

A Study on

National Quality Infrastructure &

Government Regulatory Practices

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Study on National Quality Infrastructure (NQI) & Government Regulatory Processes (GRP)

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Abbreviations

A*STAR	Agency for Science, Technology and Research (Singapore)
APLAC	Asia Pacific Laboratory Accreditation Cooperation
ASEAN	Association of Southeast Asian Nations
BAFPS	Bureau of Agriculture and Fisheries Product Standards (Philippines)
BAI	Bureau of Animal Industry (Philippines)
BC	Business Continuity
BIPM	International Bureau of Weights and Measures
BOA	Bureau of Accreditation (Vietnam)
BPI	Bureau of Plant Industry (Philippines)
BPS	Bureau of Product Standards (Philippines)
CAC	Codex Alimentarius Commission
CIPM	International Committee on Weights and Measures
CIPM-MRA	CIPM Mutual Recognition Agreement
CMC	Calibration and Measurement Capabilities
DA	Department of Agriculture (Philippines)
DAkKS	Deutsche Akkreditierungsstelle GmbH (Germany)
DOH	Department of Health (Philippines)
DPWH	Department of Public Work and Highways (Philippines)
DTI	Department of Trade and Industry (Philippines)
ECA	Ente Costarricense de Acreditación (Costa Rica)
EGAC	Egyptian Accreditation Council (Egypt)
EMS	Environmental Management System
EU	European Union
FDA	Food and Drug Administration (Philippines)
FDC	Food Development Center (Philippines)
FSMS	Food Safety Management System
GDP	Gross Domestic Product
GRP	Government Regulatory Practices
QMS	Quality Management System
HACCP	Hazard Analysis and Critical Control Points
IAF	International Accreditation Forum
IEC	International Electrotechnical Commission
ILAC	International Laboratory Accreditation Cooperation
INDECOPI	National Institute for the Defense of Competition and Protection of Intellectual Property (Peru)
ISMS	Information Security Management System
ISO	International Organization for Standardization
ITDI	Industrial Technology Development Institute (Philippines)
KAN	Komite Akreditasi Nasional (Indonesia)
NAB	National Accreditation Body
NMI	National Metrology Institute
NQI	National Quality Infrastructure
NGO	Non Governmental Organisations
OAA	Organismo Argentino De Acreditación (Argentina)
OHSAS	Occupational Health & Safety Advisory Services
OIML	Organisation Internationale de Métrologie Légale or The International Organization of Legal Metrology

ONAC	Colombian National Accreditation Body (Colombia)
PAO	Philippine Accreditation Office (Philippines)
PCA	Philippine Coconut Authority (Philippines)
PTB	Physikalisch Technische Bundesanstalt (Germany)
PT	Proficiency Testing
QI	Quality Infrastructure
SM	Standards Malaysia
SMEs	Small and Medium-sized Enterprises
SPRING	Standards, Productivity and Innovation Board(Singapore)
SRA	Sugar Regulatory Administration (Philippines)
STAMEQ	Directorate for Standards, Metrology and Quality (Viet Nam)
TBT	Technical barriers to trade
TC	Technical Committee
TISI	Thai Industrial Standards Institute
TRTA	Trade Related Technical Assistance
WTO	World Trade Organization

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Executive Summary

The capability to boost trade has been hindered by the country's lack of competitiveness.

Under the Millennium Development Goals, the Philippines committed to halving poverty from 33.1% in 1991 to 16.6% by 2015. The goal can be achieved, provided that determined efforts are undertaken. Mass poverty remains the critical challenge with the poor accounting for 26.5% of the population as of 2009.

One way to reduce poverty is to increase trade. However, the capability to boost trade has been hindered by the country's lack of competitiveness. In the 2011 World Economic Forum Global Competitiveness Report, the Philippines was ranked 75th out of 142 countries. The country was ranked 136th out of 183 countries in the International Finance Corporation/World Bank study; it was ranked 39th out of 85 countries in the International Institute for Management Development study. The Philippines was 7th among the Association of Southeast Asian Nations (ASEAN)-8 countries in both the World Economic Forum and International Finance Corporation surveys; it came in 5th among the ASEAN-5 countries in the International Institute for Management Development 2011 study.

As stated in the Philippine Development Plan 2011-2016, the inadequate and poor quality of infrastructure diminished the country's overall competitiveness and its capacity to attract investments. The country aspires to be ranked in the top one-third in all three competitiveness surveys by 2016.

While the Philippines excels in IT business process outsourcing, it seeks to increase and expand the range of its exports by becoming more competitive. A fully functional

National Quality Infrastructure can help ensure that the country's products and services comply with international standards and the conformity assessment requirements of trading partners, which could be barriers to trade. With tariffs reduced, technical barriers to trade have increased, making it difficult to enter the borders of other countries. Also, as ASEAN transforms into a single market in 2015, preparations have to be made for the Philippines to benefit from the envisioned free flow of goods and services in the region. This must be achieved without compromising the safety of consumers and the environment. The lack of a robust quality infrastructure in the country will make the Philippines a dumping ground of substandard and unsafe products. It would also render Philippine-made products and services uncompetitive in the global market.

Quality infrastructure pertains to the physical and organizational structures in metrology, standardization, testing, certification, and accreditation that support the production, maintenance, and improvement of the quality of goods and services. The totality of the quality infrastructure in the country, both in the government and in the private sectors, constitutes the National Quality Infrastructure (NQI).

This study aims to assess the existing NQI and government regulatory practices with the intent of addressing gaps and avoiding duplication and overlaps. It aims to identify the steps needed to improve the NQI in order for the Philippines to meet international standards, to comply with technical regulations and the conformity assessment requirements of trading partners, and to amply protect consumers and the environment.

To obtain the data for this study, the survey and assessment conducted focused on the three basic components of a national quality infrastructure—standardization, metrology, and accreditation—and government regulatory practices in the agriculture, fishery, food, industrial, and consumer product sectors. The two other components, testing and certification, make use of the outputs of the three components: standards (standardization), measurement results (metrology), and assessment of technical competence (accreditation).

This report is based on information gathered from interviews and responses to questionnaires sent out to private and government agencies in the Philippines, responses to questionnaires sent out to the NQI institutions in ASEAN, Latin American and European countries, and Egypt, visits to virtual libraries of various law firms, and lists of testing and calibration laboratories and other conformity assessment bodies registered with the Securities and Exchange Commission and the Department of Trade and Industry.

Findings and observations

Some elements of the various NQI components already exist, but many policy and institutional changes are needed:

- The standardization law of the Philippines (Republic Act 4109) was passed in 1964, 31 years before the founding of the World Trade Organization.
- To date, the National Metrology Act of 2003 has not been implemented. Said act also lacks some elements—such as the identification of the entity responsible for metrology in chemistry and the international task of the national metrology institute—needed for the establishment of a functional institute.

The inadequate and poor quality of infrastructure diminished the country's overall competitiveness and its capacity to attract investments.

- Many issuances exist pertaining to accreditation. However, there is no single agency that has been designated as the coordinator of all accreditation activities in the country and as the guarantor of compliance with international best practices.

Organizational structures and resources continue to be problematic. The different NQI institutions continue to function without realizing that their work is interrelated and that they should, therefore, work together to produce synergy.

It is also common for many government agencies to be mandated to provide various services ranging from standards writing, inspection, testing, certification, and sometimes even accreditation. This practice has led to their resources being spread too thin.

The problem is exacerbated by the existence of many agencies performing similar functions. At least six agencies develop standards, and five agencies are involved in accreditation. The issuance of different Republic Acts, Executive Orders, and other laws without thorough research and consultation has resulted in a fragmented quality infrastructure and the sub-optimal use resources.

The Philippines has a number of dedicated and experienced professionals working in these NQI institutions. However, given these structural and resource limitations, the steps needed to build a functional NQI cannot be carried out.

Bureau of Product Standards

The Bureau of Product Standards (BPS) was the first agency in the Philippines that was mandated in 1964 by RA 4109 to develop standards for all products for which no standards have as yet been fixed by law. No issuance names BPS as the national standards body. However, on account of the bureau's membership in the International Organization for Standardization and the International Electrotechnical Commission, it is regarded as the Philippine standards body.

After 1964, more laws were passed that authorized other bureaus and departments to develop quality and safety standards. These bodies submit the various standards that they produce to BPS. Coordination is necessary to avoid duplication and overlaps in standardization activities. However, at present, no single body is mandated to coordinate these different standards.

To date, BPS has developed 7,791 standards; 86 product standards have been adopted as technical regulations. Aside from developing standards, the bureau also does conformity assessment (i.e., certification and some tests) of the 86 regulated products. Less than 20% of the total number of bureau personnel develops standards. More than half regulate products.

The primary role of the national standards body is to develop standards for quality and competitiveness of the country's products and services. The body also prepares the national standardization plan and strategy; the Philippines has neither one at the present time. Though BPS prepared a standardization strategy several years ago, the private sector and other government departments were not consulted during its preparation. As a result, their standards needs were not included in the plan.

Coordinating standardization activities is also the responsibility of the national standards body. This is essential to avoid duplication, overlaps, and gaps in standardization efforts when addressing the needs of industries and regulatory bodies. However, the lack of coordination of these efforts has resulted in confusion and overlapping responsibilities. Standards bodies also perform regulatory functions, and regulatory bodies also develop standards.

A national standardization act defines these roles and unifies standardization activities. A review of Republic Act 4109, which created BPS, is timely. The Philippines needs to sell more high value-added products to the global market to create more jobs and to better protect citizens from hazardous and unsafe products, whether these are produced locally or imported into the country.



Philippine Accreditation Office

Accreditation gives credibility to results of inspection, testing, calibration and certification. The Philippine Accreditation Office (PAO) provides this credibility to conformity assessment results in the country.

PAO is internationally recognized, on account of its signatory member status in the PAC, Asia Pacific Laboratory Accreditation Cooperation, International Accreditation Forum, and International Laboratory Accreditation Cooperation. However, it has inherent structural weaknesses and limited resources; if not addressed, these will endanger PAO's international recognition.

PAO is an interim office with limited decision-making autonomy. Pending the approval of the rationalization plan of the Department of Trade and Industry, its annual budget is inadequate to fund staff training and full participation in various regional and international accreditation fora. Such participation is important for the staff to learn about the practices of advanced accreditation bodies and to gain a better understanding of the policies of international organizations.

PAO is also understaffed; more than a third of its trained personnel have resigned in the past two years, and no replacements have been hired. Due to the government's unfinished rationalization program, new hires are mostly on temporary status. This arrangement makes it easy for them to accept employment offers from other agencies and the private sector.

Although PAO is recognized as the national accreditation body, other agencies are also authorized by law to accredit conformity assessment bodies. These mandates to several bodies result in recognition complications by trading partners as to which accreditation certificates should be recognized. It also means multiple costs for international memberships, as accreditation bodies must be signatory members of mutual recognition agreements of regional/international organizations such as PAC, Asia Pacific Laboratory Accreditation Cooperation, International Accreditation Forum, and International Laboratory Accreditation Cooperation for international recognition.

The existence of several accreditation bodies and the structural and resource limitations of PAO should be addressed for a strong NQI to be established.

National Metrology Laboratory of the Philippines

Metrology pertains to accurate and traceable measurements. It is another basic component of the NQI.

The National Metrology Act (Republic Act 9236) was issued in 2003 to establish the country's national measurement infrastructure system; it has not been implemented. Said act created the national metrology board, which is mandated to set policies and guidelines in the implementation of the law. The board has not convened since 2003.

The National Metrology Laboratory of the Philippines (NMLPHIL) is a division of the Industrial Technology Development Institute (ITDI), which is under the Department of Science and Technology. NMLPHIL functions as the national metrology institute. The role of the institute is to provide traceability of the country's measurements to international standards and to disseminate these measurements to calibration laboratories, industries, and regulators in the country.

ITDI provides NMLPHIL's budget and personnel. NMLPHIL generates revenues through the metrology services it provides, and these revenues augment its budget. However, the total budget is inadequate for NMLPHIL to function fully as a national metrology institute that offers the services needed by the secondary calibration laboratories and industries in the country.

In 2002, NMLPHIL became an associate member of the General Conference on Weights and Measures making it possible to sign the International Committee on Weights and Measures (CIPM) Mutual Recognition Agreement (MRA).

However, being a CIPM-MRA signatory does not automatically mean recognition of the national metrology institute's measurements. NMLPHIL has to undergo more qualification processes, including successful participation in international intercomparisons and peer reviews, before its Calibration and Measurement Capabilities can be registered in the website of the International Bureau of Weights and Measures for recognition by other countries.

Being part of ITDI, NMLPHIL is bound by the institute's administrative policies and procedures on the hiring of personnel and procurement of supplies and equipment. These policies limit the ability of NMLPHIL to respond to the needs of its clientele for calibration services.

Though a national metrology act already exists, said act should be reviewed for adequacy to align with guidelines set by the International Bureau of Weights and Measures. The national metrology law should clearly define the responsibilities for scientific, industrial, legal, and chemical metrology and the international tasks of the national metrology institute.

Government regulatory practices

A great push for the establishment of a sound NQI is the use by regulators of the quality infrastructure. The study disclosed that most regulators in the country conduct inspection, testing, certification, and some do accreditation. This practice was acceptable in the past when clients were few, and no accredited conformity assessment bodies exist. However, these conformity assessment tasks can now be delegated to other bodies as long as the competence of these delegated bodies are assured through accreditation.

Regulatory agencies and conformity assessment bodies, working as partners, will enable regulators to focus more on their mandated functions of enforcing regulations and market surveillance.

In a nutshell, much needs to be done to establish a robust National Quality Infrastructure. The improvement of the NQI is the subject of this study, as the Philippines lags behind in almost all components of metrology, standardization, and accreditation when compared with Egypt and selected countries in ASEAN, Latin America, and Europe.

Specific recommendations to improve the NQI and government regulatory practices are listed in Sub-section 5.2 of this report. Some recommendations can be undertaken by the NQI institutions and regulators. Others may require high-level policy decisions and legislative action.

Implementing these recommendations may be a daunting task, but what is important is that areas for improvement have been identified in this study. The recommended actions may not be an exhaustive list, as there may be more actions that the agency thinks necessary. Still, it is worthwhile to consider these recommendations and to share them with policy and decision makers in government and the private sector, legislators, regulatory bodies, NQI institutions, and other stakeholders for their support and full participation in the establishment of a robust Philippine NQI and sound government regulatory practices.

The different NQI institutions continue to function without realizing that their work is interrelated and that they should, therefore, work together to produce synergy.

Introduction

Businesses have to go beyond government regulations for safety, health, and environment.

A robust national quality infrastructure (NQI), having the inherent elements of metrology, standardization, testing, certification, and accreditation, is vital to the economic growth of the Philippines. It is an important link in accessing markets, improving competitiveness, and promoting innovation and technology, which could accelerate the integration of the economy into the global trading system.

Several competitiveness surveys have shown the weaknesses in the country's physical and technical or quality infrastructure. Compared with its neighbors, the country's economic performance in terms of investments and exports has been unsatisfactory. Philippine products and services continue to be challenged in local and overseas markets.

The compliance of businesses with minimum requirements of governments or technical regulations to enter an overseas market is not enough. Businesses have to go beyond government regulations for safety, health, and environment. They need to supply products that will meet the quality specifications of consumers and to continuously innovate to satisfy more discriminating customers.

This study aims to provide a comprehensive assessment of the country's NQI, primarily in the sectors of agriculture, fishery, food, industrial, and consumer products, to serve as a basis for improvement and sustainable actions by all concerned entities in the country. Government and the private sector should work as partners in building a robust NQI. Such coherent and unified NQI will enhance consumer protection and improve the competitiveness of Philippine products and services.

Scope of work

Collection of information on Philippine laws, mandates, and other issuances in the pertaining to quality infrastructure (i.e., standards, testing, certification, accreditation, and metrology) for the competitiveness of food, agriculture, fishery, industrial, and consumer products.

Identification of public and private entities carrying out activities related to technical regulations, standards, testing, certification, accreditation, and metrology and enforcing relevant regulations. The corresponding law or issuance authorizing or mandating the identified entities to implement or enforce specific standards or technical regulations shall also be identified.

Collation and analysis of data gathered from tasks 1 and 2 to determine adequacy to meet the country's requirements given its level of development in terms of coverage, overlaps, and duplication in the existing NQI and government regulatory practices in the Philippines.

Identification and analysis of gaps in the existing NQI and government regulatory practices in the Philippines by benchmarking them against international best practices in NQI and government regulatory practices in Southeast Asian countries and by evaluating them against the needs of regulatory bodies and major export industries to meet international standards.

Formulation of recommendations and a medium-term action plan to address the gaps in existing NQI and government regulatory practices in order to ensure adequate consumer protection and promote industrial competitiveness.

Government and the private sector should work as partners in building a robust NQI. Such coherent and unified NQI will enhance consumer protection and improve the competitiveness of Philippine products and services.

Compared with its neighbors, the country's economic performance in terms of investments and exports has been unsatisfactory.

The role of the NQI system

Ensuring the characteristics, quality, and performance of products in economic terms is not new. Each civilization has developed its own mechanism to guarantee a fair exchange of goods.


However, for many centuries, the dimension of the economic transactions, the diversity of products and suppliers, and the technological complexity were small enough to guarantee a certain degree of control within those communities. It is the exponential growth of the number of transactions and the diversity of choices that has increased the demand for a formal structure of ensuring the safety and performance of products.

Through the years, industrialized economies have developed that structure to fulfil the need for a formal mechanism to support the growth opportunities provided by trade while ensuring the basic aspects of safety and quality. The establishment of the World Trade Organization, the globalization of production and economic transactions, and the emergence of China in global trade have presented developing economies with the challenge of putting up such a quality structure—referred to as the National Quality Infrastructure—in order to participate in the global economy.

Industrialized economies have been relying on technical standards as a means to facilitate economic transactions. Technical standards have become a basic aspect of any trade-related activity.

The use of technical standards to develop trade and to boost competitiveness, or to guarantee the safety of products in any market, requires the existence of a set of intertwined activities ranging from access to standards and technical regulations, metrology, testing, quality assessment, certification, and accreditation. These activities and the institutional setup of organizations to support them and their interconnection together with regional/international institutions and practices is the mandate of the NQI.

In the current socio-economic environment, there is very little room for countries to decide whether or not they want to be part of the global economy. Their only choice is to



decide how they can benefit from the global economy.

In this context, trade is not only the driver for growth; it also generates incentives to improve domestic rules and facilities so that opportunities for trade and investment are not wasted.

In order to benefit from global trade, increase customer safety and choice, boost competitiveness, and stimulate employment and domestic demand, developing economies have to attract foreign investment. According to Sanetra and Marban , “If developing countries want to attract foreign investments, they must keep in mind that infrastructure—and this includes quality infrastructure—is one of the key factors foreign investors will consider.”

From an institutional point of view, three of five components are essential to establish the basics of an NQI: standardization, accreditation, and metrology. The two other components, testing and certification, use the output of the three—standards, measurement results and the assessment of their technical competence—and provide the support for the quality infrastructure service providers, such as certification bodies, inspection bodies, testing laboratories, and calibration laboratories.



Benchmark Analysis

Methodology

The benchmark analysis aims to assess the current status of the Philippine National Quality Infrastructure in comparison with the NQI of developed economies, of selected countries in ASEAN, and of other economies having a similar degree of development.

The analysis starts with the development of benchmark criteria for the three institutional pillars of the quality infrastructure: metrology, accreditation, and standardization. These criteria provide a framework for the description of the main functions and characteristics of the different NQI components and for the comparison between countries.

The way the benchmark criteria are developed also constitute a description of best practices that are based on the experience and current situation of developed economies, specifically, the economies in the European Union (i.e., Germany, the United Kingdom, Belgium, and Spain).

The next step of the benchmark analysis is the development of the Philippine analysis. This analysis aims to assess how the metrology, accreditation, and standardization activities in the Philippines compare to the best practices that constitute a fully functional NQI.

The third step of the benchmark analysis is the regional analysis. The Philippines, as a member of ASEAN, is working with neighboring countries toward the development of an economic community. Therefore, it is important to identify the differences and the similarities of the main institutional components of the NQI; such an analysis will show what areas need to be prioritized in order to have adequate integration in the region.

Lastly, international analysis is done as part of the benchmark analysis. This analysis aims to compare the Philippine NQI with that of other economies that have a similar level of development. It will identify the activities that are particularly underdeveloped.

The international analysis focuses primarily on Latin American countries that offer a good range of countries with similar level of development as the Philippines. In addition, the analysis included the country of Egypt in order to bring some contrast to the Latin American regional aspects.



Figure 1: Components of the benchmark analysis

The information on the different countries were gathered through the following methods:

- Interviews with the relevant Philippine agencies, namely, the Bureau of Animal Industry, Bureau of Agriculture and Fisheries Product Standards, Bureau of Fisheries and Aquatic Resources, Food and Drug Administration, Food Development Center, National Food Authority, National Meat Inspection Service, National Telecommunications Commission, Philippine Coconut Authority, and Sugar Regulatory Administration
- Interviews with three national metrology institutes (NMIs) and four accreditation bodies in ASEAN.
- Survey questionnaires on the benchmark criteria for metrology, accreditation, and standardization sent to the NQI institutions of 18 ASEAN and 33 non-ASEAN economies.
- Telephone follow-ups and structured interviews conducted for the representative of ASEAN and non-ASEAN economies to complete the questionnaires.

Identification of benchmarks and best practices in countries in the European Union

A main element of this study is the development of a benchmarking analysis with other economies in order to assess whether the different institutional findings are in accordance with the development of an NQI and whether other economies have faced similar challenges. In order to conduct that comparative analysis, it was necessary to develop a set of benchmark criteria to assess each economy individually.

The criteria that were developed focused primarily on the three basic NQI components: standardization, metrology, and accreditation.

The benchmark criteria considered the elements that would represent a fully functional NQI that incorporates best practices. Such an NQI can effectively and efficiently respond to the challenges of the global economy. In so doing, the NQI becomes the reference for the domestic market and is internationally recognized.

The development of homogeneous quantitative and qualitative criteria facilitates the comparison between components of different economies. The benchmark criteria are grouped in five categories:

Criterion 1. Legal framework supporting the NQI component. This criterion aims to identify whether the current legislative framework has the necessary elements to enable the development of an NQI.

Criterion 2. The activities of the NQI component. This criterion aims to evaluate the scope and competence of the NQI component to carry out its primary activities.

Criterion 3. The participation of the NQI component in regional and international organizations. The proper integration within the international community is essential for the sound development of the NQI. This criterion aims to assess the level of integration of the NQI component in the pertinent organizations.

Criterion 4. The information-gathering and dissemination activities of the NQI component. The ability to promote and disseminate the value of the NQI component to the national and global market is a key aspect of successful implementation of the NQI. This criterion aims to identify the information activities that may indicate the maturity and future sustainability of the services offered.

Criterion 5. Institutional set-up of the NQI component. The experience of NQIs in developed economies have already identified best practices for institutional governance. This criterion aims to identify the adequacy of financial and human resources allocated to each component.

The benchmark criteria and best practices for three NQI components

The current section provides the explanation of each of the benchmark criteria for the three basic components being analyzed: standardization, metrology, and accreditation. This explanation represents best practices in each of the components to develop an NQI in developing countries. The assessment against these criteria defines the proximity to a fully functional National Quality Infrastructure.

The development of the best practices has been elaborated after the following steps were undertaken:

- A study and analysis of literature on the role and functions of the National Quality Infrastructure.
- A study and analysis of reports and presentation of public and private organizations supporting developing countries to work on a fully functional National Quality Infrastructure.
- An analysis of the guidelines developed by the main NQI international organizations, i.e., International Organization for Standardization (ISO), International Electrotechnical

Commission (IEC), International Accreditation Forum (IAF), International Laboratory Accreditation Cooperation (ILAC), International Bureau of Weights and Measures (abbreviated BIPM from the French Bureau International des Poids et Mesures), International Organization of Legal Metrology (abbreviated OIML from the French Organisation Internationale de Métrologie Légale).

- An analysis of the NQI components of European countries, i.e., Belgium, Germany, Spain, and the United Kingdom, which were used in determining best practices.
- Testing the benchmark criteria through the completion of the benchmark questionnaires for the three German institutions on standards, accreditation, and metrology.

The relevant literature and sources can be found in Annex 8 while the data corresponding to Germany is presented in Annexes 2, 3 and 4.

Using the criteria to assess standardization activities

Criterion 1. Legal framework supporting standardization

- Indicator:* The existence of a national standardization act
Description: Standardization activities receive legislative recognition as a national task. Otherwise, the standardization activities in a country become fragmented; they do not contribute to international standardization and do not guarantee the application of World Trade Organization and international best practices.
- Indicator:* The creation of a national standards body
Description: To ensure the optimal use of resources, the national standardization act creates a single national standards body to coordinate all standardization activities. The national standards body is the guarantor of the World Trade Organization Technical Barriers to Trade Code of Good Practice for the Preparation, Adoption and Application of Standards and international standardization principles. Though other organizations may develop standards, the national standards body shall be the sole body that publishes national standards.
- Indicator:* Clear differentiation between a technical regulation and a standard
Description: The national standardization act clearly describes the voluntary nature of standards, making a clear distinction between them and technical regulations. Ensuring the voluntary nature of standards is a key factor to effective spreading state-of-the-art technology and best practices.
- Indicator:* The use of voluntary standards in support of legislation
Description: This practice has proven to be one of the most successful regulatory tools in terms of efficacy, i.e., legislation up to technology change, and efficiency, i.e., optimal use of the resources of regulatory bodies. It is particularly important when referring to internationally accepted standards. The direct reference to international standards, which may or may not be nationally endorsed, guarantees that legislators are performing their regulatory activities against the best technology available while eliminating potential barriers to trade.

- e. *Indicator:* The participation of civil society and other stakeholders in the development of standards
Description: The participation of all relevant stakeholders in the development of standards guarantees the inclusion of best practices, the adequacy of the standards to meet the needs of industry and consumers, and the enforcement of the law whenever legislation refers to national standards.
- f. *Indicator:* The existence of a national standardization strategy
Description: Such a strategy can identify the needs of the national industry in the current global economy. It can define and prioritize the standardization activities, taking into account the role of standards in supporting legislation, specifically relating to consumer and health protection, boosting trade and market access, and promoting innovation and competitiveness.

Criterion 2. Standardization activities

- a. *Indicator:* The conformity of standardization practices with World Trade Organization Technical Barriers to Trade Code of Good Practice for the Preparation, Adoption and Application of Standards
Description: Developing national standards that meet the requirements of the World Trade Organization is essential for the country to be fully integrated in global trade. Creating such standards will ensure that they do not become technical barriers to trade.
- b. *Indicator:* The compliance of internal rules and procedures with ISO/IEC directives
Description: Developing such documents is a sign of a mature national standardization system. It is a step toward a country's full integration into the international standardization arena.
- c. *Indicator:* The existence of national technical committees for key economic sectors
Description: Since standardization is a market-driven process, it is essential that the main economic sectors are properly represented in national technical committees. These committees ensure that national characteristics are taken into consideration and that best practices are implemented at the national level.
- d. *Indicator:* Balanced participation of stakeholders in national technical committees
Description: The standardization process must be driven by the interests and needs of a broad variety of stakeholders. These stakeholders include private sector manufacturers, traders, and service providers; federations, associations, and chambers of commerce and industry; government agencies; NQI components, namely, metrology, conformity assessment, and accreditation; research and development institutes; the academe; and consumers and organizations representing their interests.
- e. *Indicator:* Technical committees that pursue and increase the participation of stakeholders
Description: The national standards body must reach out to all its stakeholders. It must educate them about the importance and benefits of standards and about their own roles in the standardization process.

- f. *Indicator:* Clear rules and procedures for the creation and management of National Technical Committees
Description: The national standardization body should define the rules for the establishment of a technical committee. These rules should include the possibility for industry and other stakeholders to influence decision makers or to directly propose the creation of technical committees.

The existence of a regional or international technical committee, that the national technical committee aims to mirror, shall be considered as a favourable argument in the decision to approve the creation of a new national technical committee.

The management rules and procedures of the technical committee should at least include the responsibility of national technical committees; meetings; subcommittees and working groups; standardization work and decisions by correspondence; and management of standardization work results.

Criterion 3. The participation of the standardization body in regional and international organizations

- a. *Indicator:* Membership in ISO and in IEC
Description: International cooperation is a vital tool to dismantle technical trade barriers. The type of membership in each organization will define the way in which the national standards body can benefit and contribute to international standardization.
- b. *Indicator:* Membership in the Codex Alimentarius Commission
Description: The commission is an intergovernmental body and may therefore not be represented by the national standards body. Nevertheless, proper national representation and coordination should exist.
- c. *Indicator:* Participation in international standardization technical committees
Description: A fully functional national standardization body should participate in the key international technical committees and contribute to the standardization process by offering and defending the position of its national industry. Developing standards at an international level is the most effective way to use national resources and avoid the duplication of standardization efforts.
- d. *Indicator:* Membership and participation in regional standardization bodies
Description: These bodies are effective mechanisms for generating synergies in the access and development of standards. The more active a national standardization body is in regional bodies, the more effective and influential it can be in supporting trade and the competitiveness of its national industry.
- e. *Indicator:* Source of funding for membership fees and participation in regional and international bodies
Description: The bulk of standardization work happens at the regional international level. Ample funding should ensure the participation of a national standardization body in these arenas.

- f. *Indicator:* The existence of other cooperation agreements
Description: Some national standardization bodies have developed bilateral agreements with their neighbors or more developed economies to reinforce their access to international standards or to further develop their know-how of the standardization process.

Criterion 4. The information-gathering and dissemination activities of the standardization body

- a. *Indicator:* The availability of online standards catalogue and purchasing of standards
Description: Since standards represent best practices, and since they may provide conformity to legislative requirements, the body should devote efforts to make national standards as accessible as possible. Using the Internet to do so is a must for a national standardization body.
- b. *Indicator:* The availability of online standards process
Description: The body should allow an online catalogue and enable the possibility of buying standards. It should also include a search tool to inform different users about the status of new standards and to facilitate their contribution in the public enquiry stage of standards development.
- c. *Indicator:* The existence of a standards library
Description: The national standardization body should guarantee the existence of a physical and/or virtual standards library, where potential users and buyers can consult on the contents of the documents.
- d. *Indicator:* The availability of advice services or publications
Description: A fully functional national standardization body will be able to offer commercial services related to the implementation of standards, such as advice services or dedicated publications.
- e. *Indicator:* The availability of training and seminars
Description: A fully functional national standardization body will leverage its unique status to develop seminars that would promote the use and the benefits of standards.
- f. *Indicator:* The availability of materials for dissemination, such as leaflets and booklets
Description: The body should systematically develop promotional materials to gain national recognition and to promote the benefits of participating in the development or the use of standards.

Criterion 5. Institutional set-up of the national standardization body

- a. *Indicator:* Governance and decision-making autonomy
Description: The aim of any national standardization body is to become self-sufficient in order to guarantee its financial survival, its market-driven nature, and its independence. Ideally, the body would be a private organization, with limited funding from the government.

- b. *Indicator:* Contribution of civil society to governing the body
Description: Failure to achieve balanced representation at the level of governing and advisory bodies will be a severe obstacle to the confidence and trust in the standardization process on the part of those groups that are not adequately represented.
- c. *Indicator:* Financial structure and independence
Description: The national standardization body is a service provider. Therefore, it should provide the services that are valued by national industry. Sustainability will only be achieved when the body has developed a financial and institutional structure that enables it to grow through the value of its services.

The government should guarantee the existence of a national standardization body. However, the aim, and what would be considered a fully functional body, is that which can sustain itself.

- d. *Indicator:* Adequate budget and staff
Description: Different institutional structures of national standardization bodies may result in different needs in terms of budget and staff. Nevertheless, it is always interesting to compare the amount of resources that, standardized by Gross Domestic Product, each country invests in standardization.

Using the criteria to assess metrology activities

Criterion 1. Legal framework supporting metrology

- a. *Indicator:* The existence of laws defining metrological infrastructure, including the national and international tasks of the NMI
Description: Metrology has a critical importance in national and international trade. It is therefore essential that laws define metrology as a national task. These laws must incorporate the legislative and institutional mechanisms to guarantee the adequate performance of the different metrological activities, namely, scientific metrology (development of primary measurement standards or primary methods); industrial metrology (proper maintenance and control of industrial measurement equipment, including the calibration of instruments and working measurement standards); and legal metrology (verification of instruments used in commercial transactions, health, and environmental protection, according to criteria defined in technical regulations).

It is also essential to establish an NMI with sufficient legal recognition to implement the national metrology strategy and to contribute to international metrological activities.

- b. *Indicator:* Adequate laws regarding modern international requirements and best practices
Description: A modern legal framework on metrology will clearly define which institution is the NMI, its tasks and responsibilities, its financial basis, and its mandate to represent national metrology locally and internationally and to make mandatory the International System of Units.

Any legislative requirement that is so specific that will require changes in the law, or any regulation that may limit or threaten the independence of the NMI, should be removed to ensure a fully functioning national metrology system. Some examples of these obstacles may be indicating the exact fees for metrological services, indicating lists of instruments under legal metrology, and explicitly nominating the director of the NMI.

- c. *Indicator:* The existence of other laws defining metrological responsibilities (e.g., for national time, radiation, metrology in Chemistry, legal metrology, etc.)
Description: The legal framework should clearly define all the responsibilities. It is important that laws, acts, executive orders are not contradictory.
- d. *Indicator:* The existence of other organizations performing national metrology activities other than the NMI
Description: The National Metrology Act shall guarantee the role of the National Metrology Institute as the sole coordinator of all metrology activities and as the guarantor of the traceability at national and international levels. The existence of organizations performing activities outside the control of the NMI, and their doing so without a legal mandate, hampers the credibility and functioning of the NMI.
- e. *Indicator:* The existence of a national metrology policy or strategy (e.g., a 10-year master plan)
Description: It is important that a national metrology strategy is fully integrated in the organization of the NMI, metrology in chemistry, and legal metrology. This strategy is the driver and benchmark of the organization's performance. The strategy, with the support of a quality management system, should guarantee that all organizations in charge of metrology work towards the full implementation of the national metrology policy and have formal mechanisms to feed back the results of that implementation. The strategy should form part of the national economic development strategy.

Criterion 2. Metrology activities

- a. *Indicator:* The establishment of NMI according to best international practices and guidelines
Description: All countries must ensure they have a practical system to provide their markets with the appropriate levels of traceable metrology to underpin their trade activities. The NMI should set up its structure and organization according to the requirements of the recognized international organizations, i.e., International Committee for Weights and Measures (abbreviated CIPM from the French Comité International des Poids et Mesures) and BIPM.
- b. *Indicator:* Metrological competence
Description: When deciding on the metrological services to be offered in the country, the NMI needs to evaluate the cost-effectiveness of maintaining the required level in each discipline of metrology.

In developed economies, it is generally accepted that not every national laboratory can be everything to everybody and have agreed to maintain different areas of specialization while addressing the general requirements of industry.

In some developing countries, the national laboratory is no more than a “post office” which co-ordinates the flow of work to accredited laboratories in other countries or economies.

Best practices regarding NMI competence consist of identifying both the actual capacity in general terms and its response to the key economic sectors.

As regards the actual competence, the ability to perform a wider range of activities with the required level of competence in the country shows a higher level of development and maturity of the metrology activities in the country.

The fields of Calibration and Measurement Capabilities should correspond to the needs of industry. There are some fundamental fields that should be covered first: mass, temperature and pressure.

Number of registered Calibration and Measurement Capabilities:

- Acoustics, ultrasound, vibration
- Electricity and magnetism
- Length
- Mass and related quantities
- Photometry and radiometry
- Ionizing radiation
- Thermometry
- Time and frequency
- Chemistry

A second critical aspect of the metrology competence is the level of international intercomparisons:

Number of international intercomparisons registered in key comparison database¹

- Acoustics, ultrasound, vibration
- Electricity and magnetism
- Length
- Mass and related quantities
- Photometry and radiometry
- Ionizing radiation
- Thermometry
- Time and frequency
- Chemistry

- c. *Indicator:* The institutionalization of metrology in chemistry
Description: There is no preferred institutional set-up as long as all services are available nationally. Usually, though, the NMI handles metrology in chemistry. To ensure that a national approach is taken, the NMI must coordinate the work of the different institutions.
- d. *Indicator:* The institutionalization of legal metrology
Description: The institutional set-up of legal metrology, whether it is inside or outside the NMI, is not critical. What is critical is that legal metrology guarantees that market surveillance responsibilities are clearly separate and sanctions for violators are clear.
- e. *Indicator:* The harmonization of technical regulations and their compliance to international best practices
Description: In order to guarantee the reliability of measurement instruments, the verification process must ensure that all technical regulations of different government departments are harmonized and reliably enforced through a national focal point and are clearly communicated to all potential users.
- f. *Indicator:* The existence of a formal coordinating structure between the NMI and secondary laboratories
Description: Having active coordination between the NMI and the accredited calibration laboratories represents best practices. Calibration labs can be private or public enterprises that use secondary or working measurement standards traceable to their NMI to calibrate customer instruments. The uninterrupted chain of traceability from an industrial measuring instrument to the National Measurement Standard shall remain guaranteed.
The benchmark can be assessed in two different ways:
- *Coordination at technical level between NMI and calibration laboratories*
Best practices will show that the NMI coordinates technical working groups or metrology clubs on metrological issues (e. g., calibration guidelines and procedures, uncertainty calculation, validation procedures, technical assistance, etc.) where calibration labs actively participate.
 - *Coordination of services provided between NMI and calibration laboratories*
Best practices will show that the NMI offers only services not provided by any other lab in the country. These services are either of a higher order than services offered by other labs or services that are not commercially interesting to other labs.
- g. *Indicator:* The availability of metrological services for industry in trade-related key economic sectors
Description: Best practices show that all metrological services in high demand are available in the country. These services are internationally recognized through accreditation or Calibration and Measurement Capabilities. Only specialized services with limited demand are sometimes obtained from abroad.

Criterion 3. The participation of the metrology body in regional and international organizations

a. *Indicator:* Membership in the Metre Convention

Description:

b. *Indicator:* Being a signatory of CIPM-MRA

Description: Participation in the CIPM MRA enables national accreditation bodies and others to be assured of the international credibility and acceptance of the measurements that the NMI disseminates. It also provides international recognition of the measurements made by accredited testing and calibration laboratories, provided that these laboratories can demonstrate competent traceability of their measurements to a participating NMI.

c. *Indicator:* Membership in OIML

Description: OIML promotes the global harmonization of legal metrology requirements and procedures. Members of OIML benefit from mutual information and confidence in each member's legal metrology structures, documents that provide harmonized requirements, guidance for the development and implementation of legal metrology regulations, and global systems for international certification and acceptance in legal metrology.

d. *Indicator:* Participation in international technical working groups

Description: International working groups or committees develop recommendations or technical guidance documents. They also assess and respond to technological advances and coordinate the identification, planning, and execution of key comparisons of national measurement standards.

