

QUALITY INFRASTRUCTURE

BUILDING TRUST FOR TRADE



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Inclusive and
Sustainable
Industrial
Development

Setting up a Quality Infrastructure System is one of the most positive and practical steps that a developing nation can take on the path forward to developing a thriving economy as a basis for prosperity, health and well-being.

A Quality Infrastructure is a system contributing to governmental policy objectives in areas including industrial development, trade competitiveness in global markets, efficient use of natural and human resources, food safety, health, the environment and climate change.

It offers a complete package addressing the needs of the nation's citizens, of customers and consumers, and of enterprises and other organizations that offer them products and services. The Quality Infrastructure System covers essential aspects such as policy, institutions, service providers, and the value-adding use of international standards and conformity assessment procedures.



QUALITY
INFRASTRUCTURE SYSTEM
THE ESSENTIALS

A Quality Infrastructure System (QIS) is a combination of initiatives, institutions, organizations, activities and people. It includes a national quality policy and institutions to implement it, a regulatory framework, quality service providers, enterprises, customers and consumers (who include citizens as “consumers” of government services).

What “quality” means

“Quality” means ensuring that products and services meet the requirements of the customers.

Another way of understanding this approach to quality is that products and services should be fit for the purpose for which they are intended. For example, expensive leather shoes can be regarded as luxury products, but failing to meet the quality requirements of a farmer who really needs a pair of much less expensive rubber boots fit for his purpose of working in muddy fields.

This understanding of quality as being fit for purpose and meeting customer requirements allows a QIS to be used for producing effective results in meeting a broad range of challenges, in addition to product or service quality. Examples of particular interest to developing countries are food safety, health, the environment, tackling climate change, social responsibility and gender issues.

Dynamic system

A QIS is a dynamic system. “Dynamic” places the emphasis on actions. These actions are intended to provide results and they are evaluated according to these results. “System” means its parts inter-act with each other to provide overall QIS results which are greater than could be achieved by the parts working individually.

Catalyst for competitiveness and global market access

A QIS system is a catalyst for improving the quality of products and services on a national scale. It therefore helps to stimulate demand for these products and services, which invigorates individual businesses and the economy as a whole. By helping national industry to meet the requirements of export markets, a QIS increases the competitiveness of the nation’s economy and its ability to participate in global trade and in value chains.

Compliance with international requirements

A QIS is a powerful tool for defining, developing and verifying quality requirements for products and services. It verifies and demonstrates that products and services actually meet these requirements. It ensures that the quality requirements and the products and services they generate meet the state-of-the-art requirements and best practice essential for participating in international trade.

No “one size fits all”

Because there is no ready-made QIS model that will suit all countries, a tailor-made approach is necessary. The QIS adjusts to meet the national and regional requirements that have been identified by a thorough assessment of needs.



QI BENEFITS

The QIS provides benefits to everyone in the supply and demand chain. This includes the consumer, manufacturer and the supplier.

Consumers benefit because the QIS provides confidence that the products and services they purchase are fit for their purpose.

Manufacturers and suppliers benefit because the QIS promotes their use of international standards to ensure that their products and services meet state-of-the-art requirements, and that their business processes are modelled on management system standards recognized worldwide.

Regulators benefit because the QIS helps them to identify and specify the standards and conformity assessment processes they can use to ensure that public interest requirements, such as health, safety and environmental, are being met. The regulator will often make conformity assessment obligatory in these fields and may prohibit the sale of nonconforming products and services.

The government benefits because the QIS puts at its disposal a system for stimulating the economy, increasing the competitiveness of its industry on global markets, using resources efficiently, sharing technological know-how, tackling environmental and climate-related challenges, and for fulfilling its responsibilities for public health and safety, including food safety.



