ISO/CASCO Working Groups), as a capacity-building tool, though it has to be recognized that language can be a barrier for some countries to participate effectively
- Sharing feedback on training course providers, in order to improve selection criteria and maximise effectiveness of future training programmes
- Sharing of marketing templates aimed at promoting greater awareness of the role of standardization
- Sharing resources for translations (where applicable)
- Awareness building about the interactions between voluntary standards and (mandatory) technical regulations

### METROLOGY

- Identification of regional and/or sub-regional “centres of excellence” for more advanced metrological investments
- Sharing methodologies and procedures with less developed countries (mentoring). Once again, language can be an issue, but investments in bilingual efforts using the two predominant languages in the region (English and Spanish) could be beneficial
- Sharing of metrological standards, and improvement in regional transport, handling and customs clearance capabilities to minimise damage and delays

### ACCREDITATION

- Recognition of national or multi-economy ABs without the need for one AB per country (for example the Caribbean CCA scheme)
- Accreditation cooperation (recognition that not all countries will ever be able to justify establishing their own AB)
- Sharing of assessors among ABs on a regional basis for assessments requiring specific competences
- Sharing responsibilities for training of peer evaluators among the members of IAAC, (there is currently an acute shortage of peer evaluators, with many “scopes” concentrated on a small number of people.)
- Pooling resources to create “independent peer evaluators” funded by subscriptions to IAAC, instead of being nominated by individual ABs (to address, among other issues, problems of personnel turnover)
- Possibility for collaborations between ABs and NMIs for sharing of assessors (laboratory assessments)

### CONFORMITY ASSESSMENT SERVICES

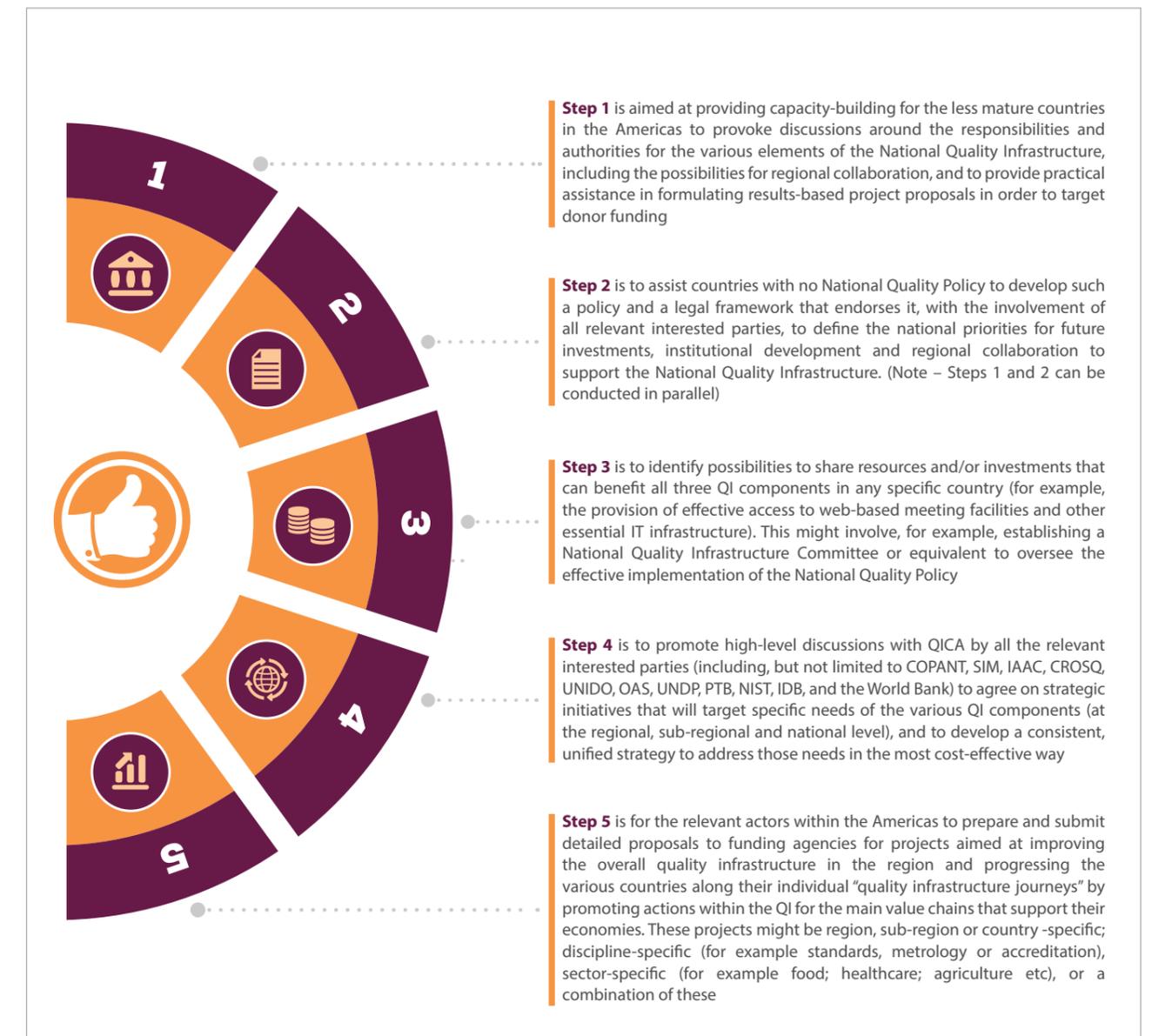
- Promotion of mutual cooperation agreements between conformity assessment bodies
- Facilitation of collaboration and “sharing” of resources between testing laboratories in the same region or sub-region (Example of the Caribbean Network of Conformity Assessment Bodies (CANCAB))
- Facilitation of transportation and customs release for specialized product testing at regional centres of excellence; inter-laboratory tests and calibration of standards
- Development of regional suppliers of proficiency testing programmes
- Increased participation into worldwide reputable certification schemes (including, for example, IECEE, IECEx, IECRE)

## The steps on the “Quality Infrastructure Journey”

It is clear that there is good collaboration between the three main Quality Infrastructure institutions at the regional level, but this needs to be deployed “downwards” to the national level, where even in the more mature countries there sometimes remain conflicting and/or divergent interests between the various QI institutions. This can be the case where potential conflicts of interest exist due to blurred responsibilities between (for example) development of standards and technical regulations; standards development and the provision of conformity assessment services; accreditation and metrology, accreditation and regulatory authority, and others. In some cases, it may be necessary or advisable to develop and/or revise the National Quality Policy in order to address these.

Equally important is to establish better collaboration between the various donor and international technical assistance agencies to ensure the optimum use of financial and technical resources available, and allow for the identification and selection of priority projects with the greatest impact in each country, according to its specific level of development in the “Hierarchy of Needs”.

