



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

QUALITY INFRASTRUCTURE FOR SUSTAINABLE DEVELOPMENT

“Quality Infrastructure stimulates industrial development, trade competitiveness, innovation and efficient use of resources, while ensuring food safety and protecting human health and the environment.”

Li Yong, Director-General, UNIDO

OVERVIEW

The contribution of quality infrastructure (QI) to the Sustainable Development Goals (SDGs) and its relevance is often not well known. The achievement of the SDGs requires a radical change of economic activities, social practices and human behavior. The QI systems with all the building blocks in place – standardization, metrology, accreditation and conformity assessment, in particular, testing, certification and inspection services, play a fundamental in supporting this transformation. QI can help consumers make informed choices, encourage innovation, lead businesses and industries to take up appropriate new technologies and organization methods improving current practices, and support public authorities in designing and implementing public policies aligned with the SDGs. Robust QI systems better position developing economies to achieve sustainable development, through building prosperity, meeting the needs of people, and protecting the planet.

This brochure provides a summary of a larger, more comprehensive publication on QI in support of the SDGs. It outlines how QI systems better position developing economies to meet the SDGs by creating economic prosperity through inclusive economic growth,

safeguarding the wellbeing of people in a way that ensures they have dignified lives, while also protecting the planet. The information and examples provided on the following pages are intended to help provide insights and examples of how QI supports and underpins implementation of those SDGs that have been included.

