



**Standards
Alliance**

STANDARDS, METROLOGY, & CONFORMITY ASSESSMENT: TOOLS TO FACILITATE TRADE AND MARKET ACCESS

An Interactive Reference Handbook 2022 Edition

SECTION 1: AN OVERVIEW OF NATIONAL QUALITY INFRASTRUCTURE (NQI)

PREPARED BY THE STANDARDS ALLIANCE, A PARTNERSHIP BETWEEN THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID) & THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)



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American National Standards Institute

AN OVERVIEW OF

NATIONAL QUALITY INFRASTRUCTURE (NQI)

For countries, understanding the link between national quality infrastructure (NQI) and global trade, consumer safety, and export competitiveness is at the forefront of trade policy. An effective NQI is an integral part of the way we protect consumers globally. NQI makes our world easier, safer, and more accessible for consumers, businesses, and governments. And non-binding NQI often goes on to form widely used legislation and act as a compliance system throughout the world.

National quality infrastructure refers to a country's legal and institutional framework that supports the quality of goods and services. A properly functioning NQI incorporates public- and private-sector cooperation across four pillars of quality: standards, conformity assessment, accreditation, and metrology. These pillars unlock a wide array of domestic and international benefits. Domestically, NQI supports market predictability, promotes product reliability, enhances consumer protections, and spurs innovation. Internationally, an effective NQI facilitates global trade, increases market access, expands export competitiveness, encourages knowledge transfer, and underpins product interoperability.

NQI is particularly important for developing and emerging nations seeking to encourage

economic growth and foreign investment. These benefits hinge on the implementation of international best practices for each of the four pillars of quality. Best practices include the use of international standards, open and transparent development of standards and regulations, and accreditation.

Deviations from best practice have the potential to undermine international trade flows by erecting unnecessary obstacles to trade, diminishing the quality of goods and services, damaging market predictability, and misguiding or even endangering consumers. Further, domestically, a lack of clear quality frameworks can lead to poor-quality products entering markets and low consumer access to reliable product information.

Approximately two-thirds of World Trade Organization (WTO) membership is comprised of developing countries or countries in transition from centralized to market economies.¹ For these countries, international standards and conformity assessment provide an existing source of technological expertise to support economic development and global competitiveness.

This handbook aims to describe the basic components of NQI and to provide the user with information to guide the improvement or development of an effective NQI.

¹ https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm

DEVELOPING A NATIONAL QUALITY INFRASTRUCTURE

All countries should have and implement a National Quality Infrastructure in order to realize the benefits that will be gained from embracing quality as a driver for economic development. A well-designed NQI supports consumer protection, international trade, technological innovation, and compliance with international agreements like the WTO Technical Barriers to Trade (TBT) and Sanitary and Phyto-Sanitary (SPS) Agreements.

It should be noted: Not all countries have a formal National Quality Policy (NQP) but may have implemented well-organized elements of NQI. For countries in the process of establishing a quality infrastructure, an NQP may be a useful tool to inform the development of a fully functioning NQI.