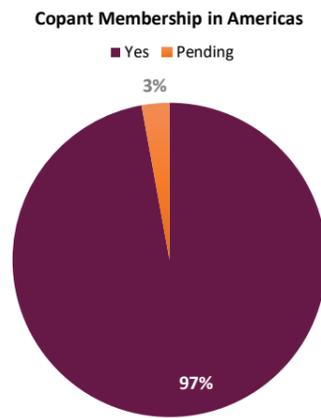
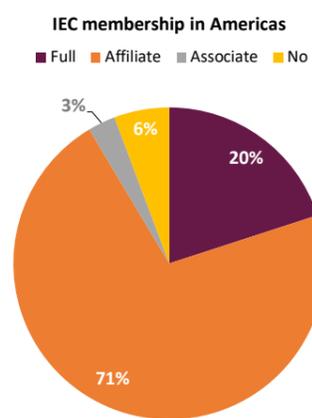
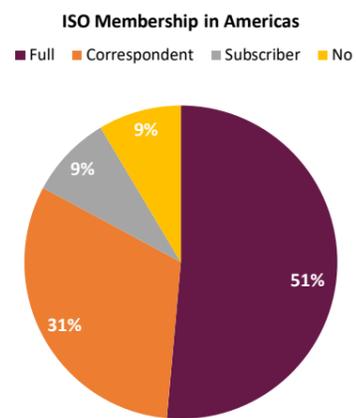
The following steps in the Quality Infrastructure Journey are inter-related, and not necessarily sequential:



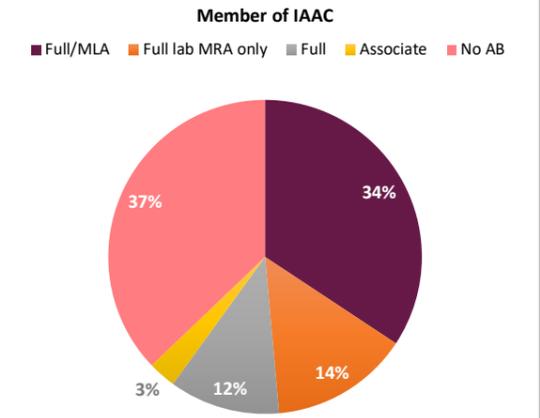
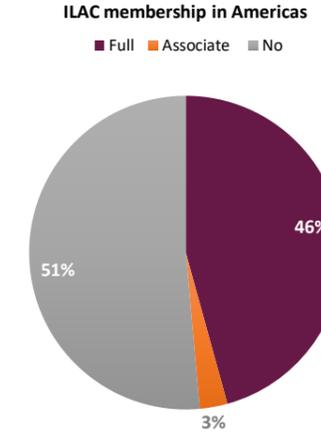
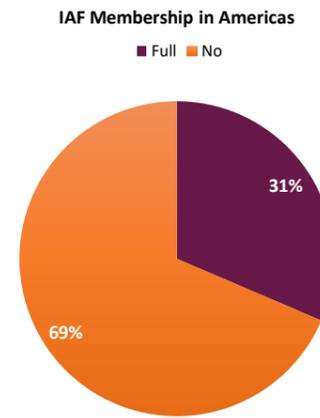


# QI IN THE AMERICAS AT A GLANCE

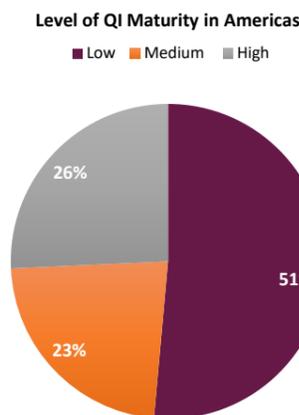
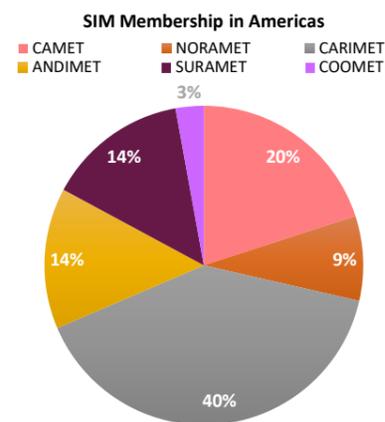
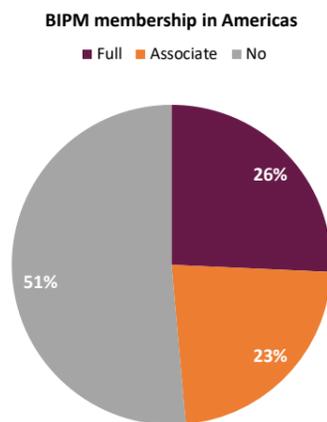
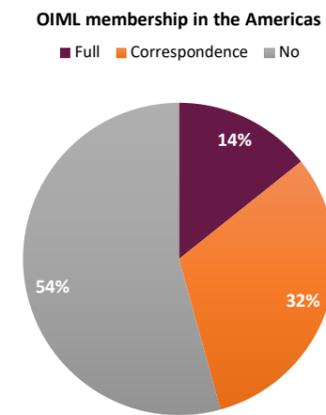
All the countries in the Americas participate in COPANT (with one pending member). 18 countries are full members of ISO in their own right; 11 are correspondent members and 3 are subscriber members. Only 7 countries in the Americas are full members of IEC in their own right; 25 have affiliate status, and there is one associate member.



12 countries in the Americas have full IAAC membership (including laboratory and/or inspection MRA and certification MLA); 5 are full members and laboratory and/or inspection MRA signatories; 4 are full members but not yet MRA or MLA signatories. There is 1 associate member and 13 countries that currently have no accreditation body. 16 countries in the Americas are members of ILAC in their own right, and there is 1 associate member. 11 countries are members of IAF in their own right.



All the countries in the Americas participate in one of the sub-regional metrology associations that make up SIM. 5 countries are full members of OIML in their own right and 11 are correspondent members. 9 countries are full members of BIPM in their own right, and 8 are associate members.



In terms of overall Quality Infrastructure (based on an analysis of maturity of the standards, metrology and accreditation institutions), 9 countries are considered to have a high level of maturity; 8 medium and 18 a low level of maturity. The geographical distribution of these countries can be seen in Figure 5.

Explanation:

- LOW MATURITY:** Countries with little or no effective quality infrastructure
- MEDIUM MATURITY:** Countries that have some quality infrastructure components in place and are actively participating in regional initiatives
- HIGH MATURITY:** Countries with QI components that are actively involved in regional and international standardization, metrology and accreditation initiatives

NOTE: Please refer to Annex VIII for more details

## ANNEXES

- I. Standardization
- II. Metrology
- III. Accreditation
- IV. Conformity Assessment Service providers
- V. COPANT Strategic Plan 2016 – 2020
- VI. SIM Strategic Plan 2012 (Reaffirmed in Nov 2016)
- VII. IAAC Strategic Plan 2016 – 2020
- VIII. Summary of National Quality Infrastructure maturity indicators in the Americas



According to ISO/IEC Guide 2 “A standard is document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context” with a note to explain that “Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.”

International Standards are voluntary in their application, though they can also be used as a basis for regulatory requirements and assessments of conformity. “Mandatory standards” do not exist in WTO terminology, but the phrase is sometimes used to designate standards that are considered to be regulatory in nature, but are developed by national standards bodies, contrary to the WTO Code of Good Practice for the Preparation, Adoption, and Application of Standards.

According to Tippmann and Racine<sup>7</sup> “Standards play an important role in global trade. They define how products, processes, and people interact with each other and their environments. They enhance competitiveness by offering proof that products and services adhere to requirements of governments or the marketplace. When used effectively, standards facilitate international trade, contribute to technology upgrading and absorption, and protect consumers and the environment.”

The three best-known global standardization entities are IEC (the International Electrotechnical Commission), ISO (the International Organization for Standardization), and ITU (the International Telecommunication Union), which under the banner of the WSC (World Standards Cooperation) work together to advance and strengthen the voluntary consensus-based international standards system.

Participation in international standards development activities is usually conducted via the representation of relevant stakeholders by National Standards Bodies, National Committees, or other groups of each participating country. The ever-increasing use of remote (internet-based) meeting arrangements and electronic commenting and balloting processes provides developing countries with opportunities to shape the way standards are developed.