A fully functional NMI should be able to participate actively in technical working groups that directly impact its activities or the national industry. The greater the degree of participation, the more developed the metrology system becomes. Allocating resources for the metrology body to systematically contribute to international work is a best practice.

e. *Indicator:* Membership in regional metrology bodies

Description: Full participation in regional metrology bodies (e.g., APLMF, APMP) is an effective way for the metrology body to gain international recognition and to facilitate the transfer of knowledge within a particular economic zone.

Being active at a regional level leads to more laboratory international intercomparisons, better coordination and reinforcement of the national presence at international level, and enhanced identification of areas of cooperation with neighboring countries to optimize the use of existing resources (e.g., the development of a regional field of specialization).

- f. *Indicator:* The availability of funding for membership fees and participation in regional and international bodies
Description: The credibility and competence of the NMI is closely related to its participation in regional and international metrology organizations. Such participation is a strategic aspect of the NMI, and should, therefore, be adequately funded.

Criterion 4. The information-gathering and dissemination activities of the metrology body

- a. *Indicator:* Development of services for industry
Description: A fully functional NMI is able to develop and provide services for the national industry. These services may include consulting services (e.g., metrology mapping, demand analysis), training and seminars, and coordination of proficiency testing schemes.
- b. *Indicator:* Participation in standardization activities
Description: Best practices show that NMI and other metrology experts participate in the standardization technical work on a regular basis. They contribute to the standardization governance bodies to ensure coherence within the NQI.
- c. *Indicator:* Participation in work related to technical regulations
Description: Best practices show that NMI and other metrology experts regularly participate in the development of technical regulations in a structured way.
- d. *Indicator:* Participation in the accreditation of calibration laboratories and test laboratories
Description: Best practices show that the existence of a formal agreement between the NMI and the accreditation body, regarding the use of NMI staff as assessors, is beneficial. The participation of the NMI in advisory groups of the accreditation body and the coordination of proficiency testing schemes is needed.
- e. *Indicator:* Development of online tools to promote the image of the metrology body and to provide services and materials for dissemination
Description: The NMI should systematically develop promotional materials (e.g., leaflets, books) to promote its services and to inform the public about its activities. Using the Internet to disseminate these materials is a must.

Criterion 5. Institutional set-up of the national metrology body

- a. *Indicator:* Governance and decision-making autonomy
Description: Best practices recommend the development of an NMI model that ensures financial independence, such as an independent legal entity or a state enterprise fully funded by public funds.

- b. *Indicator:* Contribution of the other NQI components to NMI governance
Description: Coordination with other NQI components is essential not only at technical level, but also at the level of governing and advisory bodies. Best practices show that relevant stakeholders participate regularly with full voting or decision rights in the governing bodies.
- c. *Indicator:* Financial structure
Description: The government is responsible for guaranteeing the existence and maintenance of the NMI. An NMI should ideally be 100% publicly funded. It should not compete with commercial calibration labs, and it should not rely on income from commercial services. Otherwise, the mandate of the NMI—to realize and to disseminate national standards and research—may suffer in favor of revenue generation.
- d. *Indicator:* Adequate budget and staff
Description: Different institutional structures of the NMI may lead to different needs in terms of budget and staff. Nevertheless, it is always interesting to compare the amount of resources, standardized by Gross Domestic Product that each country invests in metrology.

Using the criteria to assess accreditation activities

Criterion 1. Legal framework supporting accreditation

- a. *Indicator:* The existence of a national accreditation act that defines and develops the national accreditation body
Description: Countries generally tend to establish a national accreditation system and define its structure in a national accreditation act. Doing so prevents competing entities and recognition complications within the country. It also reduces costs for duplicating national structures and for international memberships.
- b. *Indicator:* The existence of other organizations in charge of accreditation
Description: Best practices show that the best set-up is to have a single national accreditation body that is responsible for the entire range of accreditation activities at the national level. This body also represents national interests, and it is recognized at the international level.
- c. *Indicator:* The existence of a national accreditation policy or strategy
Description: Such a policy is fully integrated in the institutional organization of the national accreditation body. It is the driver and benchmark of the body's performance. With the support of a Quality Management System, the policy ensures that the body works toward full implementation of the policy and that it has formal mechanisms to feed back the results of that implementation.

Criterion 2. Accreditation activities

- a. *Indicator:* The establishment of the national accreditation body according to best international practices

Description: The body must conform with ISO/IEC 17011 [Conformity Assessment – General requirements for accreditation bodies accrediting conformity assessment bodies]. This conformity proves its technical competence to perform its activities. It is a requirement for the body to seek membership and recognition at the international level.

- b. *Indicator:* Fields of accreditation

Description: All types of accreditation consist mainly of an assessment of the implemented quality system in the entity to be accredited and an evaluation of the professional competence in the area of accreditation. For the second part, a recognized expert is generally contracted to join the assessment team.

The assessment of the fields of accreditation does not only refer to the accreditation schemes that can be performed with in-house expertise. It also includes the combination of in-house expertise and external pool of assessors and experts.

Best practices will show that a national accreditation body can perform accreditation and is not limited to the following conformity assessment bodies:

- Testing and calibration laboratories according to ISO/IEC 17025
- Inspection Bodies according to ISO/IEC 17020
- Certifying Bodies for Quality Management System according to ISO/IEC 17021
- Certifying Bodies for Environmental Management System according to ISO/IEC 17021
- Certifying Bodies for Product Certification according to ISO Guide 65
- Certifying Bodies for Personnel Certification according to ISO/IEC 17024
- Medical testing laboratories according to ISO 15189
- Proficiency testing schemes according to the requirements of ISO Guide 43-1
- Reference Material Producers in accordance with ISO Guide 34

- c. *Indicator:* The competence of the national accreditation body in the different fields of accreditation

Description: A fully functional body will have the services of technical experts and lead assessors readily available for the entire scope of services offered. It will conduct continuous training in order to increase the pool of qualified technical personnel.

- d. *Indicator:* Number of technical committees or working groups

Description: The national accreditation body operates technical committees with external experts as know-how support for the different fields of accreditation scopes. Active technical committees show the body's ability to discuss and implement the state-of-the-art in accreditation and its recognition and credibility at national level.

- e. *Indicator:* The availability of overall accredited laboratories for trade-related key economic sectors
Description: Best practices show the capacity to respond to the needs of the national authorities and industry in two directions:
- Sufficient number and capacities of accredited laboratories and continues to accredit more laboratories for regulated products.
 - Sufficient number and capacities of accredited laboratories for identified major export products and continues to accredit laboratories needed by exporters.
- f. *Indicator:* Overall accredited conformity assessment bodies for trade-related key economic sectors
Description: Best practices show the capacity to respond to the needs of the national industry in two directions:
- Sufficient number and scope of accredited certification bodies for export products.
 - Sufficient number and scope of accredited certification bodies for regulated products.

It is highly recommendable that there is accreditation competence for the key sectors of the economy in order not to hamper the potential competitive advantage by unnecessary increase in costs.

Criterion 3. The participation of the accreditation body in regional and international organizations

- a. *Indicator:* Signatory of IAF MLA and ILAC MRA
Description: Mutual recognition plays an increasingly important role in accreditation. The clients of accreditation bodies are laboratories and certification bodies. Most of these bodies are unable to individually set up mutual recognition agreements with their counterparts all over the world. Being recognized worldwide through one accreditation is much simpler, easier, and less costly to achieve and maintain.
- b. *Indicator:* Membership in international accreditation organizations (i.e., ILAC, IAF)
Description: The national accreditation bodies that are members of ILAC and IAF have been evaluated by peers as competent to sign arrangements that enhance the acceptance of products and services across national borders, thereby creating a framework to support international trade through the removal of technical barriers. ILAC manages the arrangements in the field of laboratory and inspection accreditation. For an accreditation body to become a full member of ILAC, it must do the following:
- Operate accreditation schemes for testing laboratories, calibration laboratories, inspection bodies, and/or other services as decided from time to time by the ILAC General Assembly.
 - Show evidence that it is operational and committed to complying with the requirements set out in relevant standards established by appropriate international standards writing bodies such as ISO and IEC and ILAC application documents; and conforming to the obligations of the ILAC Mutual Recognition Arrangement.
 - Be recognized in its economy as offering accreditation services.

- Be a signatory to the ILAC Mutual Recognition Arrangement. Each accreditation body that is a signatory to the arrangement agrees to maintain conformance with ISO/IEC 17011, related ILAC guidance documents, and a few, but important, supplementary requirements; and ensure that all its accredited laboratories comply with ISO/IEC 17025 or ISO 15189 (for medical testing laboratories) and related ILAC guidance documents.
- IAF manages the arrangements in the field of management systems and product certification bodies. For an accreditation body to become a full member of IAF, it must do the following:
 - Be accepted within an economy, region, or internationally and be engaged in developing, conducting, or administering programs to accredit entities.
 - Operate such programs in accordance with international standards and application IAF guidelines.

c. *Indicator:* Participation in international accreditation organizations (ILAC and IAF) technical committees or working groups

Description: The international working groups or committees develop recommendations or technical guidance documents to guarantee both the quality and adaptation of the accreditation process to the needs of the market and to ensure a harmonized approach.

A fully functional national accreditation body should be able to participate in those technical working groups with direct impact to its activities or the national industry. Allocating resources for the body to contribute systematically to the international work is a best practice.

d. *Indicator:* Membership and participation in regional accreditation bodies (e.g. APLAC, PAC)

Description: Membership and active participation in regional bodies accreditation is essential to gain recognition in the regional market and to facilitate trade exchanges. Moreover, regional memberships and mutual recognition agreements, based on international criteria, is an effective way to stay abreast of international developments.

e. *Indicator:* The availability of funding for membership fees and participation in regional and international bodies

Description: Given the importance of participating in regional and international accreditation bodies to ensure recognition of the national accreditation activities, this activity should be considered a strategic aspect of the national accreditation body and should therefore be adequately funded.

Criterion 4. The information-gathering and dissemination activities of the accreditation body

a. *Indicator:* Develops services for industry

Description: A fully functional national accreditation body performs services for national industry. These services may include consulting services, seminars, and the coordination of proficiency testing schemes.

- b. *Indicator:* Participation in standardization activities or the development of guidelines and accreditation criteria
Description: The national accreditation body has best practices when its personnel and accreditation experts regularly participate in the standardization and technical work and contribute to the standardization governance bodies to ensure coherence within the NQI.
- c. *Indicator:* Involvement of stakeholders in accreditation guidelines and criteria formulation
Description: The national accreditation body has best practices when it involves all significant interests in policy, guidelines, and criteria formulation. It also continues to consult relevant stakeholders for the proper functioning of the accreditation body.
- d. *Indicator:* Development of online tools to promote the image of the accreditation body and to provide services and materials for dissemination
Description: The body should systematically develop promotional materials (e.g., leaflets, books) to promote its services and to inform the public about its activities. Using the Internet to disseminate these materials is a must.

Criterion 5. Institutional set-up of the national accreditation body

- a. *Indicator:* Governance and decision-making autonomy
Description: A national accreditation body must be absolutely independent and impartial. Any legal and financial structure that potentially hampers that independence is not considered best practice. A national accreditation body should aim to become self-sustaining, even if that process requires a transition period during which financial support from the government would be essential.
- b. *Indicator:* Contribution of the other NQI components to governing the national accreditation body
Description: Coordination with other NQI components is essential not only at the technical level, but also at the level of governing and advisory bodies. Best practices show that relevant stakeholders regularly participate with full voting or decision rights in the governing body.
- c. *Indicator:* Financial structure and independence
Description: The national accreditation body is a service provider. It should therefore offer services that are valued by national industry. Sustainability will only be achieved when the national accreditation body has developed a financial and institutional structure that enables it to grow through the value of its services.

The government should guarantee the existence of a national accreditation body. However, the aim and what would be considered a fully functional NAB is that which can sustain itself.

d. *Indicator: Adequate staff*

Description: A national accreditation body must mainly be a management organization that can be run with a small number of staff. Other technical expertise is then contracted depending on the actual needs. Having experts in all possible accreditation scopes as permanent staff within a national accreditation body is costly and inefficient.

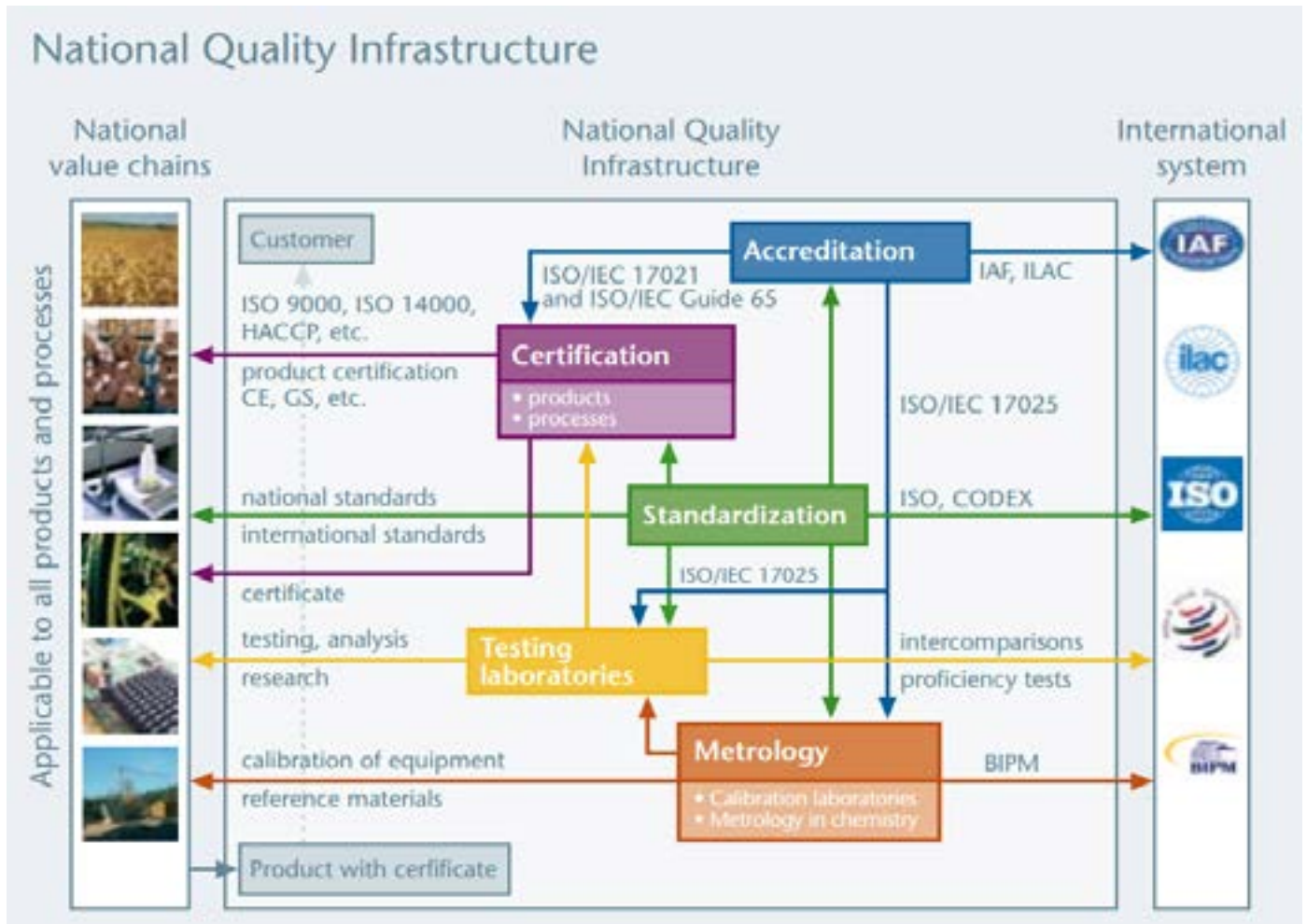


Figure 2: The ideal National Quality Infrastructure, as explained by Sanetra and Marban²

²Sanetra, C. and Marban, R, *The Answer to the Global Quality Challenge: a National Quality Infrastructure*. Physikalisch-Technische Bundesanstalt. 2007.



Prepackaged products are commonly sold in the market, but consumers are not assured of whether the actual contents of the package correspond to what appears on the label.

An Overview of NQI in the Philippines

Metrology in the Philippines

The National Metrology Act, or Republic Act 9236, was issued in 2003. Said act was supposed to establish the national measurement infrastructure system of the country. However, the National Metrology Board created under the act and tasked to issue policies and guidelines on metrology has not convened since 2003. To date, the Philippines has no development plan for its national metrology infrastructure.

The National Metrology Laboratory of the Philippines (NMLPHIL), although not named specifically in the National Metrology Act, functions as the national metrology institute. NMLPHIL is a division of the Industrial Technology Development Institute, which is under the Department of Science and Technology.

NMLPHIL is the agency in charge of the national standard of units of measurements for mass, length, electricity, frequency, temperature, force, and pressure. It is not fully recognized as the national entity in all metrological aspects in the Philippines as there are other agencies given charge of the following units. The Philippine Atmospheric, Geophysical and Astronomical Services is the agency in charge of epoch time. The Philippine Nuclear Research Institute is in charge of ionizing radiation.

NMLPHIL shares in the budget of the Industrial Technology Development Institute. In 2011, it received a budget of Php14 million and an additional amount of Php2 million from the revenues it generated through the metrology services that it provides. Of its total of 26 employees, 23 are technical staff.

As shown in Table 1 and Chart 7, NMLPHIL has the lowest human and financial resources among the national metrology institutes surveyed. Due to its limited resources, NMLPHIL's metrological capabilities are limited to the basic fields of metrology.

It even has difficulty sustaining these basic services. Some government and private secondary calibration laboratories have higher measurement accuracies than NMLPHIL. Many secondary calibration laboratories even have to send their standards abroad for calibration, a practice that is time-consuming and costly.

The Philippines is an associate state of the General Conference on Weights and Measures. The status of membership in the Metre Convention of six selected ASEAN countries is shown in Table 2.

Being an associate state of the General Conference on Weights and Measures is a step before being a full member of the Metre Convention, and it enables NMLPHIL to sign the CIPM-MRA. However, signing the CIPM-MRA does not entitle automatic recognition of measurements made by NMLPHIL. The agency still has to participate in international intercomparisons and undergo peer review.

Only after the agency has successfully passed these tests will NMLPHIL declare Calibration and Measurement Capabilities (CMCs) for registration in the BIPM Key Comparison Database (KDCB). CMCs that are registered in BIPM's KDCB are recognized internationally.

As of December 2011, NMLPHIL had no registered CMCs in the BIPM KCDB. It is working towards this goal, especially after being granted accreditation in 2010 by DAkkS Germany for mass, temperature, and pressure. (Please refer to Table 1 and Chart 5.)

The responsibility for metrology in chemistry, which is an important field, is not defined in the law. Nonetheless, the director of ITDI has designated the standards and testing division of the institute as a focal point for metrology in chemistry. Legal metrology pertains to measurements used in commerce, health, and environment.

Table 1: Comparison of resources of ASEAN countries' NMIs

Country	NMI	Annual budget (in USD)	No. of personnel	CMCs in BIPM ³ KCDB ⁴
Indonesia	Puslit K IM-LIPI (Research Centre for Calibration, Instrumentation and Mterology-Indonesian Institute of Sciences)	2.6 M	78	89
Malaysia	SIRIM Berhad (Standards & Industrial Research Institute of Malaysia)	4.0 M	100	155
Philippines	NMLPHIL (National Metrology Laboratory of the Philippines)	.33 M	26	0
Singapore	A Star NMC (National Metrology Centre of the Agency for Science, Technology and Research)	7.5 M	75	308
Thailand	NIMT (National Metrology Institute of Thailand)	10.0 M	166	390
Vietnam	VMI (Vietnam Metrology Institute)	No data	No data	20

³Bureau of International des Poids et Mesures, or International Bureau of Weights and Measures

⁴key comparison database

Table 2: Comparison of BIPM membership of ASEAN countries' NMIs

Country	Status	Year of Joining
Thailand	Member state	1912
Indonesia	Member state	1960
Singapore	Member state	1994
Malaysia	Member state	2001
Philippines	Associate state	2002
Vietnam	Associate state	2003

It has been defined in Republic Act 9236 as the responsibility of the National Metrology Board.

As the board has not been activated, no single organization oversees the implementation of legal metrology. Instead, various government agencies carry out legal metrology functions: local government units are in charge of measures for weight and length; the Land Transportation Franchising and Regulatory Board supervises taximeters; the Department of Energy regulates petroleum-dispensing pumps and transport containers; and the Energy Regulatory Commission takes charge of electric meters. It is unclear who is in charge of water meters; many agencies, such as Maynilad, Manila Water Co., the National Water Resources Board, and various local water districts, are doing it now. Each agency authorized to check measuring equipment does this according to its internal procedures. The harmonization of procedures in legal metrology has not yet taken place.

Prepackaged products are commonly sold in the market, but consumers are not assured of whether the actual contents of the package correspond to what appears on the label. This is one part of legal metrology that no agency is enforcing and monitoring. The effective implementation of regulations on metrology in commerce and in the health sector (e.g., thermometers, manometers) will promote consumer protection.

Standardization in the Philippines

The Bureau of Standards was mandated in 1964 to establish standards for all products for which no standards have as yet been fixed by law, regulations and decrees. It is now known as the Bureau of Product Standards (BPS).

In 1992, Republic Act 7394, or the Consumer Act of the Philippines, gave authority to three government departments—the Department of Agriculture, the Department of Health, and the Department of Trade and Industry—to develop and implement quality and safety standards for consumer products. Said act fragmented the standardization activities in the country.

Five more laws were passed after 1992 that gave mandates to other agencies to develop quality and safety standards, thereby adding to the already fragmented situation. Although many agencies are mandated to develop standards, not one is tasked to coordinate the standards development activities and to ensure that there are no overlaps or duplication of activities and that the needs of regulators and industries for standards are addressed.

BPS has been a member in the International Organization for Standardization since 1969. It became a member of the International Electrotechnical Commission in 1997. These memberships, and the fact that BPS is mandated to develop standards for all products, have led to its being regarded as the Philippine national standards body. There is no issuance naming BPS as such, despite its being the country's biggest standards-writing agency.

BPS does limited coordination with other standards or regulations writing agencies. The three departments -- the Department of Agriculture, the Department of Health, and the Department of Trade and Industry -- are co-equal under Republic Act 7394.

BPS has come up with a standardization strategy primarily for products within the jurisdiction of the Department of Trade and Industry. A national standardization strategy should cover all possible standards that are needed by industries and regulators in the country.

It should be noted that the agencies given mandates to develop quality and safety standards are regulatory bodies; they do not write standards for competitiveness but for regulation. Even the mandate given to BPS in 1964 through Republic Act 4109 to write standards was intended for regulatory purposes. It only evolved that most of the standards being developed now are for voluntary application. BPS has in its catalogue over 7,000 standards, and 86 of these are being used as technical regulations.

The distinction between standards and technical regulations is still unclear to most stakeholders. It appears that there are many agencies mandated to develop standards. In reality, though, they only write rules and guidelines for regulatory purposes.

The term technical regulation is seldom used when referring to mandatory requirements for safety, health, and the environment. Standards that are written by standards-writing organizations are voluntary, and they are intended for competitiveness of industry. Technical regulations are compulsory, as these pertain to the protection of life, health, safety, and the environment.

Technical regulations are best based on the safety, health, or environment requirements of standards. The WTO, in its Code of Good Regulatory Practice, encourages member countries to base their technical regulations on international standards so as not to pose unnecessary technical barriers to trade.

As a standards-writing body, BPS also checks the conformity assessment of the products that it regulates. Less than 20% of its personnel do standards development, and more than 50% do conformity assessment (e.g., testing and certification) of regulated products. Per Republic Act 8749, or the Philippine Clean Air Act, the Department of Trade and Industry is responsible for accrediting private emission testing centers. The same function is also being handled now by BPS; previously it was done by the Bureau of Trade Regulation and Consumer Protection, which is also under the same department.

In a nutshell, the government has to specifically mandate BPS as the national standards body to take charge of coordinating all standardization activities in the country. The main function of the national standards body is to assist businesses, particularly small and medium-sized businesses that lack resources, to conduct research and become competitive. National standardization will help them access information on new technologies and the requirements of target markets for quality, safety, reliability, environmental compatibility, and hygiene, in the case of agricultural and food products. This information is useful in product design and innovation.

While the national standards body focuses on developing standards, regulatory agencies can use these standards as bases for technical regulations. These agencies can then focus on the enforcement of regulations and market surveillance.

Accreditation in the Philippines

Aside from the Philippine Accreditation Office (PAO) the following agencies are also authorized to do accreditation:⁵

- Bureau of Agriculture and Fisheries Product Standards, per Republic Act 10068, for organic certification bodies.
- Food and Drug Administration, per Republic Act 9711, for private laboratories without PAO accreditation which are doing tests for FDA.
- BPS, per Republic Act 8749 (through the Department of Trade and Industry), for private emission testing centers.
- National Commission for Muslim Filipinos, per Republic Act 9997, for halal certification bodies.

PAO is recognized as the national accreditation body through Executive Order 802 issued in 2009. It is a member of the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC) and is signatory to both IAF and ILAC MRAs. PAO is also a member of the Pacific Accreditation Cooperation (PAC) and the Asia Pacific Laboratory Accreditation Cooperation (APLAC) and signatory as well of the MRAs of the two organizations.

At present, PAO has a staff of eight. No replacements have yet been hired for resigned personnel. This number is not enough for PAO to manage its accreditation programs and to carry out the required assessments for new applicants and accredited conformity assessment bodies. While accreditation bodies can be lean, as they can draw experts from a pool if this is available, the manpower complement in an accreditation body should still be sufficient for the body to manage the various accreditation schemes and to respond in a timely and effective manner to demands for its services.

After 2009, three Republic Acts were passed that gave authority to three more agencies, in addition to PAO, to also do accreditation work. The existence of five entities performing accreditation shows that there is no mandate for a single accreditation body.⁶ Having such a body would prevent duplication in national structures, multiple costs for international membership and participation, and recognition complications within and outside the country.

⁵The terms *accreditation* and *certification* are often used interchangeably. Several agencies claim to offer accreditation services, but they are either doing certification or giving authorization. Those agencies are not included in the above enumeration of accreditation bodies.

⁶More agencies are said to be offering accreditation services, but they are actually just giving certification or authorization. Some examples are the Bureau of Research and Standards of the Department of Public Works and Highways and the Bureau of Trade Regulation and Consumer Protection of the Department of Trade and Industry. The Bureau of Research and Standards has published a list of accredited batching plants, materials testing engineers, and laboratories in its website. The Bureau of Trade Regulation and Consumer Protection is accrediting repair shops. These bodies are not regarded as accreditation bodies, and they are excluded in the list above.

How the Philippines' NQI compares with the NQI of selected ASEAN countries

Five other countries in ASEAN were surveyed on metrology, standardization, and accreditation components for benchmarking with the NQI of the Philippines. These countries are Indonesia, Malaysia, Singapore, Thailand, and Vietnam. The analysis follows.

Metrology in selected ASEAN countries

Criterion 1. Legal framework supporting metrology

Malaysia, Philippines, Singapore, and Thailand all have the legal frameworks that support the establishment of their metrological infrastructure. Indonesia reported that it has no legal framework defining its metrological infrastructure.

The National Metrology Act of the Philippines defines the responsibilities for scientific and legal metrology, but not for metrology in chemistry. Also, it does not define the international tasks of the national metrology institute.

On the other hand, the laws of Malaysia, Singapore, and Thailand include the definition of the international tasks of their national metrology institutes and of the responsibilities for metrology in chemistry and legal metrology.

It can be said that Republic Act 9236 has not yet been implemented. The national metrology board responsible for issuing and enforcing guidelines on metrology has not been convened since its creation in 2003.

Of the ASEAN countries surveyed, Singapore and Thailand have their national metrology institutes independent from other organizations. Those of Indonesia, Malaysia, and the Philippines are attached to other agencies. However, the national metrology institutes of Indonesia and Malaysia are much better resourced both in personnel and finances.

Table 1 (p.33) shows a comparison of resources of the national metrology institutes of the six ASEAN countries⁷ together with their Calibration and Measurement Capabilities published in the International Bureau of Weights and Measures (BIPM) key comparison database (KCDB).

Chart 1: Benchmarks with ASEAN Countries' NMIs

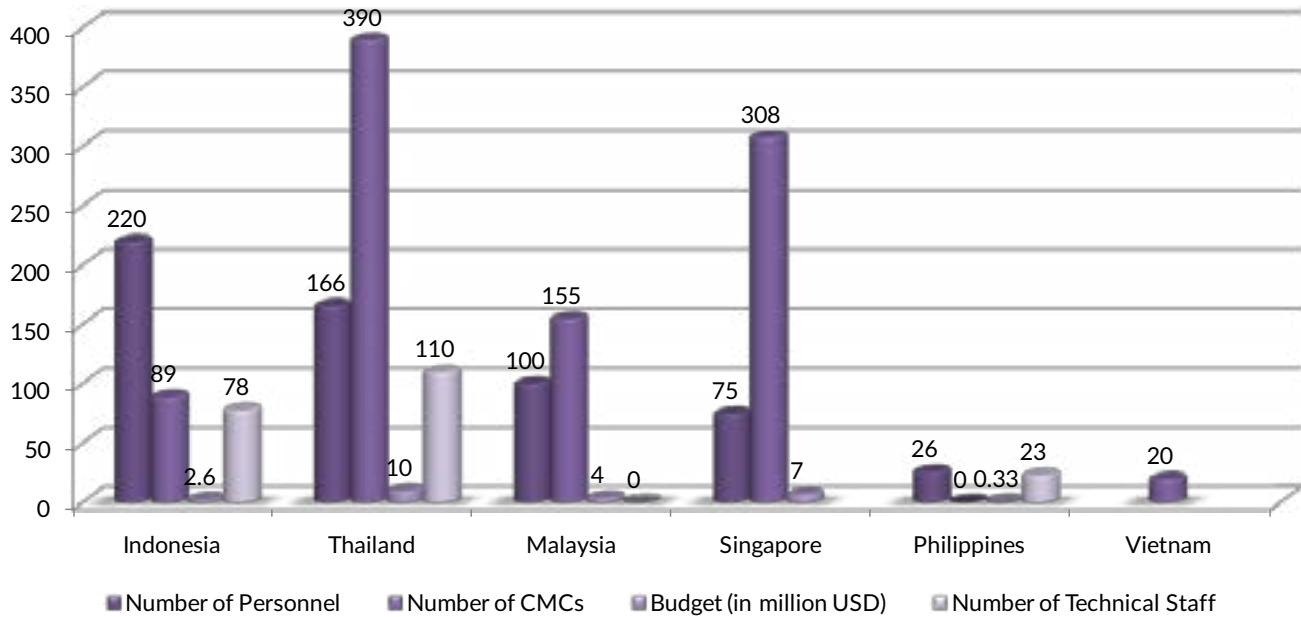
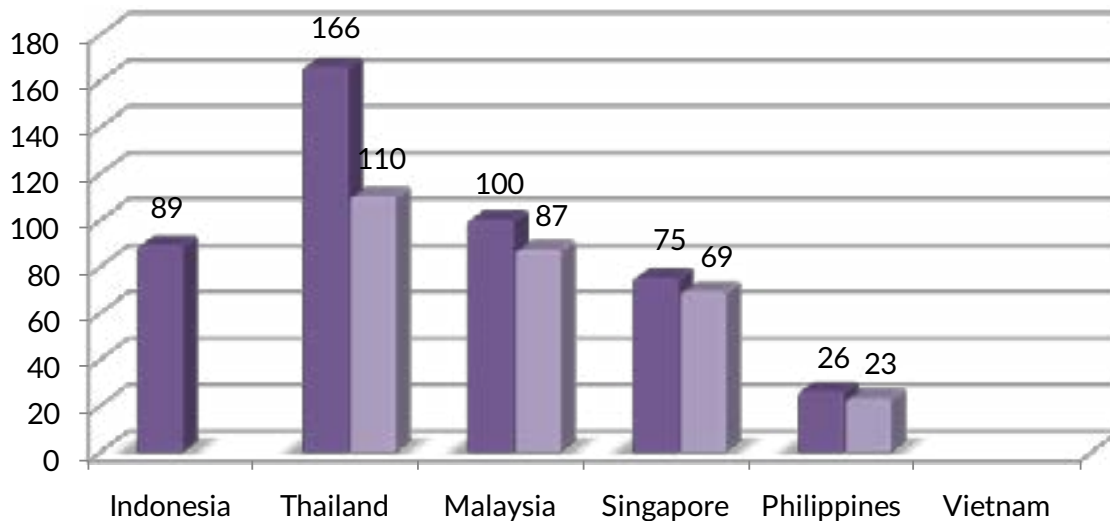


Chart 2: Comparison of NMI Staff Resources in ASEAN countries



⁷Data on the budget and personnel of the Vietnam Metrology Institute are not available, but its Calibration and Measurement Capabilities are published in the BIPM website.

Chart 3: Comparison of CMCs registered in BIPM KCDB of ASEAN countries

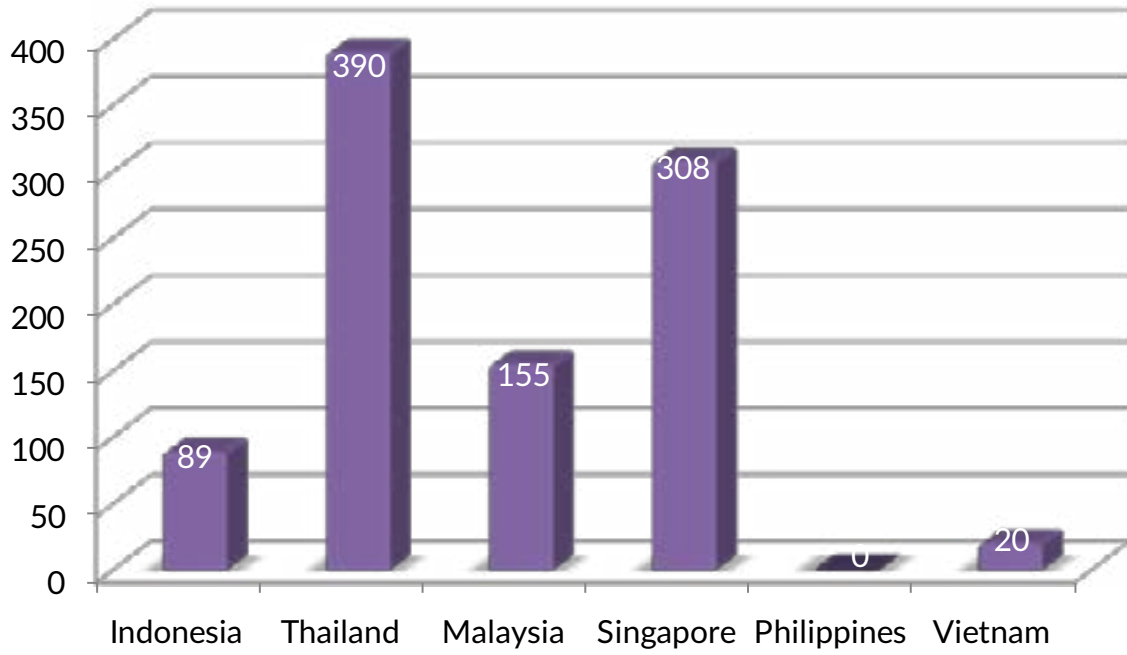


Chart 4: Comparison of CMCs registered in BIPM KCDB per GDP of ASEAN countries

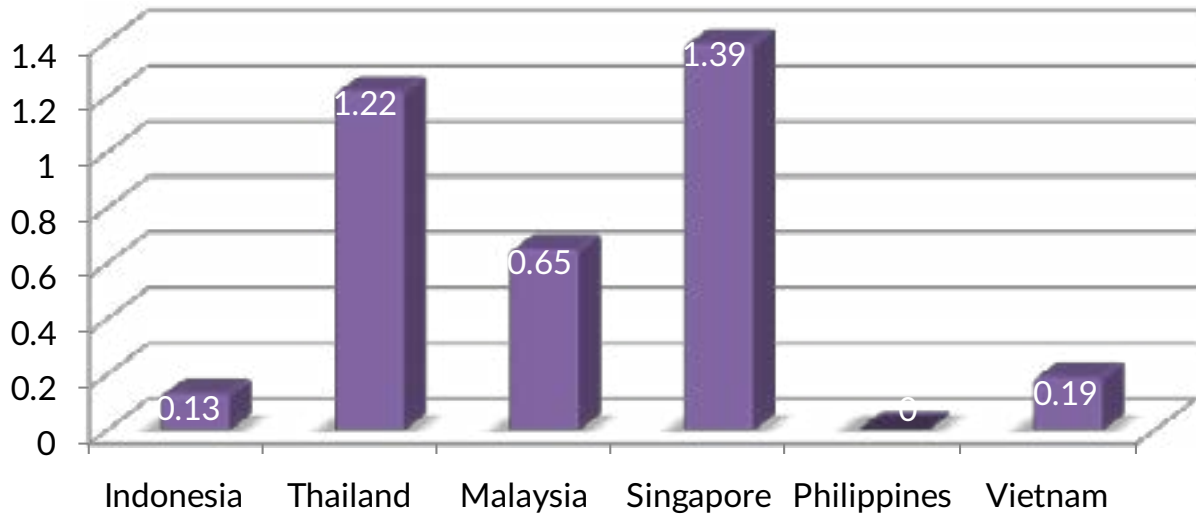


Chart 5: Participation in International Intercomparisons

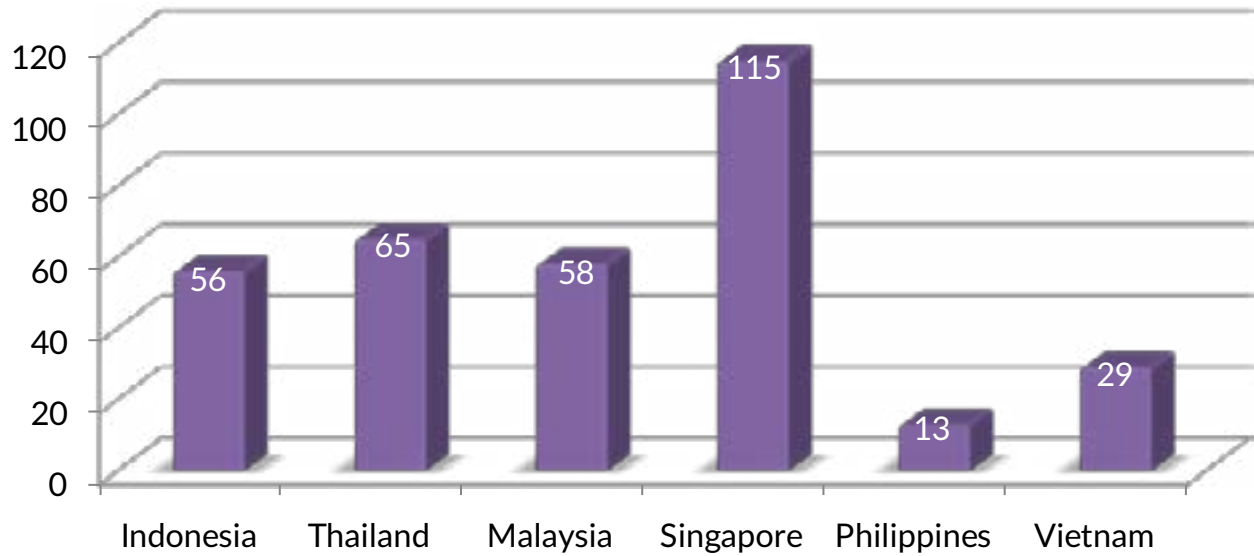


Chart 6: Participation in International Intercomparisons per GDP

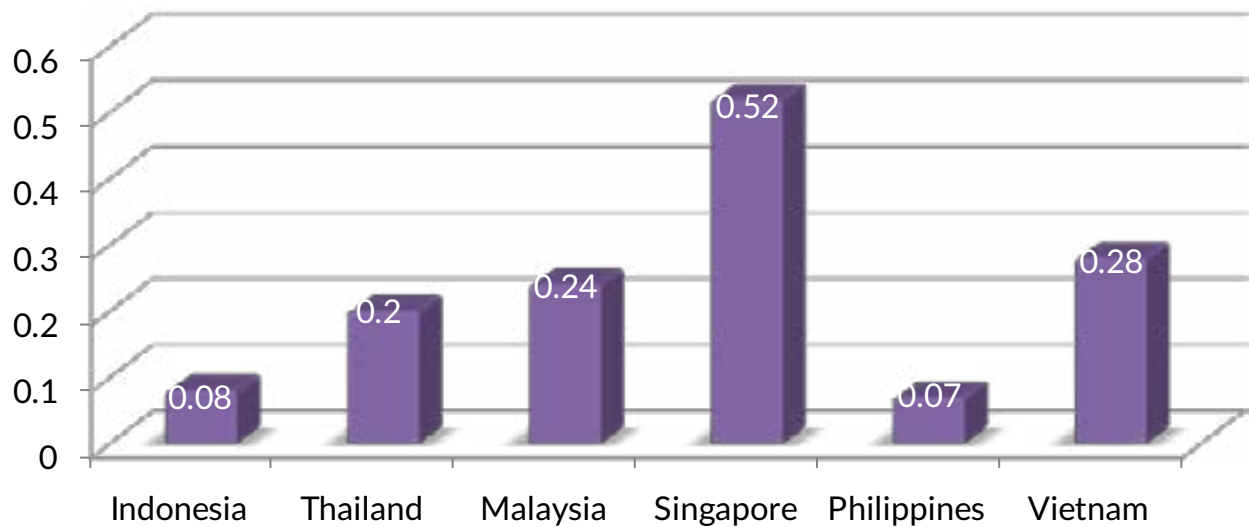
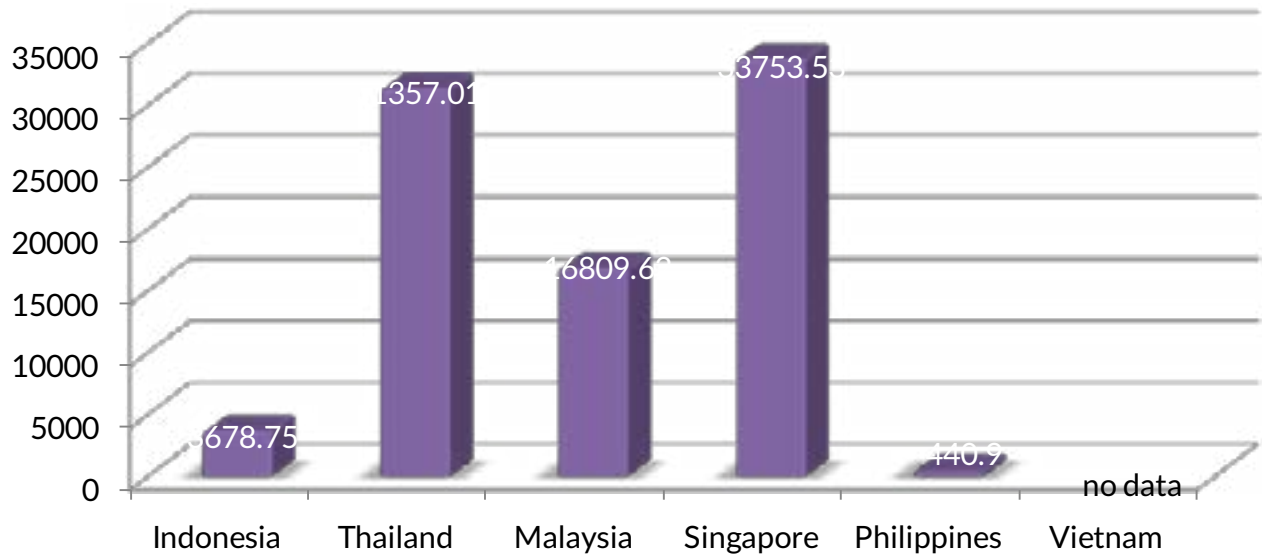


Chart 7: Comparison of NMI Budget per GDP of ASEAN countries



Standardization in selected ASEAN countries

Criterion 1. Legal framework supporting standardization

Except for the Philippines, the countries surveyed issued their standardization laws in response to the trade developments brought about by the agreements in the World Trade Organization (WTO), which began on January 1, 1995. Table 4 shows the standardization laws of the six countries.

