



Trade & Industrial Policy Strategies (TIPS) is a research organisation that facilitates policy development and dialogue across three focus areas: trade and industrial policy, inequality and economic inclusion, and sustainable growth

## QUALITY INFRASTRUCTURE IN BRAZIL

FEBRUARY 2021

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TIPS report for the Department of Trade, Industry and Competition. This country study is for a project on the alignment of the quality infrastructure/technical infrastructure in South Africa. The project includes four country case studies: Australia, Brazil, Kenya and South Korea. The case studies are available on the TIPS website.

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## ABBREVIATIONS

ABNT	Brazilian Association of Technical Standards (Associação Brasileira de Normas Técnicas)
AfCFTA	African Continental Free Trade Area
BIPM	International Bureau of Weights and Measures
BRICS	Brazil, Russia, India, China and South Africa.
CAINT	INMETRO - International Affairs Coordination (Coordenação-geral de Articulação Internacional)
CBR	Brazilian Committee for Technical Regulations
CEPAL	Economic Commission for Latin America and the Caribbean
CGCRE	General Accreditation Coordination (Coordenação-geral de Acreditação) (INMETRO)
CIPM	BIPM - International Committee for Weights and Measures
CNI	National Confederation of Industry (Confederação Nacional da Indústria)
CONMETRO	Brazilian National Council of for Metrology, Standardisation and Industrial Quality
CRM	Certified Reference Material
DIMCI	Directorate of Scientific Metrology and Technology (INMETRO)
dtic (the)	Department of Trade, Industry and Competition (South Africa)
ECI	Economic Complexity Index
GDP	Gross Domestic Product
HS	Harmonized System
IAAC	Interamerican Accreditation Cooperation
IAF	International Accreditation Forum
IEC	International Electrotechnical Commission
ILAC	International Laboratory Accreditation Cooperation
INMETRO	National Institute of Metrology, Quality and Technology
IPEM	State Institutes of Weights and Measures
ISO	International Organization for Standardisation
MERCOSUL	Southern Common Market (Mercado Comum do Sul)
MRA	Mutual Recognition Agreement
MRL	Multilateral Recognition Arrangement (IAF)
NBR	Brazilian Technical Standards (Normas Técnicas Brasileiras o Norma Brasileira)
Nedlac	South Africa's National Economic Development and Labour Council
NMI	National Metrology Institute
NMISA	National Metrology Institute of South African
OECD	Organisation for Economic Co-operation and Development
OIML	Organisation of Legal Metrology
PPP	Purchasing Power Parity
PTB	German National Metrology Institute (Physikalisch-Technische Bundesanstalt)
QI	Quality Infrastructure
QICA	Quality infrastructure Council of the Americas

RBMLQ-I	Brazilian Network of Legal Metrology and Quality (INMETRO)
SADC	South African Development Community
SEPEC	Special Secretary of Productivity, Employment and Competitiveness
SGT	MERCOSUL - Sub-Working Group (Sub-Grupo do Trabalho)
SIM	Interamerican Metrology System (Sistema Interamericano de Metrología)
SINMETRO	National System of Metrology, Standardisation and Industrial Quality
TI	Technical Infrastructure
TIPS	Trade & Industrial Policies Strategies (South Africa)
WTO	World Trade Organization

# 1 INTRODUCTION

## 1.1 Motivation and terminology

The Department of Trade, Industry and Competition (the dtic) commissioned Trade & Industrial Policy Strategies (TIPS) to conduct a study on the alignment of the technical infrastructure (TI) in South Africa. This study includes case studies on the quality infrastructure (QI) in four other countries (Australia, Brazil, Kenya and South Korea).

Brazil was selected as a case study because the country is, like South Africa, an emerging market and part of the BRICS (Brazil, Russia, India, China, South Africa) group. It is the largest country in South America and takes a leading role in the development of QI. At the same time, Brazil is also involved in the Portuguese-speaking countries of Africa.

Brazil was already one of the key case studies in the South African 2001 SQAM-Review (Nedlac, 2001). Annex 2 contains a summarised text of passages about Brazil from this reference document.

In this document the term *quality infrastructure* is used. This term was agreed on in 2017 by the International Organizations for Metrology (BIPM – International Bureau of Weights and Measures – and OIML – International Organization of Legal Metrology), Standards (ISO – International Organization for Standardization) and Accreditation (IAF – International Accreditation Forum and ILAC – International Laboratory Accreditation Cooperation), United Nations Industrial Development Organization (UNIDO), United Nations Economic Commission for Europe and The World Bank within the framework of the International Network on Quality Infrastructure (INetQI) co-operation network. Quality infrastructure is defined as:

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

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

*It relies on metrology, standardisation, accreditation, conformity assessment, and market surveillance (in regulated areas).*

Beyond international standardisation of the terminology, the understanding of quality infrastructure is also more comprehensive. It also includes the market and state-regulated area. QI serves to promote quality culture and goes beyond the narrow trade sector to include areas of health and environment.

## 1.2 Information base

Basic information on the Brazilian National System of Metrology, Standardization and Industrial Quality (SINMETRO) can be found on the National Institute of Metrology, Quality and Technology (INMETRO) website<sup>1</sup> where the history of the institution and the current tasks and activities of the departments are also described in detail. Information on standardisation and certification can be found on the website of the Brazilian Association of Technical Standards (ABNT).<sup>2</sup>

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<sup>1</sup> <https://www.gov.br/inmetro/pt-br>

<sup>2</sup> <http://www.abnt.org.br/>

The descriptive parts of this study are based mainly on the material published on the institutional websites.

Various publications contribute to the understanding of QI in Brazil. These include both scientific publications and reports on international co-operation projects. Martin Kellermann provides a comprehensive description of the development of metrology at INMETRO in a case study for the Physikalisch-Technische Bundesanstalt (PTB), the German National Metrology Institute (NMI), and the World Bank (Kellermann, 2019). He writes about the gradual development of metrological competence and the international recognition of INMETRO. At the same time, PTB's long-lasting support is highlighted.

Innovative reports on QI in Brazil include the studies on the impact of the quality infrastructure, which were funded by the Economic Commission for Latin America and the Caribbean (CEPAL) and PTB. In a case study on the measuring instrument industry, Jorge Gonçalves and Taynah Lopez de Souza describe the impact of the quality infrastructure on the economy and society (Gonçalves et al., 2015).

There are also publications on legal metrology (Rodrigues Filho and Gonçalves, 2015, Rodrigues Filho and SORATTO, 2017, Rodrigues Filho, 2017), the importance of accreditation (Moura and Borges, 2015) and the contribution of metrology to environmental and climate protection (De Oliveira et al., 2010; Brandi and De Souza, 2009; Brandi and Dos Santos, 2016)

For static data, this report draws on the author's own study (Harmes-Liedkte and Oteiza Di Mateo, 2019) and the corresponding data sources of the international QI organisations (BIPM, ISO, IAF and ILAC).

Guideline-based interviews contributed to a better understanding of the current situation of the Brazilian quality infrastructure. The interview partners were Ricardo Fermam, Deputy Head of the Department for the Development of INMETRO's Accreditation Programme, Camila Torres, ABNT's Certification, Sustainability Standards Officer and Thalita Romano, ABNT's International Standardisation Officer. In addition, Rogerio de Oliveira Corrêa, Dolores Teixeira Brito, Maria Roth and Valnei Cunha from INMETRO and Lieselotte Seehausen and Anett Matbadal from PTB commented on a draft version of the study. As usual, the content and possible errors in the document are the sole responsibility of the author.

## **2 CONTEXT**

Brazil is South America's largest and most influential country, a rising economic power and one of the world's biggest democracies. On 8.5 million square kilometres it has a population of over 211 million people (IBGE, n.d.). Brazil has the ninth-largest gross domestic product (GDP) in the world by nominal measures.

The country is a founding member of the United Nations, the G20, BRICS, Union of South American Nations, MERCOSUL (Southern Common Market – Mercado Comum do Sul), Organization of American States, Organization of Ibero-American States and the Community of Portuguese Language Countries. After the Asian and Russian financial crises (2017), MERCOSUL adopted a protectionist stance to guard against exposure to volatile foreign markets, and is negotiating Free Trade Agreements with the European Union and Canada.

Brazil is an upper-middle-income country, ranking as the 52nd most prosperous economy per capita out of 133 countries. Its 211 million inhabitants have a GDP per capita of US\$9 880 (US\$15 662 PPP 2017). In 2017 the GDP of Brazil was US\$2.06T (OEC, n.d.). GDP per capita growth has averaged -1.3% over the past five years, and is below regional averages (Atlas of Economic Complexity, n.d.)