The establishment of a National Standards Body (NSB) by a developing country is often the first step in the implementation of a National Quality Infrastructure, and indeed, every country in the Americas has its own NSB. With the current exception of Venezuela, all are members of COPANT, the regional standards organization for the Americas. In terms of size and infrastructure of the individual NSBs, however, there are major variations. A useful indicator is the number of ISO Technical Committees and subcommittees in which the NSB has an active participation. These range from the more mature countries such as the USA, Canada, Brazil and Argentina that are full members of ISO, with participation in several hundred Committees or Subcommittees, to the more recently-formed NSBs in countries such as Belize, Grenada, Guyana, Nicaragua and Suriname who do not participate in ISO work at all, and who are either Corresponding or Subscriber members of ISO, or are not members at all. It should also be noted, however, that there are countries such as Paraguay with long-established NSBs who also have no direct participation in the work of ISO.

There are, of course, other organizations around the world that play an important role in the sustainable development agenda by developing Voluntary Sustainability Standards (sometimes referred to as “private standards”), usually applicable to specific sectors or topics. Examples include organizations under the umbrella of the GFSI (Global Food Safety Initiative) and the GSCP (Global Social Compliance Programme), FSC

(Forestry Stewardship Council), MSC (the Marine Stewardship Council), SAI (Social Accountability International), Fairtrade International and many more. Further information can be found in the UNIDO Brochure “Meeting Standards, Winning Markets – Trade Standards Compliance 2015”.

Whilst International Standards (and most National Standards) are voluntary in nature, Technical Regulations are mandatory, usually with the objectives of the protection of human safety or health, protecting the environment, or preventing deceptive practices. Regulations may also be aimed at certain sectors, for example that of telecommunications and terminal equipment, and such regulations are widespread in economically integrated areas such as the European Union and elsewhere. Technical regulations are developed by government, often by designated regulatory agencies under ministries, and sometimes are produced with little or no involvement of the NSB. Such technical regulations can sometimes impose technical barriers to trade and unnecessary constraints to businesses when they are not soundly based on the legitimate objectives of government to protect the health and safety of citizens and the environment.

In recent years, the number of technical regulations and standards adopted by countries has grown significantly. Increased regulatory policy can be seen as the result of higher standards of living worldwide, which have boosted consumers' demand for safe and high-quality products, and of growing problems of water, air and soil pollution which have encouraged modern societies to explore environmentally-friendly products. According to the WTO<sup>8</sup> however, “It is difficult to give a precise estimate of the impact on international trade of the need to comply with different foreign technical regulations and standards, but it certainly involves significant costs for producers and exporters. In general, these costs arise from the translation of foreign regulations, hiring of technical experts to explain foreign regulations, and adjustment of production facilities to comply with the requirements. In addition, there is the need to prove that the exported product meets the foreign regulations. The high costs involved may discourage manufacturers from trying to sell abroad. In the absence of international disciplines, a risk exists that technical regulations and standards could be adopted and applied solely to protect domestic industries.”



7) Tippmann, C. and Racine, J-L. “The National Quality Infrastructure - A Tool for Competitiveness, Trade, and Social Well-being”; World Bank; March 2013.

8) [https://www.wto.org/english/tratop\\_e/tbt\\_e/tbt\\_info\\_e.htm](https://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm)



The second major component in a quality infrastructure is a national measurement system that can ensure that measurements are made with appropriate accuracy and reliability and can be related to other measurements made elsewhere (domestically or internationally). A national metrology institute (NMI) establishes the national measurement system used to maintain, develop, and disseminate measurement standards and to diffuse metrological expertise in its country. NMIs provide calibration services to independent calibration laboratories and other organizations responsible for regulations and standards.

It is the NMIs' responsibility to provide the measurement capabilities needed within their economies (to the extent possible) and to maintain their own measurement capabilities at levels which provide comparability with institutes in other economies. However, in many economies (in both developed and developing countries), access to appropriate high-level measurements for some quantities needs to be through NMIs in other economies.

A typical national metrology system comprises the following elements:



### Legal Metrology

Legal metrology concerns measurements and measuring instruments for the protection of health, public safety and the environment, for enabling taxation, and for the protection of consumers and fair trade. It includes the approval of measurement devices used in daily commerce to ensure fair trading practices. The compliance of measurement devices to requirements is verified through type testing of measuring instruments, verification and inspection. Examples include scales and other weighing devices, volume measures, gas and electricity meters etc. Legal metrology does, however, have a wider application beyond trade measurement in many economies, dealing with other forms of measurement which may have a legal or regulatory basis, such as vehicle speed measurement and breath analysis for alcohol content.



### Scientific Metrology

Traceable measurements allow the acceptance of measurement results internationally and can only be achieved through a proper, benchmarked national measurement system. Scientific metrology includes the establishment of quantity and unit systems, units of measurement, the development of new measurement methods, the realization of measurement standards, the process to ensure traceability of every measurement and, as a consequence, the equivalence of national measurement standards to those of other nations. The Arrangement that allows the formal recognition of calibration and measurement capabilities of NMIs is the CIPM mutual recognition agreement (MRA) that is managed by the BIPM and the metrology regions (SIM, APMP, Euramet, COOMET, AFRIMET, GULFMET).



### Industrial Metrology

Industrial metrology concerns the application of metrology to manufacturing and other processes and their use in society, ensuring the suitability of measurement instruments, their calibration and the quality control of measurements.

International coordination of measurement science and recognition of measurement capabilities is facilitated through the International Bureau of Weights and Measures (BIPM). The

activities of BIPM and NMIs have a number of key interactions with accreditation, conformity assessment and standards activities. These include:

## ACCREDITATION, CONFORMITY ASSESSMENT AND STANDARDS



- NMIs make available appropriate measurement standards with uncertainties that are commensurate with the technical needs of their countries' laboratories, industry users and other clients of their calibration services (including foreign users)
- They maintain traceability of national measurement standards to international standards and the SI units through a credible and transparent process of international recognition. (Traceability to international measurement standards is a fundamental requirement of a number of ISO/CASCO and other ISO standards, such as ISO/IEC 17025, ISO/IEC 17020 and ISO 9001)
- Their calibration and measurement capabilities are recognized through the CIPM Mutual Recognition Arrangement among NMIs. This MRA uses ISO/IEC 17025 and other appropriate ISO/IEC standards as fundamental criteria for NMIs to have their capabilities recognized through the MRA. Accreditation is one of the pathways for an NMI to demonstrate that it has a system in place to fulfil the requirements of the MRA, and the other mechanism is based on a peer review by experts from other NMIs. Participating NMIs are from developed and developing countries
- BIPM maintains a publicly available database of the calibration and measurement capabilities (CMCs) of each of the NMIs in the CIPM MRA. This information also includes key and supplementary comparisons regularly conducted among the NMIs
- NMI experts have technical expertise that can be used in accreditation assessments, and NMIs often provide reference values and measurement artefacts for measurement and calibration proficiency tests

The international forum for legal metrology is the International Organization for Legal Metrology (OIML). It and its member

bodies also have a number of conformity assessment roles and interactions. These include:

## CONFORMITY ASSESSMENT



- OIML members undertake type approval of regulated measuring devices. Essentially these national type approvals are a device-specific form of product certification. This process requires testing against specific OIML specifications (often with some national variations)
- IML has also developed its own mutual recognition arrangement to reduce the need for multiple testing and certification of measuring devices. This arrangement is called the OIML Mutual Acceptance Arrangement (MAA) and is intended to facilitate acceptance of OIML Certificates of Conformity across national borders
- The OIML MAA uses ISO/IEC 17025 compliance as part of the acceptance requirements for signatory bodies and also uses either accreditation or peer evaluation as the processes for determining acceptance into the MAA

# ACCREDITATION



Accreditation is an attestation of the competence and impartiality of conformity assessment bodies to carry out specific conformity assessment tasks. These bodies include but are not limited to calibration laboratories, medical laboratories, testing laboratories, inspection bodies, providers of proficiency testing, producers of reference materials, and bodies that certify management systems, products and persons, or undertake verification and validation. Most countries have a single national accreditation body responsible for all areas of accreditation in order to benefit from economies of scale, to avoid market confusion and to provide a single focal point for international agreements. When a country does not have an accreditation body, or where the AB is only recognized for limited scopes of accreditation, conformity assessment bodies can seek accreditation elsewhere. Although this is often a suboptimal solution for the conformity assessment body, it is often not economically viable for small economies to justify having their own AB.