The standardization laws issued after 1995 point to a single national standards body. While other agencies can also write standards, best practice dictates that the national standards body coordinate all activities pertaining to standards development.

For example, Malaysia's standards development activities are outsourced to SIRIM Bhd. SIRIM manages all standards and technical committees, and standards produced by the committees are submitted for promulgation by Standards Malaysia as Malaysian Standards.

In the Philippines, the term "mandatory standard" is used instead of technical regulation. Standards, according to the WTO, are voluntary. When compliance to these standards is mandated, these standards become technical regulations. In the five other ASEAN countries, technical regulations are clearly distinguished from standards.

The other agencies in the Philippines mandated to develop standards are regulatory bodies. The documents produced are not for voluntary application, but for regulatory purposes.

Criterion 2. Standardization activities

The standardization acts of the surveyed countries that were issued after January 1, 1995 point to a single body that is regarded as the national standards body. This body is in charge of coordinating all standards development activities in the country and ensuring that all those who write standards comply with the WTO Technical Barriers to Trade Code of Good Practice for the Preparation, Adoption and Application of Standards and the International Organization for Standardization (ISO) / International Electrotechnical Commission (IEC) directives on standards preparation.

A country may have several standards-writing organizations, but a central body coordinating the activities will help ensure that there are no overlaps, duplications, or gaps in what the country has programmed for consumer protection and industry competitiveness. All standards developed or adopted by the different standards-writing organizations are submitted to the national standards body for promulgation as national standards.

It may be noted that, in the Philippines, the regulations enforced to protect the health and safety of consumers or the environment are called mandatory standards. Standards, according to WTO and the international bodies such as ISO, IEC, and ITU, are voluntary in nature. When regulatory bodies adopt safety standards or refer to the safety parameters of established standards, these become technical regulations. A country has obligations to notify the WTO secretariat within a stipulated period prior to enforcement of regulations.

In the five other ASEAN countries, there is a clear distinction between standards and technical regulations. Regulatory bodies do not develop standards, but only adopt the standards produced by the national standards bodies for its consumer or environment protection function.

While other agencies can also write standards, best practice dictates that the national standards body coordinate all activities pertaining to standards development.

Table 3: Comparison of Standardization in selected ASEAN countries

Country	GDP*	ISO TC Participation	IECTC Participation	Number of staff	Budget in US Dollars	ISO TC Participation/GDP	IECTC Participation/GDP
Indonesia	706.762	222	18	272	9.1 M	.31	.03
Malaysia	237.959	258	27	57	12 M	1.08	.11
Philippines	199.591	119	1	62	.88 M	.60	.005
Singapore	222.199	127	10	380	No data	.57	.05
Thailand	318.908	271	27	400	13 M	.85	.08
Vietnam	103.574	73	0	1200	No data	.70	0

*GDP scale (1000 million USD)

Criterion 3. The participation of the standardization body in regional and international organizations

The Philippines, through BPS, is a full member of the ISO and IEC. It participates in the technical committees of both organizations, as shown in Table 3. The entire participation of BPS is by correspondence.

In contrast, in the five other ASEAN countries, the standardization bodies actively participate in the ISO and IEC technical committees that are relevant to their economies. Staff attended meetings in person so that their industry or country positions can be offered and defended. Participation in international standardization organizations provides early access to information on standards and new and emerging technologies, thereby updating local industries on recent developments.

Malaysia, Singapore, and Thailand, aside from their membership in technical committees, also handle the secretariat of ISO technical committees that are important to their economy. Active participation in the technical committees of international organizations is beneficial to the country, as information gathered and knowledge gained could be shared with members of the national mirror technical committees.

Criterion 4. The information-gathering and dissemination activities of the standardization body

Except for Indonesia and the Philippines, the national standards bodies of the four countries can sell standards online. Information technology is used to develop standards and to allow stakeholders to participate in standards development. This has promoted transparency in the preparation of national norms.

The national standards bodies of the selected benchmark countries conduct many seminars on standards and other related topics, as can be seen on their websites. In contrast, the Philippine national standards body conducts seminars that are mostly about standards implementation.

Criterion 5. Institutional set-up of the national standardization body

The national standards bodies of the six ASEAN countries are public organizations, but they allow the participation of the private sector and other stakeholders in their technical committees. Except for the Philippines, civil society participates in the governance of the national standards bodies of the five countries through their governing councils or advisory committees. The governing council is an important part of the standards body structure from where the head of the national standards body can obtain advice on policy and strategy formulation.

Table 4: Standardization laws of selected ASEAN countries

Country	Title of Standardization Law	Year Issued
Indonesia	Presidential Decree 103	2001
Malaysia	Standards of Malaysia Act 549	1996
Philippines	Republic Act 4109	1964
Singapore	Standards, Productivity and Innovation Board Act	2002
Thailand	National Standardization Act BE	2008
Vietnam	Presidential Issuance on Standards, Metrology and Quality	1999

Chart 8: Standards Benchmark with ASEAN Countries

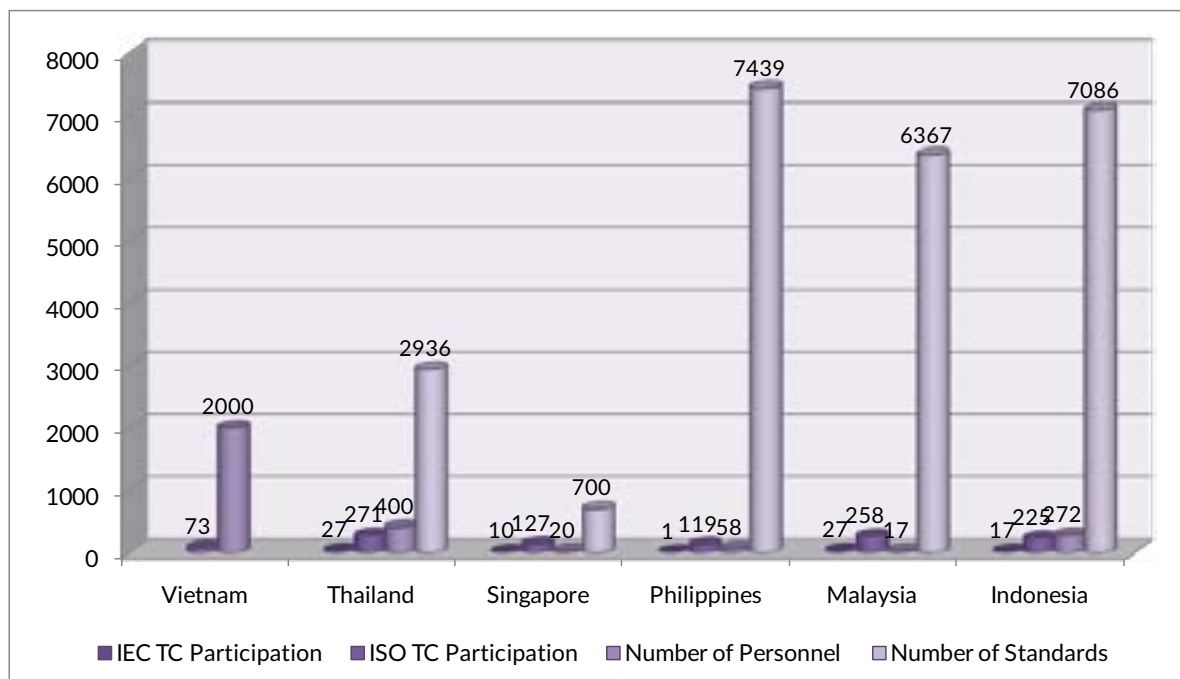


Chart 9: ASEAN Countries' Participation in ISO & IEC TCs

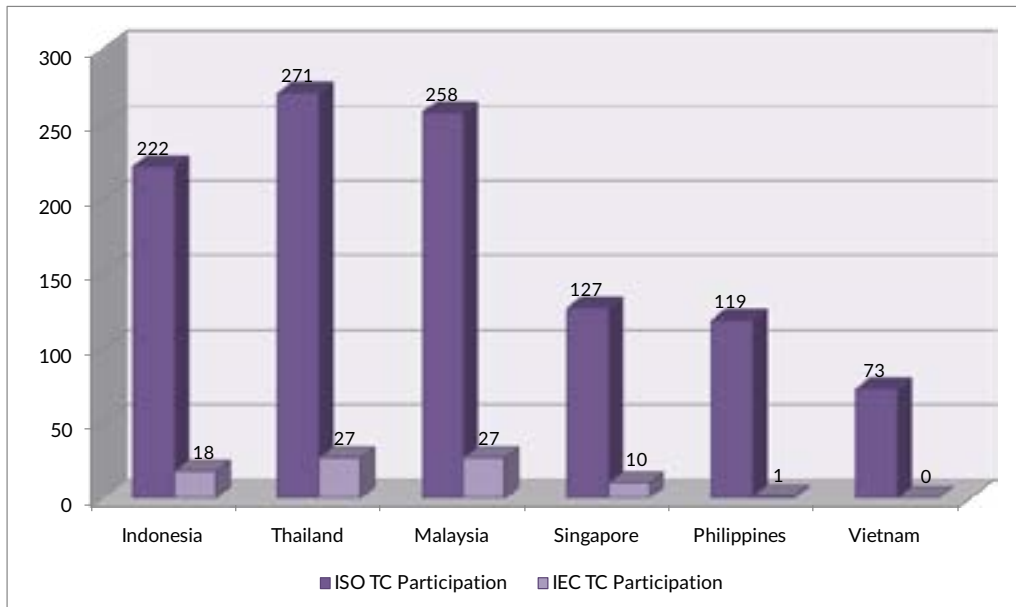
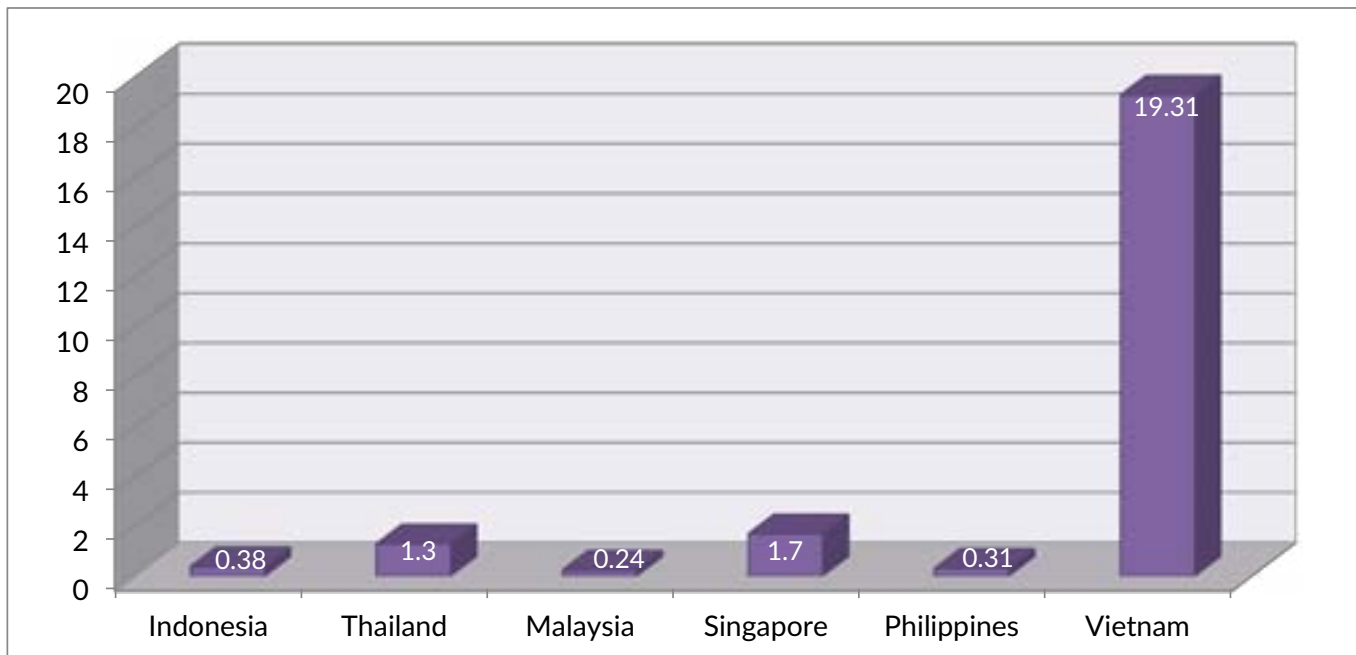


Chart 10: Standardization Staff Relative to Gross Domestic Product

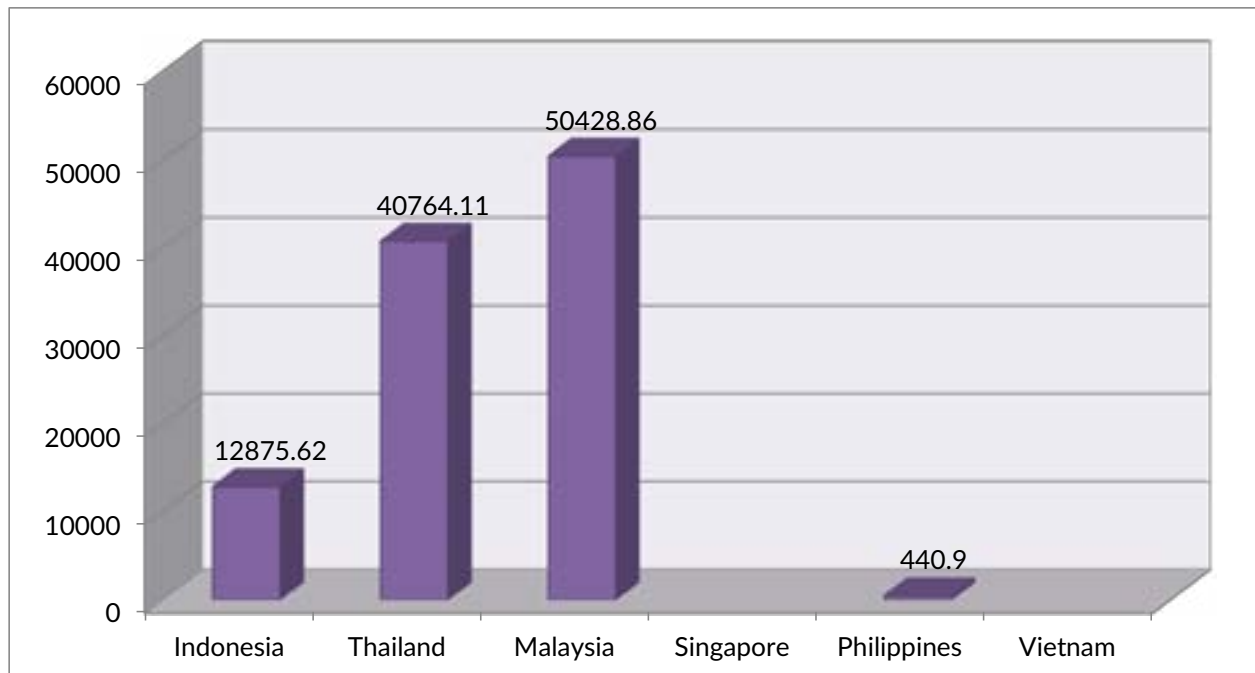


N.B. It is difficult to compare standards bodies based on number of staff because some bodies reported figures that included personnel for the other activities carried out by the body. For example, Thailand reported that it has 400 staff and Indonesia 272, while Singapore has only 20 and Malaysia 17 people involved in standards development work. The Philippines reported a total of 62 staff; 11 staff are involved in standards development.

Chart 11: Comparison of Annual Standardization Budgets (in Million USD) of Selected ASEAN Countries



Chart 12: Annual Budgets of National Standardization Bodies Relative to Gross Domestic Product



Accreditation in selected ASEAN countries

Criterion 1. Legal framework supporting accreditation

The legal framework for accreditation of Indonesia, Malaysia, Singapore, Thailand and Vietnam are contained in their national standardization laws, which were all crafted after 1995.

Except for the Philippines and Thailand, all four countries have single accreditation body. With the issuance in 2008 of the national standardization act in Thailand, efforts are underway for four accreditation bodies in the country to be under one umbrella. The Philippines will have to unify its accreditation bodies to optimize resources and address recognition complications.

Table 5: Accreditation Benchmarks

Country	Number of Accreditation Bodies	Schemes Offered by National Accreditation Bodies	Number of Personnel in National Accreditation Bodies
Indonesia	1	11	35
Malaysia	1	11	40
Philippines	4	8	8
Singapore	1	10	17
Thailand	4	10	64
Vietnam	1	5	20

Table 6: Number of Experts and Lead and Technical Assessors Relative to Gross Domestic Product

Country	GDP*	Experts	Lead Assessors	Technical Assessors	Experts/GDP	Lead Assessors/GDP	Technical Assessors/GDP
Indonesia	706.762	-	-	-	-	-	-
Thailand	318.908	221	-	276	0.7	-	0.87
Malaysia	237.959	70	39	169	0.29	0.16	0.71
Singapore	222.199	-	8	280	-	0.04	1.3
Philippines	199.591	15	7	32	0.08	0.04	0.16
Vietnam	103.574	22	19	32	0.21	0.18	0.31

Chart 13: Accreditation Benchmarks with ASEAN Countries

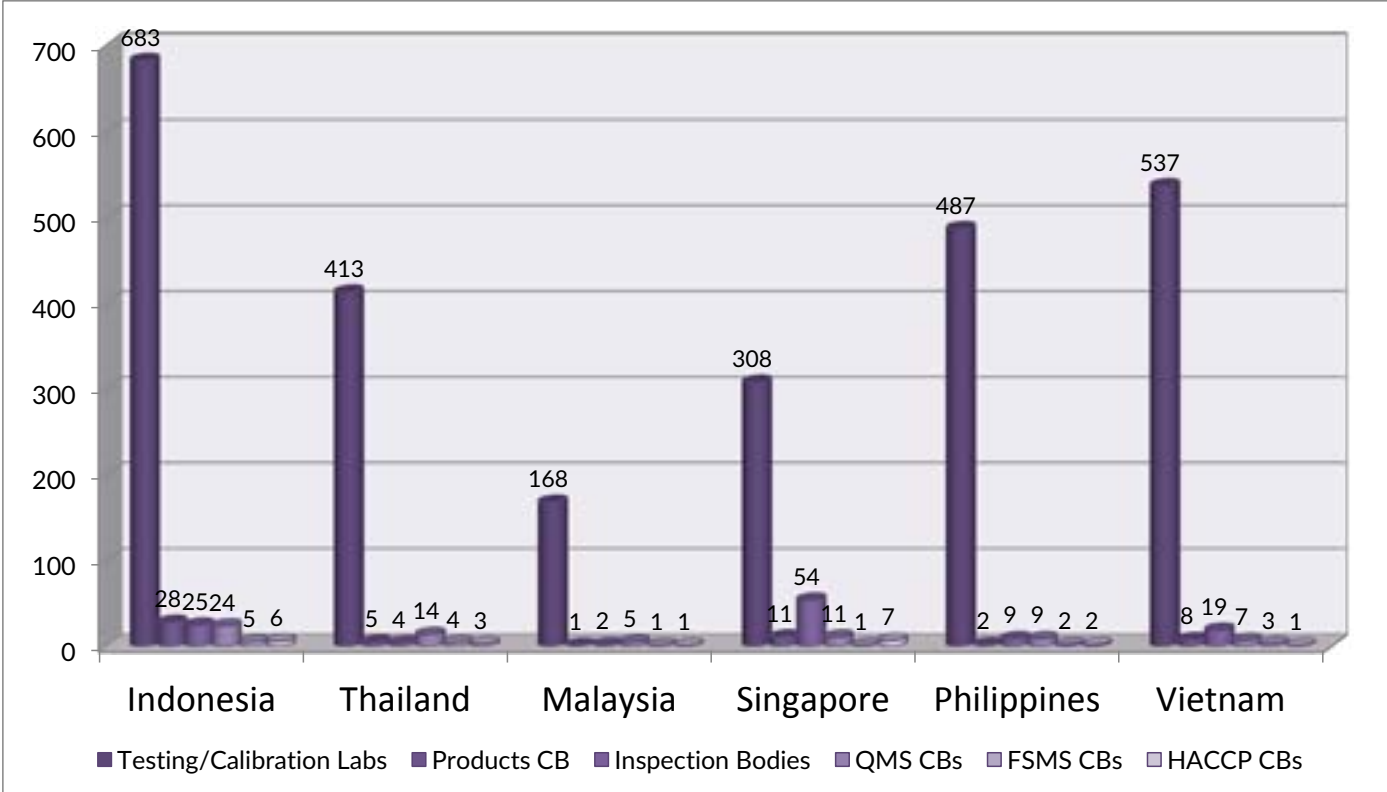


Chart 14: Total Pool of Experts and Lead and Technical Assessors

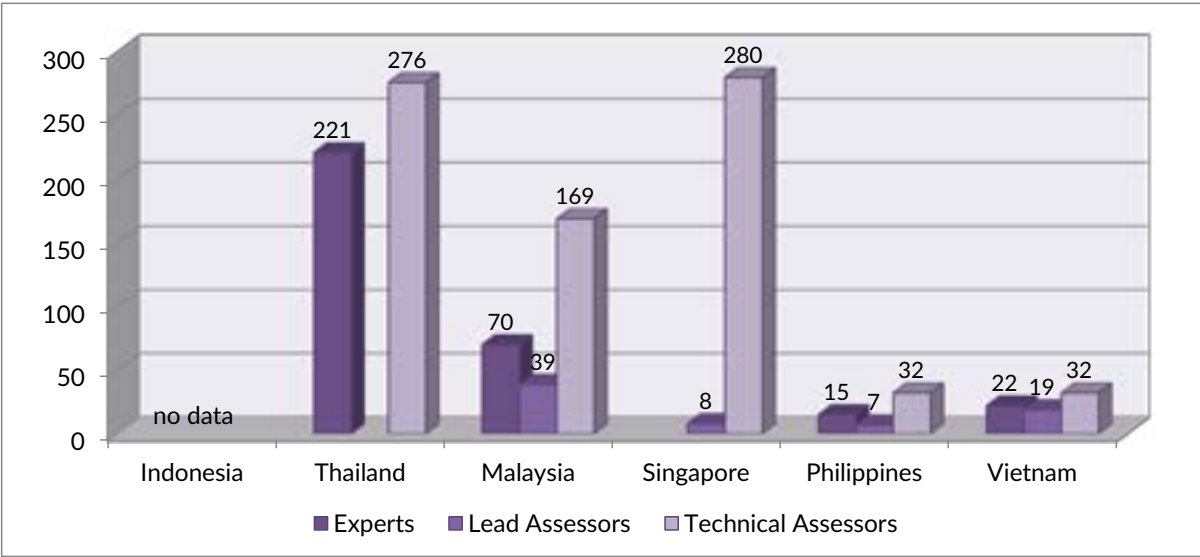
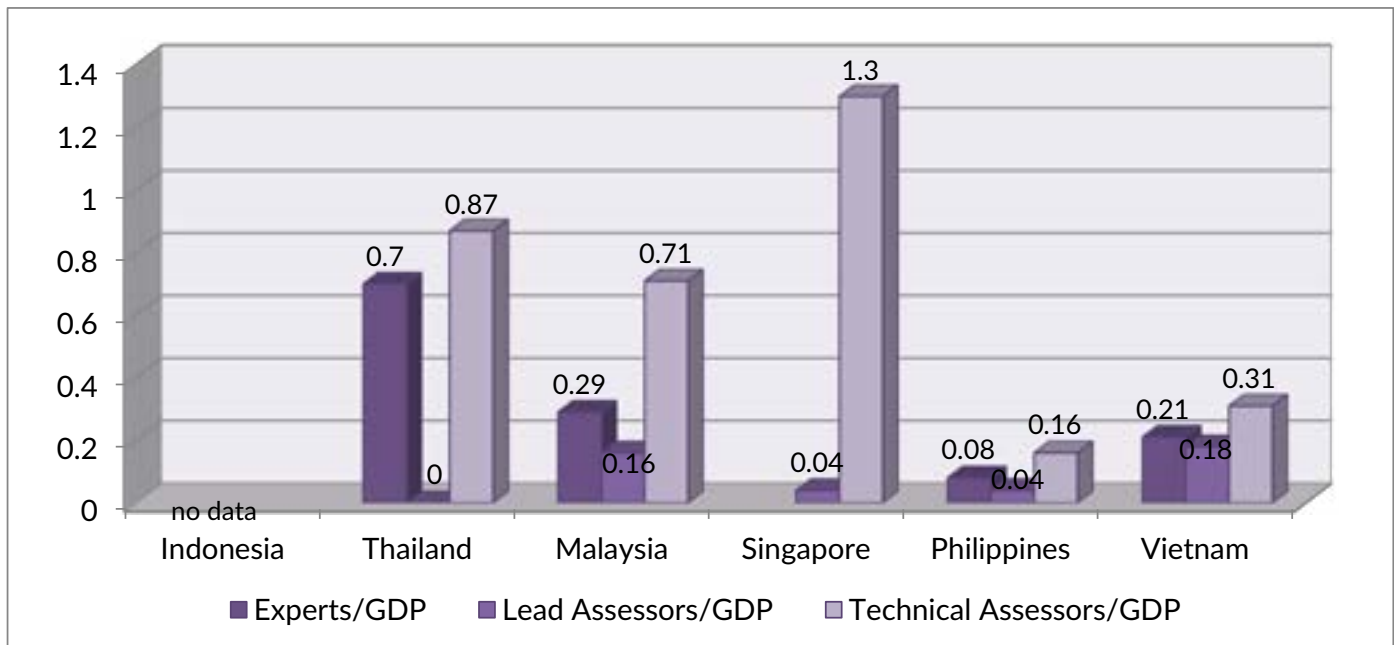


Chart 15: Experts and Lead and Technical Assessors Relative to Gross Domestic Product



How the Philippines' NQI compares with the NQI of non-ASEAN countries

As mentioned before, the international analysis has been mainly focused on Latin American countries, with the addition of Egypt. The data gathered through the three questionnaires on metrology, accreditation, and standardization and the Philippine analysis led to the gap analysis. The main findings for standardization, metrology, and accreditation resulting from this gap analysis are summarized as follows. The data gathered from the questionnaires and desk research is attached as Annexes 2, 3, and 4.

Metrology in non-ASEAN countries

Criterion 1. Legal framework supporting metrology

In general terms, it can be said that the Philippines has a solid legal framework that defines the metrological responsibilities of the National Metrology Institute (NMI) in comparison with the selected countries. These countries do have the same perception of the quality as regards the national dimension. In the case of the Philippines, laws defining other aspects of metrology complement this perception.

However, in comparison with these countries, the Philippine legal framework does not properly address the international representation and obligations of the NMI. This deficiency may be partially responsible for the comparative lack of international involvement as shown later in this document.

Half of the countries reported to have a national metrology strategy, and some of them reported that that strategy was fully deployed to the operational level. In the case of the Philippines, however, the national metrology strategy is neither developed nor implemented.

Criterion 2. Metrology activities

Following the findings in the legislative framework, a main aspect that stands out in the comparison with the selected countries is the lack of full implementation of the requirements of the International Committee for Weights and Measures and International Bureau of Weights and Measures (abbreviated BIPM from the French Bureau International

des Poids et Mesures) in the establishment of the NMI. All other economies reported full compliance with the international requirements.

Metrological activities are closely related to guaranteeing and maintaining international and national traceability. The questionnaires developed providing two important indicators: number of Calibration Measurements Capabilities (CMCs) registered in the BIPM key comparison database and the number of international intercomparisons registered in the key comparison database.

As of November 2011, the Philippine NMI has not registered any CMCs in the BIPM key comparison database. Except for Colombia, all the other countries have reported CMCs registered in BIPM.

In order to reach the number of CMCs submitted by countries of similar size, the Philippines should have registered CMCs numbering between 25 and 35. These figures should be the target for the next years.

In terms of international intercomparisons, the Philippines is in a better situation than in the previous indicator. Still, the comparison relative to Gross Domestic Product shows that the number performed and registered in key comparison database is still substantially lower than most of the selected countries. In order to equate the relative ratio to those economies closer in size to the Philippines, the number of international intercomparisons should at least double.

Most of the selected countries have completed or started the process of institutionalizing metrology in chemistry. From a development perspective, it can be said that the Philippines is lagging behind these selected countries. However, it should be noted that the degree of institutionalization varies a lot from country to country.

Table 7: Comparison of the activities and sizes of the National Metrology Institutes relative to Gross Domestic Product

	GDP*	No. Of CMCs	Total Staff	Total Tech Staff	Budget	No. Of CMCs/ GDP	Total Staff/ GDP	Total Tech Staff/ GDP	Budget/ GDP
Mexico	1034.31	204				0.20			
Argentina	369.99	280	400	100	24,000,000	0.76	1.08	0.27	64,866
Colombia	289.43		26	22	6,000,000	0	0.09	0.08	20,730
Egypt	218.47	46			700,000	0.21	0	0	3,204
Philippines	199.59	0	26	23	330,000	0	0.13	0.12	1,653
Peru	153.80	25	34	32	1,000,000	0.16	0.22	0.21	6,502
Uruguay	40.27	204	400	20	600,000	5.07	1.96	0.05	30,000
Costa Rica	35.79	78				2.18			
*GDP Scale (1000 millions of USD)									

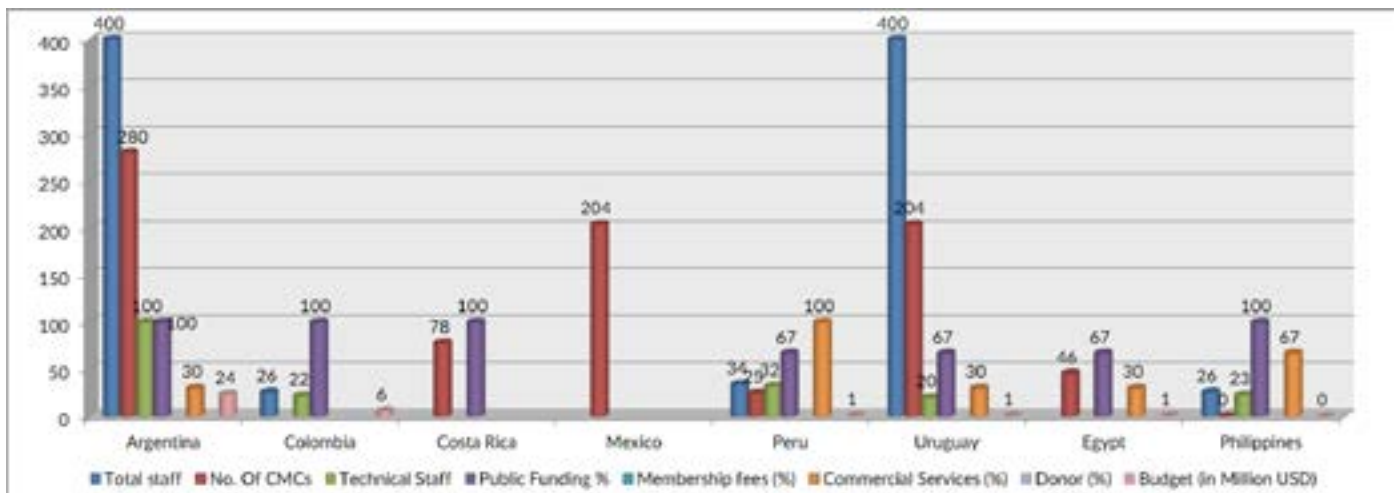
The most important comparative aspect regarding legal metrology is the fact that, although there is an institutional setup in the Philippines, it has not been active since 2003. Meanwhile, in the other countries, for those who reported data on legal metrology, the bodies responsible for legal metrology are active since they are active at international level. However, the low level of responses in this aspect may imply that, although necessary, legal metrology is developed after the bases for fundamental and industrial metrology have been established.

Due to the lack of complete data, it is difficult to assess the status of secondary laboratories in the Philippines compared to the selected countries. The existing data suggests that the numbers of accredited laboratories in the Philippines is closer to that of smaller economies, such as Uruguay or Costa Rica. In order to be closer to the ratio of bigger economies of similar size to the Philippines, the number of accredited calibration laboratories should be at least 10 times bigger.

The limited technical coordination, i.e., the calibration laboratories contact the NMI on an ad-hoc bases, seems to be the norm in the stage of development of the Philippines. However, this does not mean that there is no need to improve this coordination. Other economies of similar development level and smaller size have reported that the NMI coordinates technical working groups or metrology clubs on metrological issues

In terms of the coordination services, the perception is that the situation in the Philippines is worse than that of the selected countries. In the country, the NMI offers similar services to those offered by the secondary laboratories. In other economies, the NMI only offers services that are not covered by the other laboratories.

Chart 16: Comparison of the Activities and Sizes of the National Metrology Institutes



**Table 8: Comparison of the activities of
National Metrology Institutes relative to Gross Domestic Product**

Country	GDP*	CMCs registered in BIPM KCDB	International Intercomparisons (KCDB)	CMCs Registererd in BIPM KCDB/GDP	International Intercomparisons (KCDB)/GDP
Mexico	1034.31	204	29	0.197	0.028
Argentina	369.99	280	103	0.767	0.278
Colombia	289.43	0	16	0	0.055
Egypt	218.47	24	46	0.111	0.211
Philippines	199.59	0	13	0	0.065
Peru	153.8	35	22	0.228	0.143
Uruguay	40.27	204	29	5.066	0.72
Costa Rica	35.79	78	26	2.179	0.699

* GDP Scale (1000 millions of USD)

Most of the selected countries reported that the metrological services offered in the country meet the requirements of the national industry. In the case of the Philippines, the perception is that only basic metrological services are available within the country. For the selected countries, most metrological services of high demand are available within the country, and these services are internationally recognized through accreditation or CMCs.