Brazil is the 22nd largest export economy in the world. In 2017, Brazil exported US\$219 billion and imported US\$140 billion, resulting in a positive trade balance of US\$78.3 billion.

The top exports of Brazil are soybeans (US\$25.9 billion), iron ore (US\$20.1 billion), crude petroleum (US\$17.4 billion), raw sugar (US\$11.4 billion) and cars (US\$6.78 billion), using the 1992 revision of the HS (Harmonized System) classification. Its top imports are refined petroleum (US\$11.4 billion), vehicle parts (US\$5.1 billion), packaged medicaments (US\$3.1 billion), integrated circuits (US\$3.03 billion) and cars (US\$3 billion) (OEC, n.d.).

The top export destinations of Brazil are China (US\$48 billion), the United States (US\$25.1 billion), Argentina (US\$17.8 billion), the Netherlands (US\$7.57 billion) and Germany (US\$6.18 billion). The top import origins are China (US\$27 billion), the United States (US\$20.4 billion), Argentina (US\$9.3 billion), Germany (US\$9.3 billion) and South Korea (US\$5.39 billion) (OEC, n.d.).

Brazil ranks as the 48th most sophisticated country in the Economic Complexity Index (ECI). Compared to a decade before, Brazil's economy has become less complex, worsening its positions in the ECI ranking. A lack of diversification in exports is reported as driving Brazil's worsening complexity (Atlas of Economic Complexity, n.d.)

Brazil experienced a period of economic and social progress between 2003 and 2014 when more than 29 million people were lifted out of poverty and inequality declined significantly. Since 2015, however, the pace of poverty and inequality reduction seems to have stagnated. In the wake of a sharp recession, Brazil went through a phase of profoundly depressed economic activity. The year 2017 saw the beginning of a slow recovery in Brazil's economic activity, with 1.1% of GDP growth in 2017 and 2018 – mainly because of a weak labour market, investments deferred by uncertainties about the elections, and the truckers' general strike, which brought economic activities to a halt in May 2018. Restoring fiscal sustainability is the most pressing economic challenge for Brazil. To address the dynamics of unsustainable debt, the government enacted Constitutional Amendment 95/2016, which limits the rise of public spending.

Jair Bolsonaro has been Brazil's President since January 2019. Led by Economy Minister Paulo Guedes, the government has been active in implementing a neoliberal policy of privatisation and deregulation measures defined in the Economic Freedom Law (Lei da Liberdade Econômica, Law n° 13.874/2019). In the area of quality infrastructure, the Bolsonaro government is preparing a regulatory reform based on the New Approach of the European Union. In contrast to the previous governments under the leadership of the Labour Party, the Bolsonaro government rejects an active industrial policy.

Since 2020, Brazil has been particularly hard hit by the COVID-19 crisis and has one of the highest number of cases worldwide.

### **3 STRUCTURE AND GOVERNANCE**

#### **3.1 SINMETRO and CONMETRO**

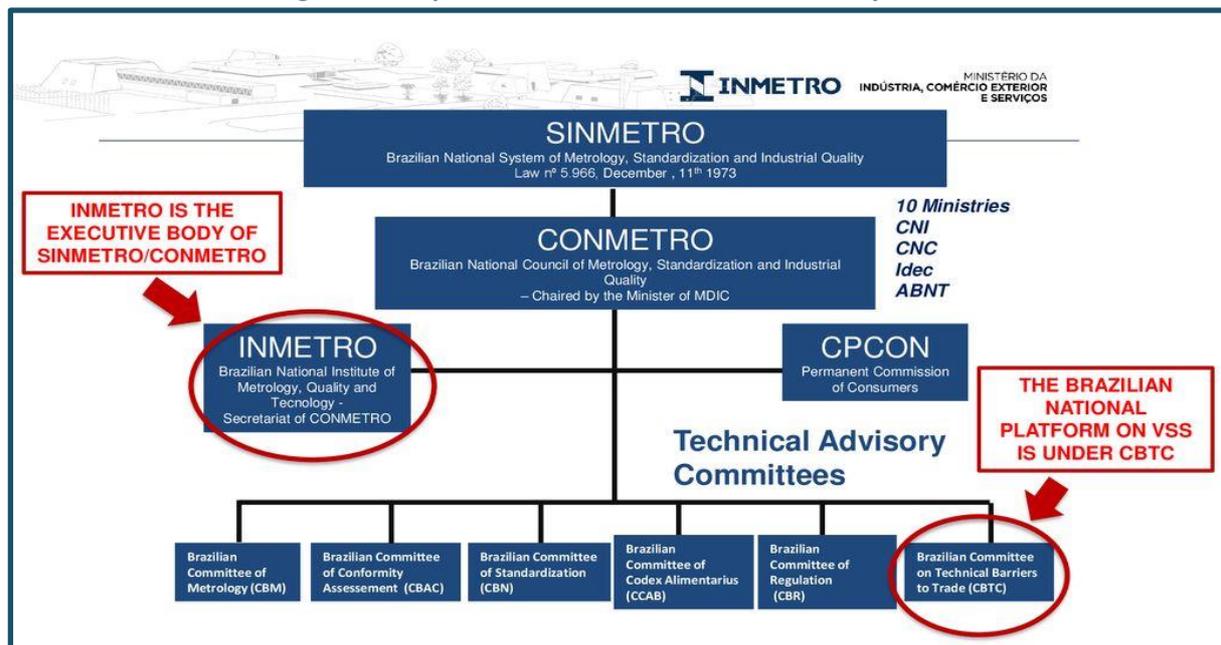
Brazil's quality infrastructure is seen as a system, called SINMETRO. The national QI is based on public and private entities, which carry out activities related to metrology, standardisation, industrial quality and conformity assessment. SINMETRO was established by Law 5966 of December 11, 1973 (Government of Brazil, 1973), with an infrastructure of technological services capable of evaluating and certifying the quality of products, processes and services through certification bodies, a network of testing and calibration laboratories, training bodies, proficiency testing bodies and inspection bodies, all accredited by INMETRO.

The previous governance system of the Brazilian quality infrastructure is no longer in force. In April 2019, President Bolsonaro dissolved hundreds of government consultation bodies by

decreto 9 759. These included the Brazilian National Council of for Metrology, Standardisation and Industrial Quality (CONMETRO) and its Technical Committees, which have not met since. In the government's view, these collegial bodies are considered inactive, paralysed, with no room left for manoeuvre. It is not clear at the time of writing this report whether CONMETRO will be re-established.

The following comments refer to the previously existing national quality system. This system has supported standardisation bodies, scientific and industrial metrology and legal metrology laboratories in the federal units/states.<sup>3</sup> This structure was formed to meet the needs of industry, commerce, government and consumers. SINMETRO was involved in many activities related to the Brazilian Quality and Productivity Program, which aims to improve the quality of products, processes and services in industry, commerce and the federal administration.

Figure 1: Graphic Illustration of the Brazilian QI system



Source: INMETRO

Among the organisations that make up the SINMETRO, the following can be listed as main ones:

- CONMETRO and its Technical Committees,
- INMETRO,
- Accredited Certification Bodies, (Quality Systems, Environmental Management Systems, Products and Personnel),
- Accredited Inspection Bodies,
- Accredited Training Bodies,
- Accredited Proficiency Testing Provider Body,
- Accredited Laboratories - Calibrations and Tests
- The Brazilian Association of Technical Standards – ABNT,
- State Institutes of Weights and Measures – IPEM, and
- The State Metrological Networks.

<sup>3</sup> The federative units of Brazil (Portuguese: unidades federativas do Brasil) are subnational entities with a certain degree of autonomy (self-government, self-regulation and self-collection) and endowed with their own government and constitution, which together form the Federative Republic of Brazil. There are 26 states (estados) and one federal district (distrito federal). [https://en.wikipedia.org/wiki/States\\_of\\_Brazil](https://en.wikipedia.org/wiki/States_of_Brazil)[https://en.wikipedia.org/wiki/States\\_of\\_Brazil](https://en.wikipedia.org/wiki/States_of_Brazil) (Accessed 2 April 2020).