A QI WHAT IT IS AND WHAT IT ACHIEVES

Markets and consumers

The increased choice of competing products brought by global markets and the downward pressure on prices resulting from competition mean that customers will tend to reject products that they do not perceive as being quality products, even though their price may be low. Global markets and competition will probably tend to give them a choice of better quality at the same price.

The emphasis of a QIS is on markets and consumers. All component parts of the QIS act dynamically on each other. This inter-action is particularly intense between enterprises and customers/consumers. Enterprises offer products and services and receive direct and indirect feedback from consumers in the form of sales and levels of customer satisfaction.

Markets also provide feedback - although not necessarily as swiftly as coming from the point of sale - on quality infrastructure services, quality infrastructure institutions and governance. This feedback allows review, modification and improvement of the different components and of the whole quality infrastructure – which underlines the dynamism and system nature of the QIS.

Quality infrastructure services

A further link in the QIS chain is made up of the organizations that provide conformity assessment services for the quality infrastructure.

Conformity assessment

Conformity assessment is the name given to the processes and procedures that are used to demonstrate that a product or a service, management system, an organization or personnel meets specified requirements. These requirements are usually stated in international standards developed by organizations such as ISO (International Organization for Standardization). The requirements for conformity assessment activities themselves are also given in international standards and this helps to ensure consistency worldwide, as well as cross-border acceptance of results.

The use of international standards thus harmonizes conformity assessment activities throughout the world. This has far-reaching benefits for international trade in general. Agreements among nations or regions on the mutual acceptability of requirements, assessment methods, inspection or test results, etc., can all help to reduce or remove technical barriers to trade. These are requirements and rules – often defined in regulations - relating to importation and market access that vary from country to country and may bar a foreign product from entering a national market.

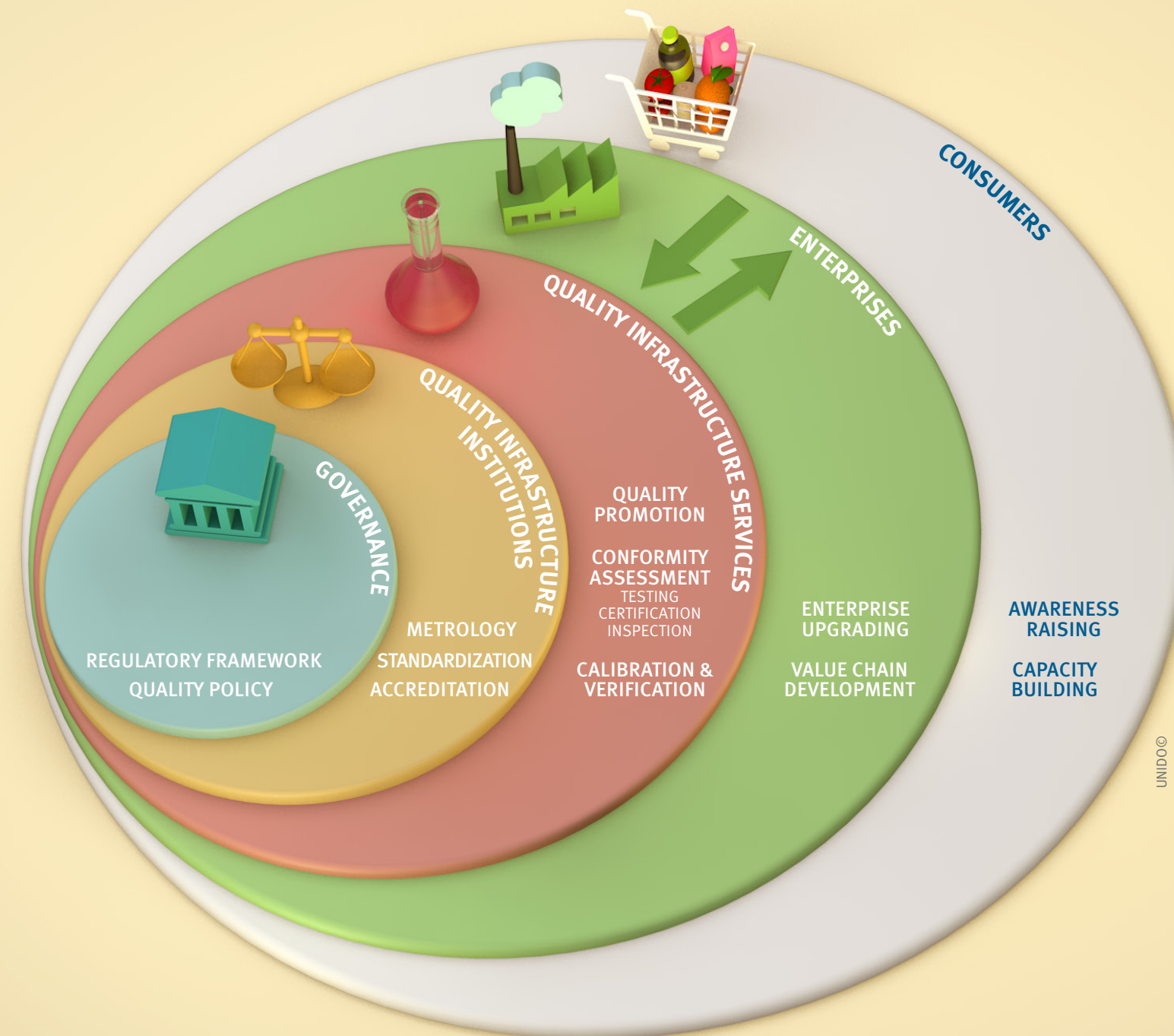
The World Trade Organization's Agreement on Technical Barriers to Trade (WTO TBT Agreement) was established to ensure that technical regulations and standards, and the procedures for assessing conformity with them, do not create unnecessary obstacles to international trade.