Criterion 3. The participation of the metrology body in regional and international organizations

The Philippines is an associate member of the Metre Convention and CGPM. In contrast, the economies of similar size to the Philippines are full members of these international organizations. Moreover, unlike the Philippines, these countries are also members of the International Organization of Legal Metrology.

In terms of participation, the situation of the Philippines is similar to previous analysis, where the numbers show a situation closer to smaller economies such as Costa Rica or Uruguay. However, without an NMI established in full alignment with international practices and without having international responsibilities clearly delineated, it is unreasonable to expect active participation.

Regional membership and participation is active and in line with the level of involvement reported by the selected countries.

The Philippines is also behind the selected countries in terms of sustainability of funding for international and regional membership and participation. Again, the lack of a clear delineation of international responsibilities does not help to identify and to secure necessary funding.

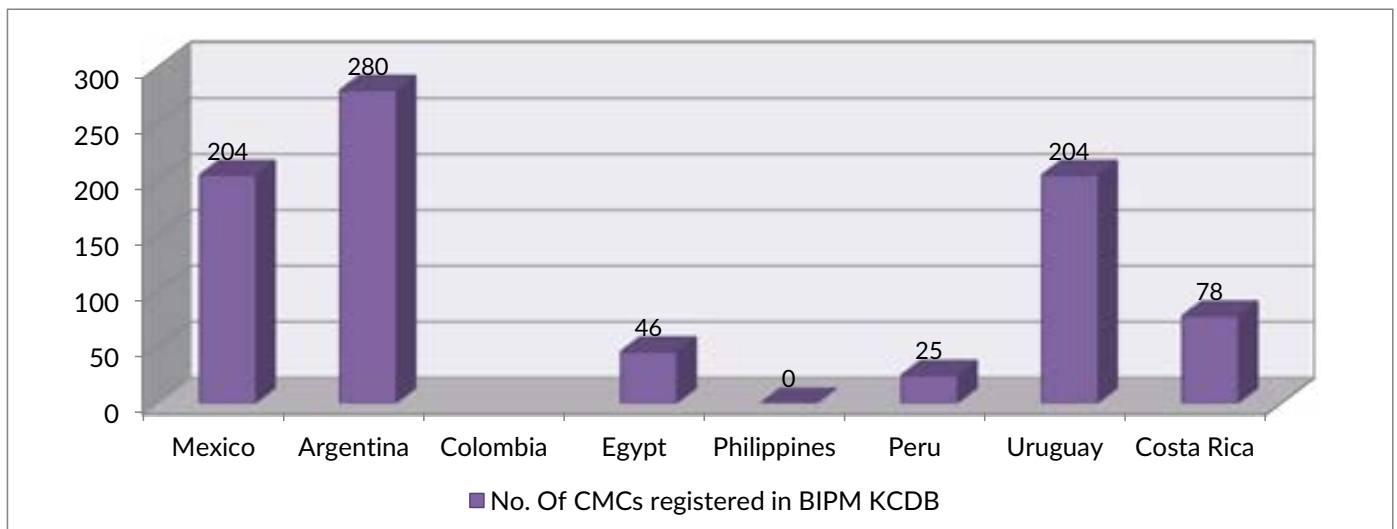
Criterion 4. The information-gathering and dissemination activities of the metrology body

It is notable that all the selected countries, except the Philippines, provide consultancy services. This may be related to the degree of available resources.

The level of participation in the standardization and technical regulations activities by the NMIs varies a lot from country to country. However, bigger economies usually have more sustainable participation. The perception of the level of participation in the case of the Philippines is rated the lowest among the countries studied. The country's NMI and other metrology experts do not participate in technical standardization work.

In the case of participation in accreditation of calibration laboratories and test laboratories the situation is even worse compared to the selected countries. Meanwhile the Philippines reported no participation a vast majority of the selected countries reported that at least regular use of NMI staff as assessors, regular participation of NMI in advisory groups of the accreditation body and mutual support for the coordination of national intercomparisons / PT sc

Chart 17: Comparison of Calibration and Measurement Capabilities registered in BIPM key comparison database



Criterion 5. Institutional set-up of the national metrology body

Compared to the selected countries, there is a perception that the resources of the NMI in the Philippines are not enough to satisfy national needs. Chart 21 shows the comparative analysis in terms of staff and budget relative to the Gross Domestic Product.

Charts 21 and 22 show that, in terms of both staff and annual budget, the Philippine NMI is comparatively under-resourced. Specifically, when referring to the annual budget, in order to be at the level of the next relative lowest annual budget, i.e., Egypt, the Philippine NMI should double its budget.

Chart 18: Comparison of CMCs registered in BIPM key comparison database relative to Gross Domestic Product

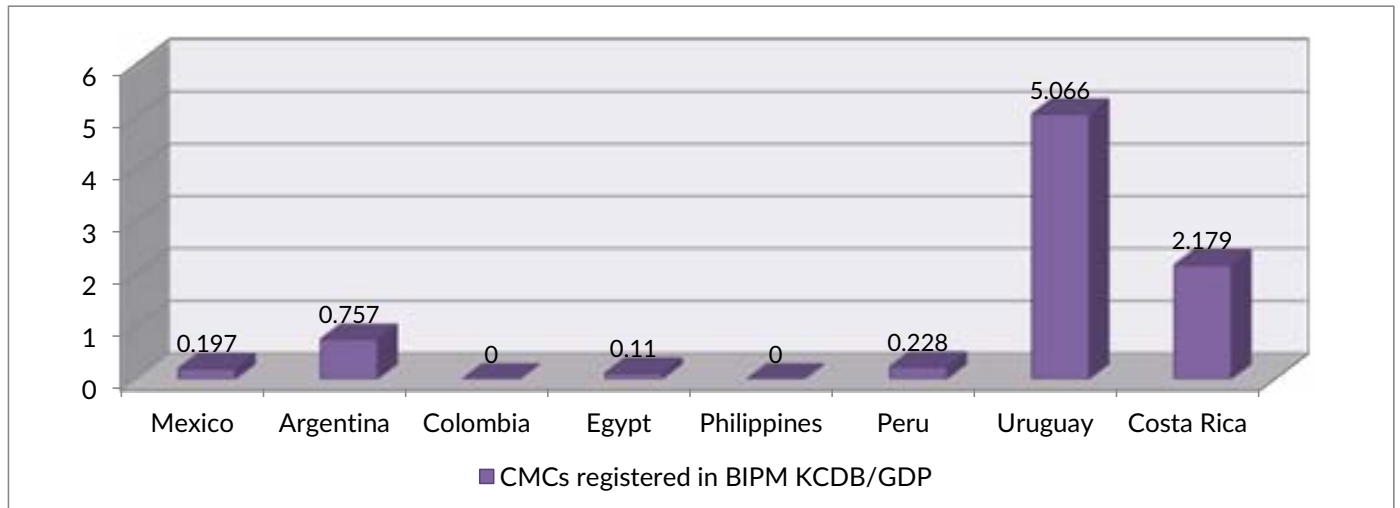
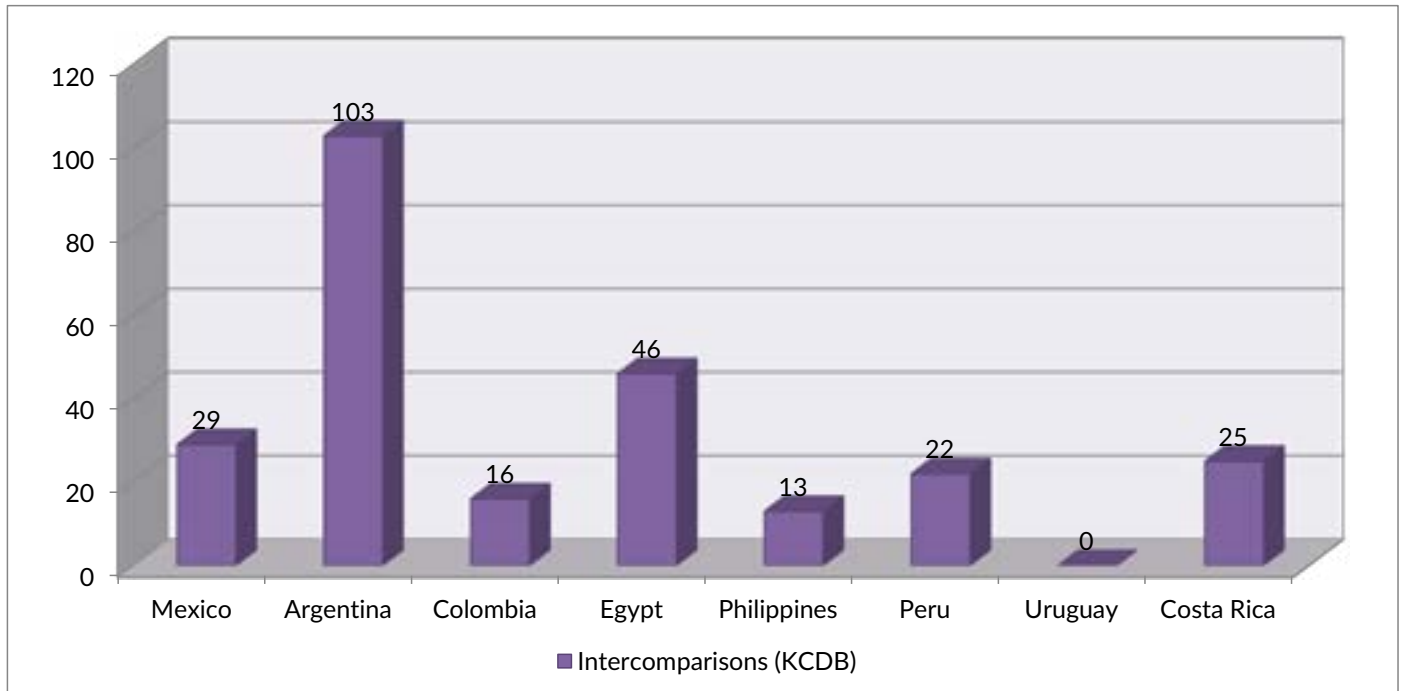


Chart 19: Comparison of international intercomparisons (key comparison database)



The most important comparative aspect regarding legal metrology is the fact that, although there is an institutional setup in the Philippines, it has not been active since 2003.

Chart 20: Comparison of international intercomparisons relative to Gross Domestic Product

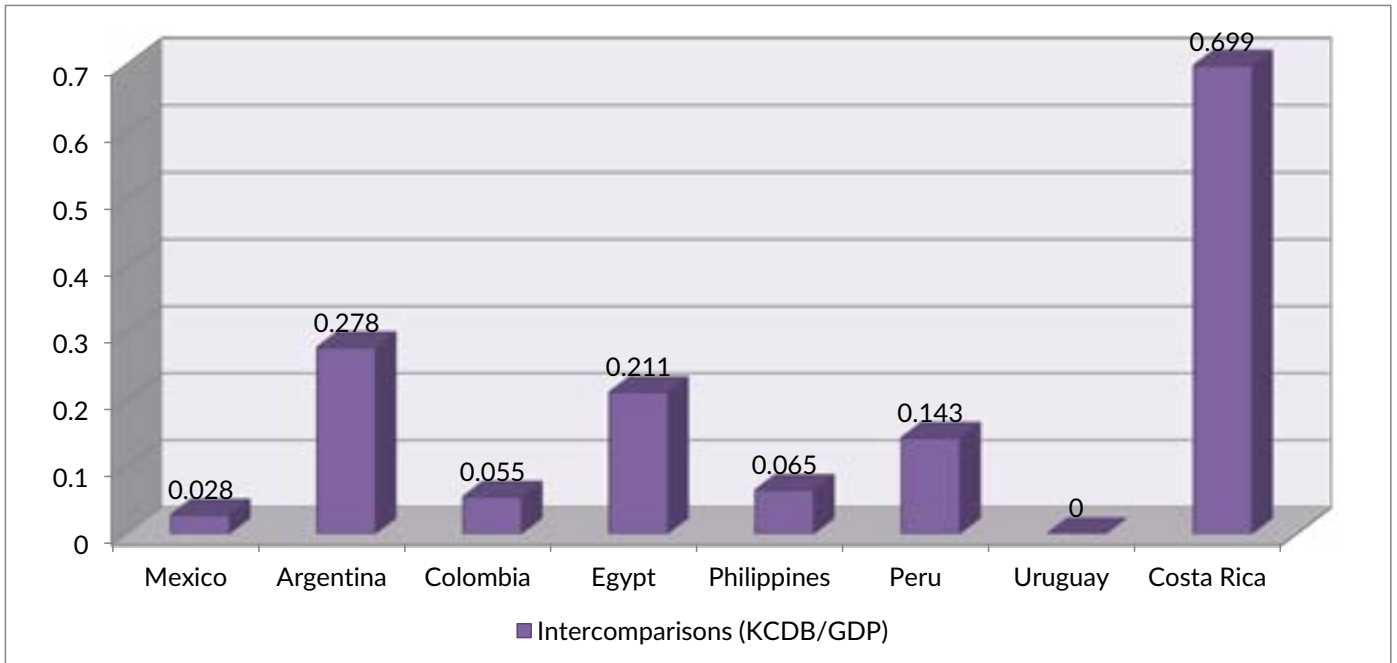


Chart 21: Comparison of the staff of NMIs relative to Gross Domestic Product

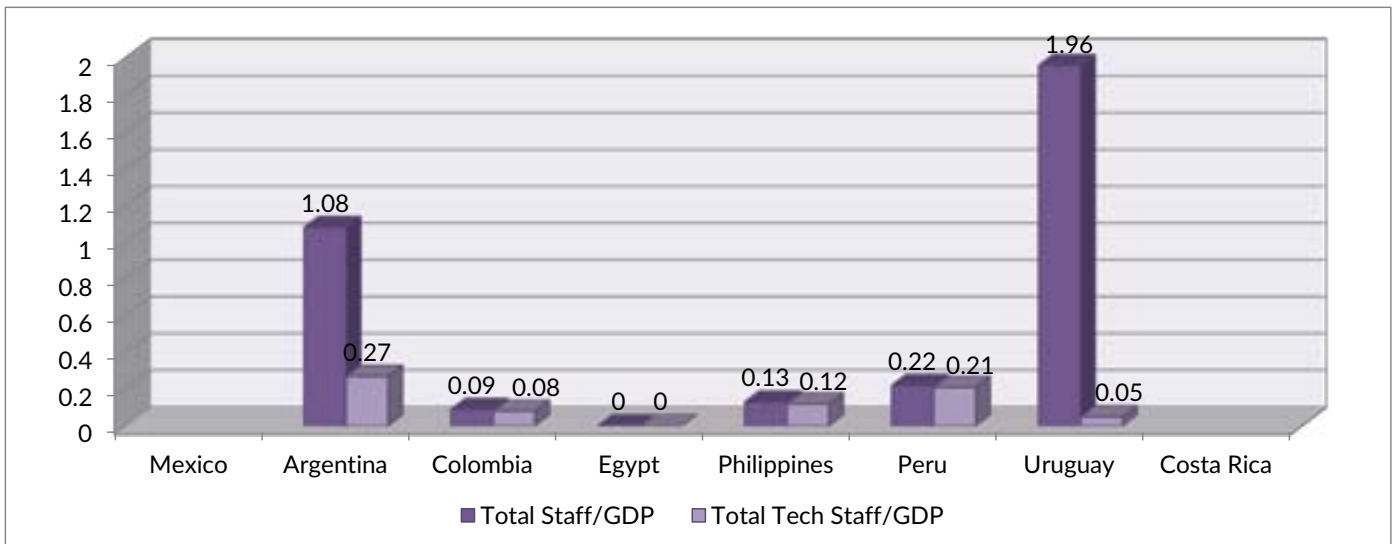
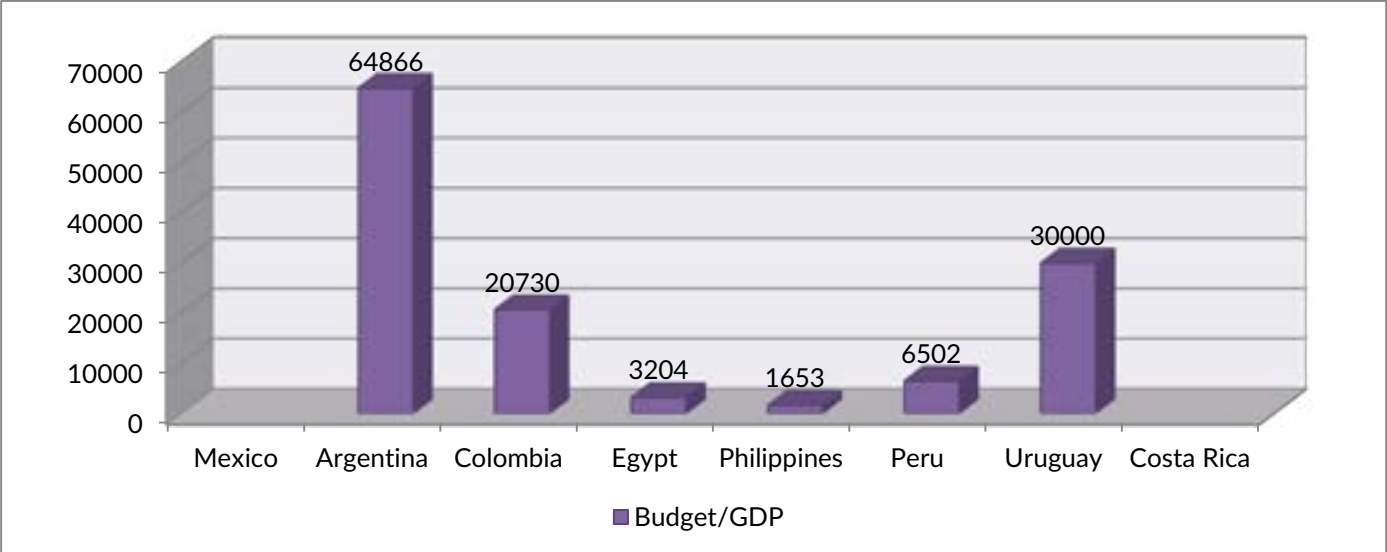


Chart 22: Comparison of the annual budgets of NMIs relative to Gross Domestic Product



Standardization in non-ASEAN countries

Criterion 1. Legal framework supporting standardization

The most important difference between the Philippines and the selected countries is the fact that the legal framework in the country does not include a national act on standardization. As a result, there is no clear mandate or strategy behind the national standardization body in the Philippines.

From the data gathered, the perception is that, in all of the selected countries, there is a clear legal framework for the national standards body to operate. In some countries, there exists a national standardization strategy developed from the policy to the operational level.

A second important difference between the Philippines and the selected countries is the distinction between technical regulations and standardization activities. Except for the Philippines, all the selected countries reported having a clear distinction between both activities. In the country, on the other hand, the existence of mandatory standards blurs that distinction.

Related to the previous concern is the fact that, besides the national standardization body, other bodies also develop standards. This is a situation that also occurs in some of the selected countries and in European economies. However, without the justification for historical reasons (civil society organized themselves before regulators started to make

reference to voluntary standards, i.e., International Electrotechnical Commission (IEC) and International Standardization Organization (ISO), it is difficult to defend the existence of different standards developers not coordinated under one single organization.

Criterion 2. Standardization activities

Precisely due to the dispersion of the standards development activities, there is an important difference between the selected countries and the Philippines as regards the rules and regulations of the standards development process. The coordinating role of the national standardization body and the clear distinction between standards and technical regulation enable the selected countries to guarantee that all the standardization work follows the World Trade Organization Technical Barriers to Trade Code of Good Practice for the Preparation, Adoption and Application of Standards and the ISO/IEC Directives. However, that is not the situation in the Philippines, where there is still a need for further coordination between all bodies developing standards.

A second aspect that stands out in the comparison with the selected countries is in relation to the existing technical committees. Most selected countries have a favourable perception that the main sectors of the economy are well represented, both through the existence of a national technical committee and through active participation of all interested parties in those technical committees.

This seems not to be fully the case in the Philippines. This situation is due in part to the potentially mandatory nature of standards, the lack of coordination among the different standards developers, and the lack of resources to promote the participation of civil society in national technical committees and to establish active technical committees in key sectors of Philippines economy.

Criterion 3. The participation of the standardization body in regional and international organizations

The Bureau of Products Standards is the Philippine national standardization body. It has gained the necessary international recognition by becoming full member both in ISO and IEC. Compared to the selected countries this is in line with those most developed economies. Some of the smaller countries are still not full members of IEC.

However, when analyzing the level of participation relative to the size of the economy, it shows that the Philippines participation in ISO is average, and it is negligible in the case of IEC.

The number of technical committees may not be a good indicator of the quality and depth of the involvement in international standardization, since it may imply that national standardization bodies simply process documents and information from the international standardization bodies without truly involving industry and the relevant groups of interest at national level. However, that level of quality of participation is not feasible to assess.

Finally, one of the main differences between the selected countries and the Philippines is the stability of the funding to participate in regional and international standardization

Table 9: Comparison of the participation in international standardization and the sizes of national standards bodies relative to Gross Domestic Product

Country	GDP*	ISO TC Participation	IEC Participation	No. of Staff	Budget (in US Dollars)	ISO/TC Participation/ GDP	IEC Participation/ GDP	No. of Staff/GDP	Budget/ GDP
Mexico	1034.31	86	52	86	0.028	0.08	0.05	0.08	0
Argentina	369.99	335	7	330	0.278	0.91	0.02	0.89	64866
Colombia	289.43	141	4	354	0.055	0.49	0.01	1.22	88691
Egypt	218.47	291	42		0.211	1.33	0.19	0	0
Philippines	199.59	119	1	62	0.065	0.60	0.01	0.31	4409
Peru	153.8	20	0	10	0.143	0.13	0	0.07	4551
Uruguay	40.27	49	0		0.72	1.22	0	0	0
Costa Rica	35.79	22	0	27	0.699	0.61	0	0.75	4135
* GDP Scale (1000 millions of USD)									

bodies. All the countries that provided an answer to that have reported that their participation is annually budgeted within the national standards body and is, therefore, sustainable. However, in the case of the Philippines, it is not in the annual budget of the Bureau of Products Standards, therefore it requires approval from other authorities, and covers technical participation on a case-to-case basis.

Criterion 4. The information-gathering and dissemination activities of the standardization body

Some of the countries have reported the possibility of using online tools to facilitate the participation of national stakeholders in the standardization process. The Philippines has not yet developed this capability. Given the geographical dispersion and the previous stated weak participation of stakeholders this might be a good step forward.

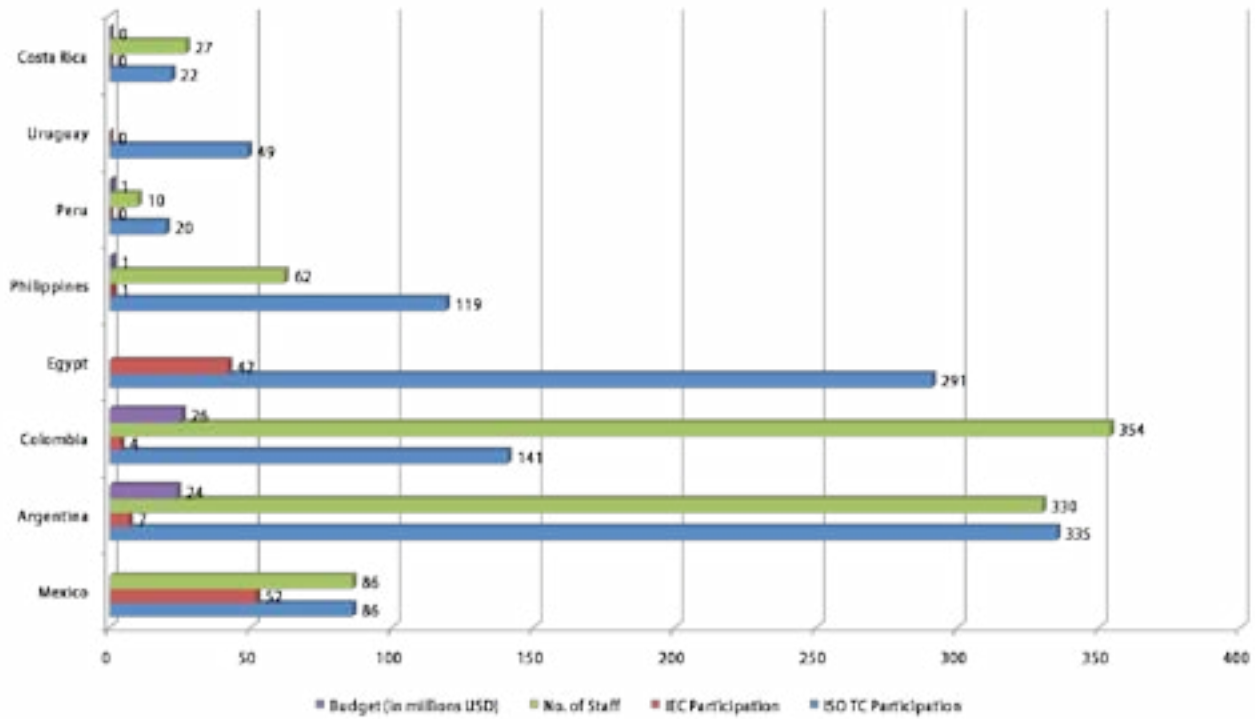
All the countries have reported offering training activities on the benefits of standards and their implementation. In the case of the Philippines most of this training is only available on demand and mostly related to new standards; it does not promote the use of voluntary standards.

Criterion 5. Institutional set-up of the national standardization body

Most of the selected countries have an institutional structure that offers both governance and financial autonomy from the government. Only Peru is a fully public organization.

This finding has a great importance on the level of participation of civil society in the governance of the standardization body. All the countries, except Peru, have reported that relevant stakeholders participate regularly in the governing bodies and that they have full voting rights. However, in the Philippines, due to the institutional structure of the national standards body, there is no a governing body or committee where civil society can contribute openly to the body's strategic and operational decisions.

Chart 23: Comparison of participation in international standardization



It is also important to note that the countries with an institutional set-up that provides them with financial and governance autonomy are the ones that have developed quality commercial services. These services generate revenues that account for more than 75% of their annual budget.

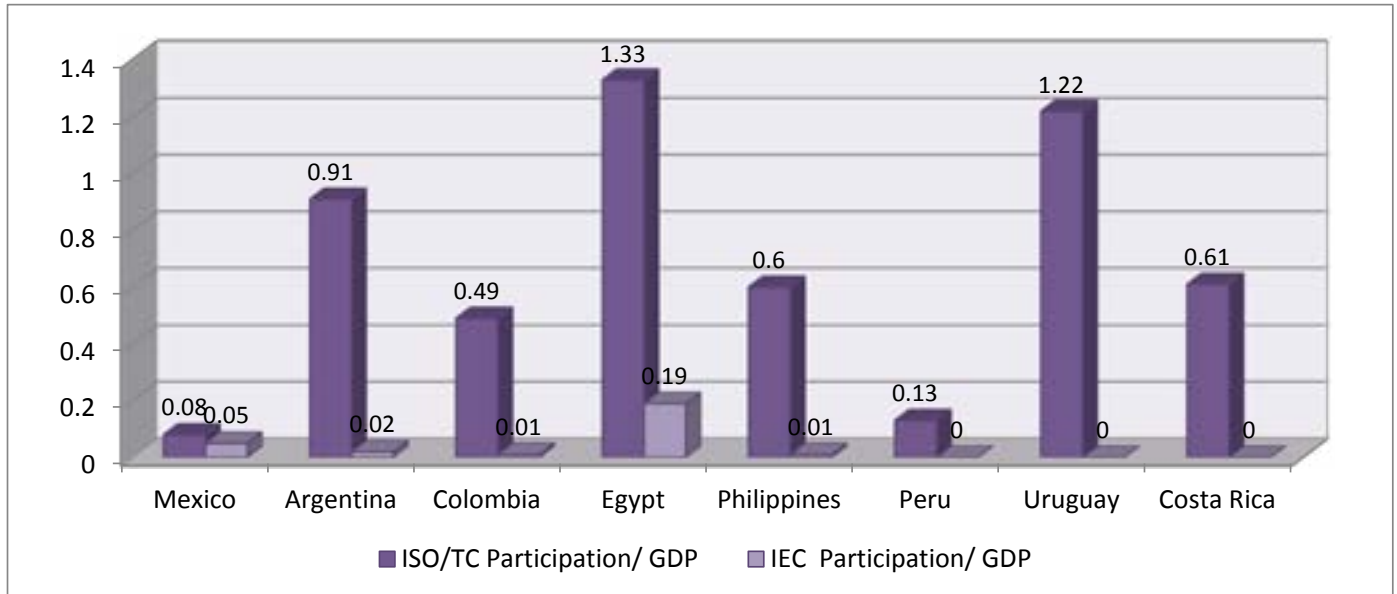
Chart 25 shows that, although it is difficult to assess exactly the number of employees devoted exclusively to standardization activities in the selected countries, it may appear at first sight that the number of staff in the Philippines is slightly lower in relative terms. However, knowing that the services offered are also lower, it is difficult to assess if that difference is truly real or not.

The easiest comparison in terms of staff, given the institutional similarities, would be with Peru. In this case, taking into consideration the different involvements in ISO technical work, we may say that the number of staff is adequate to the services provided. However, the services provided are below what should be offered by a fully functional national standards body.

Chart 26 shows that, in terms of annual budget, there is a similar analysis as per the number of staff. There is a need to increase the annual budget if the Philippines want to move ahead in the development of a fully functional national standards body.

However, that increase of annual budget shouldn't necessarily come from government budget. The commercialization of some of the products of a national standards body should be explored. This would require a different institutional set-up.

Chart 24: Comparison of the participation in international standardization and of the size of national standards bodies relative to Gross Domestic Product



Accreditation in non-ASEAN countries

Criterion 1. Legal framework supporting accreditation

The national accreditation bodies in Latin America have all been established longer than the Philippine Accreditation Office (PAO). PAO was founded in 2008. This data reflects that in general terms, both in NQI development and integration in the global market, Latin American countries are slightly ahead of the country in making the necessary institutional arrangements.

Compared to the selected countries, the Philippines is the only country that does not have a national accreditation act that defines and fully develops the mandate of the national accreditation body. Moreover, all of them declared to have developed and implemented a national accreditation strategy from the strategic to operational level. In the case of the Philippines, not having a well-developed national accreditation act has led to the lack of a national accreditation strategy.

All the countries, except for Colombia, have only one body responsible for the accreditation activities at national level and for representing the country internationally. Accreditation, due to the nature of its activities, is an activity where competition between bodies may hamper the independence and integrity of its output. Economies in similar levels of development than the Philippines have decided to provide the accreditation mandate to one single organization.

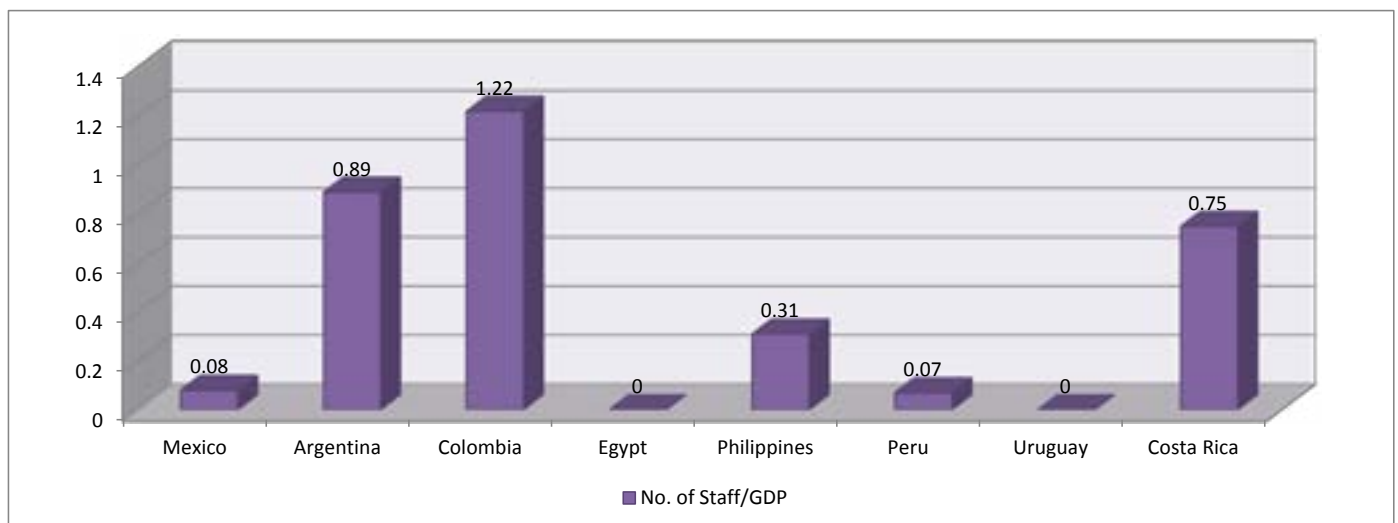
Criterion 2. Accreditation activities

The comparative analysis shows that PAO ranks well in terms of accreditation fields. Some accreditation schemes are not covered by PAO, i.e., ISO/IEC 17024, ISO Guides 43-1 and 34. Aside from Thailand, which offers the accreditation of proficiency testing providers, these same schemes are not covered by all the countries included in the analysis. This shows that the coverage in terms of field of accreditation is in line with the current level of development and the size of the Philippine economy.

However, there is for almost all the certification schemes, a different perception of the technical competence. Most of the surveyed countries estimate their technical competence as fair or sustainable. They perceive that there are enough experts and technical and lead assessors readily available for scopes of laboratories, or that there is continuous training conducted to produce more qualified members in the pool.

However, in the Philippines, the technical capacity is always perceived as limited. It is quite difficult to avail of the services of experts and technical and lead assessors.

Chart 25: Comparison of the national standards staff relative to Gross Domestic Product



Again, this shows that the Philippines lags behind the selected countries in terms of accreditation development. Though PAO has taken the necessary steps to provide the Philippine economy with the necessary fields of accreditation, there is still a need to increase the pool of experts available to provide the services offered.

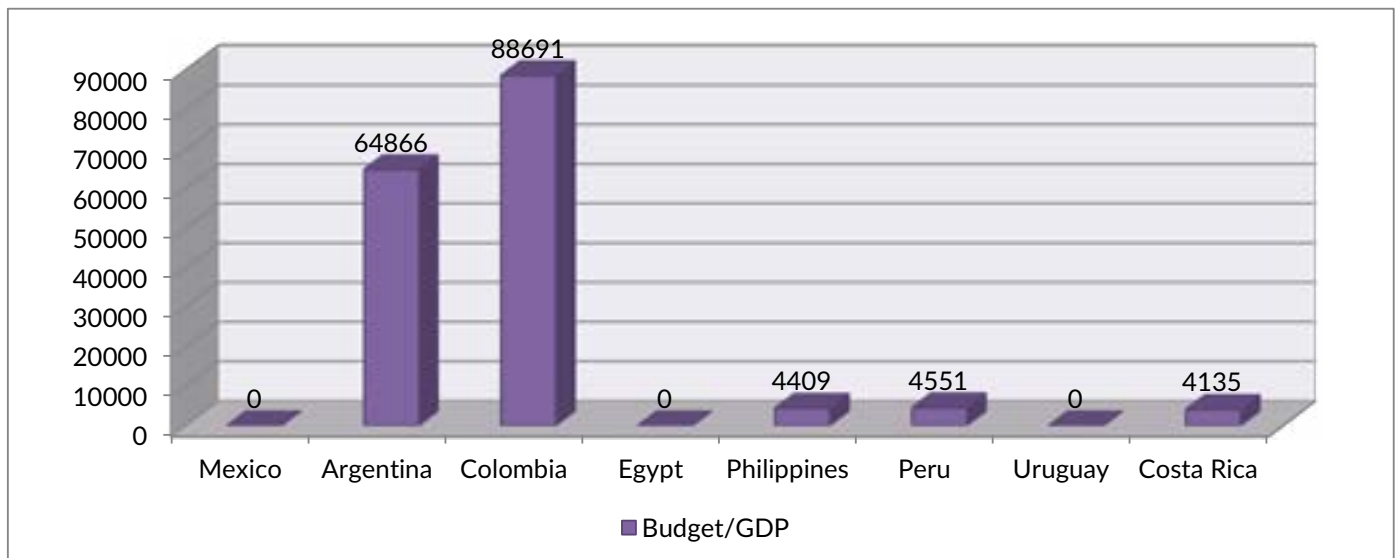
There is a general perception that the laboratory infrastructure for regulated products and main export sectors is limited. However, in terms of accredited laboratories, the perception is that the Philippines is close to selected countries.

Regarding the number of conformity assessment bodies, though, most of the countries believe that the number of conformity assessment bodies is either fair or sustainable. There are enough accredited conformity assessment bodies for export products or sufficient numbers and scopes of accredited conformity assessment bodies for export products.

In contrast, the perception is that in the Philippines the number of conformity assessment bodies for export products is limited. There are not enough accredited conformity assessment bodies for some export products.

In terms of the number of accredited bodies, e.g., testing houses, laboratories, certification bodies, and inspection bodies, the comparisons in GDP relative terms shows that Philippines has comparatively a good number of accredited bodies. On the average, the country has more testing houses than the rest.

Chart 26: Comparison of the annual budgets of national standards bodies relative to Gross Domestic Product



However, there is a perceived lack of technical competence for accrediting in different schemes. There is also a perception that the number of accredited laboratories and conformity assessment bodies is low. These show that the existing infrastructure does not fully respond to the needs of the industry.

Regarding the number of assessors, Table 11 and Charts 28 and 29 show that the Philippines is in general behind the selected countries in terms of total number of experts, in particular lead assessors. A broad analysis suggests that the Philippines would need to double the number of available experts and lead assessors to be half-way between those economies with the highest ratio and those with the lowest.

Criterion 3. The participation of the accreditation body in regional and international organizations

The Philippines has gained international recognition by being a full member in the relevant organizations, i.e., International Accreditation Forum and International Laboratory Accreditation Cooperation. Except for Colombia, all the selected countries are full members in these organizations, too.

However, it should be noted that some of those countries have reported active participation in the international technical committees and working groups. This seems to be the next natural step of development for the Philippines.

At the regional level, the Philippines shows a high level of involvement, which is also shown by the selected countries within their regions.

However, the sustainability of the funding for membership and participation in the international and regional bodies is uncertain. Interestingly, the bodies with higher autonomy both in terms of governance and budget face fewer financial constraints to participate in the international arena. The perception in the Philippines, as one of the countries whose accreditation body is highly dependent on the government, is that the source of funding for international integration is weak.

Criterion 4. The information-gathering and dissemination activities of the accreditation body

Compared to the selected countries, the involvement of the Philippine accreditation body in the development of standards or guidelines in accreditation is poor. The perception is that this involvement is extremely limited. In contrast, in the case of the selected countries, their overall perception is that the accreditation experts participate regularly in those activities.