CONMETRO was SINMETRO's governing body and is chaired by the Special Secretary of Productivity, Employment and Competitiveness (SEPEC) of the Ministry of Economy, as the previous responsible Ministry of Development, Industry and Foreign Trade no longer exists. The council consisted of the following members:

- Ministers (State Development, Industry and Foreign Trade; Environment; Labour and Employment; Health; Science, Technology and Innovation; Foreign Affairs; Justice; Agriculture, Livestock and Supply; Defence; Education; Cities)
- Presidents of the INMETRO; ABNT; National Confederation of Industry (CNI); Consumer Protection Institute; and the National Confederation of Trade in Goods, Services and Tourism.

CONMETRO has worked through its technical advisory committees, which were open to society through the participation of entities representing academia, industry, trade and other activities interested in the issue of metrology, standardisation and quality in Brazil. CONMETRO's technical advisory committees are the Brazilian Committee for Standardisation), Brazilian Committee for Conformity Assessment, Brazilian Committee for Codex Alimentarius, Brazilian Committee for Technical Barriers to Trade (CBTC) and the Brazilian Committee for Technical Regulations (CBR).

In addition, CONMETRO had the Brazilian Permanent Commission of Consumers and the Brazilian Life Cycle Assessment Program (PBACV) as advisory bodies. (INMETRO, n.d.-a)

### **3.2 INMETRO**

INMETRO is a federal agency linked to SEPEC in the Ministry of Economy. INMETRO is the executive body of CONMETRO, and its main competencies are:

- Scientific and industrial metrology,
- Legal metrology,
- Conformity assessment,
- Accreditation body,
- Executive Secretary of CONMETRO and its technical advisory committees, and
- Supervisor of Certification Inspection and Verification Bodies.

INMETRO is also the official monitoring body for compliance with the principles of OECD Good Laboratory Practice.

In 2018 the INMETRO budget was R\$929.442 million, coming from the federal government. Revenues in 2018 reached R\$784.7 million, almost R\$20 million more than in 2017. In 2018, 77% of the expenses were related to INMETRO's inspection and regulation services: verification of measuring instruments and pre-packaged goods, accreditation and conformity assessment.

INMETRO currently has 936 employees in the main areas of accreditation, metrology and technical regulations. The Directorate of Scientific Metrology and Technology (DIMCI) employs 205 people (21.9% of the total), the Directorate of Legal Metrology employs 100 people (10.68% of the total), the General Commission of Accreditation (CGCRE) has 70 employees and the Directorate of Conformity Assessment has 50 employees.<sup>4</sup>

### **3.3 ABNT**

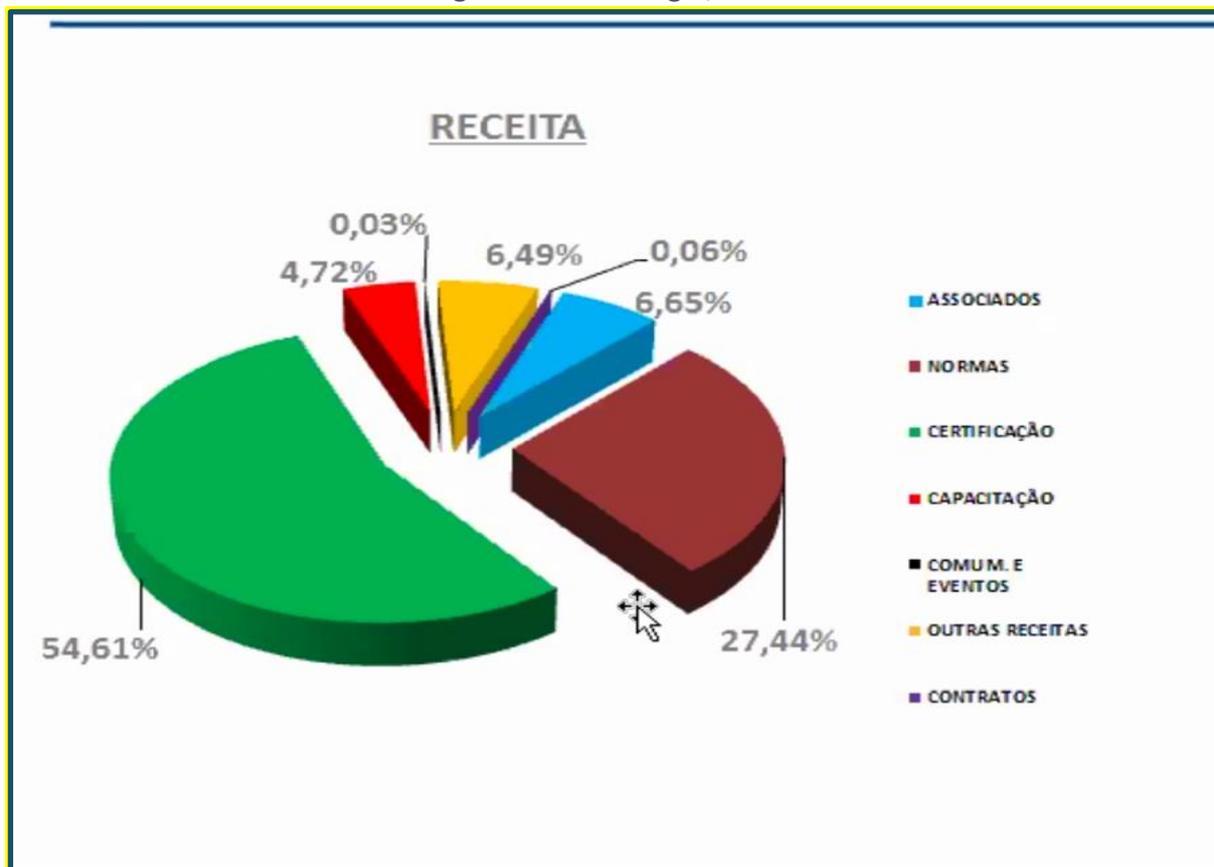
The Brazilian Association of Technical Standards, the national standardisation body of Brazil is recognised by the Federal Government through various legal instruments. It is a private entity and

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<sup>4</sup> Interview with INMETRO.

responsible for the preparation of the Brazilian Technical Standards (NBR). Standardisation and certification are the two independent business areas. ABNT does not operate laboratories.

Figure 2: ABNT budget, 2017



Source: ABNT. Note: ABNT generates more than half of its revenues through certification services. The development of standards accounts for about a quarter of the revenues. Other sources of income are membership fees from companies, costs for courses and event rooms. Government support is marginal and represents about two per cent of the budget.

## 4 KEY COMPONENTS AND DISTRIBUTION OF COMPETENCES

### 4.1 Metrology (scientific, industrial and legal)

#### 4.1.1 Scientific and industrial metrology

Metrology is the science that covers all theoretical and practical aspects related to measurements, whatever uncertainty in any field of science or technology. In this sense, scientific and industrial metrology is a fundamental tool in technological growth and innovation, promoting competitiveness and creating a favourable environment for scientific and industrial development in any country (INMETRO, n.d.-b).

Scientific and industrial metrology is one of the central units of INMETRO. To maintain the credibility of INMETRO's metrology laboratories, several actions have been taken, notably peer reviews and the participation in key comparisons with other NMIs, in areas such as temperature, humidity, high resistance and inductance, made under the co-ordination of BIPM and Interamerican System of Metrology (SIM), in addition to comparisons made nationwide. As evidence of the credibility of its laboratories, INMETRO maintains updated records of traceability to international standards.

In 1999, INMETRO obtained recognition of its national measurement standards through a CIPM Mutual Recognition Agreement (MRA). The laboratories of the Brazilian calibration network are accredited by INMETRO's the CGCRE, which guarantees international recognition of calibration results

by being signatory of the ILAC MRA. In 2020, INMETRO Brazil registered 250 key and supplementary comparisons and 550 calibration and measurement capabilities at the BIPM Key Comparison Database (KCDB, n.d.)

In terms of scientific and industrial metrology, INMETRO acts mainly in a reactive way, and there is no consolidated practice of articulation with industry in its demands for metrology. But there are initiatives underway to change this, including the creation of a Division of Innovation and Technology under the scope of the Planning Directorate. In addition, DIMCI has a network of Metrology in Chemistry Laboratories.

#### **4.1.2 Legal metrology**

The Directorate of Legal Metrology of INMETRO is the competent authority for legal metrology in Brazil. As in all organised societies, technological, economic and social development in Brazil has determined the effective implementation of metrological control of measuring instruments. Initially covering only measurements in commercial transactions, legal metrology activities have been gradually extended to the other areas provided for in the legislation. (INMETRO, n.d.-c).