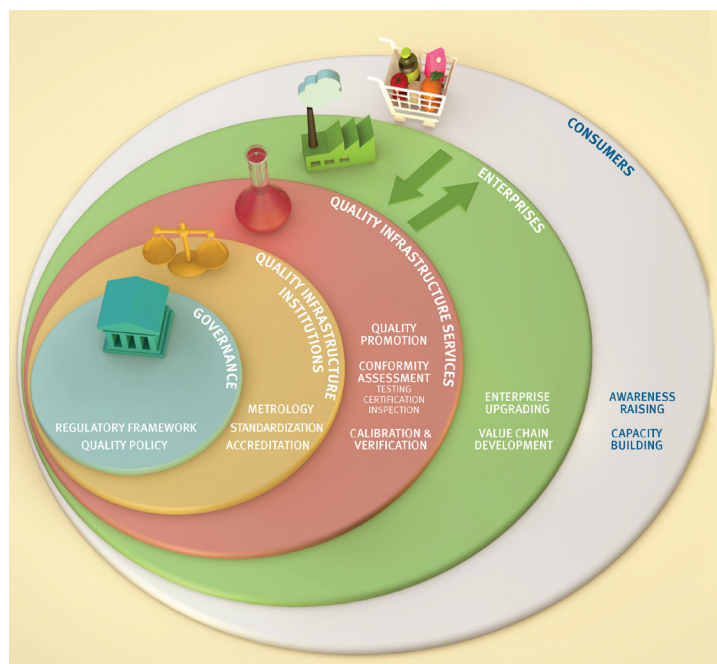
As countries develop or refine their NQI, transparency helps to ensure predictability in domestic and international trade. As with any changes to national law, maintaining open and transparent access to early draft NQI measures and allowing for public comment periods are considered international best practices. In fact, some countries elect to notify draft NQI measures with open comment periods to the WTO. This practice can provide valuable feedback for policymakers and provide trading partners with increased awareness of pending changes to national policy.

What Is a National Quality Infrastructure?

There are several approaches to establishing an NQI, but there has been no broadly accepted international definition. On June 30, 2017, the United Nations Industrial Development Organization (UNIDO) hosted the annual meeting of the Network on Metrology, Accreditation and

Standardization for Developing Countries in which one definition of quality infrastructure (QI) was developed. The meeting focused on quality infrastructure as a pillar supporting competitiveness, trade, and sustainable development, and the key outcome of the meeting was the adoption of the following definition of quality infrastructure:

“The system comprising the organizations (public and private) together with the policies, relevant legal and regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods, services and processes. The quality infrastructure is required for the effective operation of domestic markets, and its international recognition is important to enable access to foreign markets. It is a critical element in promoting and sustaining economic development, as well as environmental and social wellbeing. It relies on: metrology, standardization, accreditation, conformity assessment, and market surveillance.”



Quality Infrastructure System. Source: UNIDO

² ISO (2013). National Standards Bodies in Developing Countries. Retrieved from https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/fast_forward.pdf

The Four Pillars of a Quality Infrastructure

Metrology, standards, accreditation, and conformity assessment form the foundation of quality infrastructure. These QI components act as separate but interdependent pillars. While often underappreciated by consumers and government officials, these four pillars are vital to safeguard the integrity of products and processes. When well-coordinated under an NQI, they enable sustainable development and create a path for global trade, market access, technological innovation, and export competitiveness by supporting consumer confidence, product quality and safety, health and, environmental protection.²

Effective NQI supports local exporters by helping producers understand, meet, and demonstrate adherence to requirements in target markets. This is especially true for agricultural products. If clear frameworks for quality are not in place, or are underdeveloped, exporters will struggle to enter and compete in foreign markets. Examples of such failures include product certification reports issued without citing the international standard or conformity assessment method used, which can lead to unsafe or poor quality products.

Why Develop a National Quality Strategy?

Building a clear NQI enables domestic enterprises to meet the demands of the multilateral trading system and to provide proof that their products conform to international standards. Unfortunately, in many developing and transitional economies NQI is underdeveloped or non-existent. Often the national metrology and standards institutes provide all NQI services, which creates a centralization of quality control and supervision that can lead to competing interests, undermining quality and providing openings for corruption. These risks are mitigated by separating quality institutes which delegate relevant roles and responsibilities to domestic NQI components.