In terms of the services offered to the industry, the results of the questionnaires show that Philippine offering is close to the one in the selected countries. However, this does not provide any information on the quality and pricing of those services.

Generally, the range of dissemination materials is similar to that in the selected countries. However, in the case of the Philippines, there is a need to increase the volume of materials in order to be effective in promoting the accreditation services to industry.

Criterion 5. Institutional set-up of the national accreditation body

Latin American accreditation bodies vary in legal status. As is the case in the rest of the world, there are both private and public accreditation bodies in the region. However, when they are part of the public sector, accreditation bodies tend to operate as autonomous government agencies, sometimes affiliated with a specific government ministry.

A second important aspect is the contribution of other NQI components in the governance of the national accreditation body. All the selected countries, except for Peru who is a governmental body, have reported that the other NQI components regularly participate and with full voting rights in the accreditation governance.

It is important to show that 3 of the 4 countries that reported figures of the sources of their annual budget show that at least 50% of their income comes from their commercial services. This shows that in order to increase the accreditation services to industry it is not enough to make the services available; the services also have to be sold like any other service in the market.

Table 12 and Charts 30 and 31 assess the resources of the surveyed accreditation bodies. The Philippine accreditation body is inadequately resourced in terms of permanent staff in comparison with the selected countries. To reach the average of permanent staff, excluding Costa Rica and Philippines, the country has to double the number of its permanent staff.

The Philippine accreditation body is seriously inadequate in terms of budget in comparison with the selected countries. To reach the average of permanent staff, excluding Costa Rica and Philippines, the country has to increase the budget of the accreditation body by five times.

Compared to the selected countries, the Philippines is the only country that does not have a national accreditation act that defines and fully develops the mandate of the national accreditation body.

Chart 27: Comparison of the activities and sizes of national accreditation bodies

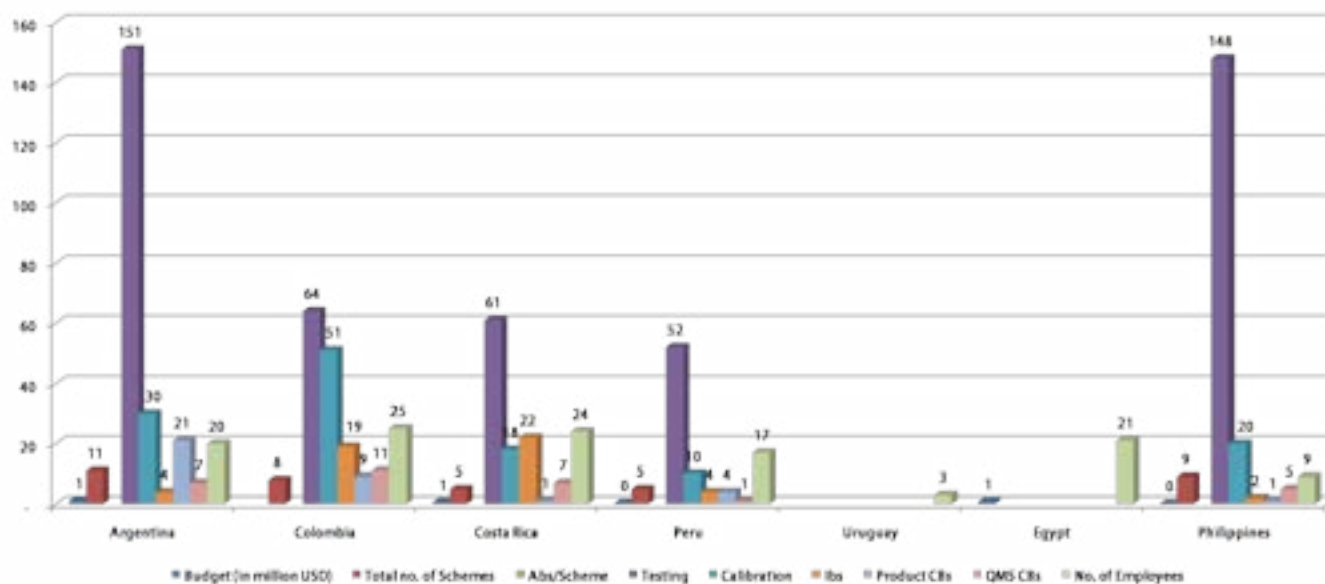


Table 10: Comparison of the activities of national accreditation bodies relative to Gross Domestic Product

Country	GDP*	Testing/GDP	Calibration/GDP	IB/GDP	Product CBs/GDP	QMS CBs/GDP
Argentina	369.99	0.41	0.08	0.01	0.06	0.02
Colombia	289.43	0.22	0.19	0.07	0.03	0.04
Egypt	218.47	-	-	-	-	-
Philippines	199.59	0.74	0.1	0.01	0	0.03
Peru	153.8	0.34	0.07	0.03	0.03	0.01
Uruguay	40.27	-	-	-	-	-
Costa Rica	35.79	1.7	0.5	0.61	0.03	0.2

Table 11: Comparison of the pool of experts in national accreditation bodies relative to Gross Domestic Product

Country	GDP*	Number of Experts	Tech. Assessors	Lead Assessors	Number of Experts /GDP	Tech. Assessors /GDP	Lead Assessors/GDP
Argentina	369.99	492	61	105	1.33	0.165	0.284
Colombia	289.43	30	45	15	0.104	0.155	0.052
Egypt	218.47	21	8	8	0.096	0.037	0.037
Philippines	199.59	15	32	7	0.075	0.16	0.035
Peru	153.8	64	3	6	0.416	0.02	0.039
Uruguay	40.27	100	30	10	2.463	0.745	0.248
Costa Rica	35.79	95	28	14	2.654	0.782	0.391

Chart 28: Comparison of the pool of experts in national accreditation bodies

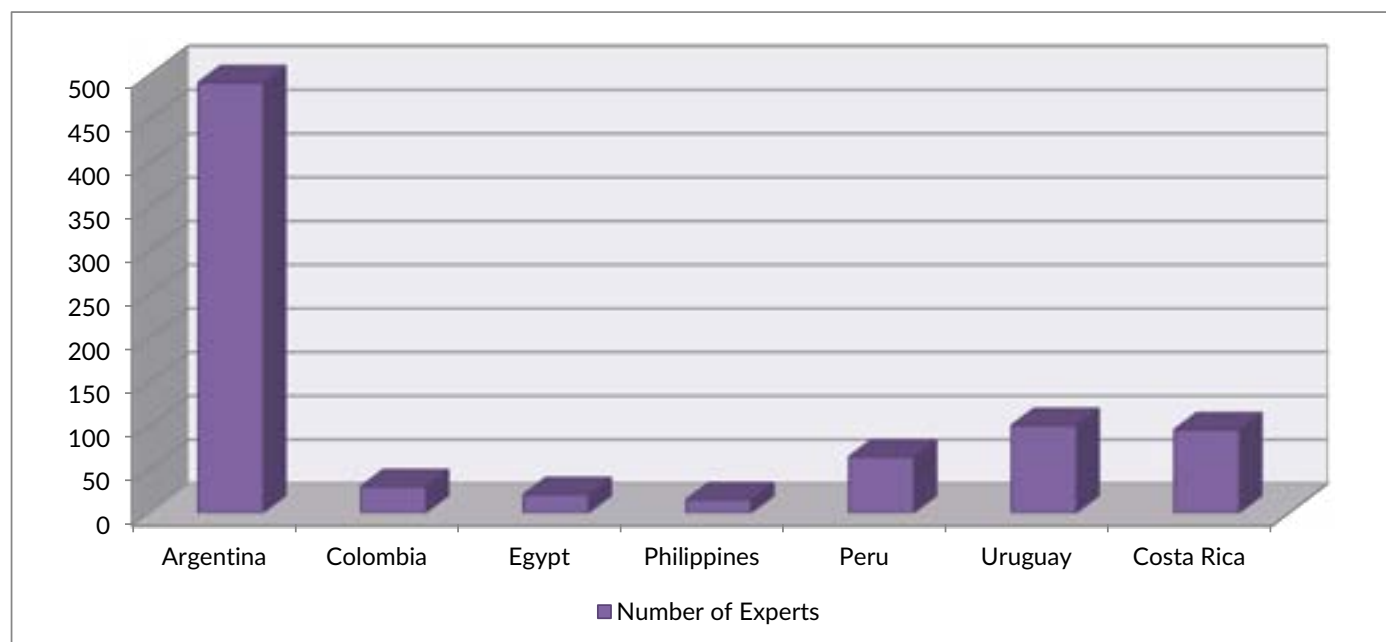


Chart 29: Comparison of the pool of experts in national accreditation bodies relative to Gross Domestic Product

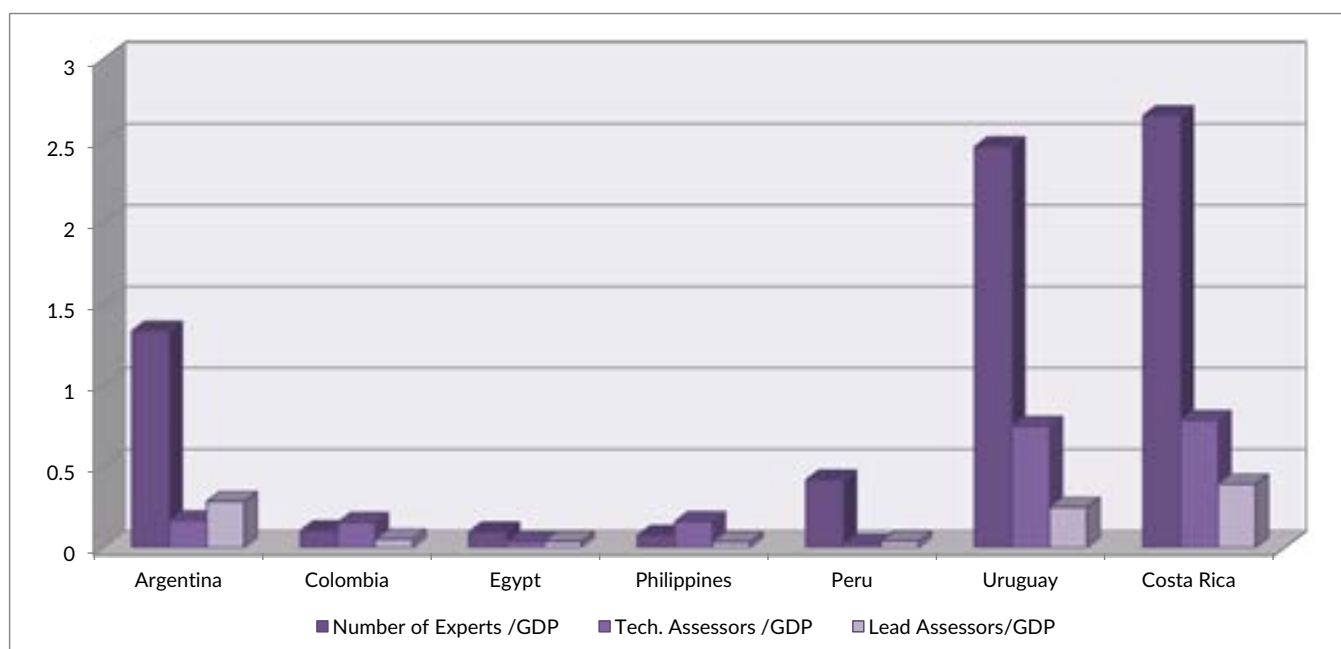


Table 12: Comparison of the size of national accreditation bodies relative to Gross Domestic Product

	GDP*	Staff	Annual Budget (USD)	Staff/GDP	Annual Budget/GDP
Argentina	369.99	20	1,100,000	0.054	2,973.04
Colombia	289.43	25	-	0.086	-
Egypt	218.47	21	740,563	0.096	3,389.77
Philippines	199.59	9	110,000	0.045	551.13
Peru	153.8	17	280,000	0.111	1,820.55
Uruguay	40.27	-	-	-	-
Costa Rica	35.79	24	650,000	0.671	18,162.01

Some elements of the various components of the NQI exist, but it is fragmented and inadequate.

Chart 30: Comparison of the staff of national accreditation bodies

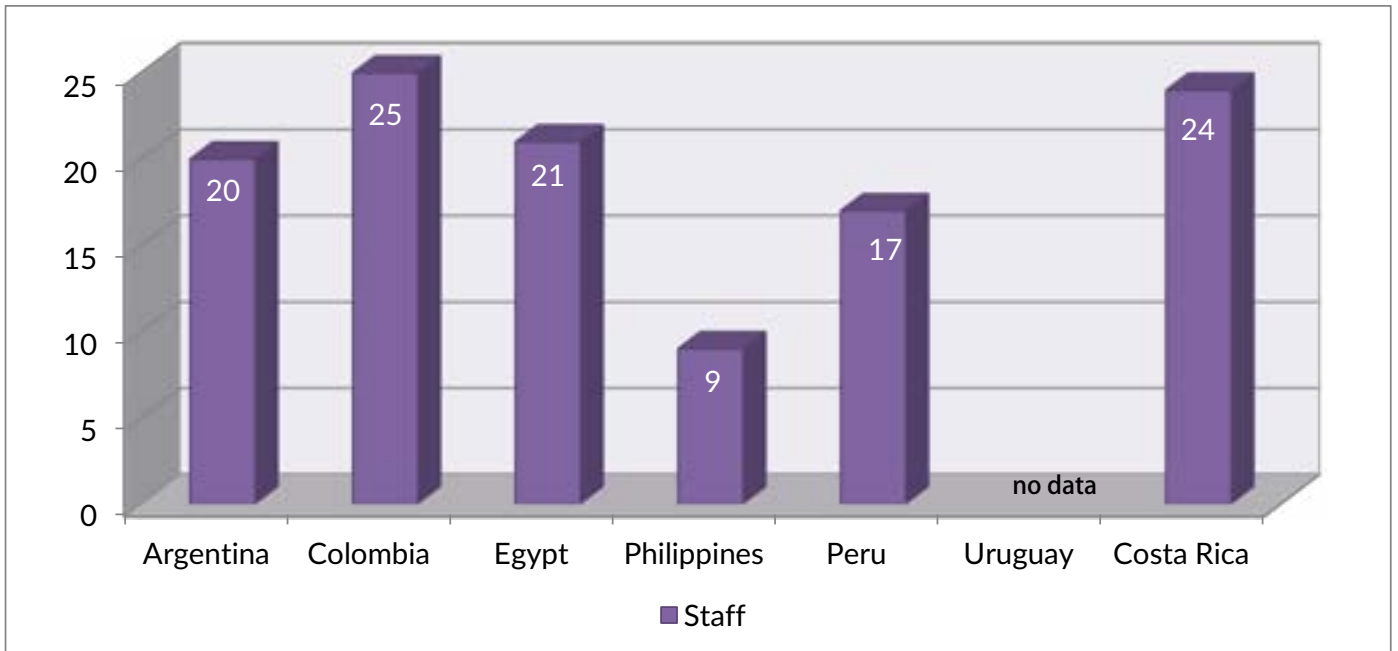


Chart 31: Comparison of the staff of national accreditation bodies relative to Gross Domestic Product

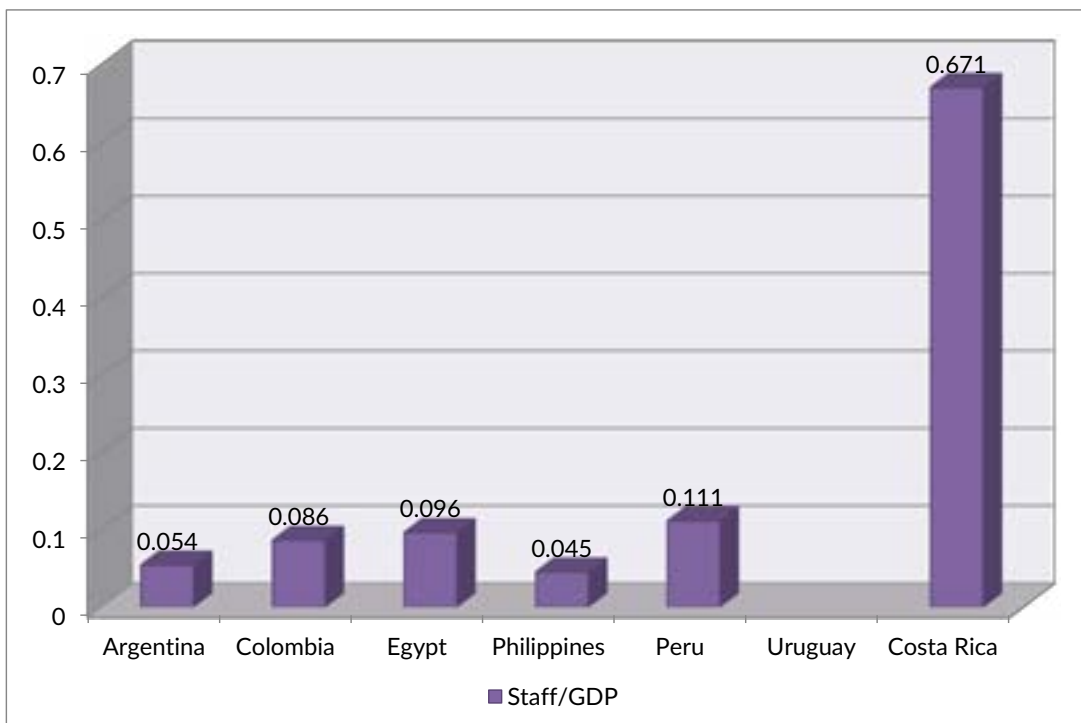


Chart 32: Comparison of the annual budgets of national accreditation bodies

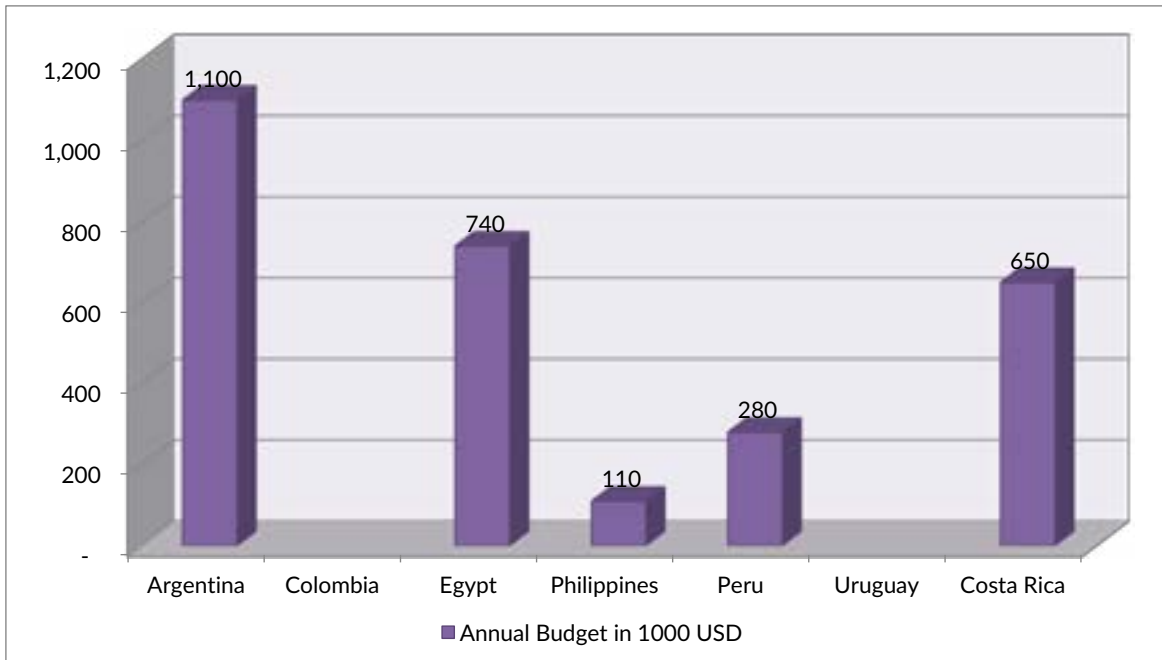
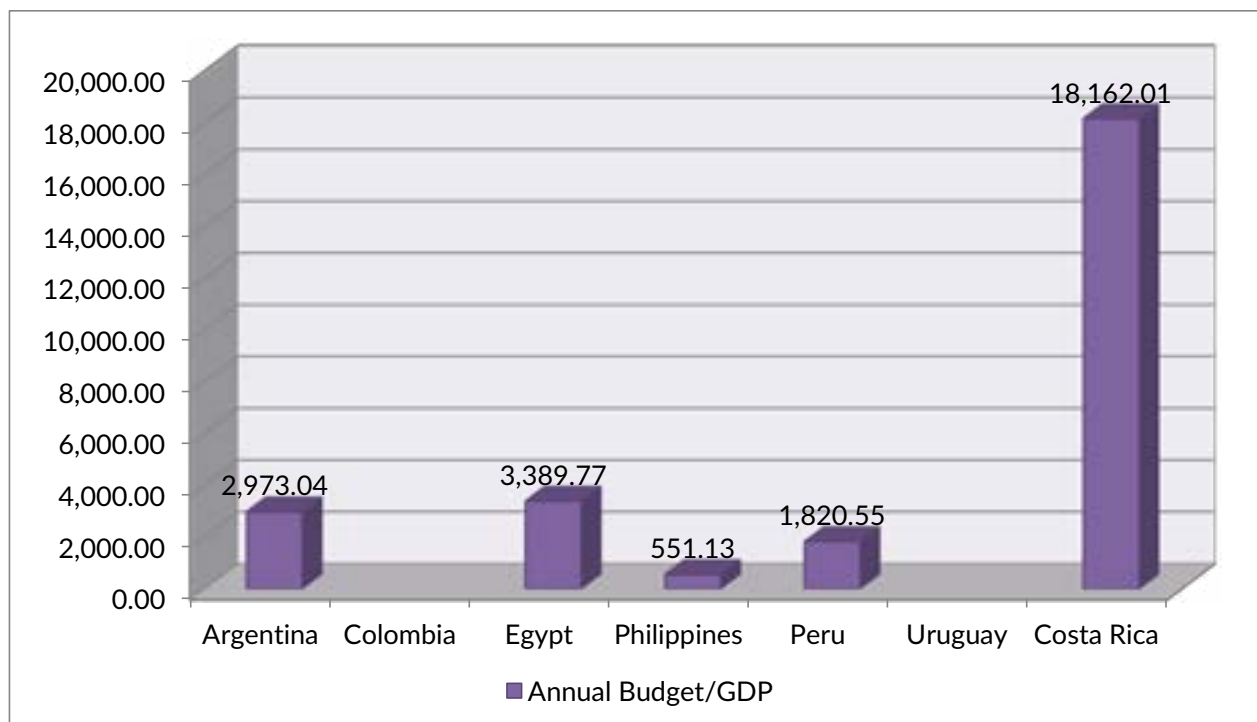


Chart 33: Comparison of the annual budgets of national accreditation bodies relative to Gross Domestic Product



Conclusions & Recommendations

To achieve a robust NQI, the components should work together as a system, in a coordinated and coherent manner, that will support the goal of industry competitiveness and efficiency and effectiveness of regulators in ensuring consumer protection. However, the study shows that some elements of the various components of the NQI exist, but it is fragmented and inadequate.

Fragmentation hampers the efficiency in the use of NQI resources. It makes it more difficult to develop and coordinate policies. On most occasions, the coordination between different entities is more a battle for existing resources than a strategy developing exercise.

This fragmentation also burdens industry and consumers. The transaction costs of engaging with the NQI is high. The participation of different entities results in duplication repetition of similar procedures and costly delay.

The following general recommendations seek to address this fragmentation and build a more robust NQI.

General Recommendations

- Prepare a National Quality Infrastructure (NQI) master plan that takes into consideration the national needs for competitive products and services and for the protection of consumers and the environment. One of the points in the 10-point agenda identified in the Philippine Development Plan (2011-2016) is the promotion of a coherent and responsive policy environment. Writing an NQI master plan falls under this policy.
- Review the laws, mandates, and decrees that have been issued on metrology, standardization, and accreditation as connected laws and not in isolation. Merely amending the standardization act will not suffice, as standards are just one component of the NQI. These NQI components are interrelated, and they should be treated as a system. The review should take into consideration the relationship between the NQI components and technical regulations.

- Raise awareness among national authorities and industry on the value added provided by an NQI. In developing countries, if the industry is not sufficiently developed, there is a general perception that the state has to “do everything,” namely, determine the needs, provide solutions, and create public awareness.
- Educate industry players on the services and benefits of the NQI. They need to be enlightened on how they can identify their needs and use voluntary compliance mechanisms.
- Involve civil society and other stakeholders in the governance of NQI bodies. It is important to improve the openness and soundness of policies of the three NQI component bodies—Philippine Accreditation Office (PAO), BPS, and the National Metrology Laboratory of the Philippines—by involving civil society and stakeholders of said bodies. Setting up a Philippine NQI council with the active participation of all stakeholders would create a formal structure to define the roles of the different agencies involved in NQI activities.
- Develop the services offered by the NQI agencies. It is important that the agencies responsible for the NQI components see themselves as national providers of essential services. Then they can focus on increasing the quality and quantity of the services that they offer to Philippine industry and regulators. Besides addressing the needs of their clients, they can also aim to be self-sustained agencies. This will happen by making them organizationally independent and charging fees for services they provide at prevailing market rates.
- Strengthen market surveillance activities, and relate these activities with the other NQI components. Many of the new legislative approaches adopted by BPS with the DAO on LVE require a very strong market surveillance. Strong market surveillance programs will benefit consumers and highlight the need for accurate measurements, standards, and accredited conformity assessments.

Specific recommendations

The recommendations for each NQI component are divided in two parts. Long-term objectives refer to an ideal situation, which can be attained in a period of five years. Medium-term objectives refer to actions that can be mostly undertaken immediately by the NQI institutions and regulatory bodies. These actions may take up to three years to carry out.

The actions listed under medium-term objectives are not exhaustive. There may be other actions that the agencies may deem necessary in order to achieve the long-term objectives.

Metrology

Long-term objectives

- Establish the National Metrology Institute (NMI) of the Philippines as a separate organization, instead of only a division of the Industrial Technology Development Institute, under the Department of Science and Technology.
- Develop NMI services that are complementary and of higher technical quality and complexity than those offered by the secondary laboratories to prevent the NMI from just competing with secondary calibration laboratories.
- Pass the necessary laws to provide NMI with the mandate to coordinate and represent the Philippines in international conferences.

Medium-term objectives

- Prepare a 10-year development and implementation plan for the establishment of a metrology infrastructure in the country.
- Review the National Metrology Act of 2003.
- Activate the National Metrology Board.
- Define the international tasks of NMI in line with CIPM and BIPM guidelines.
- Mandate NMI to coordinate and participate in international activities.
- Provide the resources needed to set up a formal coordination network between the secondary laboratories that is led by NMI.
- Collect, assess, and harmonize the technical regulations dealing with legal metrology in various government agencies.
- Revive membership in OIML.
- Register a total number of 25 to 35 Calibration and Measurement Capabilities in BIPM key comparison database to include mass, temperature, pressure, and other measurements fields relevant to the country's needs.
- Increase the number of international intercomparisons registered in the key comparison database between 30 to 40.
- Increase the annual budget of NMI, to be used primarily to buy equipment, by 20% annually for the next five years.
- Increase the staff of the NMI 10% annually for the next five years.

Standardization

Long-term objectives

- Develop BPS as the country's national standards body and as the single coordinator of all standardization work in the Philippines.
- Consolidate the recognition of BPS as a service provider for industry and national authorities through an active and empowered participation of all relevant stakeholders both at technical and governance level.
- Develop BPS as a legal autonomous organization (the exact legal structure should still be analyzed) with increasing financial autonomy.
- Increase the level of financial sustainability by developing and offering commercial services to industry.

Medium-term objectives

- Develop a national standardization plan and strategy involving all national stakeholders in order to address the needs for standards of industry and regulators.
- Review Republic Act 4109 and other mandates given to governmental agencies to develop specific standards and determine their relevance and responsiveness to the needs of the country.
- Focus the limited standardization resources in the industries and sectors that will create an impact on competitiveness, trade flows, and consumer protection.
- Set up and implement from a legislative point of view a clear differentiation between standards and technical regulations throughout all government agencies.
- Train national authorities in the WTO Codes of Good Practice for the Preparation, Adoption and Application of Standards and Good Regulatory Practice.
- Review the annual budget of BPS for the next five years to guarantee the fees for international participation and training.
- Create an advisory committee to the director of BPS with the full participation of stakeholders and with the intention of becoming a true governance body in five years time.
- Increase the participation of national stakeholders in the discussion and adoption on ISO/IEC standards.
- Develop a set of commercial services, such as training and publications, related to standardization.

- Allow BPS to retain revenues from the services it provides to increase its annual budget and financial independence from government.
- Ask BPS to have this report and the information in it publicized and disseminated to raise awareness among policy and decision makers in government and the private sector, legislators, regulatory authorities, NQI institutions, and other stakeholders.

Accreditation

Long-term objectives

- Develop PAO as a single national accreditation body that acts as the coordinator of all accreditation activities in the Philippines.
- Set up PAO as an body with financial autonomy. The exact legal structure should still be analyzed.

Medium-term objectives

- Develop a national accreditation strategy that will designate PAO as the sole accreditation body that will promote accreditation in the country and represent the country at international organizations.
- Mandate PAO as the national accreditation body tasked with streamlining all the activities of the other bodies—such as the National Commission for Muslim Filipinos, the Bureau of Agriculture and Fisheries Product Standards, the Bureau of Product Standards, and Food and Drug Administration—that also carry out accreditation tasks.
- Develop technical cooperation between PAO and Bureau of Agriculture and Fisheries Product Standards to guarantee that the legitimate functions of the latter are guaranteed while PAO remains the sole and ultimately responsible for accreditation.
- Increase the number of lead assessors by 100%.
- Guarantee the annual budget of PAO, including the fees for participation in the various fora and training of international accreditation organizations, for the next five years.
- Mandate PAO to develop and implement a marketing plan to promote and sell accreditation services and to review the fees it charges so that they are at par with the fees in ASEAN and with prevailing market prices.
- Allow PAO to retain the revenues from the accreditation services it provides in order to reduce the pressure to increase its annual budget while enhancing its financial independence.

Government Regulatory Practices

An agency needs to have a legal mandate to enforce regulations. Such a mandate can come from a law, decree, or other legal issuance. An administrative order issued by the department secretary specifies the details of a regulation. This is followed by the issuance of implementing guidelines on how the regulation will be implemented.

The World Trade Organization requires the notification of technical regulations to its secretariat at least 60 days prior to enforcement. Depending on whether it is a matter regarding Technical Barriers to Trade or sanitary and phytosanitary measures, the notification is coursed through the appropriate inquiry point in the country. From the information gathered for this report, not all regulatory agencies submit notifications of their regulations to the national inquiry points. Thus, these notifications do not reach the WTO.

At present, there is no national clearing house for technical regulations being enforced by the various regulatory bodies to avoid duplications, overlaps, and conflicting provisions.

Most regulators, in addition to enforcing regulations and market surveillance, also carry out conformity assessment tasks—testing, inspection, and certification. They are used to doing all these activities under their own roof.

However, regulators must be made to appreciate that it will be more efficient for them to do their enforcement and market surveillance functions if conformity assessment is outsourced to external bodies, provided that these bodies are accredited.

Table 13 lists the regulatory agencies and the services that they offer.

It should be noted that the standards development functions of the agencies under the Department of Agriculture have been rationalized. The Bureau of Agriculture and Fisheries Product Standards handles the development of standards for all agencies under the Department of Agriculture, as mandated by the Agriculture and Fisheries Modernization Act of 1997, with the concerned agency participating as member.

In the 2006 study conducted by Dr. Maxima Flavier for the World Bank, duplications were noted in the tests being conducted by the various laboratories under the Department of Agriculture. The study recommended rationalizing these laboratories for optimization. The resources that can be freed resulting from rationalization can then be used to handle other important tests or activities that will make the Department of Agriculture more responsive to the needs of industry.

An important need of the agriculture and fishery industries is for tests on antibiotic residues. At the time of the study, the services of the Food Development Center, the official laboratory of the Department of Agriculture for contaminants, and the University of the Philippines - Natural Science Research Institute, said these tests were unavailable.

Only three of the laboratories being used by the regulators are accredited by the national accreditation body. These are the chemical and microbiological laboratories of the Food and Drug Administration and the household appliance laboratory of the Bureau of Product Standards (BPS) testing center.

BPS regulates 86 products. It makes use of third-party accredited testing laboratories in the Philippines and abroad. However, there remain 14 laboratories testing products for BPS that are not yet accredited to ISO/IEC 17025. It should also be noted that some of these accredited laboratories have capability limitations such that many safety parameters in the various standards are not being tested.

Among the list of 86 regulated products, the Philippines has no safety testing capability for three products: fireworks, seatbelts, and helmets and their visors. For seatbelts and helmets, test results from accredited laboratories in the country of origin are recognized. However, in the absence of in-country capability, confirmatory tests on the products could not be conducted.

Medium-term objectives

- Review the mandates of regulatory bodies regarding the development of standards.
- Advocate for government regulators to seriously consider regulating only those necessary for safety, health, and environment protection.
- Separate conformity assessment service providers from regulatory authorities. International best practices show that regulatory authorities should not manage laboratories or certification schemes. Instead, they should make use of conformity assessment results from accredited bodies. Doing so will prevent conflicts of interest and give them more time for enforcement and market surveillance, which are important tasks that cannot be outsourced to the private sector.
- Conduct regulatory impact assessment and inventory of resources, both public and private, before enforcing regulations to ensure that the government can effectively implement regulations.

Conduct activities targeting regulators and stakeholders that will promote awareness of the WTO Codes of Good Practice for the Preparation, Adoption and Application of Standards and of Good Regulatory Practice, of the differences between standards and technical regulations, and of the differences between certification and accreditation.

Shift the burden of proving compliance from government to producers and suppliers. Market surveillance should be strong, and stiff penalties should be imposed on violators.

Table 13: Services offered by Regulatory Agencies

Agency	Services					
	Standards writing	Testing	Calibration	Inspection	Certification	Accreditation
Bureau of Animal Industry, under the Department of Agriculture (DA)	x	x	x	x	x	
Bureau of Fisheries and Aquatic Resources, under DA	x	x		x	x	
Bureau of Plant Industry, under DA	x	x		x	x	
National Food Authority, under DA		x				
Fertilizer and Pesticide Authority, under DA		x		x	x	
Philippine Coconut Authority, under DA	x	x		x		
National Meat Inspection Service, under DA	x	x		x	x	
Sugar Regulatory Authority, under DA		x		x		
Food and Drug Administration, under the Department of Health (DOH)	x	x		x	x	x
National Telecommunications Commission, under the Commission on Information and Communications Technology				x	x	
Bureau of Research and Standards, under the Department of Public Works and Highways		x		x	x	
Bureau of Product Standards	x	x		x	x	x

Appendixes

Appendix 1: Analysis of the Philippine NQI

METROLOGY		
Benchmark Criteria	Philippine Situation	Gap Analysis
1.1 Existence of a legal framework defining metrological infrastructure including the national and international tasks of the NMI (National Metrology Institute)	A legal framework exists but international task of the NMI is not defined.	National measurement systems need to be compatible with guidelines set by BIPM. Harmonization with BIPM helps ensure comparability of national measurement systems. International tasks of the NMI needs to be defined.
1.2 Is the legal framework adequate regarding modern international requirements and best practices?	No. There are many gaps identified in the national metrological infrastructure even with <i>Batas Pambansa Blg. 8</i> and RA 9236.	There are many gaps identified in the national metrological infrastructure. No R&D being conducted. Very few international intercomparisons.
1.3 Are there any other laws defining metrological responsibilities (e.g. for national time, radiation, Metrology in Chemistry, Legal Metrology, etc.)?	Yes. 1. Standard for epoch time is with the Philippine Atmospheric Geophysical & Astronomical Services Administration (PAG ASA). 2. Department of Energy for petroleum dispensing pumps and transport containers for petroleum. 3. Republic Act 7394 regulates practices for weights and measures used in consumer products. 4. Ionizing Radiation is with the Philippine National Research Institute. 5. Electric meters is with the Energy Regulatory Commission	

1.4 Besides the NMI and the bodies named under the Law. Are there other organizations performing national metrology activities not defined in any law?	Yes. Land Transportation Franchising and Regulatory Board (LTFRB) for taxi meters and Energy Regulatory Commission for electric meters.	
1.5 Existence of a National Metrology Policy/Strategy (e.g. a 10-year Masterplan)	No National Metrology Policy/Strategy.	No National Metrology Masterplan exist.
National Metrology Institute	National Metrology Laboratory, ITDI Website: www.itdibiz.com	
2.2 NMI is established according to best international practices and guidelines by CIPM and BIPM	No. R& D activities are being conducted by the NML due to budgetary and personnel constraint. Insufficient number of good international intercomparison .	No definition of the international task of the NMI
2.3 Metrological competence Number of Calibration and Measurement Capabilities (CMCs) registered in BIPM Key Comparison Data base	None	No CMCs registered in BIPM website although NML is presently working towards this.
2.3.2 Number of international intercomparisons registered in KCDB	13	Need to participate in more international intercomparisons as this is one of the basis for declaring CMCs
2.3.3 Number of scopes accredited by an Accreditation Body who is signatory to the ILAC - MRA	Three (3) areas accredited by DAkks (Mass, Temperature and Pressure) covering 34 scopes	
2.4.1 Is Metrology in Chemistry institutionalized?		The ITDI director designated the Standards & Testing Division of ITDI as focal point for MIC activities.
2.4.2 Dissemination of Metrology in Chemistry (MiC) 1. As a reference material provider 2. Through traceable values 3. International recognition as a reference material provider- ISO Guide 34 4. International recognition for traceable values as PT providers(ISO/IEC 17043)	None None None None	

2.5.1 Responsibilities for legal metrology	The National Metrology Board (NMB) is responsible for legal metrology. NMB policies have to be implemented by DOTC, DOH, DOST Regional Metrology Laboratories, DTI, LGUs.	Since 2003 when RA 9236 was enacted up to now the NMB has not convened.
2.5.2 Technical regulations in legal metrology are harmonized and follow international best practice, e. g. recommendations from the International Organization of Legal Metrology (OIML).	Extremely limited. No harmonization by NMB of technical regulations issued by different government departments.	Philippines is no longer a member of OIML. It has plans to revive membership even as correspondent member.
2.6 NMI - Secondary Laboratories		
2.6.1 Number of accredited calibration laboratories: Are there international accreditations (under ILAC MRA/IAF MRA or regional MRAs/MLAs)?	The number of PAO accredited calibration entities is 21, the NML has DAkkS Accreditation in 3 areas (mass, temperature and pressure) covering 34 scopes.	Accreditation scopes of secondary calibration laboratories are limited.
2.6.2 Coordination at technical level between NMI and accredited calibration (e.g. Coordination of services provided between NMI and accredited calibration laboratories	Limited coordination between NMI and accredited calibration laboratories.	Calibration laboratories contact the NMI on an ad hoc basis. The NMI rarely coordinates with calibration laboratories for their present and future traceability needs.
2.6.3 Coordination of services provided between NMI and accredited calibration laboratories	Limited. The NMI provides many routine services on the same technical level as other calibration labs and only few services of higher level or not covered by other calibration laboratories.	There is no higher level accuracy for many measurements thus secondary calibration laboratories have to send their calibrating standards abroad for calibration.
2.6.4 Availability of metrological services for industry in trade related key economic sectors	Limited. Only basic metrological services are available within the country: the semiconductor industry.	Many calibration requirements of the electronics industry are not served by the NML nor by the secondary calibration labs in the country. Equipment are sent overseas for calibration.
2.6.5 Do the available metrological services meet the requirements of industry in trade related key economic sectors?	No. Less than 50% of industry needs is served by metrological entities in the country.	Needs are the higher level accuracy measurements.