New measuring instruments must have their model approved by INMETRO, which examines, tests and verifies that it is suitable for its purpose. After manufacture, each device undergoes an initial check to ensure its accuracy before use. When in use, its holder is responsible for maintaining its accuracy and correct usefulness, being controlled by periodic audits and inspections.

The RBMLQ-I is present in each state, through bodies delegated by INMETRO, controls equipment and instruments to ensure that consumers are receiving correct measures.

INMETRO also works to ensure that legal metrology is applied uniformly across the world, playing an active role in co-operation with MERCOSUL and OIML. Metrological control comprises the control of measurement instruments or material measure, carried out through actions related to type approval, verification and inspection.

Metrological supervision consists of procedures performed in the manufacture, import, use, maintenance and repair of a measuring instrument or material measure to ensure that regulatory requirements are being met. These procedures also extend to the control of the accuracy of the indications on pre-packaged goods.

Legal metrological expertise is made up of a set of operations aimed at examining and certifying the conditions in which a measuring instrument or material measure is found and determining its metrological qualities according to specific regulatory requirements, for example, to prepare a report for judicial purposes.

To exercise this control, the government issues laws and regulations. The regulations establish the authorised measurement units, the technical and metrological requirements, the marking requirements, the usage requirements, and the metrological control, which must satisfy manufacturers, importers and holders of the measuring instruments to which they refer.

Elaboration of regulations is generally based on the recommendations of OIML, to which Brazil is affiliated as a member country. It also includes the collaboration of the manufacturers of the measuring instruments and entities representing the consumers, for their participation in the Metrological Regulation Working Groups. These groups aim to make this process of drafting metrological technical regulations more participatory, representative and transparent, and are composed of representatives from INMETRO, state metrological bodies (RBMLQ), representatives of professional associations, government agencies involved in the group's area of operation, and others that the group itself deems necessary. They are also involved in the evaluation of the OIML's

International Recommendation projects as well as in the analysis of the MERCOSUL Resolution projects.

Brazil's technical regulation currently covers measurements in the field of the principal quantities, notably concerning the instruments used to determine mass, volume, length, temperature and energy. The technical regulation of pre-packaged products aims to standardise the quantities in which the measured products are sold without the presence of the consumer, as well as the tolerances allowed in their sale. It also establishes rules for the correct indication and positioning of quantitative indications on packaging in general.

These actions are the mechanisms for adequate consumer protection and guarantee of fair competition in the national market, and can be summarised as follows:

- a) Preventive consumer protection actions:
  - a. Technical regulations and procedural rules resulting from them, with the scope of metrological quality requirements of the instruments, measures, means and methods of measurement,
  - b. Technical appraisal of the measurement models and measurement instruments, comprised of the professional examination of their performance, the intrinsic protection they have to hinder measurement fraud and the sealing plan that inhibits or blocks the tampering of components or even their proper functioning,
  - c. The initial and periodic verification of these instruments and measures; the initial measure before putting it into use; and the periodic one at intervals, usually after one year,
  - d. Standardisation of the quantities in which the pre-packaged products are packaged to avoid unfair competition and promised deceptive advantage, even if hidden from the consumer,
  - e. Establishing procedures in operations with measuring instruments and material measures, and
  - f. Establishing legal units of measurement and their correct use.
- b) Inspection actions for consumer protection:
  - a. Metrological inspection to verify the correct functioning and adequate use of instruments and measures,
  - b. Metrological expertise in pre-packaged products to verify the correspondence between the nominal quantity and the effective quantity,
  - c. Application of a fine penalty, seizure and interdiction of instruments and products that are in disagreement with metrological legislation,
  - d. Revoking of approval and suspension of the initial verification of a model that will make it possible, when in use, to facilitate fraud against the consumer.

#### **4.1.3 Brazilian network of legal metrology and quality**

Motivated by the vast territory, INMETRO opted for a decentralised model, delegating the execution of the metrological control to the state metrological agencies (IPEM), which are part of the RBMLQ-I. (INMETRO, n.d.-e).

RBMLQ-I is the executive arm of INMETRO throughout the Brazilian territory, executing the verifications and inspections related to the measurement instruments and the regulated material measures, and the control of the accuracy of the quantitative indications of the pre-packaged products, following the legislation in force.

The network is composed of 26 regional metrological agencies, being 23 agencies of the state government structure, one municipal agency, and the remaining two administered by INMETRO itself. This structure has been guaranteeing the execution of the activities in all points of the national territory, with headquarters in 26 states of the federation, agencies in 65 cities of the interior, and 23 checkpoints of tank vehicles located in poles of automotive fuel distribution.

## **4.2 Standards**

### **4.2.1 Brazilian technical standards**

Brazilian Technical Standards refer to a set of standards and technical rules relating to documents, procedures or processes applied to companies or specific situations. An NBR is prepared by ABNT. NBRs are voluntary in nature but can be used by legislators as references in technical regulations. Compliance with these technical regulations is mandatory.

In 2019, ABNT had published a total of 8 288 NBRs. Of these, for 1 983 (24%) it was the so-called NRB ISO, i.e. the adoption of standards of the International Organization for Standardization. Similarly, ABNT adopted the 333 ISO (4%) IEC from the International Electrotechnical Commission. The remaining 5 972 (72%) are national standards. This share is high and probably also due to the prescriptive use of standards in technical regulations.

### **4.2.2 Sustainability standards**

In the past two decades, voluntary sustainability standards have grown rapidly, sometimes leading to unnecessary trade barriers. Responsibility for these sustainability standards are usually international non-governmental organisation that stand for a specific sustainability issue, be it sustainable forestry, organic farming or animal welfare. Sustainability standards are conformity assessment schemes as defined in ABNT NBR ISO/IEC 17000/2005, considered as a set of social, environmental and economic criteria that – fulfilled by producers, manufacturers, traders, retailers or service providers – contribute to the sustainable development of value chains.

With the support of the United Nations Forum for Sustainability Standards, INMETRO has established a platform for voluntary sustainable standards. (INMETRO, n.d-d).The forum is a vital reference centre in the country for discussions on voluntary sustainability standards. Tasks of the platform are:

- To map sustainability standards that affect the Brazilian economy, the domestic market and access to foreign markets,
- To initiate discussions on the topic and organise events,
- To study the impact of sustainability standards on the Brazilian economy and exports,
- To develop proposals for proactive national policies to maximise the positive impact of sustainability standards,
- To generate knowledge on the topic for relevant actors in the public and private sectors affected by sustainability standards, and
- To analyse and compare national experiences of best practice and appropriate proactive policies.

As part of the platform, international development co-operation projects drew up initial studies on sustainability standards for Amazon rainforest products. These projects are intended to promote the export of sustainable products and contribute to environmental and climate protection.

In recent years, ISO has also increased its involvement in the development of sustainability standards. As a member of ISO, ABNT is introducing these standards in Brazil. ABNT is also active in certifying an ecological footprint in various product categories. ABNT is also part of the Global Eco-labelling Network and certifies products with the voluntary eco-label. ABNT was also the first Latin American Greenhouse Gas Verification and Validation Body.

### 4.3 Technical regulations

Brazil has around 30 regulatory authorities at the federal level. Their activities should be co-ordinated within the Brazilian regulatory committee (CBR), which is part of CONMETRO and which was revoked by the Decree 9759 from April 2019. INMETRO is responsible for the co-ordination of technical regulation, and accreditation of conformity assessment bodies. ABNT is responsible for developing technical standards, which serve as a basis for some technical regulations. State governments are responsible for market surveillance.

The original plan was for the new regulatory model to enter into force in April 2020. Due to the COVID-19 crisis, the government postponed the measure and launched a consultation process. It is currently expected that the new regulatory system will become effective in 2021. The aim of the model is to improve regulatory performance, reduce administrative burdens, promote innovation and competitiveness in the productive sector, and align the country with international best practices in product regulation.

The new regulatory model is a response to the criticism of previous regulatory practice in Brazil. The previous model was considered complex, rigid and inefficient. The regulations were prescriptive, and left companies hardly able to innovate. Also, many conformity requirements were difficult to verify.

INMETRO estimates that the previous model could only cover 12% of the products in its area of jurisdiction. Furthermore, the compliance rate with the technical regulations was only about 60%, despite the high degree of regulations and the intensive use of mandatory conformity assessment systems.

The reform project of the regulatory system is guided by the models of regulation of consumer products, in particular those of the European Union and the United States. These models are characterised by risk-based regulation, with general rules defining the objectives to be pursued (e.g. not exposing consumers to risk), regulatory activities focusing on monitoring regulatory issues, and regulatory measures being formulated and prioritised based on this monitoring. The standards institutes formulate the technical specifications for the products. This provides a more efficient and flexible model for addressing and prioritising the most important regulatory issues.