Accreditation is an impartial and objective process that offers the least duplicative, the most transparent, the most widely accepted, and the least discriminatory route for the formal recognition world-wide of credible and trustworthy conformity assessment results.

For businesses trading internationally, recognition of accredited conformity assessment results comes through mutual recognition arrangements established among the accreditation body members of IAF and ILAC.

IAF ([www.iaf.nu](http://www.iaf.nu)) is the world forum for accreditation bodies and other bodies interested in conformity assessment in the fields of management systems, products, services, personnel and other similar programmes of conformity assessment.

ILAC ([www.ilac.org](http://www.ilac.org)) is the international organization for accreditation bodies accrediting calibration laboratories, testing laboratories, medical testing laboratories and inspection bodies, as well as providers of proficiency testing, and producers of reference materials.

Accreditation body members of IAF and ILAC operate in accordance with the international standard ISO/IEC 17011 “Conformity assessment - General requirements for accreditation bodies accrediting conformity assessment bodies”. Each organization maintains a recognition arrangement among signatory accreditation body members who have been successfully peer evaluated in accordance with this standard to demonstrate their competence. Signatories agree to accept the results of each other’s conformity assessment bodies under the arrangements, and so accredited conformity assessment under the accreditation of each signatory is able to be recognized internationally.

Both organizations work together and coordinate their efforts to enhance accreditation and conformity assessment worldwide. Together, they have a global vision of a single worldwide programme of conformity assessment which reduces risk for business, regulators and the consumer, by ensuring that accredited services can be relied upon; that government and regulators rely on the IAF and ILAC Arrangements to further develop or enhance trade agreements; and to support the freedom of world trade by eliminating technical barriers, realizing the free-trade goal of ‘tested, inspected or certified once and accepted everywhere’.

At a regional level, regional arrangements are managed by the regional co-operation bodies that work in harmony with ILAC and IAF. These include IAAC in the Americas, EA in Europe, APLAC & PAC in Asia-Pacific, AFRAC in Africa, SADCA in Southern Africa, and ARAC in the Arab region.

Accreditation also builds upon and is complimentary to the other key quality infrastructure components – standards and metrology, and IAF and ILAC work closely with the relevant institutions in these fields, as does IAAC at the regional level with its QI counterparts COPANT and SIM, through the QICA collaboration.

# CONFORMITY ASSESSMENT SERVICE PROVIDERS



There has in the past been some debate as to whether or not conformity assessment services form part of a National Quality Infrastructure, but they are certainly necessary for its effective implementation, so a description will be included here.

ISO/IEC 17000 defines conformity assessment as: “demonstration that specified requirements relating to a product, process, system, person, or body are fulfilled”. The methods for demonstrating conformity can include testing, inspection, suppliers’ declarations of conformity and

certification. Specified requirements include those contained in suppliers’ or purchasers’ specifications, national, regional or international standards or governmental regulations

Conformity assessment services are usually performed by organizations specializing in one or other activities, of which the main ones are described below. They may supply their services on a commercial (for profit) basis, or they may be operated or mandated by the government, but in all cases they typically charge a fee for their services.

 <p>Testing</p>	<p>A product is tested against a specific set of criteria, such as performance or safety. Testing is the most common form of conformity assessment. Testing also provides support for other types of conformity assessment such as inspection and product certification.</p>
 <p>Inspection</p>	<p>Inspection bodies play an essential role in cross-border trade. They act on behalf of governments and business partners (importers and exporters) by inspecting imported goods and materials. They are responsible for examining a huge range of products, materials, installations, plants, processes, work procedures and services, in the private as well as the public sector, and report on such parameters as quality, fitness for use and continuing safety in operation. The overall aim is to reduce risk to the buyer, owner, user or consumer of the item being inspected. Government and business often use their services to inspect imported goods and materials.</p>
 <p>Certification</p>	<p>Certification is formal assurance provided by an independent, third party certification body that a product, service, process, person, organization or management system conforms to specific requirements. In addition to the numerous product certification schemes that have been in existence for many years, other well-known examples are the certification of quality management systems and environmental management systems as conforming, respectively, to the ISO 9001 and ISO 14001 standards. More than a million business and public-sector organizations worldwide have had their management systems certified to one or both of these standards. Newer management standards that also allow for certification address food safety (ISO 22000), energy management (ISO 50001) and information security (ISO/IEC 27001).</p>

Once again, there is a strong interaction of conformity assessment activities with the overall Quality Infrastructure. Standards that define criteria for determining the conformity of products, processes and systems have long made a significant contribution to the economic component of sustainable development, and will no doubt continue to play a

role in facilitating the achievement of SDG9. However, there is increasing awareness that conformity assessment standards have an important role to play for most of the other SDGs, to help determine the extent to which all relevant actors in the sustainability arena are achieving their stated goals and targets.

# COPANT STRATEGIC PLAN 2016 – 2020



## VISION



- Promote cooperation for the development of the region through an efficient and relevant national standardization; active participation in international standardization; applying conformity assessment procedures according to international practices.

## STRATEGIES



- Building Capacity: Identify, promote and support activities to build the standardization infrastructure and capacities of COPANT members, motivating mutual communication, cooperation and collaboration.**
  - 1.1 Improve the technical competence of staff members of the NSBs in areas of standardization, conformity assessment and training of specialized human resources to help NSBs develop a solid national base so they may effectively move to regional and international level; identifying and leveraging resources from other organizations that are available for NSB capacity building.
    - Identify and share didactic and informative material on national and international standardization processes and procedures to improve the training capacity of the member body targeted to its stakeholders.**
      - The NSBs will share their material that will be posted at the COPANT portal
      - Explore collaboration between NSB in order to have translated materials
      - Create a database of experts or trainers to be published on the COPANT portal
    - Develop a best practices and education data base for stakeholder outreach and engagement strategies for effective participation in national and international technical standardization work.**
      - COPANT creates and maintains on its website an educational space on Quality Infrastructure that includes links to material and videos of its own or of other organizations. NSB members will require to share links to their sites containing this material
    - Have a permanent annual training program that allows members to develop their capacities so that they can meet the needs of their markets. Review their content annually.**
      - Provide training programs for NSBs
      - Request more NSBs to organize and host more training programs for COPANT members
    - Procedures and processes established to provide efficient and timely flow of information between NSBs and potentially leveraging COPANT secretariat as a central hub to share positions.**
      - Establishment of a space on the website to post information pertaining to press releases, achievements, projects etc.
      - Circulation of emails to Members to post relevant information
    - Improve communication between members with a focus on sharing information on the value of having common policy objectives and/or regional positions, including sharing voting positions.**
      - Establish a communication plan
      - Organize annually, during the week COPANT, Speed Networking meetings that allow members to conduct their business bilaterally or multilaterally
      - Align the strategic planning of COPANT with those of ISO and IEC and send comments and contributions to the elaboration of the strategic planning of these organizations
      - Share tools and technologies to facilitate development work COPANT