<p>3.1 Recognition by & participation in regional / international organization</p> <ul style="list-style-type: none"> • Member of the Meter Convention • Signatory of CIPM MRA • Membership of OIML 	<p>Yes, Associate member.</p> <p>Yes, Associate member.</p> <p>No.</p>	<p>There is a BIPM resolution that by 2013 the fees of associate members will double from .05% to .1 % of the fees for full member. This should be considered by the NML when proposing budget.</p> <p>Being a non-OIML member deprives NMI information on international practices on legal metrology.</p>
<p>3.5 Membership in regional metrology bodies (e.g. APMP, APLMF)</p>	<p>Full member of: APMP APLMF</p>	<p>None</p>
<p>3.6 Participation in regional metrology organizations TCs/WGs</p>	<p>APMP: 6-mass & related quantities, length, electricity, thermometry, photometry, EC APLMF: No regular participation; 1-in ACCSQ WG3</p>	<p>Participation is not consistent due to budgetary constraints.</p>
<p>3.7 Source of funding for international/regional bodies membership fees and participation</p>	<p>Weak. ICF-DFA assumes CGPM memberships, while ITDI does the same for APMP and APLMF fees and participation.</p>	<p>Not sustainable. Participation in regional/ international organizations are sometimes funded by foreign donors due to constraints in budget.</p>
<p>4.1 Develops services for industry</p>		
<p>4.1.1 Consulting services (e.g. Metrology mapping, technical assistance, demand analysis)</p>	<p>No.</p>	
<p>4.1.2 Training/seminars</p>	<p>Yes.</p>	<p>Needs to conduct more seminars as these are conducted only as requested by secondary calibration laboratories.</p>
<p>4.1.3 Coordinates national intercomparisons with calibration laboratories or other proficiency testing schemes</p>	<p>Yes.</p>	<p>Very limited.</p>

<p>4.1.4 Develops relationships with relevant stakeholders</p> <ul style="list-style-type: none"> • Participation in standardization • Participation in technical regulations • Participation in accreditation of calibration and testing laboratories 	<p>Extremely limited. No invitation to participate.</p> <p>Extremely limited. No invitation to participate.</p> <p>Extremely limited. No invitation to participate even after desire was expressed by NMI.</p>	<p>No realization or appreciation by the standards body on the importance of metrology or accurate measurement</p> <p>No realization or appreciation by regulators on the importance of accurate measurements.</p> <p>No realization or appreciation by accreditation body (ies) on the importance of the NMI's expertise in assessing calibration laboratories for accreditation.</p>
<p>4.1.5 Develops awareness raising and dissemination activities</p> <ul style="list-style-type: none"> • Online tools to promote the corporate image and services • Dissemination materials (leaflets, booklets, etc.) 	<p>Yes. Recently more attention is being brought forward in the area of promoting NMI services and efforts to develop own corporate identity.</p> <p>Yes. Annual distribution of world metrology day posters</p>	<p>There is a need to promote the functions of the NMI as accurate and sound measurement system is vital to a country's industrial development and competitiveness.</p> <p>Materials distributed on what the NMI's capabilities are are scanty.</p>
<p>5.1 Institution setup of NMI governance and decision-making autonomy</p>	<p>Dependent entity within another governmental body of shared budget.</p>	<p>Budget is small and NML is bound by ITDI's policies on hiring of personnel and procurement.</p>
<p>5.2 Contribution of the stakeholders (especially private sector and industry) and other NQI components to NMI governance (e.g. metrology council, board of directors, etc.)</p>	<p>Limited. The participation of private sector and industry is per RA 9236.</p>	<p>The needs and inputs of the private sector particularly industry is crucial to the governance of the NMI. Most of the members of the NMB are from government.</p>
<p>5.3 Funding structure of NMI</p>	<p>Government: 85% Income from metrological services: 10% Donor funding: 5%</p>	<p>Annual budget is not enough for NML to function fully as NMI.</p>
<p>5.4 Is existing funding sufficient?</p>	<p>No.</p>	<p>No budget for capital expenditures which is very important.</p>
<p>5.5 Human resources</p>	<p>No. of employees: 26 No. of technical staff: 23</p>	<p>Very few compared to what it is mandated to do.</p>
<p>5.6 Budget adequacy</p>	<p>USD 330,000</p>	

STANDARDIZATION		
Benchmark Criteria	Philippine Situation	Gap Analysis
5. Evidence of a National Standardization Act	<p>Laws on Standardization that have been passed:</p> <ul style="list-style-type: none"> • RA 4109:1964- Creation of the Bureau of Standards (now Bureau of Product Standards) giving charge to the Bureau to establish standards for, and inspection of all agricultural, forest, mineral, fish, industrial and all other products in the Philippines for which no standards have as yet fixed by law, executive order rules and regulations • RA 7394:1992 or the Consumer Act of the Philippines provides for the development and provision of quality and safety standards for consumer products to be handled by the following Departments: <ul style="list-style-type: none"> a) Department of Health with respect to food, drugs, cosmetics, devices and substances b) Department of Agriculture with respect to products related to agriculture c) Department of Trade & Industry with respect to products not specified under the DOH and DA. • RA 8435:1997 or the Agriculture & Fisheries Modernization Act creating and authorizing the Bureau of Fisheries Product Standards to cover the formulation of standards for fresh, primary and secondary processed agriculture and fishery products. • RA 8479 : 1998 or the Oil Industry Deregulation Act authorized the Oil Industry Management Bureau to formulate and implement policies, plans and programs related to national standards and environmental regulations affecting quality of fuel, fuel additives and facilities in the downstream oil industry. 	<p>The BPS has been regarded as the national standards body since it is the member body for the Philippines of the International Organization for Standardization (ISO) and the International Electrotechnical Commission. Until 1992, BPS was responsible for developing standards for all products but fragmentation resulted when other agencies were also mandated develop quality and safety standards. Since those other agencies given mandates are Bureaus just like BPS, no deliberate effort was given by BPS to coordinate standards development activities being done by the other agencies. Please note that several of these agencies develop standards or technical regulations without reference to a National Standardization Plan prepared by the National Standards Body (NSB) with inputs from stakeholders and others concerned. A National Standardization Plan is usually prepared by the National Standards Body (NSB) and that body is defined in a National Standardization Act. With the corresponding strategies to meet the needs of both regulators and industries, but particularly industries as standards are really for competitiveness. Since the agencies mandated to develop standards are regulatory bodies, most the document or “standards” they produce are intended for regulatory purposes internationally known as “technical regulations”.</p>

	<ul style="list-style-type: none"> • RA 9296: 2004 or the Meat Inspection Code mandated the National Meat Inspection Service to establish safety and quality standards for meat & meat products. • RA 9711: 2009 known as the Food and Drug Administration Act gave the FDA the authority to develop and issue standards and appropriate authorizations covering establishments, facilities and health products. • RA 9593:2009 or the Tourism Act authorized the DOT to formulate and enforce standards for tourism enterprises. • EO 546 gave the National Telecommunications Commission the authority for establishing and enforcing technical standards as well as rules and regulations for the effective use of communication facilities. 	<p>In the Philippines the term used for technical regulation is mandatory standard. For competitiveness, technical regulations are not sufficient. Government regulations are minimum requirements to protect consumers from safety, health and environmental risks. To compete in the global market one has to go beyond mere compliance with minimum requirements. Developing for productivity and competitiveness of industries is the primary role of the NSB while protection of consumers is the role of regulators.</p>
6. Defines and develops the National Standards Body	No law or issuance exists defining the creation and tasks of a national standards body.	The law that created BPS is a Republic Act while the mandates of the other agencies to establish quality and safety standards are also Republic Acts. This does not support the development of a single national standardization body.
7. Are there other bodies developing standards?	The following are developing standards/technical regulations: BPS- Department of Trade & Industry BAFPS - Department of Agriculture FDA - Department of Health OIMB- Department of Energy DOT - Department of Tourism	Development of standards/ technical regulations by several agencies is not coordinated.
8. Clear differentiation between technical regulation and standard.	There is no differentiation between technical regulations and standards. There is a mix in the use of the two terms. Most, if not all agencies given mandates to develop standards are regulatory bodies and not standards but rules or guidelines that will be enforced by the regulatory body.	Technical regulations are not distinguished from standards. In fact, the word used in the Philippines for technical regulation is mandatory standard.

9. Enables and defines the participation of civil society in the development of standards	The standards body has no governing board where civil society can participate. In the technical committees, there is private sector participation.	No governing council or advisory committee with representatives from significant interests can participate.
10. Existence of a national standardization policy/ strategy	A national standardization strategy was crafted in 2004 but no updating happened after that year.	An updated Standardization Plan/ Strategy is needed.
11. Standardization practice in line with WTO TBT Code of Good Practice for the Preparation, Adoption and Application of Standards	BPS complies with "Standards Code" of the WTO agreement on technical barriers to trade. No information on other bodies' compliance with the said Code.	Coordination is necessary so that all bodies developing standards adhere to the WTO Code of Good Practice in the Preparation, Adoption and implementation of standards.
12. Internal Rules and Procedures in line with ISO/IEC Directives	The BPS Directives are patterned after the ISO/IEC directives. The other bodies that develop standards or technical regulations where BPS participates also adhere to the BPS directives.	Coordination is necessary so that all bodies developing standards adhere to the WTO Code of Good Practice and the BPS Directives.
13. Are there National Technical Committees for the key economic sectors?	There are some key economic sectors that have no National Technical Committees.	No technical committees exist for business process outsourcing, shipbuilding, and minerals, etc. which are key economic sectors.
14. Balanced participation of stakeholders in National Technical Committees. (Stakeholders include: manufacturers [corporations and SMEs], trade and service providers, sectoral associations/federations/ chambers of commerce, national authorities, state-owned companies, QI bodies, research centers, academia, and consumers' associations.)	The BPS Directives defines TC representation.	Balanced participation is not achieved all the time as some sectors are not keen on having standards developed. Others have negative views on standards especially when these are declared mandatory while others think that mandatory standards or technical regulations are good for the industry.
15. Pursues and increases participation of stakeholders	BPS invites stakeholders usually to fora on new international standards such as ISO-sponsored seminars.	Few fora and seminars conducted due to personnel constraints.

16. Clear rules and procedures for the creation and management of National Technical Committees	The BPS Directives contain clear rules and procedures for the creation and management of National Technical Committees.	No gap.
17. Membership in recognized International Standardization Bodies	BPS is a full member of ISO and IEC.	No gap.
18. Membership in Codex Alimentarius Commission (CAC)	The Philippines thru DA and DOH has a National Codex Organization (NCO) which discusses and prepares Philippine positions on issues in Codex. Experts who attend Codex meetings come from the NCO.	No coordination between BPS and NCO.
19. Participation in international standardization TCs	BPS is P member in 119 ISO/ TCs and O member in 46 TCs It is P member 1 TC and O member in 5 TCs of IEC. Participation is primarily by correspondence.	Participation in these TCs is mostly by correspondence which ISO and IEC allow but to be effective comments/inputs to ISO/IEC Committees should come from National Technical Committees.
20. Membership in regional standardization bodies	No regional standardization body but the Philippines as part of ASEAN and APEC is a member of the ACCSQ and APEC-SCSC respectively.	Attendance to ACCSQ meetings and its working groups and APEC SCSC is irregular and inconsistent due to budgetary and personnel constraints.
21. Source of funding for international/regional bodies membership fees and participation	Membership fees to international organizations such as ISO and IEC are paid by DFA from International Commitment Fund (ICF) while participation in meetings overseas is charged to the agency"s budget.	The amount approved by the Department of Budget and Management for international travel is inadequate to ensure attendance in all regional and international meetings.
22. Other cooperation agreements	There is cooperation agreement with ASTM and AMTEC. AMTEC is a private standards writing body developing standards on agricultural machinery.	Cooperation with ASTM allows the Bureau to adopt their standards. These are adopted when no ISO nor IEC standards exist.
Information and dissemination		
23. Availability of online standards catalogue and purchasing of standards	Standards catalogue is available online, but purchasing on line not yet possible.	At present on- line purchase of standards is not possible.
24. Availability of online standards process	On-line participation in standards development process not yet available.	The opportunity of potential users of standards who are not part of the national technical committees available only during the two-month circulation of the draft standard.

25. Standards library	A Standards Data Centre is available where one can research on published standards and/or purchase copies of standards.	Most standards sold to the public are photocopies only which does not speak well of the NSB.
26. Advice services or publications	The NSB has a standards and Conformance portal where advice on new standards and publications are posted. It also publishes electronically once every quarter a Standards Bulletin on activities of the Bureau.	
27. Trainings	Most trainings conducted are on standards implementation and not on the standards per se.	Trainings on newly published standards are conducted only on request.
28. Dissemination materials (leaflets, booklets, etc.)	Limited printed materials are available but the BPS Bureau has a Standards and Conformance Portal where information on newly published standards is made available.	Very limited printed promotional materials about the agency and its services.
29. Governance and decision-making autonomy	Governance and decision-making on what standards to develop are all made by the BPS Director and the Executive Committee. Decisions on international travels for participation in various fora are made by higher authorities.	BPS is not autonomous in decision-making.
30. Civil society contribution to governance	Civil society is involved in standards deliberation but not in governance of the NSB.	BPS has no governing nor advisory committee where civil society contributes to governance of the NSB.
31. Financial structure and independency	All revenue generated from services provided goes to the national treasury and the NSB in turn gets an annual budget from the national government.	Membership dues to international organizations paid by the Department of Foreign Affairs.
32. Size adequacy	Out of a total of 62 personnel in BPS, 11 are in standards development.	More than 50% are doing testing and certification of regulated products . Standards development staff is less than 20% of the total number of personnel in the NSB.
33. Annual budget	USD 880,000	Very small compared to other NSBs

ACCREDITATION		
Benchmark Criteria	Philippine Situation	Gap Analysis
1. Legal Framework – National Accreditation Act and other relevant legislation		
1.1 Existence of a National Accreditation Act	At least three (3) issuances namely: RA 9236, EO 802 and RA 9711 mention the accreditation body in the Department of Trade & Industry as the national accreditation body. EO 802 strengthens and recognizes the PAO as the NAB. Republic Act 10068 was also issued naming BAFPS as AB for organic CBs. Another issuance RA 9997 vests the NCMF as accreditation body for halal certifying bodies.	The existence of several bodies offering accreditation services shows there is no National Accreditation Act (NAA). An NAA is usually issued to avoid recognition complications and unnecessary costs attendant to international memberships.
1.2 Defines and develops the National Accreditation Body	Somewhat but since there is no provision of budget to the NAB in the three issuances, it is not possible for the NAB to develop.	The role of the NAB in the national quality system should be clearly defined and sources of operating funds identified.
1.3 Are there any other organisations in charge of accreditation?	Yes. The following agencies also offer accreditation services: <ul style="list-style-type: none"> • Bureau of Agriculture and Fisheries Product (BAFPS) Standards for Organic CBs • Food & Drug Administration for private testing laboratories (FDA) • National Commission for Muslim Filipinos (NCMF) for halal certifying bodies 	Having another body to solely accredit organic certifying bodies will result in inability to leverage on expertise present in the NAB. FDAs' accreditation of private testing laboratories duplicates what PAO does.
1.4 Existence of a National Accreditation Policy/ Strategy	Extremely limited. Only on accreditation of government testing laboratories where these were given one year from issuance of the EO to seek PAO accreditation.	No National Accreditation Policy except that policy where government testing laboratories were given one year from issuance of the EO to seek PAO accreditation.
2. National Accreditation Body	Philippine Accreditation Office Website: www.pao-dti.gov.ph	
2.1 The National Accreditation Body is established according to best international practices, i.e. conformance with ISO 17011	Yes, based on its having passed the peer evaluations of the PAC and APLAC and subsequent membership in the PAC and IAF MLA; APLAC and ILAC MRAs.	Of late the number of personnel in the AB has decreased by 33% since its re-entry into the APLAC/ILAC MRA in 2009. This greatly affects NAB's ability to adhere to assessment schedules.

2.2.1 Testing and calibration laboratories according to ISO/IEC 17025	Yes, the NAB has accredited 169 testing and calibration laboratories.	The number of accredited laboratories is only a small percentage of the total number of laboratories operating nationwide based on information gathered from the survey.
2.2.2 NAB competence on ISO/IEC 17025	Limited. Quite difficult getting services of experts, technical and lead assessors for scopes being applied for accreditation.	There is still a lack of lead assessors as these are mostly PAO personnel. Due to limited number of assessors in the pool, assessment teams cannot be constituted quickly to respond to assessment needs.
2.2.3 Inspection Bodies according to ISO/IEC 17020	Yes. The NAB has accredited 2 inspection bodies.	
2.2.4 NAB competence on ISO/IEC 17020	Limited. Quite difficult getting services of experts, technical and lead assessors for scope being applied for accreditation.	
2.2.5 Certifying Bodies for Quality Management Systems according to ISO/IEC 17021	Yes, the NAB has accredited 5 QMS CBs.	There are other CBs operating in the country with overseas accreditation and not PAO.
2.2.6 Certifying Bodies for Environmental Management Systems according to ISO/IEC 17021	Yes, the NAB has accredited 2 EMS CBs	There are other CBs operating in the country with overseas accreditation and not PAO.
2.2.7 NAB competence on ISO/IEC 17021	Limited. Quite difficult getting services of experts, technical and lead assessors for scope being applied for accreditation.	It's not easy to get experts for the CBs witnessed audits.
2.2.8 Certifying Bodies for Product according to ISO Guide 65	Yes, but no accredited Product CB at the moment.	
2.2.9 NAB competence on ISO Guide 65	Limited. Quite difficult getting services of experts, technical and lead assessors for scope being applied for accreditation.	There is a lack of lead assessors and experts.
2.2.10 Certifying Bodies for Personnel Certification according to ISO/IEC 17024	No.	No capability yet.

2.2.12 Medical laboratories in accordance with ISO 15189	Yes. Three medical testing laboratories accredited to ISO 15189.	
2.2.13 National Accreditation Body Competence on ISO 15189	Limited. Quite difficult getting services of experts, technical and lead assessors for scopes being applied for accreditation.	
2.2.14 Proficiency testing schemes in accordance with the requirements of ISO Guide 43-1	None.	No capability yet.
2.2.15 NAB on competence on ISO Guide 43-1	None.	
2.2.16 Reference Material Producers in accordance with ISO Guide 34	None.	No capability.
2.2.17 NAB competence on ISO	None.	
2.3 Number of Technical Committees/Working Groups	Four.	
2.3.1 Number of Technical Committees/Working Groups per GDP	6 per USD2,140	
2.4 Access to expertise: estimated pool of entities and experts	15 experts 32 technical assessors 7 lead assessors	Not enough members in the pool, giving rise to difficulty in constituting assessment teams.
2.5 Overall accredited laboratories for trade related key economic sectors	78 laboratories Food, agricultural, and mineral products with laboratories for food having the most number.	No accredited laboratories for antibiotic residues.
2.5.1 Accredited laboratories for regulated products	12 accredited laboratories for regulated products	There are only 12 laboratories for regulated products but each laboratory has numerous scopes.
2.5.2 Major export products	Electronics, agriculture & food, minerals, and automotive products	There is a need for high technical level calibration for electronics, and antibiotic residues testing lab for agriculture and food.
2.6 Overall accredited conformity assessment bodies for trade related key economic sectors	78 accredited laboratories Food, agricultural, fishery and mineral products with food laboratories having the most number	The official laboratory of the DA for contaminant has not started with its tests for nitrofurans and chloramphenicol. The NSRI of UP has just acquired LC-MS. Within 2012 it will be capable of conducting tests for malachite green and even conduct proficiency tests.

3. Recognition by and participation in regional and international organizations		
3.1 Signatory of PAC, IAF, APLAC, - MLA	Yes, signatory to QMS & EMS MLA in PAC & IAF; and calibration & testing MRA in APLAC & ILAC.	Not a signatory yet for medical testing lab and inspection body accreditations.
3.2 Membership in international accreditation organisations (i.e. ILAC and IAF) Other International body(ies)	Yes, Full member in IAF and ILAC No	Attendance even of one delegate in members' general assembly and plenary meetings is inconsistent due sometimes to budgetary constraints or Department's travel policy.
3.3 Participation in international accreditation organizations TCs/WGs	None.	
3.3.1 International Laboratory Accreditation Cooperation	None.	Not a member due to inconsistent attendance.
3.3.2 International Accreditation Forum (IAF)	None.	Not a member due to inconsistent attendance.
3.4 Membership in regional accreditation organizations (e.g. APLAC, PAC, etc.)	Yes, full member of APLAC and PAC	As full member, inconsistent in attending general assemblies and plenary meetings.
3.5 Participation in regional accreditation organizations TCs/WGs	Two	Meetings of TCs/WGs are held back to back with GA or plenary meetings and sometimes simultaneously so some meetings are not attended.
3.5.1 Asia Pacific Laboratory Accreditation Cooperation (APLAC)	Two (Technical Committee and PT)	Not all TCs/WGs are participated in as usually only one participant is sent per meeting.
3.5.2 Pacific Accreditation Cooperation (PAC)	Two (Technical Committee and Developing Programs Committee)	Not all TCs/WGs are participated in as usually only one participant is sent per meeting.
3.6 Source of funding for international/regional organisations membership fees and participation.	Government: DFA for membership fees Government-approved budget for the agency	Funds for participation coming from government budget are insufficient to enable participation in all TCs/WGs.
3.7 Other cooperation agreements	None	

4. Information and dissemination		
4.1 Develops services for industry		
4.1.1 Consulting services	No.	No consulting services yet.
4.1.2 Trainings/seminars	Yes.	Awareness seminars.
4.2 Develops relationship with relevant stakeholders	Yes.	Need to improve relationship with other NQI components.
4.2.1 Participation in Standardization/ Development of Guidelines and accreditation Criteria	Extremely limited, such as commenting on ISO standards being circulated	
4.2.2 Involvement of stakeholders in accreditation guidelines and criteria formulation	Fair. Stakeholders are represented in the PAO Council.	Active participation of all sector representatives
4.3 Develops raising awareness and dissemination activities – offline and online tools	Yes.	Very limited use of online and offline tools
4.3.1 Develops online tools to promote the corporate image and services	Yes, but integrated with DTI website	Needs to improve accessibility and user-friendliness of PAO website
4.3.2 Dissemination materials (leaflets, booklets, etc...)	Yes, but very limited	Needs to improve quality of promotional materials
5. Institutional setup		
5.1 Governance and decision-making autonomy	Governmental body	Not much decision-making autonomy.
5.2 Contribution of the other NQI components to NAB governance	Extremely limited	Needs to involve NQI components in NAB governance
5.3 Financial structure and independency	Completely dependent limited government funding	
5.4 Size adequacy	No. of employees: 8 (at present)	Some vacant positions are not filled up.
5.5 Budget adequacy	Annual budget: USD110,000	The budget of about Php 5 million is not sufficient to fund all necessary activities of the accreditation body.

Appendix 2: Metrology Benchmark Analysis

Criterion 1. Legal framework supporting metrology														
Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
1.1 Existence of a legal framework that defines the metrological infrastructure, including the national and international tasks of the National Metrology Institute (NMI)	0	4	4	4	4		4	4	4		4	4	4	4
1.2 Adequacy of the legal framework regarding international requirements and best practices	0	4	0	4	4		4	4	4		4	4	0	4
1.3 Are there any other laws defining metrological responsibilities (e.g., for national time, radiation, metrology in chemistry, legal metrology, etc.)?	0	Yes	Yes	4			Yes	No	No		No	No	Yes	Yes
1.4 Besides the NMI and the bodies named under 1.3 are there other organizations performing national metrology activities not defined in any law?	4	0	4	0	4		2		4		4	3	4	4
1.5 Existence of a national metrology policy or strategy (e.g., a 10-year master plan)	0	4	0	0	4		3	3	4		No	0	0	4

Criterion 2. Metrology activities														
Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
2.1 National Metrology Institute (see list* below)														
2.2 NMI is established according to best international practices and guidelines by International Committee for Weights and Measures and International Bureau of Weights and Measures	0	4	0	4	4		4	4	4		4	4	4	4
2.3 Number of Calibration and Measurement Capabilities registered in International Bureau of Weights and Measures key comparison database	a: 21 b: 79 c: 7 d: 15 e: 8 f: 6 g: 4 h: 4 i: j: 140	a: 21 b: 79 c: 7 d: 15 e: 8 f: 6 g: 4 h: 4 i: j: 140		a: 0 b: 139 c: 37 d: 25 e: 40 f: 0 g: 65 h: 13 i: 0 j: 319	a: 313 b: 25 c: 30 d: 5 e: 11 f: 6 g: 11 h: 6 i: j: 390	a: 9 b: 118 c: 4 d: 69 e: 3 f: 38 g: 17 h: 0 i: 22 j: 280		a: 0 b: 54 c: 0 d: 24 e: 0 f: 0 g: 0 h: 0 i: 0 j: 78	a: 0 b: 132 c: 0 d: 45 e: 0 f: 0 g: 27 h: 0 i: 0 j: 204	a: 0 b: 6 c: 0 d: 19 e: 0 f: 0 g: 0 h: 0 i: 0 j: 25; 10 in process	a: 132 b: 45 c: 27 d: 204	a: 76 b: 263 c: 92 d: 209 e: 74 f: 69 g: 25 h: 25 i: j:	a: 2 b: 2 c: 2 d: 22 e: f: g: h: i: j: 24	
2.4 Number of international intercomparisons registered in key comparison database	a: 24 b: 6 c: 8 d: 8 e: f: g: 9 h: 1 i: j: 56	a: 4 b: 13 c: 10 d: 13 e: 3 f: 2 g: 10 h: 1 i: j: 58	a: 0 b: 5 c: 1 d: 2 e: 0 f: g: 4 h: 0 i: 0 j: 13	a: 3 b: 29 c: 12 d: 26 e: 21 f: 0 g: 17 h: 1 i: 6 j: 115	a: 5 b: 11 c: 12 d: 23 e: 3 f: g: 10 h: 1 i: j: 65	a: b: 4 c: 7 d: 11 e: f: g: 4 h: 1 i: j: 29	a: 4 b: 22 c: 11 d: 19 e: 3 f: 26 g: 2 h: 1 i: 15 j: 103	a: 0 b: 3 c: 2 d: 11 e: 0 f: 0 g: 0 h: 0 i: 0 j: 16	a: 0 b: 0 c: 0 d: 24 e: 0 f: 0 g: 1 h: 0 i: 0 j: 25	a: 0 b: 15 c: 0 d: 13 e: 0 f: 0 g: 1 h: 0 i: 0 j: 29	a: 0 b: 4 c: 2 d: 14 e: 0 f: 0 g: 1 h: 0 i: 1 j: 22	a: 0 b: 15 c: 0 d: 13 e: 0 f: 0 g: 1 h: 0 i: 0 j: 29	a: 22 b: 82 c: 50 d: 134 e: 32 f: 134 g: 15 h: 1 i: 36 j: 510	a: 1 b: 4 c: 6 d: 26 e: 0 f: 3 g: 4 h: 1 i: 1 j: 46
2.5 Number of scopes accredited by an accreditation body that is a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement	None	None	34	None	None		None	3	None		None	0	0	3
2.6 Is metrology in chemistry institutionalized?	4	4	0	4	4		2	4	4		2	4	4	4

***List of National Metrology Institutes**

Indonesia: Puslit KIM-LIPI (Research Centre for Calibration, Instrumentation and Metrology - Indonesian Institute of Sciences)

Malaysia: National Metrology Laboratory

Philippines: National Metrology Laboratory

Singapore: National Metrology Center

Thailand: National Metrology Institute of Thailand

Vietnam: Vietnam Metrology Institute

Argentina: Instituto Nacional de Tecnología Industrial-INTI

Colombia: NMI of Colombia

Costa Rica: LACOMET

Peru: Servicio Nacional de Metrología SNM (in INDECOPI)

Uruguay: Laboratorio Tecnológico del Uruguay

Germany: Physikalisch-Technische Bundesanstalt (PTB)

Egypt: National Institute for Standards

Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
2.7 Dissemination of metrology in chemistry as a reference material provider	0	4	0	4	0		4		0		4	0	4	4
2.8 Through traceable values (eg ft PTs)	0	4	0	4	0		4		0		4	4	4	4
2.9 International recognition (CMC/ accreditation) As a reference material provider for (ISO guide 34)?	0	0	0	0	0		0		0		0	0	4	4
2.10 International recognition (CMC/ accreditation) as a PT material provider (ISO/IEC 17043)?	0	0	0	0	0		4		0		0	4	0	4
2.11 Responsibilities for legal metrology are with:	Another government body	NMI	NMB	Another government body	Another government body		NMI and other body	Another government body	NMI & subcontracted to public or private bodies		NMI, other body, & subcontracted to public/private	Another government body	NMI, other body, & subcontracted to public/private	Another government body
2.12 Technical regulations in legal metrology are harmonized and follow international best practice, e. g. recommendations from the International Organization of Legal Metrology	2	4	1	4	4		2		2		2	4	4	3
2.13 Number of accredited calibration laboratories: Thereof international accreditations (under International Laboratory Accreditation Cooperation or International Accreditation Forum Mutual Recognition Arrangement or regional Mutual Recognition Arrangements or MLAs)	121	50	21	72	150		30	0	15		15	4	450	273 E G A C
2.14 Coordination at technical level between NMI and accredited calibration laboratories (e.g., coordination of services provided between NMI and accredited calibration laboratories)	3	4	2	2	4		3	2	2		3	4	4	2

Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
2.15 Coordination of services provided between NMI and accredited calibration laboratories		4	2	3	4		4	4	4		2	4	4	2
2.16 Availability of metrological services for industry in trade related key economic sectors		4	2	4	4		4	3	3		3	3	4	3
2.17 Do the available metrological services meet the requirements of industry in trade related key economic sectors		4		4	4		4	3	3		3	4	4	3
Criterion 3. The participation of the metrology body in regional and international organizations														
3.1 Member of the Metre Convention	4	4	2	4	4		4	0	2		2	4	4	4
3.2 Signatory of International Committee for Weights and Measures Mutual Recognition Arrangement	4	4	4	4	4		4	0	4		4	4	4	4
3.3 Membership in International Organization of Legal Metrology	4	2	0	4	4		2	0	2		2	2	4	4
3.4 Participation in international technical working groups	0	4	0	4	4		4		0		0		4	1
3.5 International Committee for Weights and Measures	0	4	0	4	4		3		0		0	1	all	1
3.6 International Organization of Legal Metrology Number of technical committees and subcommittees	0	0	0				0		0		0	0	all	0
3.7 Membership in regional metrology bodies (e.g. APMP, APLMF, SIM)	APMP APLMF	APMP APLMF	APMP APLMF	APMP	APMP		SIM-Full	SIM-Full	SIM-Full		SIM-Full	SIM-Full	EURAMET COOMET	AFRIMET, EURAMET, APMP
3.8 Participation in the technical committees or working groups of regional metrology organizations	APMP; KIM-LIPI in all TCs, except TCQM (RCChem) and TCRI	APMP: 8	APMP:6; APLMF: no regular participation; ACCSQ:1	APMP: 11	APMP: 12		SIM: all working groups	SIM: 6 working groups	5		SIM: 10 working groups	SIM: 8	EURAMET: all TCs COOMET: most or all TCs	AFRIMET: 6 EURAMET: 4

Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
3.9 Source of funding for membership fees and participation in international or regional bodies	3	4	1	4	4		4	3	2		2	4	4	4
Criterion 4. The information-gathering and dissemination activities of the metrology body														
4.1 Provides consulting services, e.g. metrology mapping, technical assistance, demand analysis	4	4	0	4	4		4	4	4		4	4	4	4
4.2 Offers training or seminars	4	4	1	4	4		4	4	4		4	4	4	4
4.3 Coordinates national intercomparisons with calibration laboratories or other proficiency testing schemes	4	4	2	4	4		4	4	4		4	4	4	4
4.4 Contributes to standardization	2	4	0	3	3		4	2	2		1	2	4	3
4.5 Participates in technical regulations		4	0	2	4		3		4		3	2	4	2
4.6 Participates in the accreditation of calibration laboratories and test laboratories	1	4	0	3	4		2	3	3		4	4	4	4
4.7 Develops online tools to promote the corporate image and services	0	4	1	4	4		4	0	0		0	0	4	4
4.8 Develops materials for dissemination (leaflets, booklets)	0	4	2	4	4		4	4	4		4	0	4	4
Criterion 5. Institutional setup of the national metrology body														
5.1 Governance and decision-making autonomy	1	4	3	1	0		4	4	4		2	2	4	0
5.2 Contribution of stakeholders (especially private sector and industry) and other NQI components to NMI governance (e.g. metrology council, board of directors, etc.)	1	4	0	1	4		4	2	2		2	3	3	4
5.3 Funding structure of NMI PF = Public funding CS = Commercial services	PF: 99-75% CS: 50%	PF: 99-75% CS: 50-10%	PF: 100%; CS: 75%-50% Donor:10%	PF: 99%-75% CS: 50%-10%	PF: 100%		PF: 75%-60% CS: 50%-10%	PF: 100%	PF: 100%		PF: 75%-60%; CS:100% Donors:10%	PF: 75%-60% CS: 50%-10%	PF: 100%; CS: 10% Donors: 10%	PF: 75%-50% CS: 50%-10%

Indicators	Southeast Asia						Latin America						Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Mexico	Peru	Uruguay	Germany	Egypt
5.4 Do you consider the existing funding sufficient for a sustainable development of the NMI to satisfy the national needs?	No	Yes	No	Yes	Yes		Yes	Fully	No. Facilities need to be upgraded (lab infrastructure and renovation of buildings).		Fully, only for operating costs	Not fully	Yes	No
5.5 Adequate human resources (TS = Technical staff)	78 TS not indicated	100; TS = 87	26; TS = 23	75; TS = 69	166; TS = 110		400; TS = 100	26; TS = 22			34; TS = 32	400; TS = 20	2,000 TS = 1,400	800; TS = 200
5.6 Adequate budget (in USD)	2.6 million	4 million	0.33 million	7 million	10 million		20 million	2.6 million			1 million	0.6 million	208 million	7 million

Appendix 3: Accreditation Benchmark Analysis

Criterion 1. Legal framework supporting accreditation													
Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
1.1 Existence of a national accreditation act	0	4	0	4	4	4	4	4	4	4	4	4	4
1.2 Law defines and develops the national accreditation body		4	4	4	4	4	4	4	4	4	4	4	4
1.3 Are there any other organizations in charge of accreditation?	4	4	0	4	0	4	0	4	0	0	0	0	0
1.4 Besides the NMI and the bodies named under 1.3 are there other organizations performing national metrology activities not defined in any law?	4	0	4	0	4		2		4	4	3	4	4
1.5 Existence of a national accreditation policy or strategy	0	4	0	4	4		4	4	4		4	3	4
Criterion 2. Accreditation activities													
2.1 National accreditation body (see list* below)													
2.2 Establishment of the national accreditation body according to best international practices, i.e., conformance with ISO 17011	2	4	2	4	2	4	4	4	4	4	4	4	4
2.3 Testing and calibration laboratories according to ISO/IEC 17025	4	4	4	4	4	4	4	4	4	4	4	4	4
2.4 National accreditation body competence on ISO/IEC 17025	4	4	2	4	4	4	4	3	4	3	4	4	4

*List of National Accreditation Bodies

Indonesia: Komite Akreditasi Nasional (KAN)
 Malaysia: Standards Malaysia (SM)
 Philippines: Philippine Accreditation Office (PAO)
 Singapore: SAC
 Thailand: NSC-ONAC
 Vietnam: BOA

Argentina: Organismo Argentino De Acreditación
 Colombia: ONAC - Colombian National Accreditation Body
 Costa Rica: Ente Costarricense de Acreditación
 Peru: INDECOPI-SNA
 Germany: DAkkS
 Egypt: EGAC

Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
2.5 Inspection bodies according to ISO/IEC 17020	4	4	4	4	4	4	4	4	4	4	0	4	4
2.6 National accreditation body competence on ISO/IEC 17020	4	4	2	4	4	4	3	4	4	2	0	4	4
2.7 Certifying bodies for Quality Management Systems according to ISO/IEC 17021	4	4	4	4	4	4	4	4	4	4	4	4	4
2.8 Certifying bodies for Environmental Management Systems according to ISO/IEC 17021	4	4	4	4	4	0	4	4	4	0	4	4	4
2.9 National accreditation body competence on ISO/IEC 17021	4	4	4	4	4	4	4	4	4	3	4	4	4
2.10 Certifying bodies for product certification according to ISO Guide 65	4	4	0	4	4	0	4	4	4	4	4	4	0
2.11 National accreditation body competence on ISO Guide 65	4	4	2	4	4	0	4	4	4	2	3	4	4
2.12 Certifying bodies for person certification according to ISO/IEC 17024	4	0	0	0	0	0	4	4	4	4	0	4	0
2.13 National accreditation body competence on ISO/IEC 17024	4	0	0	0	0	0	4	4	4	0	4	4	4
2.14 Medical laboratories in accordance with ISO 15189	4	4	4	4	4	0	4	4	4	0	4	4	4
2.15 National accreditation body competence on ISO 15189	4	4	4	4	4	0	3	4		1	3	4	
2.16 Proficiency testing schemes in accordance with the requirements of ISO Guide 43-1	0	0	0	0	4	0	4	4		0	0	4	0
2.17 National accreditation body competence on ISO Guide 43-1	0	0	0	0	0	0	3	3			0	3	0
2.18 Reference material producers in accordance with ISO Guide 34	0	0	0	0	0	0	0	0	0	0	0	4	0
2.19 National accreditation body competence on ISO Guide 34	0	0	0	0	0	0		3		2	0	3	0
2.20 Number of technical committees or working groups per GDP								1		8		27	0
2.21 Access to expertise – estimated pool of entities and experts	4	4	2	4	4	4	4	4	4	4	4	4	27 ¹
2.22 Overall accredited laboratories for trade-related key economic sectors	4	4	3	4	4	3							