Based on these practices and the solution to the problems of the current model, INMETRO designed the proposal of a new regulatory model based on three pillars:

1. A regulatory environment based on general provisions and essential requirements, extending the legal scope and reducing prescriptive regulations,
2. A focus on solving regulatory problems, and
3. Increased accountability of suppliers to increase market surveillance and compliance

The model follows the principle of flexibility and aims at the efficiency and proportionality of regulatory measures.

In the field of standardisation, ABNT expects that this reform can lead to increased participation of international standardisation in the sectors that are important for the country. At the same time, the possibilities for self-declaration by companies will be significantly expanded. This may lead to a decline in demand in the field of certification. Companies could, however, continue to use third-party certification as proof of conformity. Since ABNT has its own certification mark, the problem could arise with self-declaration that manufacturers refer to Brazilian standards and mention ABNT. This could confuse the consumer.

As part of the reform, INMETRO is building a database that will help to distinguish between products with low and high health, safety and environmental risks. Such a system has been in operation in the European Union for a long time. It is still open on how much effort will be needed to establish an

equivalent system in Brazil. It also remains to be seen to what extent the European instrument will be accepted in the Brazilian cultural context.

#### 4.4 Consumer protection and quality promotion

Pre-packaged goods are regulated by INMETRO to ensure the correctness of the measures used in commercial transactions. When the use of a product may compromise the safety or health of the consumer, INMETRO, or a regulatory body, may make conformity assessment compulsory for that product (INMETRO, n.d.-f). This increases the confidence that the product complies with the standards and applicable technical regulations. With the regulation of textile products, the textile and clothing industry now has an instrument to discipline the market and inform the consumer of the fibrous content in the textile products acquired by it, thus preventing damage to health, as well as losses arising from the acquisition of commercially lower fibres at abusive prices. In the specific aspects of the functionality of textile products, the benefits provided to consumers are undeniable by having a regulation that ensures clear and correct identification of the textile composition, width, weight and yarn title, as well as the care and treatments for cleaning and conservation throughout its useful life.

INMETRO's Product Analysis Program informs consumers if products are following standards. Through this programme, INMETRO identifies whether there is a need to propose actions that lead to an improvement in the quality level of the sector; therefore, it does not have a supervisory character.

One of INMETRO's significant challenges is to involve the consumer in the process of improving the quality of products and services sold in Brazil. Such a role would contribute to creating consumers who exercise their citizenship, demand their rights and fulfil their responsibilities with suppliers, and thereby play a decisive role in the quality process. For this, INMETRO has been developing the Education for Consumption Project, including initiatives such as the Consumer Portal, which gathers a wide range of information related to consumption, in addition to a newsroom and educational surveys.

#### 4.5 Accreditation

Accreditation is an internationally established tool to build confidence in the performance of organisations performing conformity assessment activities. Brazil follows the good practice of *one accreditation body per country*. The accreditation performed by CGCRE is voluntary in nature and represents the formal recognition of the competence of a Conformity Assessment Body to carry out its activities in accordance with pre-established requirements. CGCRE is a Directorate of INMETRO, and one of the main areas of the institute.

**Table 1: Accreditation of certification bodies in 2019**

IAF MLA								
Products	Management Systems Certification 17021					Per-sonnel	Validation and verification (Greenhouse Gases)	TOTAL
	QMS ISO/IEC 9001	EMS ISO/IEC 14001	FSMS ISO/IEC 22000	ISMS ISO/IEC 27001	Medical devices MS ISO 13485	ISO 17024	ISO 14065	
108	39	23	5	2	4	8	9	198

Source: Compiled by author from INMETRO website – Accreditation page. 27 July 2019.

**Table 2: Accreditation of laboratories and inspection bodies in 2019**

ILAC MRA						
Testing Labs.	Calibration Labs.	Medical Labs.	Inspection bodies	Proficiency Testing	Producers of CRMs	TOTAL
ISO 17025	ISO 17025	ISO 15189	ISO 17020	ISO 17043	ISO 17034	
1 119	414	4	6	15	9	1 561

Source: Compiled by author from INMETRO website – Accreditation page. 27 July 2019

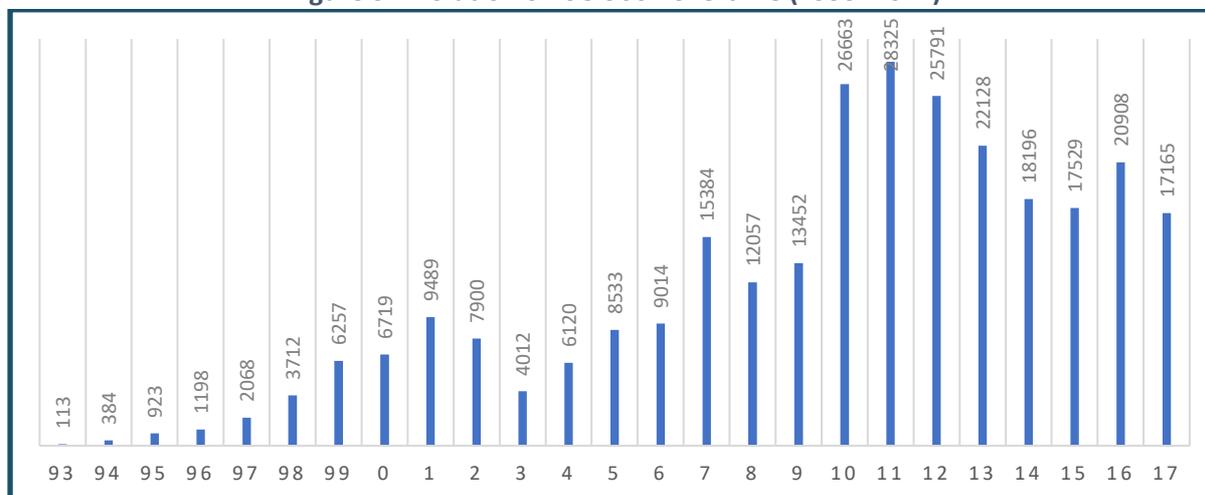
## 4.6 Conformity assessment

When INMETRO was created in the 1970s, it was responsible for approving and revoking the licence to use the Conformity Mark and issuing the Certificate of Conformity. It also had the function of accrediting laboratories and inspectors. In the 1990s, the activities were divided with certifications, which until then were conducted exclusively by INMETRO, starting to be done by accredited certification bodies. INMETRO, which was already active in the accreditation activity, became recognised as the official Brazilian accreditation body.

Today, there are many conformity assessment providers in Brazil. Private and public bodies are active in the market, and the universities play a particularly strong role as operators of accredited testing laboratories. INMETRO operates its laboratories in its function as National Metrology Institute but is no longer active as a certification body. Local certification providers such as ABNT and Fundação Carlos Alberto Vanzolini compete with multinational corporations (BSI, BVQI, TÜV Rheinland, TÜV Nord, SGS, Lloyd’s Register) (INMETRO, n.d. g).

Figure 2 shows the development of ISO/IEC 9001 in Brazil. Starting from 113 certifications in 1993, the numbers increased continuously until the peak was reached in 2011 with 28 325 certifications. Since then, the number of ISO certifications has tended to decrease, and in 2018 the number of certificates was 19 745. This trend is not specific to Brazil but is also observed internationally. Although there are some studies on ISO 9001 in Brazil (Maekawa et al., 2013; UNIDO, 2016), the reasons for the decline remain unexplored. Possible explanations are that entrepreneurs are less and less convinced of the benefits of ISO 9001 or that alternative certification systems are gaining in importance (DeSilva, 2020). There are also justified doubts about the quality of the ISO Survey data.

**Figure 3: Evolution of ISO 9001 overtime (1993–2017)**



Source: Compiled by author based on ISO Survey data.

Table 3 shows the spread of different management standards in Brazil in 2018, indicating that ISO 9001 certification continues to be dominant. In fact, companies that are certified with the next most common ISO 14001 standard usually also have ISO 9001 certification. Unfortunately, there are no aggregated statistics on product certifications. The comparison of figures of product and management standards could provide valuable information.