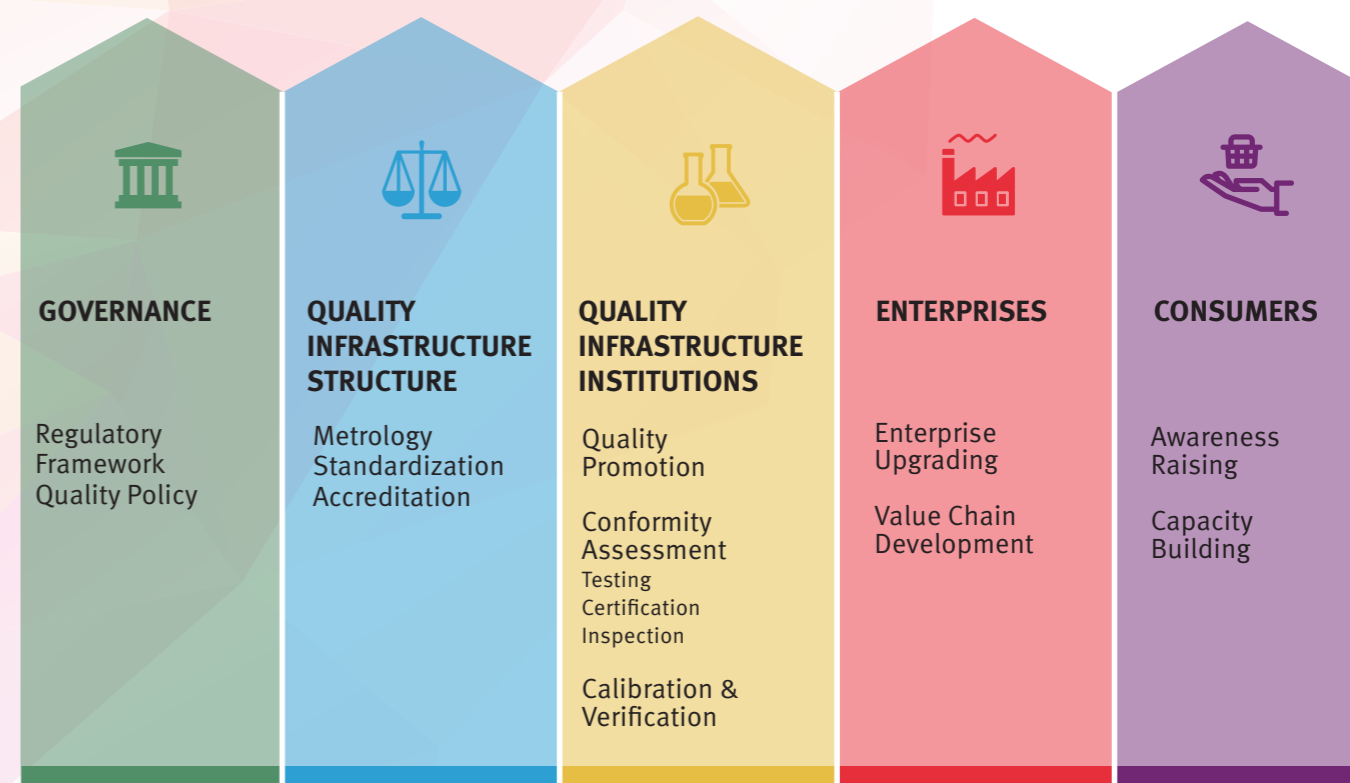
QUALITY INFRASTRUCTURE IN SUPPORT OF THE SDGs

The establishment of an appropriate QI system can substantially assist a nation in positioning their economy to seize the many opportunities available through appropriate implementation of the SDGs. A QI covers essential aspects such as: a national quality policy (NQP); QI-related institutions; conformity assessment service providers, and the value-adding use of metrology, international standards, internationally recognized accreditation and conformity assessment procedures. It supports other governmental policy objectives in areas including: industrial development; trade competitiveness in global markets; the efficient use of natural and human resources; food safety; health; the environment and climate change. Under the collaborative framework and direction provided by the NQP, all component parts of the QI system act synergistically with each other and provide a valuable tool for defining, developing and verifying quality requirements for products and services. The system components assist in the verification and demonstration that products and services actually meet specified requirements.

QUALITY INFRASTRUCTURE: PATHWAYS FOR ACTION

QI contributes to all 3 of the SDG themes: people, prosperity, and planet. These themes strongly emphasize the interdependence of the various goals, targets and approaches, and the need to implement them in an integrated and coordinated manner. Economic activities and economic development are at the core of human activity and they are the essential drivers of prosperity. At the same time, economic activities fully depend on the resources of the biosphere and are responsible for its unsustainable exploitation.

QUALITY INFRASTRUCTURE SYSTEM



©UNIDO 2018

The Quality Infrastructure is “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.”

International Network on Quality Infrastructure (INetQI)



©UNIDO 2019



BUILDING PROSPERITY

This theme of the SDGs relates to economic development. The economic goals direct attention towards industry, innovation and infrastructure, and decent work and economic growth.



MEETING THE NEEDS OF PEOPLE

This theme of the SDGs addresses societal issues with the aim of improving wellbeing for people. Goals on zero hunger, clean and affordable energy, and good health are key in ensuring that people have dignified lives.



PROTECTING THE PLANET

This pillar of the SDGs addresses the protection of the biosphere, which is an essential precondition for everything else, including economic development and the wellbeing of all people. The activities of production, transportation, trade and the consumption of goods and services depend and have a direct impact on the biosphere, through the depletion of finite natural resources, emissions to air and discharges to sea and land.



BUILDING PROSPERITY

QI supports effective domestic markets, facilitates access to foreign markets, and helps to promote sustainable economic development. Prosperity is to a significant extent related to economic development. The economic success and prosperity of nations is inextricably linked to their ability to manufacture and trade precisely made and tested products and components that are accepted by trading partners and meet destination market and consumer requirements. Manufacturers need to ensure that their products are of consistent quality, comply with relevant regulations and standards, and meet the necessary requirements and specifications.

ECONOMIC GROWTH THROUGH TRADE

The 2030 Agenda for Sustainable Development recognizes international trade as an engine for economic growth and poverty reduction, and an important means to achieve the SDGs. Through their linkages with international institutions and associated networks of cooperation, a national or regional QI provides some of the necessary tools to ensure that differences in local requirements, including those contained in national standards and technical regulations, do not unduly restrict international trade.

The WTO Agreement on Technical Barriers to Trade (TBT) acknowledges the role of regulations, standards and conformity assessment procedures (such as testing, inspection and certification) for the efficient attainment of

public goals, and sets rules to ensure that these measures are prepared, adopted and applied in ways that do not create unnecessary barriers to international trade. The TBT Agreement specifies a “code of good practice” which member states must also implement in the preparation, adoption and application of standards. National standards bodies (NSBs) and related QI institutions collaborate on national, regional and international levels to maintain and develop the technical infrastructure required to address non-tariff barriers (NTBs) including TBT and sanitary and phytosanitary (SPS) issues.