The WTO TBT Agreement promotes the recognition by countries of each other's conformity assessment results as a way of reducing barriers to trade. It emphasizes that confidence in the reliability of conformity assessment results is a prerequisite to recognition of assessments. Therefore, a QIS in a developing country that is able to demonstrate the conformity of the nation's products and services to international standards, and also to provide confidence in local conformity assessment activities, makes an significant contribution to the competitiveness of nation's economy and industry.

Conformity assessment services are usually performed by organizations specialising in one or other activities, of which the main ones are described below. They may supply their services on a commercial basis, or they may be operated or mandated by the government.

Testing

A product is tested against a specific set of criteria, such as performance or safety. Testing is the most common form of conformity assessment. Testing also provides the basis for other types of conformity assessment such as inspection and product certification.



Inspection

Inspection bodies play an essential role in cross-border trade. They act on behalf of governments and business partners (importers and exporters) by inspecting imported goods and materials. They are responsible for examining a huge range of products, materials, installations, plants, processes, work procedures and services, in the private as well as the public sector, and report on such parameters as quality, fitness for use and continuing safety in operation. The overall aim is to reduce risk to the buyer, owner, user or consumer of the item being inspected. Government and business often use their services to inspect imported goods and materials.

Certification

Certification is when a certification body gives written assurance that a product, service, process, personnel, organization or management system conforms to specific requirements.

The most well-known examples are the certification of quality management systems and environmental management systems

as conforming, respectively, to the ISO 9001 and ISO 14001 standards. More than a million business and public sector organizations worldwide have had their management systems certified to one or both of these standards. Newer management standards that also allow for certification address food safety (ISO 22000), energy management (ISO 50001) and information security (ISO/IEC 27001).

Product certification may consist of initial testing of a product combined with assessment of its supplier's quality management system. This may be followed up by testing of samples from the factory and/or the open market. Other product certification schemes comprise initial testing and surveillance testing, while still others rely on the testing of a sample product - this is known as type testing. The type of certification scheme chosen will depend on factors such as the degree of potential risk to consumers and users of the product.