**Table 3: Issued Quality Management Certificates in Brazil (2018)**

	TOTAL VALID CERTIFICATES	TOTAL NUMBER OF SITES
ISO 9001:2015	16.351	25.702
ISO 14001:2015	2.871	6.430
ISO IEC 27001:2013	110	362
ISO 22000:2005&2018	89	103
ISO 45001:2018	32	43
ISO 13485:2003&2016	144	195
ISO 50001:2011	62	72
ISO 20000-1:2011	62	96
ISO 22301:2012	10	27
ISO 28000:2007	1	1
ISO 39001:2012	1	1
ISO 37001:2016	12	24
SUM	19.745	33.056

*Source:* Compiled by author based on data of ISO Survey. *Note:* For each standard, the number of certificates and the number of sites is displayed next to each other to give a more comprehensive picture. A certificate is the document issued by a certification body once the client has demonstrated conformity to the standard; and a site is a permanent location where an organisation carries out work or a service.

## 5 Technology transfer and small, medium and micro enterprise support

INMETRO's innovation policy aims to systematically support innovation, through technological services, research and development of its projects or in partnership with interested third parties, in all its areas of knowledge.

At the Campus of Innovation and Metrology in Xerém, INMETRO has the technical infrastructure and conditions for measurements of the highest level of accuracy. With more than 300 doctorates in science and engineering, the staff is highly qualified and up to date with state-of-the-art knowledge. INMETRO offers technologies developed at the institution in this space, either through the licensing of property rights or through the transfer of knowledge and technical assistance, as appropriate.

The incubation of technological projects and research centres, along with producers and suppliers of inputs, goods and services, place the future technological park as a mechanism for generating enterprises and supporting competitiveness. Metrology is a vital value differential in this support.

This structure is available to those interested in obtaining INMETRO's partnership and support for:

- Research, development and innovation projects,
- Incubate technological projects,
- Improve processes and measurement methods, and
- Solve technological gaps in industrial processes impacted by metrology.

The incubation of technological projects is one of INMETRO's collaborative innovation practices. Projects of start-ups and companies already consolidated in the market receive the assistance of researchers and technicians of the institution and can access specialised services in the various knowledge areas of INMETRO: acoustics and vibrations, biotechnology, fluid dynamics, chemistry, materials, mechanics, electrical, technology information (ICT), thermal and ultrasound

## **6 CO-ORDINATION AND COMMUNICATION MECHANISMS**

The lead Ministry of SINMETRO is the Ministry of the Economy. On 1 January 2019, Bolsonaro's government merged the Ministry of Planning and Development and the Ministry of Finance into the current giant Ministry of Economy. SEPEC is responsible for SINMETRO, as well as:

- Infrastructure development,
- Development of industry, trade, services and innovation,
- Advocacy for competition and competitiveness, and
- Public employment policies

CONMETRO is the co-ordinating body of the Brazilian QI. The President of INMETRO is the Executive Officer of CONMETRO (Executive Secretary) and it is chaired by the Secretary of SEPEC. Ministries and also private sector organisations (ABNT and trade associations) are represented in CONMETRO.

INMETRO reports to the Ministry and executes national policy in the fields of metrology, accreditation and technical regulation. INMETRO has great autonomy and visibility in Brazilian society.

INMETRO's management is under considerable political influence. In February 2020, Brazilian President Bolsonaro intervened directly in the work of INMETRO and changed the INMETRO President. The background was a conflict over the introduction of smart taximeters, among other issues.

The current Brazilian government pursues an economic policy based on deregulation. In this respect, There is neither an industrial policy nor a national quality policy at present. The most critical reform project within INMETRO is the modernisation of the regulatory model. The current approach is that regulation should be simplified. For low-risk areas the industry should control itself, and there should be no independent third-party inspection/certification.

## **7 REGIONAL AND INTERNATIONAL CO-OPERATION**

### **7.1 International recognition and memberships**

Brazil has a long history of participation in the international metrology and standards system. However, there have been repeated interruptions due to domestic political events. A milestone for the development of today's quality infrastructure was the signing of the CIPM MRA in October 1999, and the signing of the first Multilateral Recognition Arrangement (MLA) of IAF in August 1999 by the accreditation body (INMETRO-CGCRE) for the accreditation of product and management system certification bodies.

INMETRO is a member of the international metrology organisations (BIPM and OIML) and the accreditation associations ILAC and IAF. In the context of the Americas, INMETRO is a member of SIM and Inter-American Accreditation Cooperation (IAAC) as well as a signatory of the corresponding MRAs. ABNT is a founding member of the ISO, the Pan American Commission on Technical Standards and the Associação MERCOSUL de Normalização. Since its foundation, it is also a member of the IEC.

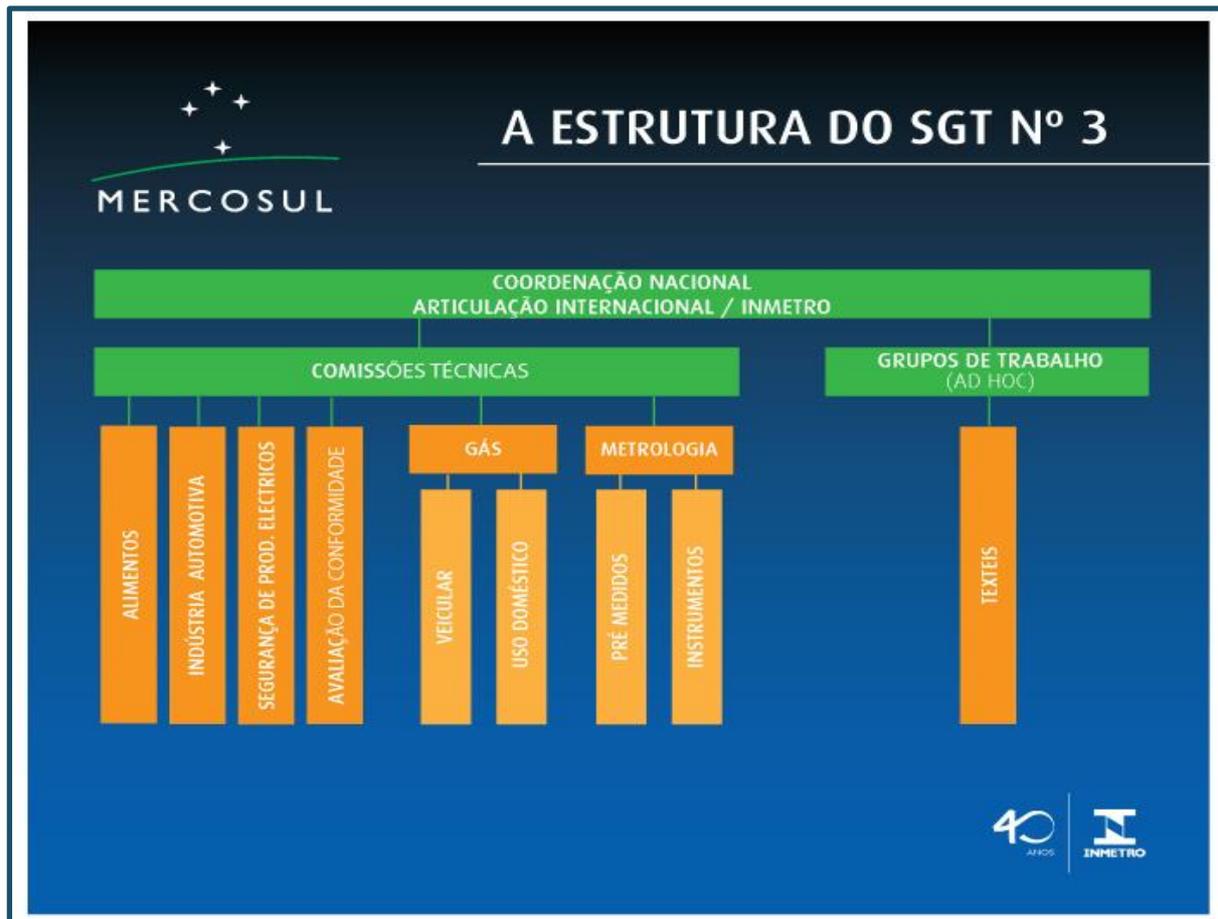
### **7.2 MERCOSUL**

MERCOSUL is the abbreviation for the South American Common Market. The member states of Brazil, Argentina, Paraguay and Uruguay represent almost half of the economic power of the entire region.

With a GDP of US\$2.4 trillion, MERCOSUL is also the fifth-largest economic area in the world. Brazil is the economic heavyweight of the block, generating 75 per cent of its combined GDP. (GTAI, 2020).