## STRATEGIES



- Increasing participation in International work for targeted economic areas: Strengthen the ability of COPANT members to target and have effective participation in Committee work at ISO and IEC in identified strategic area of importance to the member body.**
  - 2.1 Increased participation by COPANT countries' national standards bodies (NSBs) in ISO/IEC standardization and governance activities.
    - Strengthen mutual cooperation and communication on international standardization and improve the ability of NSBs to recruit new members to participate on technical committees.**
      - Collaborate and facilitate mentoring, twinning and other supportive programs and/or initiatives with the NSBs to establish their national mirror committees in areas of importance and convene information seminars and training workshops for targeted stakeholder groups and industry (e.g. the agriculture, tourism, manufacturing, energy and health sectors)
      - Promote the use of the existing discussion forums and create new ones when needed, to facilitate the exchange of information between NSBs actively involved in ISO and IEC TCs and those who are not and possibly, aligning whenever is possible the national positions, and identify potential staff exchange program between NSBs
    - Increased number of leadership positions at ISO/IEC held by COPANT member countries.**
      - Request that members submit to COPANT members their intentions to run for leadership positions in ISO and IEC and international committees (chair, secretariat, convenor) and suggest that members support the nominations of their fellow COPANT members
      - Increase the number of individuals who have management and coordination responsibilities in TC/SC/WGs
- Promoting Effective Conformity Assessment Services: Facilitate the use of International practices addressing the needs of COPANT members.**
  - 3.1 Promote the use of good international practices on conformity assessment services.
    - Share and promote good international practices on conformity assessment services.**
      - Promote and coordinate actions with IAAC
      - Develop report on best practices to be shared among COPANT member bodies
      - Promote the use of the ISO/CASCO toolbox in the region through dissemination, translation and training
    - Manage COPANT Focal Group on ISO/CASCO.**
      - Promote the active participation of COPANT members on the COPANT FG and also in ISO/CASCO work

# SIM STRATEGIC PLAN 2012 (REAFFIRMED IN NOV 2016)



## SIM Strategic Plan

This plan is to guide SIM leadership and members by presenting a clear vision and mission for SIM, by defining definitive goals of performance for the organization, and by assigning associated responsibilities to the appropriate committees within SIM.

### Vision

*To be a representative, transparent, competent, and worldwide-recognized regional metrology organization.*

### Values

*Cooperation, competence, effectiveness, fairness, solidarity, transparency, efficiency and inclusion.*

### Mission

*To promote and support an integrated measurement infrastructure in the Americas, which enables each member national metrology institutes (NMIs) to stimulate innovation, competitiveness, trade, consumer safety and sustainable development by effectively participating in the international metrology community.*

## Strategic Objectives

### I. Development of NMIs in the SIM Region

This Objective focuses on improving the technical capabilities of SIM NMIs, through training (internships, summer school, etc), mentoring, provision of (primary) traceability on specific technical services for scientific and legal metrology, assistance in implementation and maintenance of quality management system, inter-institute exchange of personnel, and promoting cooperative research projects among SIM NMIs. The goals of this Objective can be defined as improving the technical capabilities of SIM NMIs and increasing active SIM participation in the MRA and/or Treaty of the Metre. The activities identified to achieve this Objective are to be funded through resources made available from SIM NMIs, donor agencies, and membership fees.

Specific objectives are:

#### I.1 Develop Metrology for Innovation

- ACTION I.1.1: The SIM Council in cooperation with the SIM Technical Committee will develop and implement a 3-year plan to support the development of the metrology needed for emerging technologies (i.e., advanced manufacturing, nanotechnology and biotechnology). This plan will also promote the growth of cooperation for research in metrology among SIM NMIs.
  - Resources: IDB-BPR Project
  - Responsible for the execution: Ad-hoc Committee ( SIM-President, TC Chair, PDC, PC)

#### I.2 Develop Metrology for a Sustainable Development

- ACTION I.2.1: The SIM Council in cooperation with the SIM Technical Committee will develop and implement a 3-year plan to support the development of the metrology needs for Renewable Energies and Energy Efficiency.
  - Resources: PTB Project. OAS-NIST Project
  - Responsible for the execution: TC Chair, PDC, PC, SIM delegate in the Steering Committee of each Project
- ACTION I.2.3: The SIM Council in cooperation with the SIM Technical Committee will develop and implement a 3-year plan to support the development of the metrology needs for Climate Science, Biodiversity and the Green Economy.
  - Resources: PTB Project. OAS-NIST Project
  - Responsible for the execution: TC Chair, PDC, PC, SIM Member in the Steering Committee of each Project (chairs of the corresponding MWG)

#### I.3 Increase the technical capabilities of SIM NMIs

- ACTION I.3.1: The SIM Council will develop and implement a 2-year plan to increase the technical capabilities on SIM NMIs. This will include school, courses, workshops and internships.

- Resources: NIST Program, PTB Project CABUREK, BIPM CBKT Program.
- Responsible for the execution: PDC, PC

#### **I.4 Support the implementation of the redefinition of the SI in the region**

- ACTION I.4.1: The SIM Council will develop and implement a 2-year plan to support the implementation of the redefinition of the SI in the region. This will include, dissemination, workshops and traceability strategy.
  - Resources: SIM NMIs resources
  - Responsible for the execution: Ad-hoc WG

## **II. Building a Strong SIM Organization**

This Objective focuses on improving the actual operation of the SIM organization. This includes our internal organizational development (e.g., committees, General Assembly, leadership, Secretariat, Council), awareness and outreach activities, establishment of effective liaisons with other stakeholder organizations, information sharing via the SIM website, strengthening SIM's legal status. This Objective is important in establishing the relevance and effectiveness of SIM as a worldwide leader in metrology, which is critical in ensuring that the interests of SIM NMIs are well understood and represented at the international level.

Specific objectives are:

### **II.1 Implement mutually beneficial ways of interaction with outside organizations**

- ACTION II.1.1: The SIM Council will develop a plan for interaction with external organizations in metrology that will include a list of beneficial interactions, a clear statement of mutual benefits, and a plan for development of the required relations. The plan will include specific interactions with CIPM-BIPM, other RMOs, OIML and NCSLI.
  - Resources: SIM NMIs Budgets, IDB-BPR Project

- Responsible of execution: SIM President
- ACTION II.1.2. The SIM Council will develop a plan to strengthen the Quality Infrastructure Council of the Americas (QICA) role in the region and maximize its benefits for SIM NMIs.

Resources: SIM NMIs Budgets, IDB-BPR Project, PTB Project

Responsible of execution: SIM President

### **II.2 Improve means of communication among SIM members**

- ACTION II.2.1: The SIM Council will implement an effective means of maintaining a useful and current website.
  - Resources: IDB-BPR Project
  - Responsible of execution: SIM Secretary

### **II.3 Establish SIM as a Legal Entity**

- ACTION II.3.1: The SIM Council will implement SIM as a Legal Entity, as approved by the SIM General Assembly.
  - Resources: SIM NMIs resources
  - Responsible of execution: SIM President, LATU Delegate

### **II.4 Build a financially sustainable institution**

ACTION II.4.1: The SIM Council will periodically review the priorities established in this strategic plan in order to develop proposals for external funding from organizations such as OAS, UN Development Program, PTB, IDB, UNIDO and NIST Programs. Special attention will be given to the OAS Project, due to the long fruitful relationship between the two organizations, and since Metrology has been given a high priority by the Committee on Science and Technology. The need of establishing a member fee will be periodically reviewed by the General Assembly.

## II.5 Increase the participation of SIM members in leading position

ACTION II.5.1: The SIM Council will implement a plan to mentor and train SIM metrologists in effective engagement in international metrology activities for continuity and growth of SIM organization. This plan will include the effective organization of training and involvement opportunities as part of the schedule of SIM week activities.