QI INSTITUTIONS

The key institutional components in the QIS are made up of the high-level institutions responsible for standardization, metrology, conformity assessment and accreditation.

Standardization

We all have certain expectations about the products and services we buy and use. We expect them to be fit for their purpose, safe and easy to use, not harmful to health or to the environment, reliable and efficient, interchangeable and compatible with other products and to provide their benefits at an economical cost. Standards are documented agreements that translate such desired characteristics into dimensions, tolerances, weights, processes, systems, best practice and other specifics so that products and services that conform to their requirements provide confidence to buyers and users.

For developing countries, international standards developed on the basis of worldwide consensus by experts in the field constitute an important source of technological know-how. By defining the characteristics that products and services will be expected to meet on export markets, international standards give developing countries a basis for making the right decisions when investing their scarce resources.

Within a QIS, standardization is usually the responsibility of a National Standards Body (NSB) that may represent the country's interests within organizations such as ISO (the International Organization for Standardization). The NSB may provide national delegations to participate in the development of standards that are of key importance to their country's economy. Whether or not the NSB participates in the development of a standard, it is free to adopt and translate international standards as national standards. By using international standards, it ensures that the country benefits from international, state-of-the-art knowledge and that locally produced products will meet the requirements demanded by export customers.

For consumers, conformance of products and services to international standards provides assurance about their quality, safety and reliability.

Metrology

Metrology is the science of measurement and it is a vital part of everyday life. For example, food is bought by weight, water and electricity are metered, and instruments analysing blood samples must be precise. It is easy to understand that faulty measurements by medical devices, or in the maintenance of critical components such as for vehicle brakes or aircraft engines, can be highly dangerous. Accurate measurements and measuring equipment are needed for the protection of health, safety, the environment and consumers. They are vital too in contracts between individual business partners and in world trade in general.

Balances and other instruments in laboratories need to be calibrated so that they can provide reliable measurements. Firms cannot satisfactorily implement process controls to manufacture a product to standardized characteristics if control instruments such those measuring pressure and temperature are not properly calibrated.

Confidence in national measurement is assured by a national metrology institute (NMI) when it becomes signatory to the Mutual Recognition Arrangement of the International Committee of Weights and Measures (CIPM MRA). The CIPM MRA provides the institutional and technical framework for NMIs to recognize each other's measurement standards and calibration certificates, thus supporting world trade.

Accreditation

Accreditation is the process by which an authoritative body gives formal recognition that a body or person is competent to carry out specific tasks. Within a QIS, the body made responsible for accreditation will evaluate the competence of product, management system and personnel certification bodies, testing laboratories and inspection bodies. Its official approval – known as “accreditation” - will indicate to customers and users of the services of these organizations that they can have confidence in their work.

Accreditation is often the responsibility of a national accreditation body (NAB) that may seek recognition of its accreditations within the frameworks of the International Accreditation Forum (IAF) and International Laboratory Accreditation Forum (ILAC).

IAF and ILAC promote and manage “mutual” or “multilateral” recognition “agreements” or “arrangements” (MRA) whereby the parties involved agree to recognize the results of each other's testing, inspection, certification or accreditation. MRAs can be an important step towards reducing the multiple assessments that products, services, systems, processes and materials may need to undergo, especially when they are traded across borders. Since MRAs facilitate the acceptance of goods and services everywhere on the basis of a single assessment in one country, they contribute to the efficiency of the international trading system to the benefit of suppliers and customers alike-

A fundamental component of the QIS is that of governance. The leading role in setting up a QIS is played by the country's government which gives the initial impetus and is ultimately responsible for ensuring that the QIS fulfils policy objectives, meets the country's needs, conforms to international standards and best practice, and complies with world trade rules. The government provides impetus by developing a National Quality Policy (NQP) and establishing the regulatory framework for the QIS.