Quality infrastructure organisations are involved in MERCOSUL through sub-working group number 3 (SGT No. 3). Brazil's INMETRO is the national co-ordinator of SGT No. 3. The group is responsible for harmonising technical regulations and procedures for conformity assessment within the scope of MERCOSUL. The committee has technical commissions for various economic sectors (food, automotive, the safety of electrical appliances, gas for vehicles and households), conformity assessment and metrology, and an ad hoc working group on textiles.

Figure 4: Structure of MERCOSUR SGT No. 3



Source: INMETRO

One practical example of group work is the regulation of food contact materials in MERCOSUL (PackagingLaw.com. 2019).

The members of MERCOSUL have mainly harmonised their legislation on the regulation of food packaging materials in these countries. MERCOSUL member states must comply with a general safety standard and applicable positive lists. Also, except for Brazil, finished food packaging must be registered with MERCOSUL member states before being sold in these countries. Brazil does not impose registration requirements unless the finished food packaging product contains recycled materials.

The safety standard, GMC Res. No. 03/92 (“General Criteria for packaging and articles to contact with foodstuffs: terminology, general criteria, and classification of materials”), stipulates, among other things, that all materials in contact with foodstuffs must be produced in accordance with Good Manufacturing Practices and that packaging must not transfer harmful or toxic compounds to foodstuffs. Part of the regulation is also total migration limits for the food packaging material, which are to be determined with specified test methods.

### 7.3 International co-operation

International co-operation, in particular with PTB from Germany, has been a reliable partner in the development of INMETRO over several decades (Kellermann, 2019). Metrologists from INMETRO received their training in Germany, and experts from PTB regularly advise in Brazil. Other specialised institutions such as the United States National Institute of Standards also supported Brazil in developing the Brazilian quality infrastructure. Today Brazil has developed quality infrastructure and supports other Latin American neighbouring countries and Portuguese-speaking countries in Africa. Within the framework of triangular and bilateral co-operation, it continues to receive support from GIZ (German Development Cooperation).

In 2000, INMETRO professionalised its original “Service for International Affairs” and named it “International Affairs Coordination” (Coordenação-Geral de Articulação Internacional, CAINT). The unit is responsible for trade negotiations, technical co-operation and international consultancy. ABNT is also internationally well connected and actively participates in international standardisation organisations (ISO, IEC). ABNT has a full-time co-ordinator for international tasks.

CAINT was created at a time when companies were becoming increasingly international, and the government wanted to increase global competitiveness. The unit conducted numerous events and training sessions on international trade agreements, such as for the Free Trade Area of the Americas and the World Trade Organization (WTO), and the negotiations with the European Union, Mexico and MERCOSUL. It was also involved in strengthening the Trade Focal Points and the information systems.

INMETRO technical co-operation includes co-operation agreements between similar institutions (in total 116, including one with National Metrology Institute of South African – NMISA) (INMETRO, n.d.-h). the management of international co-operation projects. The International Department has always worked in partnership with the other INMETRO Directorates and supported its international activities.

In international co-operation projects with the European Union and the MERCOSUL countries, CAINT has arranged training for INMETRO representatives and the procurement of laboratory equipment. INMETRO staff trained colleagues in Latin American and African countries, in particular Bolivia, Paraguay, Uruguay and Mozambique. INMETRO professionals also co-operate closely with the metrology institutes in the US and Germany, and with other institutions in countries such as Japan and South Korea.

In a consultative capacity, the International Department has continuously supported the Presidency of INMETRO in its participation in international conferences and meetings, such as the ISO conferences and its Committee on Conformity Assessment, IEC committees, and in meetings of the BIPM, WTO and MERCOSUL. In addition, it has participated in numerous official government missions where agreements on technical co-operation were signed between INMETRO and similar institutions in the following countries: US, Germany, South Korea, Russia, China, Turkey, Argentina, Uruguay and Paraguay.

CAINT supported the Directorate of Scientific Metrology in participating in SIM and BIPM meetings (and Codex Alimentarius co-ordination), the Directorate of Legal Metrology in OIML meetings; the Directorate of Conformity Assessment in meetings with the regulatory authorities in the US, the European Union and America; and accreditation co-ordination at meetings of IAAC, ILAC and the IAF; and also the International Affairs Coordination itself at meetings of MERCOSUL Subgroup 3 and the WTO Committee on Technical Barriers.

CAINT plans to use the expertise it has acquired over 20 years to respond meet the world's needs in the wake of the COVID-19 pandemic. As part of the INMETRO 2020 strategic planning process, the unit intends to help Brazilian companies re-enter the international market and contribute to:

- The fulfilment of international agreements such as the European Union's agreement with MERCOSUL,
- The country's accession to the OECD, and
- The sustainable development goals of the UN Agenda 2030.

At the same time, CAINTE faces the challenge of a smaller budget and changes in the behaviour of individuals and in industrial relations following the pandemic. The unit sees the increased and intelligent use of information technologies as a way out of the dilemma of increasing demands and scarcer resources.

## **8 CONCLUSIONS**

### **8.1 The health of the system**

The Brazilian quality infrastructure has developed over the past 50 years. The technical competence of Brazilian experts in metrology, standardisation and accreditation is internationally recognised, and the conformity assessment services are well established.

This development has taken place in a context of Brazil experiencing numerous political and economic crises in recent decades. However, the institutional framework of CONMETRO was sufficiently resilient to be able to adapt continuously to changing conditions. However, after the recent reforms of the Bolsonaro government, it remains open whether CONMETRO will continue to exist in its present form. The direct interventions of the President have reduced the independence of INMETRO.

The central institution of the Brazilian QI is INMETRO. The institute has consolidated its competencies in scientific, industrial and legal metrology and also houses the National Accreditation Body, which can provide its services with sufficient autonomy, technical competence and impartial expertise.

The division of labour between INMETRO and the standards institute, ABNT, is clear. ABNT brings proximity to the private sector into the system, which leads to greater acceptance of Brazilian standards. At the same time, the role of independent standardisation in the new regulatory model will be strengthened.

The management of INMETRO also takes on a strategic function by bringing the contributions of the national quality infrastructure into the national economic policy. Conversely, this prominent position entails the danger that politicians, including the President, will intervene directly in the fate of INMETRO.

The QI system requires political leadership and financial support. Due to different political priorities, and the inability of the technical institutions to demonstrate their contribution to economic and social development, there is often a lack of necessary resources.

### **8.2 Inspiring experiences**

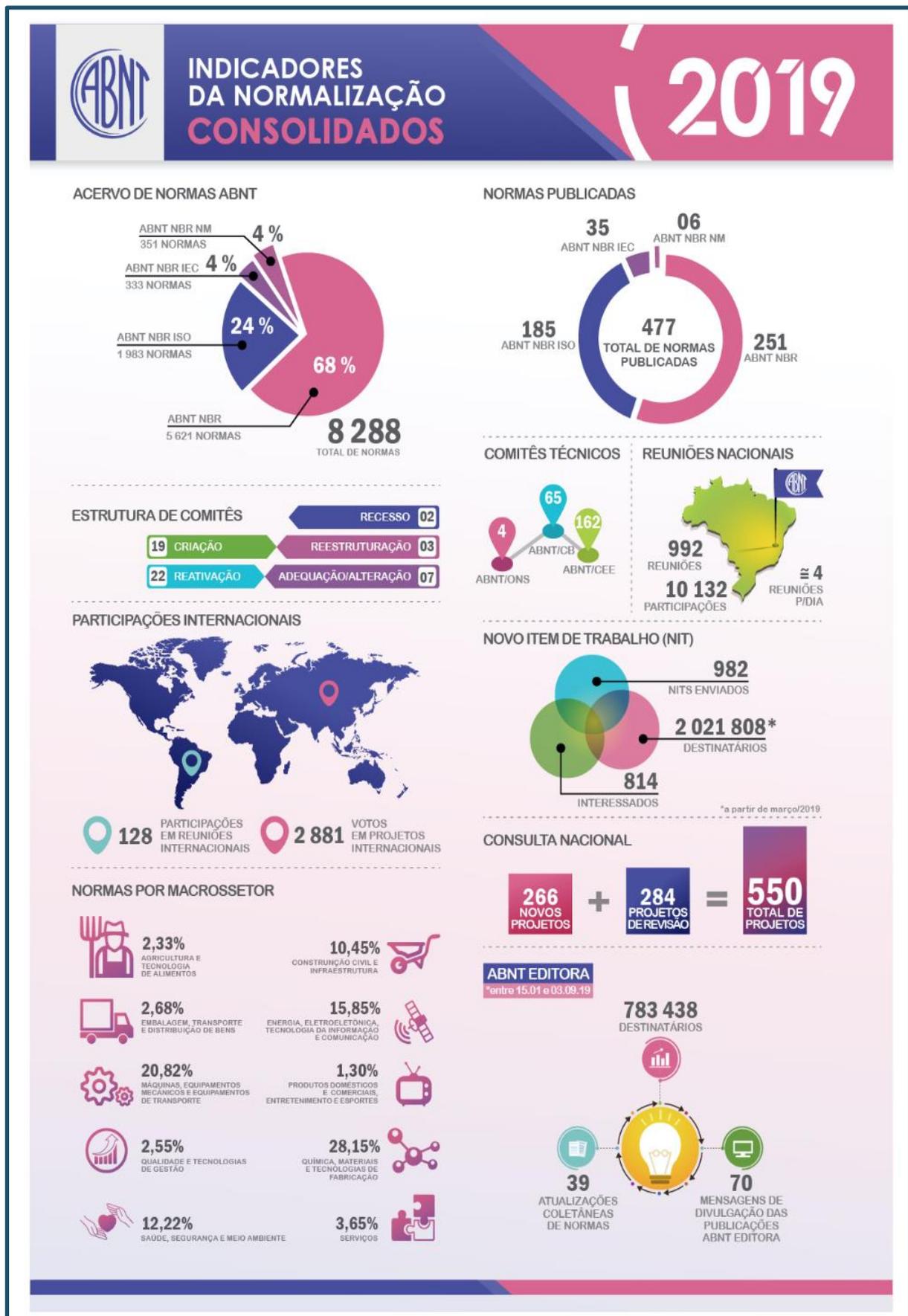
What can those responsible of South Africa's quality infrastructure learn from Brazil? Brazil's experience is relevant because the country, like South Africa, faces fundamental difficulties. If Brazil successfully introduces international good practice, the likelihood that it will be feasible in South Africa increases.