Resources: BIPM CBKT Program, SIM NMIs budgets

Responsible: PDC

## III. Fulfill Regional Metrology Organization Obligations under the CIPM MRA

This Objective focuses on the roles and responsibilities that SIM must fulfill as an official regional metrology organization recognized by the JCRB under the CIPM MRA. These obligations include the organization of regional comparisons according to SIM NMI demands, regional review of SIM member's CMC submissions, inter-regional review of CMC submissions by other RMOs, required review of the quality systems of the NMIs within SIM, and representing SIM at the JCRB. Additionally, these obligations include a reasonable and distributed participation of SIM NMIs in CIPM-sponsored activities, such as key comparisons and consultative committees. These obligations should be funded directly by the member NMIs without the need for any external or common source of funds.

Specific objectives are:

### III.1 Ensure effective international representation of SIM

- Action III.1.1: SIM Council- will participate fully in the planning of the future of the CIPM MRA with a particular emphasis on ensuring that the CIPM MRA meets the needs of all SIM NMIs.
- Responsible: President, TC Chair, QSTF Chair, PC, NORAMET Representative

### III.2 Ensure efficient and effective technical review of regional and inter-regional CMCs submitted for publishing in the KCDB

- ACTION III.2.1 : SIM Technical Committee will develop and implement procedures to ensure full and timely participation of member NMIs in the review process
  - Responsible: TC Chair

### III.3 Ensure efficient and effective review of the quality systems of SIM NMIs to ensure compliance with the requirements of the CIPM MRA and serve other needs of SIM NMIs

- ACTION III.3.1: The SIM QSTF will continue to improve the efficiency and effectiveness of the SIM Quality Systems review process by annually reviewing all procedures and modifying SIM-09 as required.
  - Responsible: QSTF Chair
- The SIM QSTF will interact with the SIM Council to consider extending SIM Quality Systems reviews to areas of metrology beyond those required by the CIPM MRA.
  - Responsible: QSTF Chair, SIM President

### III.4 Organize and implement regional key comparisons required to support the calibration programs of SIM NMIs and to provide linkage to BIPM key comparisons

- ACTION III.4.1: In response to efforts to reduce the burden of the CIPM MRA, the Technical Committee will prepare universal guidelines for determining when SIM should perform a SIM key or supplemental comparison. SIM comparisons must be specifically developed to promote the technical capabilities of SIM NMIs.
  - Responsible: TC Chair
- ACTION III.4.2: Metrology Working Groups will develop strategic plans stating the needed regional comparisons, expected participants, and approximate timelines based upon on the general guidelines from the Technical Committee.
  - Responsible: MWG Chairs

Drafted April 2012  
Revised and Approved during GA 2016 (Montevideo; November 14- 15, 2016)

# IAAC STRATEGIC PLAN 2016 – 2020



Inter American Accreditation Cooperation

## 2016-2020 IAAC STRATEGIC PLAN

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This document is classified as an IAAC Administrative Document.

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### AVAILABILITY

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Updates: IAAC AD 006/15  
Date of Issue: September 11, 2015 2016-2020 IAAC STRATEGIC PLAN

Pages 1 of 11



Inter American Accreditation Cooperation

## 2016-2020 IAAC STRATEGIC PLAN

### Introduction

The Inter American Accreditation Cooperation (IAAC) is a regional organization that works through the joint efforts of organizations and professionals in the area of accreditation and conformity assessment. IAAC coordinates its activities through the present "Strategic Plan of IAAC for the period 2016-2020". This plan defines the objectives, goals, actions and responsibilities.

This Strategic Plan is based on the vision, mission, policies, objectives and documents of the of quality management system of IAAC which are aligned with the ILAC and IAF.

In this new version of the Strategic Plan, we have sought to make it more flexible and facilitate monitoring, unifying objectives and avoiding duplication of goals and actions.

The development of this Plan has considered the IAAC Strategic Plan valid thru 2015 and the ILAC Strategic Plan (ILAC-R3:12/2014) and IAF (IAF Strategic Plan 2015-2019).

The strategic objectives are:

- **Objective 1:** Strengthen the process and management of the IAAC MLA, maintaining and increasing the number of the IAAC MLA scopes and their recognition in IAF and ILAC.
- **Objective 2:** Increase the interaction and influence in ILAC and IAF. Strengthen linkages with other regional entities.
- **Objective 3:** Promote the participation of members of IAAC, taking account of their needs and expectations.
- **Objective 4:** Strengthen the organization in technical aspects of management and presence and influence in the region; and to achieve and maintain economic/financial sustainability and increase resources.

Updates: IAAC AD 006/15  
Date of Issue: September 11, 2015 2016-2020 IAAC STRATEGIC PLAN

Pages 2 of 11



**Inter American Accreditation Cooperation**

**2016-2020 IAAC STRATEGIC PLAN**

**Objective 1: Strengthen the process and management of the IAAC MLA maintaining and increasing the number of the IAAC MLA scopes and their recognition in IAF ILAC.**

GOAL	ACTIONS	RESPONSIBLE PARTIES
<b>1.1 Improve the MLA peer evaluation process</b>	1.1.1 Harmonize criteria in the operation of the accreditation body members, based on the main international ISO/IEC standards (applicable to the AB and the CABs) and in the documents of IAF and ILAC, agreeing to the criteria applicable to peer evaluations and in the MLA Group decisions.	MLA Chair TC Chair
	1.1.2 Do benchmarking with IAF and ILAC and regional accreditation bodies.	MLAC Chair
	1.1.3 Take actions for the improvement of the performance of the MLA evaluation process.	MLAC Chair

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 3 of 11



**Inter American Accreditation Cooperation**

<b>1.2 Ensure a sufficient number of highly qualified peer evaluators for all MLA programs</b>	1.2.1 Maintain and intensify training activities for the standards and requirements applicable to the ABs and the CABs and the harmonization activities for peer evaluators performance.	MLAC Chair TSC Chair
	1.2.2 Ensure the necessary number of peer evaluators for each accreditation program, existing and new, with the required competency.	MLAC Chair
<b>1.3 Identify and implement the new scopes in which IAAC needs to work for its MLA</b>	1.3.1 Proactively and continually analyze for the possibility of additional scopes of accreditation and conformity assessment in the medium and long term, in view of the needs of stakeholders.	TC Chair MLAC Chair
	1.3.2 Develop the required documents for the new agreed MLA scopes.	TC Chair
	1.3.3 Train personnel that will participate in these new programs.	TSC Chair
<b>1.4 Maintain and increase the recognitions of ILAC and IAF</b>	1.4.1 Inform the members of the new requirements that must be met by the regions.	PSC Chair
	1.4.2 Develop and implement a program of activities to meet the new requirements and the recognition for new programs.	TC Chair MC Chair
	1.4.3 Optimize the evaluations to obtain recognition.	MLAC Chair

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 4 of 11



**Inter American Accreditation Cooperation**

	1.4.4. Follow-up on the results of the performed evaluations to obtain recognition.	IAAC Quality Manager MLAC Chair
<b>1.5 Disseminate and promote the MLAs</b>	1.5.1 Promote the acceptance of the certificates and reports issued by conformity assessment bodies accredited through established Multilateral Recognition Agreements.	IAAC members IAAC Vice Chair
	1.5.2 Reach out and promote the IAAC MLAs to all stakeholders.	PSC Chair IAAC members