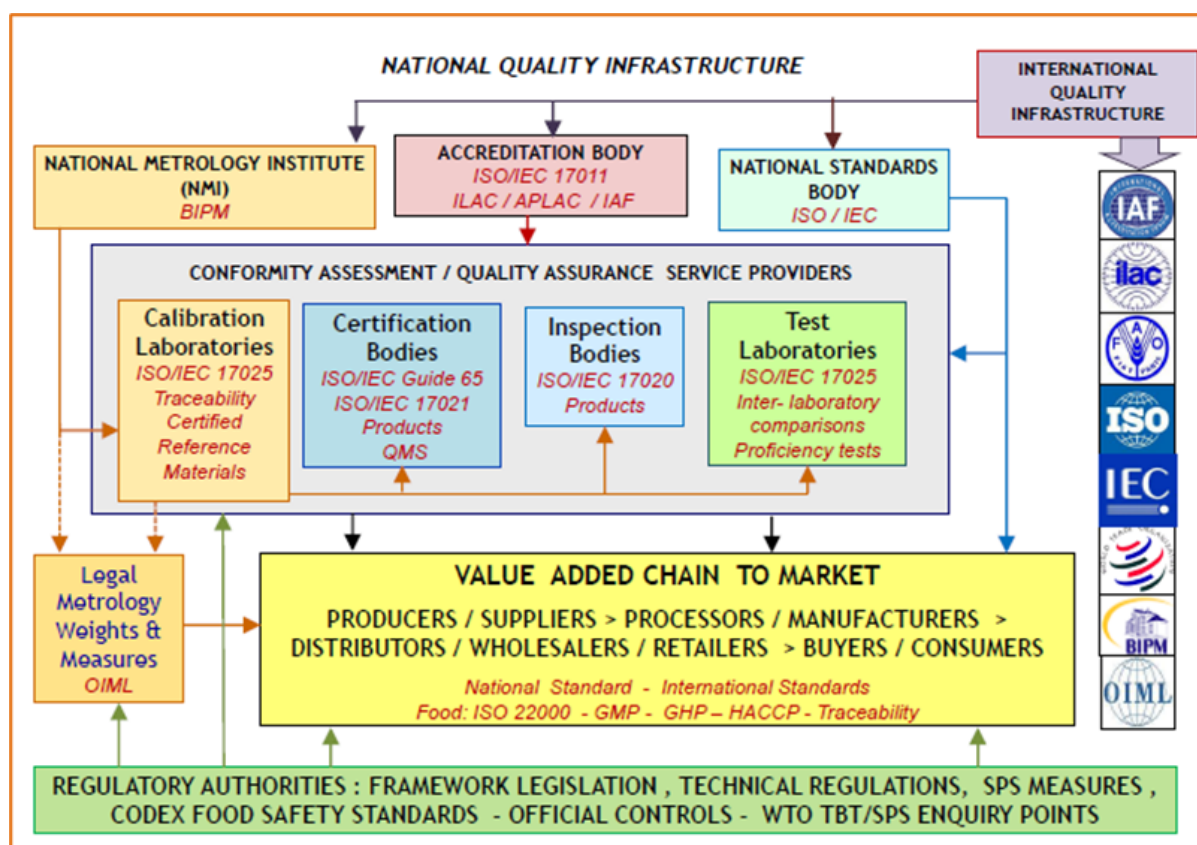
To achieve this, many developing nations create an NQP.

The NQP should detail the relationship of the quality infrastructure with the country's technical regulations and create space for private sector participation. Some countries create an NQI committee that includes private sector members. Developing an effective NQI is a complex challenge that requires the participation of various interest groups. These include the public and private sectors, academia, trade associations, consumer interest groups, and other stakeholders. Within this list, the importance of the private sector is crucial to the overall success of NQI. Private sector participation provides valuable information on market and technological trends to minimize harm and increase buy-in for government measures. An inclusive and open NQI ensures that the private sector and consumers are the ultimate beneficiaries of quality systems.