¹Technical staff

Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
2.23 Regulated products laboratories for regulated products	3	4	3	4	3	3	2	2	3	2	3	3	
2.24 Major export products	4	4	2	4	4	4	2	2	3	2	3	3	
2.25 Overall accredited conformity assessment bodies for trade related key economic sectors ³	4	4	4	4	4	4	3	4	3	2	3	3	
Criterion 3. The participation of the accreditation body in regional and international organizations													
3.1 Signatory of International Accreditation Forum – MLA	4	4	4	4	4	4	4	0	4	4	4	4	4
3.2 Membership in international accreditation organizations (i.e., International Laboratory Accreditation Cooperation and International Accreditation Forum)	4	4	4 ILAC IAF	4	4	4	4	4 ILAC IAF	4	4 ILAC -AM IAF - M	4	4 ILAC IAF	4 ILAC IAF
3.3 International Laboratory Accreditation Cooperation (ILAC)	4	2	0					1	3	0		5	n/a
3.4 International Accreditation Forum (IAF)	2	2	0	2	3	1		1		0		3	n/a
3.5 Membership in regional accreditation organizations (e.g. APLAC, PAC) Regional body or bodies	4	4	4	4	4	4	4	4	4	4 APLAC IAAC	4	4	4
3.6 Asia Pacific Laboratory Accreditation Cooperation (APLAC)	3	3	2	3	3	1				0			n/a
3.7 Pacific Accreditation Cooperation (PAC)	3	3	2	2	3	1				0			n/a
3.8 Source of funding for membership fees and participation in regional or international organizations	2	3	1	4	4	3	4	2	4	2		4	3
3.9 Other cooperation agreements										IAAC	2	D-A CH- LI	
Criterion 4. The information-gathering and dissemination activities of the accreditation body													
4.1 Develops consulting services	2	2	0	2	2	0	0	0	0	0	0	0	0
4.2 Provides training or seminars	4	4	4	4	4	4	4	4	4	4	4	4	4
4.3 Participates in standardization or the development of guidelines and accreditation criteria	4	4	1				4	3	4	3	3	3	
4.4 Involves stakeholders in accreditation guidelines and criteria formulation Continues to consult and get feedback from relevant stakeholders for the proper functioning of the accreditation body			3				4	2	4	3	4	4	

Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
4.5 Develops online tools to promote the corporate image and services	4	4	4	4	4	4	4	4	4	0	4	4	4
4.6 Disseminates materials (leaflets, booklets, etc.)	3	4	2	4	4	3	4	4	4	4		4	0
Criterion 5. Institutional set-up of the national accreditation body													
5.1 Governance and decision-making autonomy	2	4	2	4	2	2	4	4	2	0			2
5.2 Contribution of the other NQI components to governing the national accreditation body	2	3	1	3	2	1	4	4	3	2		1	2
5.3 Financial structure and independence PF = Public funding CS = Commercial services MF = Membership fees Ds = Donors	PF: 100%	PF: 100%	PF: 100% MF:100%		PF: 100%	PF: 20%	PF: <9%; MF: <9% CS: 99%-75%; Ds:<9%	PF: 19%-10% MF:<9%; CS: 99%-75%		PF: 100%		PF: 99%-75% MF:100%; CS: <9%	PF: 59%-45% MF:100%; CS: 59%-45%
5.4 Adequate human resources	35	20	8	17	40	20	20 ² 220 ³	25	24	17	3	128	21
5.5 Adequate budget Annual Budget (in USD)		1.4 million	0.12 million		13 million		1.1 million	not declared	0.65 million	0.28 million		28.1 million	0.75 million

²Permanent employees

³Assessors

Appendix 4: Standardization Benchmark Analysis

Criterion 1. Legal framework supporting standardization													
Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
1.1 Existence of a national standardization act	4	4	0	4	4		4	4	4	4		0	
1.2 Law defines and develops the national standards body	4	4	0	4	4		4	4	4	4		0	
1.3 Are there other bodies developing standards?	0	4	0	4	0		4	4	0	0		0	
1.4 Clear differentiation between technical regulation and standardization	4	4	4	4	2		4	4	4	4		4	
1.5 Enables the reference to voluntary standards to support technical regulations	4	4	4	4	4		4	4	4	4		4	
1.6 Enables and defines the participation of civil society in the development of standards	4	4	4	4	4		4	4	4	4		4	
1.7 Existence of a national standardization policy or strategy	0	4	2	4	4		4	4	0	4		4	
Criterion 2. Standardization activities													
Indicators	Standardization Activities												
	BSN	SM	BPS	SPRING	TISI	STAMEQ	IRAM	ICONTEC	INTECO	INDECOPI	UNIT	DIN	EOS
2.1 National standardization body													
2.2 Standardization practice in line with World Trade Organization Technical Barriers to Trade Code of Good Practice for the Preparation, Adoption and Application of Standards	4	4	4	4	4	4	4	4	4	4		4	
2.3 Internal rules and procedures in line with ISO/IEC directives	4	4	2	4	4	4	4	4	4	4		4	

Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
2.4 Are there national technical committees for the key economic sectors?	4	4	2	4	4	4	4	4	4	4		4	
2.5 Balanced participation of stakeholders in national technical committees	4	4	3	4	3	3	4	4	4	4		4	
2.6 Pursues and increases participation of stakeholders ¹	4	4	3	4	4	4	4	4	3	4		4	
2.7 Clear rules and procedures for the creation and management of national technical committees	4	4	4	4	4	4	4	4	4	4		4	
Criterion 3. The participation of the standardization body in regional and international organizations													
3.1 International Organization for Standardization (ISO)	4	4	4	4	4	4	4	4	4	4		4	
3.2 IEC	4	4	4	4	4	4	4	4	4			4	
3.3 Codex Alimentarius Commission (CAC)	4	4	4	4	4		4	4	4	4		4	4
3.4 International Organization for Standardization (ISO)	P-222 PDC-3	P-258 PDC-3	P-119 PDC-3	P-126 PDC-3	P-273 PDC-3	P-73 PDC-3	P-335 PDC-3	Participant	Participant status: 13 Observer status: 14	Participant status: 20 TC, 3 PDC Observer status: 110 TC 38 SC		Participant status: 720 TC & SC PDC Observer status: 10-15	
3.5 International Electrotechnical Commission	P-18 O-50	P-27 O-77	P-1 O-6	P-10 O-88	P-27 O-52		P-7 O-14	P-4 O-2	Participant status: Observer status: 7			P-178 O-71	P-43 O-7
3.6 Membership in regional standardization bodies	4	4	4	4	4	4	4	4	4	4		4	
3.7 Source of funding for membership fees and participation in regional or international bodies	4	4	2	4	4	4	4	4	4	4		4	3
3.8 Other cooperation agreements													

¹Manufacturers (corporations and SMEs), trade and services providers, sectoral associations/federations/chambers or commerce, national authorities, state-owned companies, quality infrastructure bodies, research centers, academia, and consumers associations.

Criterion 4. The information-gathering and dissemination activities of the standardization body													
Indicators	Southeast Asia						Latin America					Others	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Argentina	Colombia	Costa Rica	Peru	Uruguay	Germany	Egypt
4.1 Develops information and advice services for the implementation of standards	4	4	4	4	4	4	4	4	4	4		4	4
4.2 Availability of online standards catalogue and purchasing of standards	4	4	4	4	4	4	4	4	4	4		4	4
4.3 Availability of online standards process	0	4	2	4	2	4	2	4	0	4		4	0
4.4 Standards library	4	4	4	4	4	4	4	4	4	4		4	4
4.5 Advice services or publications	4	4	4	4	4	4	4	4	4	4		4	4
4.6 Develops awareness-raising and information dissemination activities using offline and online tools	4	4	4	4	4	4	4	4	4	4		4	4
4.7 Training (Y/N - contents)	4	4	0	4	4	2	4	4	4	4		4	4
4.8 Publishes materials for dissemination (leaflets, booklets, etc.)	2	4	2	4	4	2	4	4	4	4		4	4
Criterion 5. Institutional set-up of the national standardization body													
5.1 Governance and decision-making autonomy	2	4	1	4	4		3	3	3	1		4	
5.2 Civil society contribution to governance	1	4	1	4	4		4	4	4	4		4	
5.3 Financial structure and independence PF = Public funding CS = Commercial services MF = Membership fees	PF: 100%; MF: <9% CS: 19%-10%			PF: 99-75% CS: 19-10%			MF: 19%-10% CS: 74-60%	MF: <9% CS: 99-75%	PF: 19-10%; MF: <9% CS: 99-75%; Donors: <9%	PF: 100%		PF: 19-10%; MF: 19%-10% CS: 74%-60%	
5.4 Adequate human resources	272	17	62	20	400		330	354	22	110		330	
5.5 Adequate budget (USD)	9 million	14 million	0.88 million	not declared	13 million		24 million	25 million	0.15 million	0.7 million		82 million	

Appendix 5:

Inventory of Entities

Entities Developing/Adopting Standards			
Name of Entity	Law/Mandate	Services/Schemes Offered	Scope of Services
1. Bureau of Product Standards	RA 4109 RA 7394	Establishment of standards, inspection, testing and certification of products imported into the country	Agriculture, forest, mineral, fish, industrial and all other products for which no standards exist.
2. Bureau of Agriculture & Fisheries Products Standards	RA 8435 RA 7394	Set and implement standards for fresh, primary and secondary processed agriculture and fishery products	Fresh, primary and secondary processed agriculture and fishery products.
3. Food & Drug Administration	RA 9711 RA 7394	Prepare standards for health products, analyze and inspect and accredit private laboratories	Health products, drugs, cosmetics, medical devices
4. Department of Tourism	RA 9593	Formulate & enforce standards for tourism enterprises	Tourism enterprises, resorts, hotels, tour guides
5. Department of Energy	RA 8479	Formulate standards	Petroleum Products
Entities Doing Metrological Activities			
Name of Entity	Law/Mandate	Services/Schemes Offered	Category
1. National Metrology Laboratory (ITDI)	RA 9236	Custodian of Primary standards, calibration of measuring device	Scientific/industrial
2. Bureau of Product Standards	RA 7394	Checking of weights/ quantities as part of product certification scheme	Industrial
3. Provincial/City/ Municipal Treasurer's Office	RA 8479	Calibration & sealing of dispensing pumps	Legal
4. Local Water Utilities Administration Water Districts	PD 198	Verification of Water meters	Legal
5. Manila Water Co. Inc.	MWSS Concession Agreement	Calibration of water meters	Legal

6. Maynilad	MWSS Concession Agreement	Calibration of water meters	Legal
7. National Water Resources Board	Government	Verification of water meters	Legal
8. Manila Electric Company /DistributionUtilities	ERC Resolution 12	Calibration of electric meters	Legal
9. Land Transportation Franchising and Regulatory Board	Government	Calibration of taxi meters	Legal
10. Metals Industry Research & Development Center (MIRDC)	Government	Limit gauges, jigs fixtures, depth gauges, bore gauges, gauge blocks, weighing devices, manometers, voltmeters, ammeters, ohmmeters	Industrial (PAO accredited)
11. DOST IX	RA 3589	Balances	Legal/industrial
12. DOST VII	RA 3589	Balances	Legal/industrial
13. Bureau of Health Devices & Technology	Government	Dosimetry	
14. Applied Calibration & Instrumentation System Inc.	Private	Voltmeters, ammeters	Industrial (PAO accredited)
15. ATS Phil. Corp.	Private	Voltmeters, ammeters	Industrial (PAO accredited)
16. Department of Energy Calibration / Instrumentation & Control Section Lighting and Appliance Testing Laboratory	RA 8479		Industrial (PAO accredited)
17. First Philippines Scales Inc., Metrology Lab	Private	Laboratory and industrial mass standards, weighing devices	Industrial (PAO accredited)
18. Gemarc Enterprises, Inc.	Private	Calibration/verification of balances, weighing scales of batching plants and materials testing apparatus/equipment	Industrial (No PAO accreditation)
19. Grand Base Enterprises and Technical Services	Private	Calibration/verification of balances, weighing scales, and materials testing apparatus/equipment	Industrial (No PAO accreditation)
20. I&E Industrial Systems Services, Inc.	Private	Calibration	Industrial (PAO accredited)
21. Integrated Microelectronics Inc.	Private	Micrometers, calipers, multimeters, temperature recorders, hygrometers, ovens	Industrial (PAO accredited)

22. ITRON, Inc.	Private	Voltmeters, Ammeters, ohmmeters, electric meters	Industrial (PAO accredited)
23. Meralco Calibration and Repair Laboratory	Private	Voltmeters, Ammeters, Ohmmeters	Industrial/legal (PAO accredited)
24. MESCO, Inc.	Private	Dial gauges, height gauges, surface texture, roundness	Industrial (PAO accredited)
25. P. Imes Corp. Calibration Laboratory	Private		Industrial (PAO accredited)
26. Phil. Geoanalytics Calibration and Measurement Laboratory Corp.	Private	Industrial balances, Pressure gauges, transducers, voltmeters, ammeters, ohmmeters	Industrial (PAO accredited)
27. Powerite Phils. Int'l Corp.	Private	Pressure gauges, voltmeters, ammeters, ohmmeters	Industrial (PAO accredited)
28. Precision Measurement Specialist, Inc.	Private	Voltmeters, ammeters, ohmmeters. graphic recording instruments, electric field strength testers	Industrial (PAO accredited)
29. Premier Physic Metrologiie Co.	Private	Pressure gauges, thermometers, autoclaves	Industrial (PAO accredited)
30. Scientific Standards Services, Inc.	Private	Vernier calipers, laboratory and industrial mass standards Dial gauges, force gauges	Industrial (PAO accredited)
31. Schottel Engineering Services	Private	Calibration/verification of balances, weighing scales of batching plants and materials testing apparatus/equipment	Industrial (No PAO accreditation)
32. Siccion Marketing, Inc.	Private	Calibration/verification of balances, weighing scales and materials testing apparatus/equipment	Industrial (No PAO accreditation)
33. Welltech Service Corp.	Private	Vernier calipers, laboratory and industrial balances	Industrial PAO accredited
34. WTZEK Allied & Support Services Inc.	Private	Calibration/verification of balances, weighing scales of batching plants and materials testing apparatus/equipment	Industrial (No PAO accreditation)

Entities Doing Accreditation				
Name of Entity	Law/Mandate	Services Offered	Standards Used	Regional/ International Accreditation
1. Philippine Accreditation Office Dept. of Trade & Industry	EO 802 RA 9236 RA 9711	1.QMS 2.EMS 3.IB 4. Testing & Calibration 5.Medical Testing 6. FSMS 7.HACCP 8. Product	ISO/IEC 17021 ISO/IEC 17021 ISO/IEC 17025 ISO 15189 ISO TS 22003 Codex ISO Guide 65	1.PAC/IAF MLA 2.PAC/IAF MLA 3. None 4. APLAC/ILAC MRAs 5. None 6. None 7. None 8. None
2. Bureau of Agriculture & Fisheries Product Standards	RA 10068	Organic certification bodies	DA Approved Guidelines	None
3. National Commission of Muslim Filipinos	RA 9997	Halal certification bodies	Guidelines still being prepared	None
4. Bureau of Product Standards	RA 8749	Private emission testing centers	DAO 3	None
5. Food and Drug Administration	RA 9711	Testing laboratories	FDA guidelines	None
Entities Doing Certification				
Name of Entity	Law/Mandate	Service(s) Offered	Accredited	
1. Bureau of Product Standards	RA 4109	Product Certification	No	
2. Bureau of Fisheries and Aquatic Resources	RA 8435 RA 8550	Product Certification HACCP Certification	No	
3. National Meat Inspection Service	RA 9296	Product Certification GMP & HACCP	No	
4. Joint Management Committee of FDC, BFAR, BFAD and BETP	Export Development Council Resolution	GMP & HACCP Certification	No	
5. Organic Certification Center of the Philippines	Private	Product Certification (Organic)	DA Approved guidelines (accredited by BAFPS)	
6. AJA Registrars, Inc.	Private	QMS	Yes	
7. Certification Int'l. Phils. Inc.	Private	QMS, EMS, HACCP, FSMS	Yes	
8. SGS Phils.	Private	QMS, EMS	Yes	
9. TUV Rheinland Phils.	Private	QMS	Yes	
10. TUV Sud PSB Phils.	Private	QMS	Yes	

11. Bureau Veritas (BV)	Private	QMS	Yes
12. Det Nors Veritas (DNV)	Private	QMS	Not PAO accredited
13. TUV Nord	Private	QMS	Not PAO accredited
14. Cotecna	Private	QMS	Not PAO accredited
15. International Standards Certification	Private	QMS	Not PAO accredited
16. Bureau of Research and Standards		Personnel Batching plants	No
17. Ulama League of the Philippines	Private	Product certification (Halal)	No
18. Revival and Propagation of Islamic Heritage Foundation	Private	Product certification (Halal)	No
19. Knowledge Institute and Islamic Culture Inc.	Private	Product certification (Halal)	No
20. Ulama Conference of the Phils.	Private	Product certification (Halal)	No
21. Sabiel-al-Muhtadeen Foundation, Inc.	Private	Product certification (Halal)	No
22. National Ulama Council, Inc.	Private	Product certification (Halal)	No
23. Halal Food and Nutrition Council Phil. Inc.	Private	Product certification (Halal)	No
24. Islamic Da'wah Council of the Phils.	Private	Product certification (Halal)	No
25. Muslim Certification Board	Private	Product certification (Halal)	No

Entities Conducting Tests (Excludes Environmental, Medical and Diagnostic Labs)		
Agency Name	Tests Performed	ISO/IEC 17025 Accredited
Agriculture		
Region 1		
NMIS Region 1	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 2		
NMIS Region 2	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 3		
NMIS Region 3	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Philippine Center for Post Harvest Development and Mechanization (Former Bureau of Post harvest research and extension-BPRE)	Microbiology analyses Mycotoxin analyses Physicochemical	No
Region 4		
Bounty Fresh Food, Inc.	Microbiological testing	Yes
Jefcor Laboratories, Inc.	Chemical Testing 1. Residues in food 2. Pesticides 3. Water (Industrial wastes)	Yes
NMIS Region 4	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No

Region 5		
NMIS Region 5	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 6		
NMIS Region 6	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 7		
NMIS Region 7	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 8		
NMIS Region 8	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 9		
NMIS Region 9	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 10		
NMIS Region 10	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No

Region 11		
NMIS Region 11	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
Region 12		
Chemistry and Microbiology Laboratories, DOLE Phils. Inc. Cannery	Chemical Testing Microbiological Testing <ol style="list-style-type: none"> 1. Efficacy tests on biocides 2. Bactericides 3. Food & pharmaceutical products 4. Plant materials 5. potable water & Non potable water 	Yes
NMIS Region 12	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
CARAGA		
NMIS CARAGA	Tests on: <ul style="list-style-type: none"> • Veterinary drug residue • Pathogen reduction • Trichenilla Monitoring • Campylobacterand salmonella • Parasite prevalence 	No
NCR		
Bureau of Animal Industry - Veterinary Biologics Standardization Section	Vaccine quality control test Antigen and Antiserum	No
Bureau of Plant Industry - National Seed Quality Control Services (NSQCS)	Seed analysis Purity Germination Moisture content Seed health Seedborne virus Other seedborne virus Tetrazolium test Vigor test	No

Bureau of Plant Industry National Pesticide Analytical Laboratory (NPAL)	Pesticide residue Fruits & vegetables Tobacco Water Fish Soil Special samples Pesticide formulation	No
National Meat Inspection Services (NMIS)	Organoleptic evaluation physical characteristic pH test standard plate count coliform count bacterial identification sterility test anaerobic bacterial isolation screening test antibiotics ELISA antibiotics meat species identification carotene test bacterial identification (PCR & detection on microplate) pathology water analysis	No
Philippine Coconut Authority (PCA)	Chemical analysis Crude coconut oil/Refined bleached oil/Acid oil Desiccated coconut Coconut shell charcoal Copra	No
Sugar Regulatory Administration	Raw sugar Refined sugar Barium dextrin Dry mixes, food Molasses Agro-industrial products 1. Feeds& Fertilizers 2. Water 3. Wastewater	No
Fertilizer and Pesticide Authority	Fertilizers Pesticides 1. Chemical pesticides 2. Biorational pesticides • Biochemical pest control agents • Microbial pest control agents	No

Consumer Products		
Region 1		
Topcrete Readymix Corporation	Soil and soil aggregates Fine aggregates Coarse aggregates Concrete Concrete hollow blocks Bituminous mix	No
Region 3		
Associated Services and Testing Center		No
Filipino Ready Mix Corporation	Soil and soils aggregates Coarse aggregates Fine aggregates Concrete Concrete hollow blocks Bituminous mix	No
Freysinnet Filipinas Corporation	Coarse aggregates Fine aggregates Concrete	No
Integrated Laboratory Testing Center & Services	Physical, mechanical	No
MCM ECO CHEM Management Corporation	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks 	No
Metro North Ashpalt Mix, Inc.	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Composite aggregates • Concrete • Bituminous materials • Bituminous mix 	No
Pentagon Industrial Dev ^t . & Const. Co. inc.	Physical, mechanical	No
Reliance Concrete Testing Consultancy	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Coarse aggregates • Fine aggregates • Cement • Concrete • Concrete hollow blocks • Asphalt mix(Bituminous mix) 	No

Royal Crown Monarch Ready Mix Trading	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Bituminous mix • Concrete • Concrete hollow blocks 	No
San Jose City – PEO Material Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks 	No
Steel Asia Manufacturing Corporation	Chemical testing 40 steel bars	Yes
SteelAsia Quality Assurance Laboratory	Chemical testing on metals & alloys Mechanical testing on metals & metal products	Yes
Region 4		
ASTECC Materials testing corporation	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Concrete pps • Concrete • Concrete hollow blocks/ masonry • Galvanized iron sheets • Steel materials • Asphalt concrete pavement • Bituminous mix 	No
Cavacon Corporation Materials Testing Laboratory	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Composite aggregates • Concrete • Asphalt 	No
Cavite Testing Center	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates <ol style="list-style-type: none"> 1. Concrete 2. Bituminous mix 3. Concrete Hollow blocks 	No
Chevron Geothermal Philippines Holdings, Inc.	Chemical testing	Yes

The Coca-Cola Export Corporation Philippines Concentrate Plant Laboratory	Chemical Testing on foods Microbiological Testing 1. Microbiological tests on foods and beverages 2. Microbial test of waters, including effluents	Yes
Empire East Landholdings INC. (PRIVATE)		No
Forest Product Research & Development Institute (FPRDI)	Mechanical: Monobloc chairs	No
Formost Asphalt Corporation Lab.	Physical, mechanical tests on: <ul style="list-style-type: none"> • Fine aggregates • Coarse aggregates • Bituminous mix 	No
Hocheng Philippines Corporation Testing Laboratory	Mechanical testing Chemical testing 1. Water closet 2. Lavatory 3. Urinals 4. Ceramics	Yes
I&E Industrial Systems Services, Inc.	Laboratory testing	Yes
Industrial Inspection (Int'l) Inc.	Soil and foundation investigation Non-Destructive testing 1. Site Investigation 2. Soil Mechanics 3. Laboratory Instrumentation and Monitoring	No
Integrated Microelectronics, Inc.	Electronic testing	Yes
Mabuhay Conglomerate Asphalt, Inc.	Physical, mechanical	No
N Precision Construction MTC	Physical, mechanical tests on: <ul style="list-style-type: none"> • Concrete • Concrete hollow blocks • Steel • Fine aggregates • Concrete hollow blocks • Coarse aggregates • Bituminous materials • Bituminous mix • Galvanized steel sheets, wire and coils • Paints • Steel • Curing compound • Thermoplastic paint • Admixture • Water • Reflective sheeting • Verification/calibration • Culvert pipes 	No

PiPlay Inc. - Fabric Technical Laboratory	Chemical testing on textile & related products	Yes
Soil Phil Index Testing, Inc.	Tests on: Soil and soils aggregates Fine aggregates Coarse aggregates Concrete hollow blocks Concrete Asphalt mix In-situ	No
Southpole Aggregates Test	Concrete and aggregates	No
Southrock OUTHROCK Concrete and Dev't Corp.	Concrete and aggregates	No
Tantuco Cons't. & Trading Corp. Testing Center	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Concrete hollow blocks • Concrete 	No
Universal Testing Lab. & Inspection Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Paint • Concrete hollow blocks • Bituminous mix • Epoxy-resins • Chemical admixtures • Galvanized iron sheets and guard rails • Steel bars 	No
Vicmar Construction, Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Coarse aggregates • Fine aggregates • Concrete • Concrete hollow blocks • Bituminous mix 	No
X'Well Testing Services Inc.	Concrete and aggregates	No
Palawan PEO – MTL	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Coarse aggregates • Fine aggregates • Concrete 	No

Region 5		
Ateneo De Naga University	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete hollow blocks • Concrete • Steel 	No
City of Masbate Materials Testing Lab.. (LGU)	Physical, mechanical test on: hollow blocks , soil and soil aggregates	No
Provincial Engineer"s Office-Albay	Physical, mechanical test on Soil and soil aggregates Fine aggregates Concrete Concrete hollow blocks	No
PEO- Albay Materials Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine Aggregates • Coarse Aggregates • Concrete • Concrete Hollow blocks • Asphalt 	No
Sunwest Construction and Dev"t Corp.	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse Aggregates • Cement • Concrete • Concrete Hollow blocks 	No
Region 7		
E.B. Testing Center	Physical, mechanical Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse Aggregates • Cement • Fly ash Concrete • Asphalt mix • Concrete Hollow blocks • Asphaltic materials • Galvanized steel sheets and wires • Water • Thermoplastic paint • Concrete pipes • Weighing scales/apparatus • Miscellaneous materials • Soil/geotechnical investigation • Reflectorized pavement stud • Joint/Pre-molded filler & joint Sealant 	No

Ultimate Lab. Testing Center and Service	Concrete and aggregates	No
Terms Concrete Testing	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Cement • Concrete • Concrete hollow blocks • Bituminous mix • Steel • Asphalt mix 	No
Octagon Concrete Solutions	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Bituminous mix • Bituminous materials 	No
Region 9		
Pagadian City CEO Materials. Testing Laboratory	Test on: <ul style="list-style-type: none"> • Soil and aggregates • Coarse aggregates 	No
PEO-Materials Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and aggregates • Coarse aggregates 	No
Teddie Materials Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Coarse aggregates • Fine aggregates • Concrete • Bituminous mix 	No
Zamboanga Materials Testing Lab.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Composite Aggregates • Cement • Concrete • Concrete Hollow blocks • Bituminous mix • Galvanized Iron sheets • Steel 	No

Zamboanga del Norte Provincial Engineering Office	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Composite aggregates • Cement • Concrete • Concrete hollow blocks • Bituminous mix • Bituminous materials • Steel 	No
Region 10		
Jomi Materials Testing Laboratory	Physical, mechanical	No
LYL Development Corp. MTQCS	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Coarse aggregates • Fine aggregates • Cement • Concrete hollow blocks • Asphalt mix • Steel 	No
Goodwill Materials Testing Lab	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Cement • Bituminous mix • Steel 	No
G & P Builders, Inc.	Physical, mechanical	No
Region 11		
ACCI (Allado Const. Inc.)	Physical, mechanical	No
Davao Analytical Laboratories, Inc.	Tests on: <ul style="list-style-type: none"> • BOD5 • Chloride • Color • Copper • Total • DO • Lead • Oil and Grease • pH • Temperature • TDS • TSS • Total Copper • Iron, • Lead • Manganese • Zinc 	No

Quality Assurance laboratory Holcim Philippines	Chemical - Cement & related products	Yes
Qualitest Solutions & Technologies, Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Asphalt mix • Non- destructive 	No
Safecon Industries, Inc.	Tests on: <ul style="list-style-type: none"> • Coarse aggregates • Fine aggregates • Concrete hollow blocks • Concrete 	No
Universal Multi- Testing Solutions, Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Cement • Concrete • Bituminous mix • Concrete hollow blocks • Steel 	No
Region 12		
North Cotabato Materials. Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Asphalt cement • Asphalt mix 	No
Region 13		
Agusan Del Sur Provincial Provincial Engineering Office Materials testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Bituminous mix • Steel bars 	No
Equiparco Materials Testing Lab		No
Regional Infrastructure Dev't Corp.	Physical, mechanical	No

CAR		
A's Geotechnical & Materials Testing Lab	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Concrete hollow blocks • Bituminous materials • Bituminous mix • Galvanized iron sheets and pipes • Paints • Reinforced concrete pipes • Cement 	No
Baguio City –City Engineers Office Materials Testing Laboratory	Tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Coarse aggregates • Fine aggregates • Cement • Concrete • Concrete hollow blocks • Bituminous mix • Steel bars 	No
BIP Geotechnical & Materials Testing Lab	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Concrete • Asphalt mix • Concrete hollow blocks • Cement • Steel 	No
University of the Cordilleras CEA-SOIL & Matls. Testing Lab	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Steel • Galvanized steel sheets and wires 	No

NCR		
Acculab Calibration Laboratory, Inc.	Tests on: <ul style="list-style-type: none"> • Electronic • Mechanical • Temperature & chamber profiling • Pressure/vacuum • Force/torque • Centrifuges • Balances/scales • Incubators • pH meters • Conductivity meters • Spectrophotometers • Fume hoods • ESD stations • Autoclaves • Dissolution tester • Refractometers 	Yes
Amatest Materials Testing Equip. & Services	Physical, mechanical	No
ARS Testing And Inspection	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Bituminous mix 	No
Associated Services & Testing Center	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Fine aggregates • Concrete hollow blocks • Concrete • Steel • Asphalt mix • Bituminous mix 	No
Bioanalytical Section Clinical Investigation Unit United Laboratories Inc	Chemical testing Pharmaceutical	Yes
Bureau of Health Device & Technology	Chemical Dosimetry	No
Bureau of Product Standards	Appliances Laboratory	Yes

BPS Testing Center	<ol style="list-style-type: none"> 1. Rubber Inner Tube 2. Steel wire nails 3. uPVC Pipes 4. PE pipes 5. PB pipes 6. Bi pipes 7. Wiring Devices 8. Lamp and related devices 9. Chemical laboratory <ul style="list-style-type: none"> • Fire extinguisher • Safety matches • Lighters • Dentrifice • Zinc Carbon Cylindrical • Wires and cables 	No
Calibration/ Instrumentation & Control Section Lighting and Appliance Testing Laboratory Department of Energy	Calibration	Yes
Cement Testing Center	<p>Chemical testing Mechanical testing Tests on:</p> <ul style="list-style-type: none"> • Soil and soils aggregates • Coarse aggregates • Fine aggregates • Cement • Concrete • Bituminous mix • Concrete hollow blocks • Blended hydraulic cement with pozzolan 	Yes
Central Laboratory Universal Robina Corporation-Technology Department	<p>Chemical testing Microbiological testing</p>	Yes
Central Analytical Laboratory, San Miguel Corporation	<p>Chemical testing Microbiological testing</p>	Yes
CHEMPRO Analytical Services Laboratories, Inc.	<p>Chemical testing Microbiological testing</p> <ol style="list-style-type: none"> 1. Biofuel 2. Foods 3. Water 	Yes
Compuserve and Surveying & Dev't. Lab	<p>Physical, mechanical tests on:</p> <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates 	No
Dasmariñas Industrial & Steel Works Corp.	Physical, mechanical	No

Earth Drill Services		No
EiGEN Tech. Corporation		No
EEl Corporation	<p>Tests on:</p> <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Composite aggregates • Concrete • Concrete hollow blocks • Curing compound • Asphalt mix 	No
Energy Research and Testing Laboratory	<p>Electrical</p> <ul style="list-style-type: none"> • Refrigerators • Air conditioners 	Yes
Fine Load Testing Center	<p>Tests on:</p> <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Asphalt/ Bituminous mix • Asphaltic materials 	No
First Cored Independent Testing Center	<p>Tests on:</p> <ul style="list-style-type: none"> • Soil and soil aggregates • Coarse Aggregates • Fine aggregates • Cement • Concrete • Concrete Hollow blocks • Asphalt mix 	No
Flat Glass Testing Laboratory	Flat glass	No
Gemarc Enterprises, Inc.	Physical, mechanical	No
Geotechnics Philippines, Inc. Soils & Materials Testing Laboratory	<p>Mechanical testing</p> <p>Tests on:</p> <ul style="list-style-type: none"> • Concrete • Soils 	Yes
Geoscientific Research & Testing Laboratory	<p>Chemical</p> <ul style="list-style-type: none"> • Fuels • Coals & coke 	Yes
Grand Base Enterprises & Tech. Services	Physical, mechanical	No
IIEE Foundation CFL Testing Laboratory – (safety & performance)	<p>Tests on:</p> <ul style="list-style-type: none"> • CFLS and ballasted lamps • Fluorescent lamps 	No
Imarflex Battery Mfg. Corp.	Tests on: Lead-acid batteries	No
Infra-Geoservices	Physical, mechanical	No

Intertek Testing Services Philippines, Inc.	<p>Microbiological testing</p> <ol style="list-style-type: none"> 1. Food 2. Factory hygiene purpose 3. Non – food/Non-pharmaceutical 4. Water, including effluents 5. Metals and Alloys 6. Metallic coatings and treatment solutions 7. Clays, ceramics and related materials 8. Solvents 9. Paint and related surface coatings 10. Ink, dyes and pigments 11. Plastics 12. Leather and leather products 13. Adhesives and sealants 14. Paper, paperboard & pulp 15. Textile and related products 16. Drugs & pharmaceuticals 17. Waters 18. Miscellaneous materials and products 19. Halal testing 	Yes
Intertek Testing Services Phils.- Labtes	<p>Chemical testing Microbiological testing Mechanical testing</p> <ol style="list-style-type: none"> 1. Automotive testing services 2. Biofuel testing 3. Chemical testing 4. Cosmetics testing 5. CPSIA testing 	Yes
INWELCO Laboratory Services	<p>Mechanical testing Chemical testing Metals and alloys</p> <ol style="list-style-type: none"> 1. Ferrous materials 2. Copper and copper alloys 3. Aluminum and aluminum alloys 	Yes
Lighting & Appliance Testing Laboratory	Electrical : Compact & fluorescent lamp, ballast (Pre-heat/magnetic, electronic)	Yes
Linde Philippines, Inc. (formerly CIGI)	Medical grade oxygen	No
Mac Builders	Tests on: Concrete	
Makati Development Corp (TAGUIG CITY)	<p>Physical, mechanical Tests on:</p> <ul style="list-style-type: none"> • Fine aggregates • Coarse aggregates • Concrete • Concrete hollow blocks • Water • Soil and soil aggregates • Bituminous mix • Concrete pipes • Miscellaneous construction materials 	No

Materials Testing Civil Engineering Lab	Physical, mechanical	No
Matest Lab. Services, Inc. Private Testing Lab	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Cement • Concrete • Concrete hollow blocks • Bituminous materials • Bituminous mix steel • Admixture • In-Situ • Steel 	No
Pacific Concrete Products Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Concrete hollow blocks • Concrete • Bituminous mix 	No
PAG-ASA Steel Works Incorporated	Mechanical Testing: Steel products	Yes
McPHAR Geoservices (PHILIPPINES), INC. Chemistry Division	Chemical testing <ul style="list-style-type: none"> • Rock • Soil 	Yes
MERALCO-Testing Office Chemical Testing Laboratory	Chemical testing on: miscellaneous petroleum products	Yes
MERALCO - Testing Office Mechanical Testing Laboratory	Mechanical testing <ol style="list-style-type: none"> 1. Concrete 2. Metals & metal products 3. Industrial fasteners 	Yes
MESCO Inc., Calibration Laboratory	Calibration	Yes
Metals Industry Research & Development Center (MIRDC)	Chemical Testing Mechanical Testing <ol style="list-style-type: none"> 1. Metals & metal products 2. BI & GI pipes 3. Deformed steel bars 4. Equal-Leg steel angle bars 5. Rerolled steel bars 6. Steel sheets for roofing 7. Steel wires (low carbon) 8. Wire nails 9. LPG cylinders 10. Safety belts 11. Seat belts 	Yes

Metals Industry Research and Development Center (MIRDC) - Instrumentation and Metrology Laboratories Section	<p>Calibration testing</p> <ol style="list-style-type: none"> 1. Limit gauges 2. Jigs, fixtures, cutting tools and components 3. Engineering metrology equipment 4. Machine tools 5. Surface topography 6. Length and angle standards 7. Dimensional Precision Instrument 8. Masses 9. Weighing devices 10. Pressure and vacuum measuring devices 11. Pressure gauge testers 12. Force measuring devices 13. Torque Measuring Devices 14. Testing machines 15. Resistors, resistance boxes and potential dividers 16. Electrical Instrument calibrators 17. Electrical Indicating and recording instruments 18. Bridges, potentiometers, test sets 19. Frequency and time measuring instruments and standards 20. Power supplies 21. Signal sources 22. Calibration of temperature measurement equipment 23. Calibration of ancillary temperature measuring instruments 24. Calibration of clinical thermometers 25. Testing of temperature controlled enclosures 26. Hygrometry 	Yes
PAG-ASA Steel Works, Inc. Quality Assurance Laboratory	<p>Chemical Testing Mechanical Testing</p> <ol style="list-style-type: none"> 1. Metals and alloys 	Yes
Philippine Geoanalytics, Inc.	<p>Tests on:</p> <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Cement • Bituminous mix • Bituminous materials • Steel • Paints • Galvanized iron sheets/wires/pipes • Water • Blended Hydraulic Cement with pozzolan • Pneumatic Tires 	Yes
Philippine Geoanalytics Inc.	<p>Chemical Testing</p> <ol style="list-style-type: none"> 1. Portland cement 2. Other materials 3. Rubber and Rubber Products 4. Metals and Metals Products 5. Aggregates 	Yes

Pilipinas Shell Petroleum Corp.	Physical, mechanical	No
Philippine Textile Research Institute Testing Laboratory	Chemical testing Mechanical testing - Textile & related products	Yes
Powerpoint Battery Mfg. Corp.	Lead-acid batteries	No
Q -Tech Testing Laboratory	Mechanical 1. Ceramic tiles 2. Sanitary wares 3. Flat glass 4. Safety glass for automotives	Yes
Quantum Materials & Inspection Lab. Corp.	Physical, mechanical tests on: <ul style="list-style-type: none"> • Soil and soil aggregates • Fine aggregates • Coarse aggregates • Cement • Concrete • Concrete hollow blocks • Asphalt mix • Steel • Paints • Curing compound • Water • Thermoplastic paint • Admixture • Galvanized steel sheets and wires • Weighing scales • Miscellaneous materials • Epoxy 	No
Readycon Trading & Const. Corp.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Coarse aggregates • Fine aggregates 1. Concrete 2. Cement 3. Bituminous mix 4. Bituminous materials	No
Research & Development Center - Philippine Army	Physical/Mechanical Personnel clothing & equipment	No
Rosterdam Resources	Mechanical <ul style="list-style-type: none"> • Ceramic tiles • Sanitary wares 	Yes
Scaler Enterprises Calibration Services	Physical, mechanical	No
Scientific Environmental & Analytical Laboratory and Services, Inc	Electrical Testing A. Approval test on electrical appliances, accessories and tools B. Approval tests on lamps and related equipment	Yes