Despite tariff free access for most of their products to developed country markets, the share of the least developed countries (LDCs) in international trade remains relatively small. One reason is a lack of infrastructure, facilities and expertise to ensure that the quality of their produce and/or products comply with the requirements of these more developed markets. Therefore, countries need to prioritize, invest in and appropriately improve their national QI.

As tariffs and other trade barriers reduce, the establishment of appropriate, equivalent and trusted QI capabilities helps to create a level playing field for all businesses in the region to compete. The processes involved can be illustrated by considering one of the QI-related organizations that the Asia Pacific Economic Community (APEC) has developed to promote improvements in QI throughout that region. The Asia Pacific

Laboratory Accreditation Cooperation (APLAC), a recognized region of ILAC, is a forum where national accreditation bodies cooperate to harmonize their accreditation practices and facilitate the mutual recognition of their accredited test, measurement and inspection results. The APLAC multilateral Mutual Recognition Arrangement (MRA) also reduces the need for the re-testing of products as they move between countries.

Accurate, traceable and repeatable measurements are indispensable for industrial production. The globalization of production, especially complex component parts, has significantly increased the need and demand for measurements that can be absolutely trusted. Meeting the requirements of international standards requires measurements that are underpinned by a capable national measurement system. This is a critical foundation of any credible QI

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT (ISID) AND INNOVATION

The QI institutions and the support services they provide have a fundamental role in promoting prosperity by supporting the development of industry and infrastructure, which in turn promotes economic growth. Metrology, voluntary, consensus-based standards and the related accredited conformity assessment capabilities provide an essential contribution

to innovation by fostering the development and broad dissemination of new technologies or products in line with established best practices. This in turn generates greater employment and fosters socio-economic development.

The insightful and cost-effective implementation of standards by competent authorities supported by an accredited conformity assessment body (CAB), can improve the ecological performance of materials and products and support the energy efficiency of products and systems, including the energy efficiency of buildings, industrial plants, vehicles and electrical appliances, among others. In this way, QI advances environmentally sustainable growth, by building institutional capacities for the creation of green industries through cleaner technologies for the production of goods.

Calibration and test reports, inspection data and certification produced by an accredited conformity assessment (CA) provider enables consumers, suppliers, purchasers and regulators to have confidence that products placed on the market are safe and meet the manufacturers claims made about them. These are produced through the calibration of measuring instruments, testing of products, inspection of safety critical items and the certification of products throughout the manufacturing supply chain. In this way, QI builds the trade capacities in industries, ensuring that they can effectively participate in international trade by demonstrating their compliance with global standards and norms.



MEETING THE NEEDS OF PEOPLE

QI ensures that peoples' needs are being met. For example, metrology provides trusted measurement data that ensures that people and consumers are protected. Demonstrated compliance with the requirements contained in standards also ensure that consumer and product quality expectations are met, including usability, price and reliability.

FOOD SECURITY AND SUSTAINABLE AGRICULTURE

Agriculture is an essential sector for developing countries and economies in transition. It provides food, employment and other basic resources and also acts as an important source of foreign currency through exports. However, the future of agriculture presents some particularly daunting and diversified challenges. For countries with a high population density and limited agricultural land, a key objective is to achieve high crop productivity and resource use efficiency, to ensure food security coupled with environmental sustainability. For least developed countries (LDCs) the overarching goal is to eradicate hunger and to secure adequate nutrition to all people, especially children. The QI institutions and services they provide have a fundamental and demonstrable role in the support of trade in food and agricultural products.

In agribusiness, voluntary standardization, mandatory requirements and related compliance procedures address aspects such as guidance on agricultural practices, requirements and standards for equipment supporting

agricultural activities and seeds, plants, animal feeds and other key agricultural inputs such as fertilizers and pesticides. The correct application of these standards ensures that food is fit and safe for consumption, which in turn allows people to live healthy lives and improve their social and economic wellbeing. Food safety standards such as Codex Alimentarius ("Codex"), the International Organization for Standardization (ISO 22000) on food safety management, and food safety standards and certification schemes from the Global Food Safety Initiative (GFSI) play a role in ensuring the health, safety and quality of food products.