National Quality Policy

The NQP is the basic government instrument for establishing and overseeing the QIS. It sets out the objectives of the QIS and a road map and schedule for setting it up. The government can use the development of the NQP as an opportunity to increase awareness of the importance of the QIS and how the different national actors can benefit from it. It can do this by inviting broad stakeholder participation to develop the NQP. Examples of stakeholders include representatives of its own ministries and agencies, regulatory bodies, trade and industry associations, chambers of commerce, consumer associations, and providers and users of calibration, testing, certification and inspection services. Their input will help ensure that the NQP and QIS meet the needs of the nation, while their participation will encourage implementation of the policy and “buy-in” of the Quality Infrastructure System.

Regulatory framework

Since one of the main benefits expected from the QIS is to increase the country's ability to participate in global markets, it is important for the government to ensure that the nation implements standards and technical regulations consistently with world trade rules. These rules are established by the World Trade Organization (WTO).

Because of the mandatory nature of technical regulations, they have the potential to become technical barriers to trade (TBT) that prevent or hinder the flow of goods and services between nations. Although standards are generally voluntary, they become mandatory when referenced in regulations, for which they provide the technical content underpinning the policy objective of the regulation concerned.

In particular, the inconsistent use of standards and regulations can create technical barriers-. This can happen because technical regulations in a country may be introduced by different ministries (e.g. Ministry of Transport for seat belts, Ministry of Health on labelling of foods, Ministry of Environment on packaging materials, etc.). Therefore, the QIS needs to include a national regulatory framework that each regulator can work within in order to ensure consistency.

GOVERNANCE



The ability of developing countries to exploit commercial opportunities, to compete on global markets and to participate in international value chains is often challenged by their difficulties in demonstrating compliance with quality requirements and trade rules. The United Nations Industrial Development Organization (UNIDO) helps to tackle these challenges by working with them to set up a Quality Infrastructure System. Such a program is one of the specialized services that UNIDO offers among its overall activities to promote Inclusive and Sustainable Industrial Development (ISID). This approach offers developing countries and economies in transition opportunities to eradicate poverty and develop sustainably. ISID helps them to build up their industrial base as a platform for social inclusiveness, economic competitiveness, environmental sustainability and integrating with the global trading system.

UNIDO has an extensive and proven track record in working with government, industry and other major stakeholders in developing countries to build Quality Infrastructure Systems. As a first step, UNIDO can offer training to increase understanding of a QIS and how to get the best out of it. UNIDO's approach is holistic, from building awareness of the QIS to helping to set it up and get it running efficiently and effectively. Throughout, UNIDO emphasizes hand-in-hand and hands-on cooperation with stakeholders on collective actions based on shared objectives.

AFRICA

Malawi: Building a robust quality infrastructure system for local products and export

Mozambique: Setting up a demand-driven quality infrastructure system in line with private sector needs

Nigeria: Quality infrastructure development and support to local institutions

CEMAC: Strengthening metrology, standardization and accreditation to foster regional cooperation

ECOWAS: Regional Quality Policy development and improved quality infrastructure services

UNIDO'S QI EXPERTISE

ARAB REGION

Arab Region: Setting up regional accreditation to overcome technical barriers to trade

CENTRAL ASIA

Tajikistan: Quality infrastructure needs assessment and harmonization of technical regulations

Caucasus and Central Asia: Regional capacity building in quality infrastructure development and trade

ASIA

Bangladesh: Quality Policy development and support to metrology, standardization and accreditation

Pakistan: Support for National Quality Policy, accreditation, testing and calibration laboratories

Myanmar: Strengthening inspection and import control services to protect consumers

AMERICA

Haiti: Enhance export capacity and improve competitiveness in international markets

Nicaragua: Strengthening the quality infrastructure system to serve SMEs

Colombia: Increased compliance capacity in the cosmetics sector

The Americas: Support to standards development, metrology and accreditation

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