**Objective 2: Increase interaction and influence in ILAC and IAF. Intensify linkages with other regional entities.**

<b>GOAL</b>	<b>ACTIONS</b>	
<b>2.1 Ensure the link between IAAC with IAF and ILAC.</b>	2.1.1 Assure active participation in the ILAC and IAF Committees and other groups of interest to IAAC, supporting potential participants.	IAAC Chair
	2.1.2. Develop strategies to increase the representation and influence of the region in ILAC and IAF.	IAAC Chair
	2.1.3 Designate those responsible to attend the IAF and ILAC meetings, analyzing in advance the information so that the IAAC consensus position may be presented.	IAAC Chair

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 5 of 11



**Inter American Accreditation Cooperation**

<b>2.2 Increase the exchange among regions and with the accreditation-related regional organizations</b>	2.1.4 Inform IAAC members about news, meetings, assemblies and possible economic support from ILAC and IAF.	PSC Chair
	2.1.5 Provide information on the operation of IAF/ILAC, its committees, the forms of voting, involvement of conformity assessment bodies and of IAAC, etc.	PSC Chair
	2.1.6 Facilitate the exchange of information among accreditation bodies members of IAAC and the members of IAF and ILAC.	IAAC Vice Chair
	2.1.7 Ensure that IAAC participates in international evaluations.	IAAC Vice Chair
	2.2.1 Strengthen linkages and mutual interactions with the accreditation cooperations recognized by IAC and IAF and those under development as well as with other relevant technical organizations.	IAAC Chair
	2.2.2 Undertake joint technical and promotional activities.	MC Chair TC Chair
	2.3.1 Promote actions in the framework of the Quality Infrastructure Council of the America.	IAAC Chair
<b>2.3 Intensify the institutional interaction with SIM and COPANT</b>	2.3.2 Increase the technical interactions with SIM and COPANT.	IAAC Chair
	2.3.3 Promote the active participation of IAAC members in the development of conformity assessment standards through the standard bodies members of COPANT.	MC Chair

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 6 of 11



**Inter American Accreditation Cooperation**

**Objective 3: Promote the participation of all members of IAAC satisfying their needs and expectations.**

GOAL	ACTIONS	
<p><b>3.1 Increase the participation of members in the operation of IAAC</b></p>	<p>3.1.1 Encourage greater participation and commitment of the members for their attendance and contributions in Committees, Subcommittees and Working Groups of IAAC, occupying key positions.</p> <p>3.1.2 Ensure members are aware that maintaining their commitments in the Committees, Subcommittees and Working Groups for individual and group work is critical.</p> <p>3.1.3 Provide guidance to the members regarding the operation of IAAC, in particular new members.</p> <p>3.1.4 Learn about and meet the needs and expectations of the members of IAAC.</p>	<p>IAAC Vice Chair</p> <p>IAAC Vice Chair</p> <p>IAAC Secretary</p> <p>IAAC Vice Chair</p>
<p><b>3.2 Transmit and disseminate information and knowledge in the region to improve current accreditation activities and about demands of new scopes</b></p>	<p>3.2.1 Support IAAC members by facilitating participation, the exchange of information and knowledge, collaboration, cooperation and mutual assistance among the AB members of IAAC and with those of IAF and ILAC, through training activities, expert meetings and exchange of information and experience.</p>	<p>MC Chair</p>

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 7 of 11



**Inter American Accreditation Cooperation**

<p><b>3.3 Promote greater participation of business, end users, and conformity assessment bodies in activities of IAAC</b></p>	<p>3.2.2 Exchange information among members regarding the activities developed or in development of creditable schemes (WADA, GLOBALGAP.)</p> <p>3.3.1 Identify and meet the needs and expectations of business, end users, and the conformity assessment bodies and act accordingly.</p> <p>3.3.2 Increase the participation of certification and inspection bodies, laboratories, companies and other users of conformity assessment in the assemblies of IAAC.</p>	<p>TC Chair</p> <p>IAAC Vice Chair</p> <p>IAAC Members</p>
<p><b>3.4 Encourage the participation of regulators and agencies involved in economic development in IAAC activities</b></p>	<p>3.4.1 Ensure that authorities, regulatory agencies, business organizations, companies, professional entities, scientific-technical societies and other stakeholders in each of the countries of the regions understand the benefits of accreditation and the meaning of the MLA thru publications, presentations, etc.</p> <p>3.4.2 Identify and meet the needs and expectations of regulators and agencies involved in economic development and act accordingly.</p> <p>3.4.3 Promote the relationship with national authorities to improve the support to the accreditation bodies, disseminating and promoting IAAC activities to governmental entities.</p>	<p>IAAC members IAAC Chair and other members representing IAAC at events.</p> <p>IAAC members</p> <p>IAAC members</p>

Updates:  
Date of Issue: September 11, 2015

IAAC AD 006/15  
2016-2020 IAAC STRATEGIC PLAN

Pages 8 of 11



**Inter American Accreditation Cooperation**

<p><b>3.5 Respond to changes in national and international policies as well as governmental and private policies that directly and indirectly affect the activity of the accreditation bodies</b></p>	<p>3.4.4 Promote the participation in IAAC and in ILAC/IAF of regulators and agencies and groups involved in economic development through the dissemination of successful cases.</p> <p>3.5.1 Identify the existence and/or development of programs or recognition or evaluation that present themselves as an alternative to accreditation from either regulators or private entities. Develop a plan to counteract or eliminate this situation.</p>	<p>IAAC members</p> <p>IAAC members</p>
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**Objective 4: Strengthen the organization in technical aspects of management and presence and influence in the region; and to achieve and maintain economic/financial sustainability and increase resources.**

GOAL	ACTIONS	
<p><b>4.1 Ensure that IAAC operates effectively</b></p>	<p>4.1.1 Streamline the work of the General Assembly, the Committees, Subcommittees, and Working Groups, addressing issues of interest to all parties, achieving commitments and measuring the effectiveness of these meetings.</p> <p>4.1.2 Strengthen the functioning of the Committees, Subcommittees and Working Groups in the development, revision, translation and dissemination of the documentation.</p>	<p>IAAC Chair</p> <p>DSC Chair</p>

Updates: IAAC AD 006/15  
Date of Issue: September 11, 2015  
2016-2020 IAAC STRATEGIC PLAN  
Pages 9 of 11



**Inter American Accreditation Cooperation**

	<p>4.1.3 Review periodically and follow up on updates and/or publication of documents related to accreditation.</p> <p>4.1.4 Ensure and control that the information in the web site is up to date and complete.</p> <p>4.1.5 Maximize the use of the web site of IAAC as a tool for promotion, training, storage and access to documentation and information. Encourage that all the AB's site include the ILAC, IAF and IAAC logos.</p> <p>4.1.6 Increase the use of the IAAC website to improve the operations of the General Assembly, the Committees, Subcommittees, Working Groups and peer evaluations, implementing more information tools to discuss policies and documents.</p>	<p>DSC Chair</p> <p>IAAC Secretary</p> <p>PSC Chair</p> <p>IAAC Secretary</p>
<p><b>4.2 Promote accreditation as the means to generate confidence in conformity assessment activities</b></p>	<p>4.2.1 Disseminate, promote and facilitate the adoption and implementation of standards, guidelines and application of international documents for internationally recognized accreditation.</p> <p>4.2.2 Develop actions to raise awareness about accreditation and the IAAC MLA.</p>	<p>PSC Chair</p> <p>PSC Chair</p> <p>IAAC Treasurer</p>
<p><b>4.3 Increase income and resources.</b></p>	<p>4.3.1 Generate actions to attain an organization with its own and adequate resources.</p> <p>4.3.2 Search support from regional and international organizations for the development of training, dissemination and international representation.</p>	<p>IAAC Chair</p> <p>IAAC Treasurer</p>
	<p>4.3.2 Allocate resources, giving priority to the most urgent needs.</p>	<p>IAAC Treasurer</p>