Accredited test results, inspection data and accreditation certificates provide the necessary assurance so that consumers, suppliers and purchasers have confidence in the quality and safety of goods and in the provision of services throughout the supply chain. Samples, products, services, management systems or personnel can be evaluated against specified requirements by accredited laboratories and inspection and certification bodies to check that products are fit for purpose and safe for consumption. Chemical metrology provides essential inputs for addressing food safety issues, such as tracing contaminants in food and foodstuffs.

QI contributes to the achievement of the key targets of SDG 2, which concern ending hunger, food insecurity and malnutrition in all its forms, and ensuring access to safe, nutritious and sufficient food for all. It thereby ensures that food is grown in a sustainable way, assuring its quality.



GOOD HEALTH AND WELLBEING

QI plays a pivotal role throughout the health sector, specifically with regards to inputs (medical equipment and medicines), processes or activities (treatments and other interventions and patient care). It also ensures that people have access to high quality healthcare. QI promotes healthy lives for all. Guidelines and regulations that cover medical equipment and methods can only be relied on if the measurements and processes used to verify their compliance are accurate, traceable to internationally agreed reference standards, and performed using competently calibrated instruments.

Standardization helps ensure that medical devices are safe and fit for purpose. In this way, inferior products are prevented from entering the market, for example, ISO 14971 is an ISO standard for the application of risk management to medical devices. Risk management is a key component in demonstrating regulatory compliance for medical devices. Medicines and other major inputs to healthcare systems must also meet stringent quality and safety requirements, which are primarily covered by the World Health Organization (WHO) standards, guidelines and quality assurance procedures.



PROTECTING THE PLANET

The impact of human activity on the planet has reached dangerous levels, threatening the sustainability and management of natural resources, and the protection of the biosphere. QI contributes to the protection of the planet and biosphere by assisting in the responsible consumption of scarce resources.

RESPONSIBLE CONSUMPTION AND PRODUCTION

QI institutions and services are indispensable in supporting the transition towards sustainable consumption and production patterns. The application of appropriate standards is required to assess and improve the ecological performance of materials and products, thus supporting the resource efficiency of products. For instance, ISO 20400, the ISO standard for sustainable procurement, provides guidance to organizations, independent of their activity or size, on integrating sustainability within their procurement processes. It is intended for use by stakeholders involved in, or impacted by, procurement decisions and associated processes.

Accredited certification schemes supporting sustainable procurement – environmental or socially responsible labels – may be requested by purchasing authorities or used by bidders as a way of determining their environmental or social performance. These schemes also include, for example, the grade of product or service labels, such as the EU Energy Label.



Metrology supports the provision of data and information related to the amount of materials, energy, water and land used. It also enables producers to quantify and record the amount of emissions and waste generated by the extraction of materials, production processes and products' use.

National QI institutions, and their regional and international collaboration networks, provide indispensable support for the transformation of the production and consumption patterns required to achieve SDG 12. This leads to a better quality of life, with substantial reductions in the ecological footprints of human economic activities such as the consumption of raw materials and energy, and environmental pollution.



WAY FORWARD

The United Nations Industrial Development Organization's (UNIDO) approach to QI development is systemic and holistic, from building awareness to helping initiate, develop and strengthen a fit for purpose QI that runs efficiently and is cost-effective. This approach emphasizes the need for strong collaboration with all stakeholders and is driven by national and regional priorities including private sector needs. Together with partners from the public and private sector, academia, national and international organizations in charge of standards-setting and global practices on metrology, standards and conformity assessment, UNIDO promotes good practices, capacity building and training, and fosters global cooperation in standards-setting, measurement and compliance development along value chains.

Looking into the future, UNIDO will continue to help countries, particularly developing countries to exploit SDG-related opportunities, by working with them to develop appropriate Quality Policy (QP), Laboratory Policy (LP) and the associated QI, and by strengthening QI institutions and services which can be measured by the Quality Infrastructure Development Index (QIDI). This will enable consumers to make informed choices, encourage innovation and lead businesses and industries to take up appropriate new technologies and organization methods. In turn, it will improve current practices and support public authorities in designing and implementing public policies that are aligned with the SDGs.

Quality Infrastructure helps to build economic prosperity, improve the lives of people and protect the planet, thereby contributing to the achievement of the 17 Sustainable Development Goals.





UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Department of Trade, Investment and Innovation (TII)
Vienna International Centre,
P.O. Box 300, 1400 Vienna, Austria
Email: tii@unido.org
www.unido.org