SENTROTEK/Sentro sa Pagsusuri, Pagsasanay at Pangangasiwang Pang-Agham at Teknolohiya Corp	Microbiological Testing Chemical Testing 1. Drugs & Medical devices 2. Food & beverages 3. Packaging materials 4. Non-food & pharmaceutical products	Yes
SICCION	Physical, mechanical	No
SOCOR Construction Corporation	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Bituminous mix 	No
Soiltech Arvaza Corporation	Tests on: 1. Concrete compression testing 2. Cement compression testing 3. Compression-flexure testing 4. CBR testing 5. Marshall stability testing 6. Mechanical and electronic balances 7. Pre- and post-stressing jacks 8. Concrete pipe testers 9. Concrete rebound testing 10. Speedy moisture testing	No
Solid Laguna Corporation Testing Laboratory	Electric testing: Approval tests on electrical appliances - Audio & video household - Household appliances (electric fan, flat iron, electric blender, microwave oven, refrigerator, rice cooker, airpot, television, VCD/DVD player, electric toaster & hot plate, washing machine)	Yes
Stanger Philippines, Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates <ul style="list-style-type: none"> A. Concrete B. Concrete Hollow blocks C. Bituminous mix D. Verification/calibration 	No
TÜV Rheinland Philippines, Inc	Electrical testing Approval tests on electrical appliances, accessories and tools Mechanical <ul style="list-style-type: none"> • Heating • Household appliances (electric fan, flat iron, electric blender, microwave oven, refrigerator, rice cooker, airpot, television, VCD/DVD player, electric toaster & hot plate, washing machine) • Ceramic tiles 	

Universal Steel Smelting Corp. Inc.	Tests on: <ul style="list-style-type: none"> • Soil and soils aggregates • Fine aggregates • Coarse aggregates • Cement • Concrete • Asphaltic materials and bituminous mixes • Curing compound • Epoxy • Galvanized iron sheets, wire • Chemical admixtures • Steel bars • Admixture 	No
UST Center for Drug Research, Evaluation and Studies, Inc.	Chemical testing 1. Biological Monitoring 2. Drugs & Pharmaceutical	Yes
Fisheries		
NCR		
Bureau of Fisheries & Aquatic Resources Fish Health Section (FHS)	Biological/bacterial/ histopathology/ molecular parasite examination Bacterial identification Prawn/fry quality assessment Gross/microscopic examination Bacterial count Water sample MBV detection Molecular diagnosis Histopathological examination Physico-chemical analyses Water pH COD BOD TSS Salinity	No
BFAR-Fish Product Testing Laboratory	Chemical analysis <ul style="list-style-type: none"> • Moisture • TBA number • crude protein • NaCl • cyanide • total volatile base nitrogen • total mercury • lead Microbiological analysis <ul style="list-style-type: none"> • coliforms • E. coli • Salmonella • Shigella • <i>Staphylococcus aureus</i> 	No

Food		
Region 1		
DOST Region I	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 2		
DOST Region II	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 3		
DOST Region III	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 4		
Analytical Services Laboratory Technical Services Ginebra San Miguel, Inc.	Chemical testing Microbiological testing	Yes
Coca-Cola Bottlers Philippines, INC. Central Laboratory Services	Chemical testing Microbiological testing	Yes
DOST Region IV	Chemical/Microbiological 1. Foods , Beverages 2. Potable & non-potable water 3. Sewage	Yes
NPI Cabuyao Quality Assurance Laboratory Nestle Philippines, Inc.	Chemical testing microbiological testing 1. Microbiological tests on foods and beverages 2. Microbiological test for factory hygiene purposes 3. Cereals products 4. Dairy products 5. Edible fats and oils 6. Other food products 7. Residues in foods and agricultural materials	Yes
Region 5		
DOST Region V	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 6		
DOST Region VI	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 7		
DOST Region VII	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes

Region 8		
DOST Region VIII	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 9		
DOST Region IX	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 10		
Del Monte Philippines, Inc. Quality Assurance Main Laboratory	Chemical Testing Microbiological Testing (in-house)	Yes
DOST Region X	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 11		
DOST Region XI	Chemical/Microbiological 1. Foods, beverages 2. Potable & non-potable water	Yes
Region 12		
Dole Philippines Inc	Microbiological testing Chemical testing	Yes
DOST Region XII	Chemical /Microbiological 1. Foods, Beverages 2. Potable & Non potable water 3. Halal Testing	Yes
DOST Region XII (Satellite Lab)	Microbiological 1. Foods, Beverages 2. Potable & Non potable water	Yes
CARAGA		
DOST CARAGA	Chemical/ Microbiological 1. Foods , Beverages 2. Potable & Non potable water	Yes
CAR		
DOST Cordillera Administrative Region	Chemical/ Microbiological 1. Foods, Beverages 2. Potable & Non potable water	Yes

NCR		
Advance Food Concepts Manufacturing Inc. (AFCMI Laboratory)	Chemical testing Microbiological testing (in-house) Dairy products Sugar and sugar products Vegetables and vegetable products Vegetable side dish(acidified) Microbiological tests on foods and beverages Microbiological test for factory hygiene purposes Microbial test of waters, including effluents	Yes
Analytical Measurements Research Laboratory Philippine Nuclear Research Institute	Chemical (in house) 1. Foods 2. Water 3. tobacco and tobacco products	Yes
Analytical Services Laboratory (Institute of Chemistry-UP)	Chemical (in house) A. Foods (meat, poultry, vegetables) B. Water C. Miscellaneous materials and products	Yes
Bureau of Animal Industry-CAFAL	Proximate analysis Mineral analysis Feed microscopy Vitamin assay Antibiotics titrimetry	No
Bureau of Animal Industry Mycotoxin & Toxicology Laboratory (M&T Lab)/	Mycotoxin Toxicity test Toxicological test Volatile poisons Non-volatile poisons	No
CHEMPRO Analytical Services Laboratories, Inc.	Chemical testing Microbiological testing 1. Biofuel 2. Foods 3. Water	Yes
D & L Industries, Inc.	Chemical testing	Yes
F.A.S.T. Laboratories	Chemical Testing/Microbiological Testing 1. Cereals products 2. Dairy Products 3. Fish, crustaceans and Moisture 4. Mollusks and derived products 5. Fruit juices, drinks 6. Titratable Acidity 7. Edible fats and oils Fatty 8. Water 9. Potable waters 10. Non potable waters 11. Sewage 12. Effluents and trade wastes 13. Cooling tower 14. Industrial Waters 15. BG. Swimming and spa pools 16. Bread 17. Baked products 18. Four 19. Grains noodles 20. Meat 21. Meat products 22. Food samples 23. Meat samples	

First Philippines Scales Inc. (FPSI)	Calibration lab	Yes
Food & Drug Administration Laboratory Services Division	<p>Chemical Testing Microbiological Testing</p> <ol style="list-style-type: none"> 1. Perfume 2. Drugs and pharmaceuticals 3. Cereals products 4. Dairy Products 5. Edible fats and oils 6. Herbal products 7. Medicinal and veterinary preparations 8. Vitamins 9. Antibiotics 10. Tablets/Capsules/Boluses/For Suspensions/Solutions 11. Ophthalmic/Otic Ointments: 12. Ointments/Creams: 13. Raw materials used in Active Pharmaceutical Ingredients 14. Whitening cream and lotion 15. Whitening gels and solutions 16. Lipstick & Hair dyes 17. hygienic products 	Yes
Food Development Center (FDC)	<p>Chemical Analysis</p> <ol style="list-style-type: none"> 1. Nutritional Components 2. Food Additives/Colors 3. Minerals and Heavy Metals Group 4. Lipid Related Group 5. Mycotoxins 6. Other Analyses <p>Filth Analysis</p> <ol style="list-style-type: none"> A. Baked Goods B. Beverages and Beverage Materials C. Dairy Products D. Fruits and Fruit Products E. Grains and their products F. Miscellaneous G. Nuts and nut products H. Poultry, Meat, Fish and other Marine products I. Snack Foods Products J. Spices and other condiments K. Sugar and sugar products L. Vegetable and vegetable products M. Other services <p>Package testing</p> <ul style="list-style-type: none"> • Bottles • Flexible plastic • Metals • Metal closure • Others 	No

Food Development Center (cont'd.)	<p>Micro analysis</p> <ul style="list-style-type: none"> • Aerobic Plate Count, col/g or col/mL • Aerobic Plate Count, no. of aerobic organisms per gram or mL (Membrane Filtration) • Aerobic Sporeformers Count (Direct Plating), col/g • Air Sampling Using Plate Count Agar • Anaerobic Plate Count, col/g (for all anaerobes) • Anaerobic Plate Count, col/g (for Clostridium sp.) • Anaerobic Sporeformers Count (Direct Plating), col/g • Bacillus cereus Count <ul style="list-style-type: none"> - Presumptive, MPN/g - Confirmatory, MPN/g • Bacillus cereus Count <ul style="list-style-type: none"> - Presumptive, col/g - Confirmatory, col/g • Carbon dioxide and Hydrogen Gas Test (presence/absence only) • Characterization of Spoilage • Microorganisms from Low Acid Canned Foods • Clostridium perfringens Count <ul style="list-style-type: none"> - Presumptive, col/g - Confirmatory, col/g • Clostridium perfringens Count, presumptive (Membrane Filtration) • Coliform Count, MPN/g • Coliform Count, col/g (Direct Plating) • Coliform Count (Membrane Filtration) • Coliforms and E. coli Count (MPN/g) • Commercial Sterility of Foods (Acid and Acidified Foods) • Physical & Sensory evaluation • Physical Evaluation • Sensory evaluation • Label evaluation • Analysis of iron rice premix (IRP) and iron fortified rice(IFR) • Other types of service 	
Food & Nutrition Research Institute (FNRI)	<p>Microbiological Chemical</p> <p>A. Food</p> <p>B. Drugs & pharmaceuticals</p> <p>C. Agricultural products & materials</p>	Yes
GenOSI Central Laboratory	<p>Chemical testing</p> <p>Microbiological testing (In-house)</p>	Yes
Mead Johnson Nutrition Philippines, Inc.	<p>Chemical Testing Microbiological Testing</p> <p>1. Dairy products</p> <p>2. Food for infants & young children</p>	Yes
Philippine Institute of Pure and Applied Chemistry	Chemical Testing	Yes
Qualibet Testing Services Corporation	Chemical Testing	Yes

Research and Analytical Service Laboratory Natural Science Research Institute University of the Philippines	Chemical Testing	Yes
Standards and Testing Division – Physical and Performance Testing Laboratory Industrial Technology Development Institute - DOST	Chemical testing 1. Efficacy tests on biocides 2. Tests on cosmetics, perfumes and essential oils 3. Microbiological tests on foods and beverages 4. Microbiological test on packaging materials 5. Microbiological tests of non-food/non-pharmaceutical products 6. Microbial test of waters, including effluents Mechanical testing 1. Rubber and Rubber Products 2. Plastics and Plastic Products 3. Metal and Metal Products 4. Foods 5. Sugar and sugar products	Yes
Standards and Testing Division Industrial Technology Development Institute - DOST	Chemical Testing Microbiological Testing 1. Waters 2. Miscellaneous materials and products 3. Foods 4. Agricultural Products and Materials 5. Tests on veterinary, pharmaceutical and biological products 6. Efficacy tests on biocides 7. Microbiological tests on foods and beverages 8. Microbiological test on packaging materials 9. Microbiological tests of non-food/non-pharmaceutical products 10. Microbial test of waters, including effluents	Yes
Region 3		
CRL Environmental Corporation	Chemical testing Microbiological testing 1. Drinking water 2. Water for irrigation 3. Water for industrial & steam raising purpose 4. Sewage	Yes
Philippine Recyclers, Inc.	Chemical testing 1. Metals & alloys 2. Industrial waste water	Yes
SGS (Subic Bay), Inc.	Chemical Testing 1. Crude Petroleum 2. Fuels 3. Lubricants	Yes
RCC NOR Quality Control Laboratory	Chemical Testing Mechanical Testing 1. Ores and Minerals 2. Cements, concrete and related products 3. Cement	Yes

Region 4		
MTEC Water Treatment Technologies, Inc.	Water and Wastewater Analysis Pure Water Analysis Micro Analysis	No
Ostrea Mineral Laboratory, Inc.	Chemical 1. Ores, minerals 2. Water, Air, Soil, dust Microbiological 1. Food 2. Beverages	Yes
PG-ENRO Batangas Environment Laboratory	Environmental sampling and testing Drinking water testing Human exposure test	No
Region 7		
Water Laboratory, University of San Carlos	Water	No
Region 8		
Philippine Associated Smelting and Refining Corporation Metallurgical Laboratory Division	Chemical Testing 1. Metals and Alloys 2. Ores and minerals	Yes
ELARSI, Inc.	Chemical/Microbiological 1. Air 2. Sludge 3. Soil	Yes
Energy Development Corporation Chemistry and Isotope Laboratory Section (CILS) Geosciences Department 1. EMD Laboratory Analytical Services 2. LRMD Chemistry Laboratory 3. LGPF EMD Laboratory 4. MGPF Geoservices Chemistry Laboratory 5. MGPF EMD Laboratory 6. SNGPF Geoservices Chemistry Laboratory 7. SNGPF EMD Laboratory 8. BGPF Geoservices Chemistry Laboratory 9. BGPF EMD Laboratory 10. NNGPF EMD Laboratory	Chemical Testing Microbiological Testing <ul style="list-style-type: none"> • Water potable and domestic purposes • Drinking water • Water for irrigation • Waters for industrial steam-raising purposes • Sewage chloride • Industrial waste • Saline waters • Bore waters • Water for aquaculture Oil and Grease • Other waters • Constituents of the environment • Water other than saline waters • Air TSS • Soils • Sediments Boron EMD • 06 Sludges • Solid waste chloride • Leachate procedures SMEWW • Atmospheric 	Yes

McPhar Geoservices (Philippines), Inc. Chemistry Division	Chemical testing	Yes
MESCO Inc., Calibration Laboratory	Calibration Testing 1. Engineering metrology equipment 2. Surface topography 3. Dimensional precision instruments	Yes
Metals Industry Research & Development Center (MIRDC) – Chemical Laboratory Section	Chemical Testing Mechanical Testing 1. Metals & metal products BI & GI pipes 2. Deformed steel bars 3. Equal-Leg steel angle bars 4. Rolled steel bars 5. Steel sheets for roofing 6. Steel wires (low carbon) 7. Wire nails 8. LPG cylinders 9. Safety belts Seat belts	Yes
MWC Quality and Regulation Laboratory Services Manila Water Company, Inc.	Chemical Testing Microbiological testing 1. Drinking water 2. Sewage 3. Industrial waste 4. Saline waters 5. Bore waters 6. Sampling potable & drinking water 7. Aquatic biology of specified water source 8. Microbial test of waters, including effluents	Yes
Mach (Union) Water Lab	ROUTINE TEST <ul style="list-style-type: none"> • Drinking Water Testing • Potability tests (e.g. 13 parameters recommended by DOH) • Bacteriological analyses • Heavy metal analyses • Pesticide and other residue analyses • Environmental Sampling and Testing • Deep well, spring, river, lake and sea water quality including detection of pollutants • Wastewater quality and detection of pollutants (e.g. 7 parameters regulated by DENR) • Pesticide and other residue analyses • Sediments & Soil analysis • Biota analysis (e.g. cells of fish & mussel) • Air quality analysis: Stationary Sources & Ambient Air 	No

SGS Philippines, Inc.	<p>Chemical , Microbiological, Mechanical</p> <ol style="list-style-type: none"> 1. Metals & alloy 2. Ores & Minerals 3. Foods & beverages 4. Residues in food & Agricultural products 5. Potable & non potable water 6. Industrial waste 7. ROHS, WEEE 8. Toys 9. Ceramics 10. Textile & Textile products 11. Micro 12. Paper & paper board 13. Metallic coatings and treatment solutions 14. Ores and minerals 15. Foods 16. Residues in foods and agricultural materials 17. Drugs and pharmaceuticals 18. Agricultural Products and materials 19. Laboratory Reagents 20. Tests on Veterinary Pharmaceutical and biological products 21. Tests on cosmetics, perfumes and essential oils 22. Microbiological tests on foods and beverages 23. Microbial test of waters, including effluents 	Yes
Technical Experts on Environmental Management, Inc. Laboratory	<p>Tests on:</p> <ol style="list-style-type: none"> 1. Organic Analyses 2. Petroleum Hydrocarbon 3. Inorganic Analyses 4. Trace Metals Determination 5. Microbiology 6. Physical Testing Parameters 7. Hazardous Waste Characterization 8. Priority Pollutant Analyses 9. Drinking Water Analyses 10. Sediments 11. Asbestos 12. Building Survey 13. Fiber Identification Survey 14. Fiber Identification 15. Air Equality Monitoring 16. (Fiber Counting) 17. Bulk Sampling 18. Air Analysis 19. Ambient Air Analysis 20. Stack Analysis 	No

Appendix 6: Inventory of NQI-related Legislation and Government Regulatory Practices

Title of Metrology-related Law	Description
Republic Act 2067 (signed 1958), amended by Republic Act 3589 (signed 1963)	This act is known as the Science Act of 1958. It integrates, coordinates, and intensifies scientific and technological research. The act also pertains to the testing and analysis of products and materials and the calibration of weights and measures.
Batas Pambansa Bilang 8 (signed 1978)	This law mandates the Industrial Technology Development Institute of the Department of Science and Technology to establish and maintain the national standards of measurements for five base quantities: mass, length, electric current, temperature, and luminous light intensity. The Philippine Atmospheric, Geophysical and Astronomical Services Administration is the custodian of the national standard for the second.
Executive Order 133 (signed 1987)	This law reorganizes the Department of Trade and Industry and its attached agencies. The Bureau of Product Standards shall, among others, check length, mass, and volume-measuring instruments used in trade and commerce.
Republic Act 7394 (signed 1992)	This act is known as the Consumer Act of the Philippines. In article 62, it requires the testing, calibration, and sealing of all weights and measures used in consumer and consumer-related transactions
Republic Act 9236 (signed 2003)	This act is known as the National Metrology Act of 2003. It establishes a National Measurement Infrastructure System for standards and measurements. It also allows the creation of the National Metrology Board to be chaired by the secretary of Department of Science and Technology. The board shall be composed of the secretaries of the following agencies or their duly authorized representative with the rank of undersecretary as ex-officio members: Department of Trade and Industry; Department of Transportation and Communication; Department of Health; Department of the Interior and Local Government; Department of Justice; Department of Environment and Natural Resources; and Department of Agriculture.
Department of Energy Department Circular 2003-11-010 (invoking Republic Act 8479, otherwise known as the Downstream Oil Industry Deregulation Act of 1998)	This department circular states the rules and regulations governing the business of retailing liquid petroleum products. Section 12 specifies that the calibration and sealing of dispensing pumps and petroleum product transport containers be done by the city or municipal treasurer's office or duly authorized representatives of the Department of Science and Technology - Industrial Technology Development Institute.

Energy Regulatory Commission Resolution 12 series of 2009	This resolution adopts the rules and procedures for the testing and maintenance of electric meters of distribution utilities.
Presidential Decree 198 (signed 1973)	Known as the Local Water Utilities Administration Law, this decree mandates the verification of water meters.
Land Transportation Regulatory and Franchise Board Memo Circular 2009-12	This circular gives the Land Transportation Regulatory and Franchise Board of the Department of Transportation and Communication the authority to adjust taximeters when there are changes in the fare to be charged the riding public.
Title of Standards-related Law	Description
Republic Act 4109 (signed 1964)	This act converts the Division of Standards into the Bureau of Standards (now Bureau of Product Standards) under the Department of Trade and Industry. The bureau is mandated to provide for the establishment of standards for, and inspection of, all agricultural, forest, mineral fish, industrial, and all other products in the Philippines for which no standards have as yet been fixed by law.
Executive Order 546 (signed 1979)	This law creates the Ministry (now Department) of Transportation and Communications, which shall be the primary entity of the executive branch of the government charged with the promotion, development, and regulation of a dependable and coordinated network of transportation and communication systems.
Republic Act 7394 (signed 1992)	This act is known as the Consumer Act of the Philippines. It states that the development and provision of quality and safety standards for consumer products shall be handled by the following departments: Department of Health with respect to food, drugs, cosmetics, devices and substances; Department of Agriculture with respect to products related to agriculture; and the Department of Trade and Industry with respect to other products not specified under the Department of Agriculture and the Department of Health.
Republic Act 8435 (signed 1997)	This act is known as the Agriculture and Fisheries Modernization Act. It creates and authorizes the Bureau of Agriculture and Fisheries Product Standards to formulate standards for fresh, primary, and secondary processed agriculture and fish products. The standards development functions of the specialized agencies have been superseded.
Republic Act 8479 (signed 1998)	Republic Act 8479 authorizes the Oil Industry Standards and Monitoring Division of the Oil Industry and Management Bureau to formulate and implement policies, plans, and programs related to national standards and environmental regulations affecting the quality of fuel and fuel additives and facilities in the downstream oil industry.
Republic Act 9296 (signed 2004)	This act strengthens the meat inspection system of the country. It vests the National Meat Inspection Service with the authority to establish safety and quality standards for meat and meat products.
Republic Act 9711 (signed 2009)	This act strengthens and rationalizes the regulatory capacity of the Bureau of Food and Drugs by establishing adequate testing laboratories and field offices, upgrading its equipment, augmenting its human resource complement, giving authority to retain its income, and renaming it the Food and Drug Administration (FDA). It also authorizes FDA to develop and issue standards and appropriate authorization that would cover establishments, facilities, and health products.

Republic Act 9593 (signed 2009)	This act is known as the Tourism Act of 2009. It declares a national policy for tourism as an engine of investment, employment growth, and national development. It mandates the Department of Tourism to formulate and enforce standards for tourism enterprises.
Title of Accreditation-related Law	Description
Republic Act 9236 (signed 2003)	This act is known as the National Metrology Act. Under it, the laboratory accrediting body attached to the Department of Trade and Industry is hereby strengthened and recognized as the National Accreditation Body (NAB).
Executive Order 802 (signed 2009)	This presidential issuance strengthens and recognizes the Philippine Accreditation Office attached to the Department of Trade and Industry as the NAB.
Republic Act 9711 (signed 2009)	This act is known as the Food and Drug Administration Act. It mandates FDA to issue certificates of compliance with technical requirements to serve as bases for the issuance of appropriate authorization and spot-check for compliance with regulations regarding the operation of manufacturers, importers, exporters, distributors, wholesalers, drug outlets and other establishments, and facilities of health products, as determined by the FDA. Chapter XIV Section 35 of the act states that FDA can have product samples tested by private laboratories for as long as these are accredited by the Philippine Accreditation Office of the Department of Trade and Industry and the Department of Health.
Republic Act 10068 (signed 2010)	This act is known as the Organic Agriculture Act. It mandates the Bureau of Agriculture and Fisheries Product Standards to grant official accreditation to organic certifying bodies or entities. The bureau is tasked to formulate the necessary rules and procedures in the accreditation of organic certifying body, provided that there shall be at least one accredited organic certifying body each in Luzon, Visayas, and Mindanao. Or, in case only one organic certifying body is accredited, it shall have at least one satellite office or processing unit each in Luzon, Visayas, and Mindanao.
Republic Act 9997 (signed 2009)	This act is known as the National Commission on Muslim Filipinos Act. It creates the commission and defines its powers and functions. One of the functions of the commission is to promote and develop the Philippine halal industry and to accredit halal-certifying bodies.
Republic Act 8749 (signed 1999)	The Philippine Clean Air Act mandates the Department of Trade and Industry to accredit private emission testing centers.
Title of Testing-related Law	Description
Republic Act 2067, as amended by Republic Act 3589 (signed 1963)	This act is known as the Science Act of 1958. It integrates, coordinates, and intensifies scientific and technological research. The act also pertains to the testing and analysis of products and materials and the calibration of weights and measures.
Republic Act 4109 (signed 1964)	This act converts the Division of Standards into the Bureau of Standards (now Bureau of Product Standards) under the Department of Trade and Industry. The bureau shall have charge of the following: establishment of standards for, and inspection of, all agricultural, forest, mineral, fish, industrial, and all other products of the Philippines for which no standards have as yet been fixed by law; and the inspection and certification of the quality of commodities imported into the Philippines. Physical, biological, and/or chemical tests or analyses necessary for the examination of products under the provisions of this act may be undertaken in any branch of the government having facilities for the purpose until such time as the bureau may have its own facilities.

Republic Act 9711 (signed 2009)	This act is known as the Food and Drug Administration Act. It strengthens and rationalizes the regulatory capacity of the Bureau of Food and Drugs by establishing adequate testing laboratories and field offices, upgrading its equipment, augmenting its human resource complement, and amending certain sections of RA 3720.
Republic Act 3639, Executive Order 116 (signed 1987)	This act established the Bureau of Animal Industry and empowered it to prescribe standards for quality in the manufacture, importation, labeling, advertising, distribution and sale of livestock, poultry, meat products, dairy products and animal feeds, and veterinary supplies in the country.
Republic Acts 8485 and 8550 (signed 1998)	These acts provide that laboratory services be available to industry to ensure the quality and safety of fish and fishery products in accordance with existing fishery laws and regulations.
Republic Act 1556 (signed 1956)	This act is known as the Livestock and Poultry Feeds Act. It mandates the director of the bureau to prescribe the analysis of samples of any feed or feeding stuff according to accepted standard procedure.
Republic Act 9296 (signed 2004)	This act is known as the Meat Inspection Code of the Philippines. Among the functions of the National Meat Inspection Service are the following: establishing safety and quality standards for meat and meat products in consultation with the product standard setting agencies; accrediting establishment, facilities, conveyance and service providers for Hazard Analysis Critical Control Point Program audit; and licensing, registration, and certification of meat and meat products, as well as of meat handlers and brokers.
CEO 216-Reorganization Plan 30 A (signed 1957)	The Laboratory Services Division of the Bureau of Plant Industry is tasked with providing common laboratory services, such as physicochemical and microbiological analysis.
Republic Act 7607 (signed 1992)	This act is known as the Magna Carta of Small Farmers. It mandates the Bureau of Plant Industry, through its Pesticide Analytical Laboratories, to monitor the levels of pesticide residues on agricultural products.
Presidential Decree 1458 Art.1 Sec 2-11, June (signed 1978)	This law promotes the rapid integrated development and growth of coconut and palm oil industry in all its aspects and ensures that farmers become direct participants in and beneficiaries of such development and growth.
Presidential Decree 1770, Executive Order 1028 (signed 1985)	This law designates the Sugar Regulatory Administration as the principal agency of the Philippine government responsible for the promotion of the growth and development of the sugar industry. Among its tasks is the analysis of sugar content of juice.
O. 18	1. Register and license grain handlers (including machinery) and manufacturers of goods where grains are used as ingredients. Analyses are limited to moisture content, milling degree, and degree of infestation.
Presidential Decree Number 1144 (signed 1977)	This law creates the Fertilizer and Pesticide Authority to assure the agricultural sector of adequate supply of fertilizers and to protect the public from risks inherent in the use of pesticides.

Title of Certification-related Law	Description
Republic Act 4109 (signed 1964)	This act converts the Division of Standards into the Bureau of Standards (now Bureau of Product Standards) under the Department of Trade and Industry. The bureau shall have charge of the following: establishment of standards for, and inspection of, all agricultural, forest, mineral, fish, industrial, and all other products of the Philippines for which no standards have as yet been fixed by law; and the inspection and certification of the quality of commodities imported into the Philippines. Physical, biological, and/or chemical tests or analyses necessary for the examination of products under the provisions of this act may be undertaken in any branch of the government having facilities for the purpose until such time as the bureau may have its own facilities.
Letter of Instruction 1208 (signed 1982)	This law authorizes the Product Standards Agency (now Bureau of Product Standards) to require all firms manufacturing, importing and/or distributing electrical products and fire-fighting equipment to have their products qualified prior to distribution and sale in the market and their manufacturing processes compliant with overall quality assurance.
Republic Act 8435 (signed 1997)	This act is known as the Agriculture and Fisheries Modernization Act. Hazard Analysis Critical Control Point Program Inspection and Certification
Republic Act 8550 (signed 1998)	This act is known as the Philippine Fisheries Code. It mandates Hazard Analysis Critical Control Point Program registration and accreditation for fishery establishments and the issuance of sanitary and phytosanitary clearances for fish imported into the country.
Republic Act 9711 (signed 2009)	To issue certificate of compliance with technical requirements to serve as basis for issuance of appropriate authorization for the operation of manufacturers and other establishments and facilities of health products.
Republic Act 9296 (signed 2009)	This act mandates the National Meat Inspection Service to accredit “certify” meat establishments for compliance with Hazard Analysis Critical Control Point Program.

Appendix 7: The Components of NQI

Standardization

Standardization is the voluntary process of developing technical specifications based on consensus among all interested parties (industry including Small and Medium-sized Enterprises (SMEs), consumers, trade unions, environmental Non Governmental Organisations (NGO), public authorities, etc). It is carried out by independent standards bodies, acting at national, [regional] and international level.¹

Standardization is a collective activity to establish technical solutions to a repetitive situation. Therefore, in simple terms, a technical standard is an agreement on a particular way of doing something.

Technical Standards have a voluntary nature and its finality is to facilitate, not to compel. However, laws and regulations may refer to certain standards and make compliance with them compulsory.

Standards and standardization processes serve a number of different purposes and their importance to industry and society can be seen from several different perspectives. Some of the more important objectives of standardization are the establishment of compatibility and interoperability, the removal of trade barriers through harmonisation, and the safety and health of citizens. As a consequence, the three groups of stakeholders primarily benefiting from standardization processes are industry, consumers, and governments.

In order to develop and adopt standards at the national level, the existence of a National Standardization Institute is required.

As part of a global economy highly dependent on international trade, National Standards Institutes should aim at participating in the development and adopting international standards.

The economic benefits of developing and adopting international standards can be summarised as follows:

1. Compatibility and interface standards

Compatibility or interface standards help to expand market opportunities because they foster network effects², which are benefits from a large network of users. In economic terms it is preferable to choose a system that is widely used by others; it is therefore more beneficial to use International Standards widely than diverging national standards. These standards also allow the substitution of all components with more advanced ones – supplied not only by one producer – as they become available over time.

¹ European Commission DG Enterprise & Industry

² The effect that one user of a good or service has on the value of that product to other people.

2. Minimum quality and safety standards

By offering the possibility to a consumer to identify products manufactured following one particular standard, the market supports good manufacturers. When the market, due to the lack of voluntary standards, cannot offer consumers the possibility to distinguish between good and not so good products, the efforts of the more reliable manufacturers are hampered since decisions of consumers will be mostly based in price and not on value. Besides completing the information for consumers, standards spread and guarantee minimums levels of safety and quality. International Standards make international best practices accessible to national industry.

3. Variety reducing standards

Using a specific set of voluntary standards limits the products to certain characteristics. The whole production and distribution chain can benefit from economies of scale; mass input materials, mass production and mass distribution. Moreover, variety reducing standards, limit the risks of suppliers by shaping future technological trajectories and by shortening the timeframe to develop a critical mass of users to implement a new technology.

4. Information standards

Information standards are basic in communicating the product description and characteristics. These standards include the terminology, test methods and measurements that describe, quantify and evaluate products attributes. It is due to the existence of information standards that consumers are able to confirm that the product to be sold is what is expected to be. But most importantly, these standards constitute the root of international trade by creating trust between markets and manufacturers, and also by decreasing substantially the transaction costs between buyer and seller.

Metrology

*Metrology is the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology.*³

Measurements have been carried out for as long as civilisation has existed. Metrology is basic to the economic and social development of a country. Having the ability to produce accurate and reliable measurements is essential in economic transactions. Measurements influence profoundly the decisions made by all economic players, and therefore, wrong or unreliable measurement results may lead to an inefficient allocation of resources or sub-efficient solutions. Moreover, an accurate system of measurement is essential to guarantee the safety and health of population, e.g. electricity, chemicals, etc.

Metrology covers three main activities:⁴

1. The definition of internationally accepted units of measurement, e.g. the metre.
2. The realisation of units of measurement by scientific methods, e.g. the realisation of a metre through the use of lasers.

³ International Bureau of Weights and Measures (BIPM)

⁴ Extracted from: Howarth, P. and Redgrave, F. (2008) Metrology – in short. 3rd edition. July 2008. EURAMET e.V.

3. The establishment of traceability chains by determining and documenting the value and accuracy of a measurement and disseminating that knowledge, e.g. the documented relationship between the micrometer screw in a precision engineering workshop and a primary laboratory for optical length metrology.

Metrology is separated into three categories with different levels of complexity and accuracy:

- Scientific metrology deals with the organisation and development of measurement standards and with their maintenance (highest level).
- Industrial metrology has to ensure the adequate functioning of measurement instruments used in industry, in production and testing processes, for ensuring quality of life for citizens and for academic research.
- Legal metrology is concerned with measurements where these influence the transparency of economic transactions, particularly where there is a requirement for legal verification of the measuring instrument.

A core concept in metrology is traceability, defined as “the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons, all having stated uncertainties.” The level of traceability establishes the level of comparability of the measurement: whether the result of a measurement can be compared to the previous one, a measurement result a year ago, or to the result of a measurement performed anywhere else in the world.⁵

Traceability is most often obtained by calibration, establishing the relation between the indication of a measuring instrument and the value of a measurement standard. These standards are usually coordinated by National Metrological Institutes, who hold the responsibility of the metrology activities in a country.

Accreditation

*Accreditation is an impartial means of assessing and conveying an authoritative statement of the technical competence, impartiality and professional integrity of conformity assessment bodies operating both in the voluntary and the mandatory area.*⁶

Accreditation supports the credibility and value of the work carried out by conformity assessment bodies and thus of the corresponding attestations issued by them: test and inspection reports, calibration certificates, certifications of management systems, products and personnel and other attestations. Therefore, accreditation becomes an effective marketing tool for conformity assessment bodies, and a passport to submit tenders to contractors that require independently verified laboratories.

The role of the National Accreditation Body is to ensure the technical competence of laboratories, of inspection bodies, and of the quality certifications granted in the country.

⁵ <http://en.wikipedia.org/wiki/Metrology>

⁶ European Commission DG Enterprise and Industry

The benefits of accreditation⁷ for the different type of users can be summarised as follows:

Governments

Accreditation is the preferred mechanism for ensuring public confidence in the reliability of activities that impact on health, welfare, security and the environment. Accreditation is used, therefore, to identify bodies competent for the implementation of government policies and regulations.

Consumers

Accreditation gives consumers confidence through ensuring consistently high standards in the quality and safety of products or services purchased.

Industry

Accreditation is an essential tool for decision making and risk management. Organisations can save time and money by selecting an accredited (and therefore competent) supplier.

Accreditation can provide a competitive advantage and facilitates access to export markets within Europe and beyond – with the aim of “tested or certified once, accepted everywhere”.

Accurate measurements and tests carried out in compliance with best practices limit product failure, control manufacturing costs and foster innovation.

Given the importance of the international trade, it is therefore essential to aim at the mutual evaluation and acceptance of the accreditation systems between countries. These agreements, called mutual recognition arrangements (MRAs)⁸, are crucial in enabling test and calibration data to be accepted between these countries. In effect, each partner in such an MRA recognises the other partner’s accredited laboratories as if they themselves had undertaken the accreditation of the other partner’s laboratories.

These international agreements help exported goods to be more readily accepted in overseas markets. This effectively reduces costs for both the manufacturer and the importer, as it reduces or eliminates the need for products to be retested in another country.

⁷ Extracted from: Irish National Accreditation Board website

⁸ The Advantages of Being an Accredited Laboratory – ILAC & CALA

Testing

A test is as technical operation that consists of determination of one or more characteristics of a given product, process or service according to a specified procedure.

Prior the product or service is being produced and made available for consumption; these have to be tested in the view of conformity assurance with the specifications stipulated by the relevant quality standards.

The reliability of tests conducted depends, of course, on the correct operation and accuracy of test and measuring equipment, and the latter in turn depends on traceable calibration.⁹

Given the cost of setting up laboratories and the competence for the different text methods, it is unrealistic, and suboptimal, that the different economic players try to develop on their own the whole testing capacity. In this MSTQ component is it essential the coordination between private and public sector in order to optimise the existing resources.

It is thus advantageous to make use of existing specialized laboratories and to set up only those that are not yet available. These laboratories can either be private or they can function at government agencies; what matters is that proper accreditation makes them available and reliable for different purposes.¹⁰

Testing activities are performed by accredited testing laboratories and accredited calibration laboratories.

Certification

Certification refers to the confirmation of certain characteristics of an object, person, or organization.

Certification represents an activity aimed to ensure the conformity of product, service, etc, through technical evaluation means built upon certain combined activities, defined upon the laboratory results or accredited body, as well as upon technical specifications provided by relevant documentation.¹¹

These are two of the most common schemes offered by certification bodies:

Product Certification

Product certification is the process of verifying that a certain product has passed performance tests and quality assurance tests or qualification requirements stipulated in contracts, regulations, or specifications. For example, it may relate to a building code, nationally accredited test standards, or a set of regulations governing quality and minimum performance requirements.

⁹ Sanetra, C. and Marban, R. (2007). The answer of the global quality challenge: a National Quality Infrastructure. PTB.

¹⁰ Sanetra, C. and Marban, R. (2007). The answer of the global quality challenge: a National Quality Infrastructure. PTB

¹¹ MSTQ HANDBOOK (2010). Support to Export Promotion and Investment Attraction in Republic of Moldova

Management Systems

A management system is the framework of processes and procedures used to ensure that an organization can fulfil all tasks required to achieve its objectives. It does not automatically lead to a good and competitive product or service but, due to clearly defined, followed and maintained internal processes and procedures avoid a lot of possible errors.

Certification can be either voluntary, such as a quality mark, or mandatory, making compulsory the compliance with technical regulations.

Certification activities are carried out by accredited certification bodies.

Interrelationship between components

It should be clear that all components of the QI are closely related:

A standard, using dimensions and tolerances, cannot be defined without reference to reliable measurements.

Measurements must in turn be internationally standardized to avoid costly equivalences.

A product must be submitted to testing in order to determine conformity with the requirements defined in standards or technical regulations.

International compatibility requires that testing procedures be standardized, and also relies on reliable measurements.

Accreditation, based on international standards, is the procedure by which the whole process becomes reliable and trustworthy, leading to international trade and competitiveness.

Appendix 8: References and resources used to develop the NQI best practices

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About PhilMSTQ

PhilMSTQ is a non-profit and non-stock association of professionals and other citizens advocating for quality products and services.

It envisions a nation that produces and provides quality goods and services for all Filipinos through standardization, measurement, accreditation, and regulation, collectively known as a National Quality Infrastructure (NQI). PhilMSTQ aims to be an advocate and expert on NQI and a catalyst for productive engagement among all stakeholders.

For more information, visit our website: www.philmstq.org



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