Five practices hold relevance for South Africa:

1. Reform of the technical regulations model: In principle, Brazil follows the risk-based approach of the European Union to product safety. The role of the private sector in self-regulation is strengthened. Also, the regulations will become less prescriptive and more innovation-friendly through references to technical standards.
2. MERCOSUL regional co-operation on technical regulations and conformity assessment: Although the South American integration process has not been a success story so far, the QI organisations of Brazil, Argentina, Paraguay and Uruguay can show concrete progress in harmonisation. South Africa should also use this experience for the South African Development Community (SADC) and the African Continental Free Trade Area (AfCFTA).
3. The creation of the platform for sustainability standards at INMETRO is an interesting project that connects the QI institutions with the owners and promoters of private standards. The integration of sustainability standards into the national quality infrastructure can lead to win-win solutions. The standard owners could use the services of QI and increase confidence in their standards.
4. In co-operation with PTB and CEPAL, INMETRO has carried out various impact studies on the quality infrastructure. These analyses relate to the contributions of the quality infrastructure in specific economic sectors (e.g. the sector of measuring instruments) and value chains. Such studies could also contribute to a deeper and better understanding of the quality infrastructure in South Africa.
5. The professionalisation and institutional strengthening of the international department within INMETRO is also inspiring. Due to increasing regional and international integration, such organisational reform could also be important for South African QI institutions. However, it should be considered whether such an international department should be located within an organisation or whether it should be a staff unit of an overarching body such as a national quality council.

Finally, existing co-operation structures could be revived or expanded for further exchange. Examples could be the cooperation agreement between INMETRO and NMISA or the framework of BRICS.

## Annex 1: Standardisation in numbers



Source: Brazil Association of Technical Standards

## Annex 2: Quotes from SQAM Review 2001

“Brazil, however, is an active contributor to a number of regional bodies, which are at earlier stages of development and not yet more broadly recognised. All countries, however, have highlighted a need to make considerable investments in their regional bodies.” (p. 39)

“In the case of Brazil, however, privatisation of various government activities has resulted in the formation of new regulatory bodies. These bodies will also need mechanisms for judging the performance of the bodies they are now required to regulate, and this provides some opportunities for increased use of accreditation and certification. The expected privatisation of a number of government activities in South Africa should present similar opportunities for the various players in the SQAM arena.” (p. 40).

“All countries surveyed as part of this review have experienced difficulties in coordinating technical regulations information. A number of countries, including South Africa, Australia, Brazil, USA and Germany have the additional complication of dealing with regulations at both federal and state (or provincial) level and many also have local government regulations to address.” (p. 41)

“In the operations of national measurement institutes in Brazil and Malaysia, the parent organisations (INMETRO) and SIRIM Bhd are well known and respected throughout industry. The NMIs are therefore accepted under the larger “brand name” but recognition of their individual contribution is harder to achieve. The legal metrology requirements for traceability are very strong and comprehensive in Brazil, and strong where they exist in Malaysia. Hence the legal metrology regime can also have an influence on recognition of the role of the NMI.

... For relevance to the South African situation it might be judged that interaction between its NMI, and industry is a two-way process. Industry needs to be receptive to the concepts and objectives of metrology (as appears to have been achieved by the National Confederation of Industry [CNI] in Brazil) or be compelled by the legal metrology regime as is the case also in Brazil and Malaysia. NMIs also need to be prepared to offer additional value-adding services, which provides them with opportunities to provide specific services internationally.

In Brazil there is an additional key entity that is not part of the SQAM landscape but has a substantial impact on it, namely the National Confederation of Industry (CNI). The power of CNI to influence Brazilian industry derives from its significant funding and its pervasive and highly integrated structure. A proportion of the payroll tax collected by the Brazilian Government is returned to CNI for its operations.” (p. 42)

“The centralised structure of some SQAMs, such as in Brazil, provides internal opportunities for coordination of strategic policy across different SQAM institutions. It is not clear, however, that this is the current case, although recent structural changes in INMETRO, to have a horizontal Directorate deal with international affairs across all of the INMETRO’s SQAM activities, could Review of the South African Standards, Quality Assurance, Accreditation and Metrology (SQAM) infrastructure provide such an opportunity. The effectiveness of such a highly centralised governing structure in creating a cohesive approach is questioned in a South African context.” (p. 74)

“In the regulated sector, the organisation certifying a product or service must carry certification by a certification body accredited by INMETRO. There are 28 compulsory marks that are used. In addition, there are some marks regulated by Ministries e.g. the meat inspection mark regulated by the Ministry of Agriculture. There is some preliminary interest within MERCOSUL in the idea of an equivalent to the European CE label but no substantial progress in formulating the idea has been made.

There are a series of voluntary marks and certificates defined by ABNT, the Brazilian Standards body, but in some instances, there are specific requirements that must be met before the mark can be affixed or certificate issued.” (p. 79)

“Governments’ direct involvement in promotion of SQAM activities varied from country to country. For issues such as quality promotion, the review found that governments were more active in Malaysia and Brazil, for example, than in the UK or Australia, where past activities of support have decreased or terminated. The cycle of quality promotion usually involves government support during the initial establishment phases, and this is then gradually reduced as the private sector takes over quality promotion and support activities on a commercial basis, with a quality culture having been established in the countries’ economic delivery organisations.” (p. 88)

“Commercial activities in the area of testing and/or certification separated from the standards development activities at organisational structure level. ... A similar situation (like in the UK with BSI) exists in Brazil where the Standards body (ABNT), has both standards development and commercial activities (certification). These are operated within a single organisational structure with division of management and responsibility occurring at the Technical Directorate level. Managers for Certification and Standardisation both report to the Technical Directorate, which in turn reports to the Director General.” (p. 127)

“ABNT offers some programs funded via the Brazilian Service for Support of SMMEs. It is recognised that SMMEs make up a large part of the economy and provides input to SQAM through the well organised and influential industry representative body, CNI.” (p. 152)

“The Directorate of Scientific and Industrial Metrology (DIMCI) coordinates scientific and industrial metrology through its operation of the National Laboratory of Metrology (LNM). DIMCI is a directorate of the National Institute of Metrology, Standardisation and Industrial Quality (INMETRO). INMETRO is a Federal Autarchy established by Law No 5966 in 1973. It is responsible to the Ministry of Development, Industry and Foreign Trade. The national metrology system is authorised by Law No 9933 (1999).” (p. 168)

“Additionally, both Brazil and Malaysia have government policy objectives to foster development of mutual recognition agreements by their accreditation bodies, to facilitate trade. It is not yet clear how these MRAs will be used in those two economies in a formal sense to support relevant international trade agreements.” (p. 210)

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