For example, the International Organization for Standardization (ISO) states that: "The views of consumers also need to be taken into account when developing standards. Standards often shape product characteristics. If consumers play an active role in developing standards, the characteristics of a product or service are more likely to meet their needs. This creates a win-win situation for the consumer and manufacturer or service provider. Consumers have a voice in the development of ISO International Standards through the participation of the NGO Consumers International and the consumer representatives of national members in the technical committees."³

A useful starting point in the development of an NQP is to ensure adherence to the WTO TBT and Sanitary and Phytosanitary (SPS) Agreements; these agreements contain many of the foundational elements of NQI and are discussed further in [Section 2 of this handbook](#).

³UNI ISO (2021). Who Develops Standards? Retrieved from www.iso.org/who-develops-standards.html



BUILDING BLOCKS OF A SUCCESSFUL NQI

An NQI should consist of structures that support the four pillars mentioned above: standards, metrology, accreditation, and conformity assessment. This should include a set of parallel paths describing the technical and legal/regulatory aspects of quality.

National Standards Body: An institution that oversees national standards activities and serves as the member body for that country to regional, international, and/or multilateral organizations. An NQI should support the development and growth of a market-driven system based on voluntary consensus standards for products, processes, and services that are harmonized with relevant international standards. Strong private-sector involvement throughout the standardization process is essential.

National Metrology Institute: An institution that realizes, maintains, and disseminates national measurement units that are traceable

to the International System (SI) (scientific metrology); and develops and implements a weights and measures program in order to ensure the appropriate quality and credibility of measurements related to official controls, trade, health, safety, and the environment (legal metrology).

Accreditation Body: An institution that validates the competence of testing and calibration laboratories, product certification bodies, quality system certification bodies, and inspection bodies. An NQI should provide technical and financial support for the development of an accreditation system. Many countries approach this element of QI differently; some maintain a National or Regional Accreditation Body, while many others rely on private-sector organizations to fill this role. For example, France maintains a National Accreditation Body, the Comité Français d'Accréditation (COFRAC), whereas the United States recognizes various private-sector accreditation bodies including the American National Standards Institute (ANSI).

Accreditation establishes assurance of the quality of test data, recognizes the competence of conformity assessment bodies, and provides discipline that is internationally accepted. This minimizes duplication of re-testing and re-certification, reduces cost, and eliminates non-tariff barriers to trade and market access delays.

Conformity Assessment Bodies: These organizations perform conformity assessment processes to determine if specified requirements relating to a product, process, system, person, or body are fulfilled. This can include testing, certification, and inspection. An NQI should ensure conformity assessment bodies are competent, impartial, and work with integrity, and that they are accredited in accordance with international standards and best practices.

Mutual Recognition: Mutual recognition of accreditation and certification systems facilitates access to international markets and provides the technical underpinning to international trade. It does this by promoting cross-border stakeholder confidence and acceptance of accredited test data and certified results. The present international concept and goal is “Certified Once, Accepted Everywhere.” This is made possible through a network of mutual recognition arrangements (MRA or MLA) among international accreditation bodies.

Technical Path: A unified NQI should both strengthen and align the predictability and consistency of the national metrology, standards, and conformity assessment organizations within the public and private sectors.

Legal and Regulatory Path: An effective NQI should avoid the use of overly restrictive legal and regulatory requirements, conflicts of interest, and political interference. Additionally, quality systems should align with international best practice. The legal framework should establish and foster transparent, independent public- and private-sector institutions.

SUMMARY

Standards, metrology, conformity assessment, and accreditation form the foundation for a country’s NQI. With a firm and well-coordinated foundation in these elements, countries can support product quality, spur innovation, ensure consumer safety, promote trade and development, and protect human health and the environment. As a country considers legal or regulatory changes to existing quality systems, it is helpful to understand each component and its role within the quality infrastructure.

The next sections of this handbook address these building blocks in more detail:

SECTION 2: TECHNICAL BARRIERS TO TRADE ▶

SECTION 3: STANDARDS & REGULATIONS ▶

SECTION 4: METROLOGY ▶

SECTION 5: CONFORMITY ASSESSMENT ▶

ANNEX ▶

INTRO & GLOSSARY ▶