# SUMMARY OF NATIONAL QUALITY INFRASTRUCTURE MATURITY INDICATORS IN THE AMERICAS

Country	Population (2015, World Bank x1000)	2015 WB GDP (MUSD)	2015 WB GDP Capita (USD)	Year of NSB formation	NSB: Member of COPANT?	Official Language (LA)	Member of ISO-TG	Number of ISO-TG	Member of EC?	Code(s) (Year)	Member of SMI?	SMI Maturity Assessment	Member of BPM?	Member of OIML?	Member of IAC?	Member of ILAC?	Member of IAF?	Overall maturity
<b>NORTH AMERICA</b>																		
Canada	35852	1550536	43248	1970	SCC	French/English	Full	375	Full	1963	MRC	1	Full	Full	SCC	FULL/MRA	FULL/MRA	High
Mexico	127017	1148793	9005	1999	USN	Spanish	Full	131	Full	1969	CIM	2	Full	Corresp	EMA	FULL/MRA	FULL/MRA	High
USA	321418	18036648	56115	1918	ANSI	English	Full	598	Full	1963	MST	1	Full	Full	Various	FULL/MRA	FULL/MRA	High
<b>CENTRAL AMERICA</b>																		
Antigua/Barbuda	92	1259	13714	1992	ABBS	English	Subscriber	4	Affiliate	1988	ABBS	5	No	No	No AB	No	No	Low
Bahamas	284	4385	15429	1973	BBSI	English	Full	39	Affiliate	1970	BBSI	4	No	Corresp	No AB	No	No	Medium
Belize	359	1752	4878	1992	BBS	English	Subscriber	0	Affiliate	1992	BBS	5	No	Corresp	No AB	No	No	Low
Costa Rica	4828	54136	11260	1987	INTECO	Spanish	Full	38	Affiliate	1970	LACOMET	3	Associate	Corresp	ECA	FULL/MRA	FULL/MRA	High
Cuba	11390	?	?	1973	IC	Spanish	Full	203	Associate	1964	SENERIE/TUBIDIV	7	Associate	Full	OMARC	No	No	Medium
Dominica	72	517	7116	1999	DBOS	English	Corresp	7	Affiliate	1990	DBOS	5	No	No	No AB	No	No	Low
Dom. Rep.	10238	68102	6468	2012	INDOCAL	Spanish	Corresp	6	Affiliate	1971	IDC	5	No	Corresp	ODAC	No	No	Low
El Salvador	6126	25850	4219	2011	OSH	Spanish	Full	12	Affiliate	1975	CIM	4	No	No	OSA	FULL/MRA	No	Low
Grenada	107	984	9212	1989	GBS	English	No	0	Affiliate	1982	GBS	4	No	No	No AB	No	No	Low
Guatemala	16343	63794	3903	1992	COGUAMOR	Spanish	Corresp	2	Affiliate	1986	CIM	4	No	Corresp	OGA	No	No	Low
Haiti	10771	8765	818	2012	BHN	French	Corresp	2	Affiliate	1984	BHN	5	No	No	No AB	No	No	Low
Honduras	8075	20420	2528	2015	OHN	Spanish	Corresp	2	Affiliate	1988	CIM	5	No	No	No AB	No	No	Low
Jamaica	2725	14482	5232	1989	BSJ	English	Full	40	Affiliate	1971	BSJ	3	Associate	No	OHA	No	No	Low
Nicaragua	6082	12892	2086	1998	MFIC	Spanish	Corresp	0	No	1971	LANAMET	3	No	No	JANMAC	FULL/MRA	No	Medium
Panama	3929	52132	13268	1997	COPAMT	Spanish	Full	54	No	1972	CENAMEP	3	Associate	Corresp	OHA	FULL/MRA	No	Low
St. Kitts & Nevis	56	876	15771	1999	SKOBS	English	Corresp	0	Affiliate	1996	SKOBS	5	No	No	No AB	No	No	Low
St. Lucia	185	1431	7735	2000	SLBS	English	Full	6	Affiliate	1987	SLBS	4	No	No	No AB	No	No	Low
St. Vincent & Grenadines	109	737	6739	1992	SVGBS	English	Subscriber	0	Affiliate	2004	SVGBS	5	No	No	No AB	No	No	Low
The Bahamas	388	8853	22817	2013(1)	BBSQ	English	Corresp	5	Affiliate	2002	BBSQ	4	No	No	No AB	No	No	Low
Trinidad & Tobago	1380	23559	17321	1972	TIBS	English	Full	74	Affiliate	1964	TIBS	3	No	Corresp	TILABS	Associate	No	Medium
<b>SOUTH AMERICA</b>																		
Argentina	43416	583168	13431	1995	IBRAR	Spanish	Full	372	Full	1983	INTI	2	Full	Corresp	OBA	FULL/MRA	FULL/MRA	High
Bolivia	10724	32997	3076	1993	IBORCA	Spanish	Corresp	14	Affiliate	1971	IBN	3	Associate	No	DIR-HEMETRO	No	No	Medium
Brazil	207848	1774724	8538	1940	ABIT	Portuguese	Full	246	Full	1968	INMETRO	2	Full	Full	CECIB	FULL/MRA	FULL/MRA	High
Chile	17948	240796	13416	1973	IN	Spanish	Full	166	Full	1969	INN	3	Full	No	INN	FULL/MRA	FULL/MRA	High
Colombia	48229	292080	6051	1963	CONTEC	Spanish	Full	160	Full	1969	INMAC	3	Full	No	ONAC	FULL/MRA	FULL/MRA	High
Ecuador	16114	100176	6205	1970	INEN	Spanish	Full	52	Affiliate	1970	SEN	3	Associate	No	SAE	FULL/MRA	FULL/MRA	Medium
Guyana	767	3166	4127	1984	GIBS	English	Corresp	0	Affiliate	1970	GIBS	4	No	No	No AB	No	No	Low
Paraguay	6639	27093	4081	1963	INTN	Spanish	Corresp	0	Affiliate	1969	INTN	4	Associate	Corresp	OHA	FULL/MRA	No	Low
Peru	31376	189111	6027	1992 (Intercept)	INICAL	Spanish	Full	42	Affiliate	1963	INIC	3	Associate	Corresp	INICAL-DA	FULL/MRA	FULL/MRA	Medium
Suriname	542	5190	9485	2007	S38	Dutch	No	0	Affiliate	1984	S38	5	No	No	No AB	No	No	Low
Uruguay	3432	53442	15573	1971	UNIT	Spanish	Full	52	Affiliate	1970	URU	3	Full	Corresp	OHA	FULL/MRA	FULL/MRA	High
Venezuela	31108	?	?	1973	FONDOVORIMA	Spanish	No	0	No	1969	SENCAMER	4	Full	No	No AB	No	No	Low
<b>Colour coding</b>																		
Pending	2012-2016	No	Zero	1991-2016	GMET	1991-2016	No	Zero	No	1991-2016	GMET	Years	No	No	FULL/MRA	FULL/MRA	FULL/MRA	High
Subscriber	1976-2000	Subscriber	1-10	Associate	1971-1990	MDRAMET	Associate	3	Associate	1971-1990	MDRAMET	3	Associate	Corresponding	FULL	Associate	Associate	Medium
Correspondent	Before 1975	Correspondent	11-100	Full	Before 1970	GRAMET	Full	Over 100	Full	Before 1970	GRAMET	1 or 2	Full	Full	ASSOC	No AB	No AB	Low
Full		Full	Over 100	Affiliate		NDRAMET	Full		Full		SURAMET		Full	Full	No AB	FULL/MRA ONLY		

Note 1: Member of COOMET Eurasian Metrology Cooperation since 1991



UNITED NATIONS  
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