

The Quality Infrastructure as a Flexible PPP System

INTRODUCTION

The modern quality infrastructure (QI) has evolved over decades as a flexible public-private partnership (PPP) system, with a clear understanding of the relevant responsibilities, strengths, and weaknesses of both the public and private sectors.

8.1 GOVERNMENT RESPONSIBILITIES

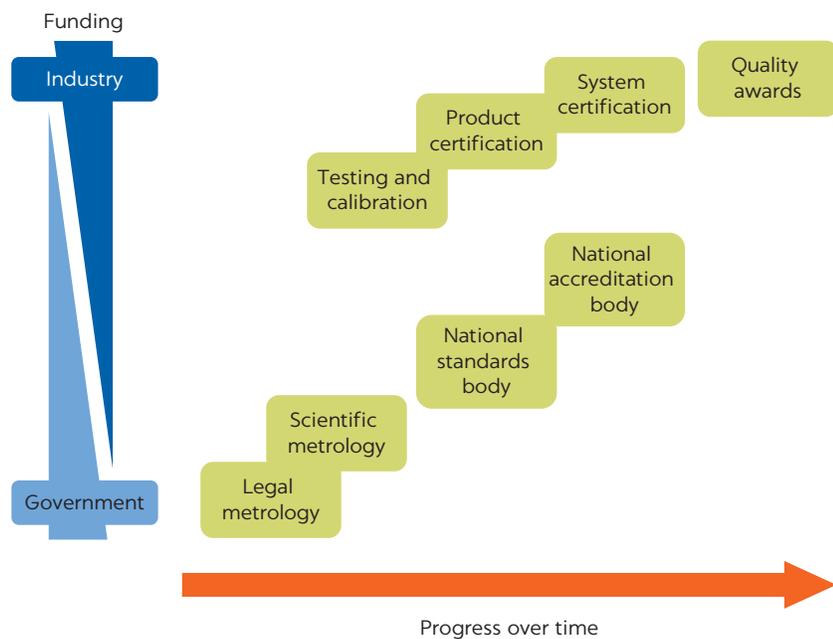
A country's QI, at its most fundamental level, is a system for the common good. Without organizations providing standards, metrology, and accreditation, none of the conformity assessment services can flourish. Without appropriate conformity assessment services, it will be difficult for any country's industry to integrate into the manufacturing value chains spanning the global economy or to access interesting markets.

The path, therefore, for any government is to (a) establish the QI fundamentals; (b) initiate the development of conformity assessment services; and (c) at an appropriate stage, withdraw from the latter to let private sector conformity assessment bodies take over service delivery. The challenges that any government faces involve political understanding, resources, timing, and boundaries—where to start and where to withdraw. The evolution of the QI in the Organisation for Economic Co-operation and Development (OECD) countries does provide a road map that low- and middle-income countries could emulate with success (figure 8.1).

8.2 METROLOGY

Metrology was established already centuries ago as governments in antiquity realized that accurate measurements are necessary for building and construction as well as for equitable trade transactions (as further discussed in module 4). The necessity for the state to gather appropriate taxes probably also played a part. The state established measurement standards and controlled the

FIGURE 8.1
Typical evolution and funding of the quality infrastructure



Source: Racine 2011.

measuring equipment used in trade. These developed into the weights and measures departments of the late 19th century. The same applied to the massive building and construction projects that the state undertook. As science and technology developed, the need for more accurate measurements arose, and the state established scientific metrology institutes during the Industrial Revolution in the technologically advanced nations.

These developments of many years ago hold true even today. Many low- and middle-income countries do have government weights and measures departments that are responsible for the control of measuring equipment used in trade. Many of these countries have also realized that a level of scientific measurement capability is required, and this responsibility has been given to the weights and measures departments. As the country develops technologically, the scientific metrology capability has to be extended, and as socioeconomic development takes place, so also does the need for legal metrology, rather than just weights and measures.

Both elements of the metrology infrastructure—scientific metrology and legal metrology—remain a government responsibility in almost all countries. A review of the membership of the International Organization for Legal Metrology (OIML) and the General Conference on Weights and Measures (CGPM) of the Metre Convention indicates that few, if any, private sector entities operate as national legal metrology authorities or national metrology institutes (NMIs). Scientific and legal metrology is a paramount example of a system for the common good of the country. Therefore, the responsibility for the establishment, funding, and continuous operations of a metrology system remains largely with the state.

It is true that scientific and legal metrology institutions can and do provide services for which they get paid by their customers, but this revenue is nowhere near adequate to cover operational and especially development costs. It is also

arguably the incorrect approach to push the scientific and legal metrology institutions to become financially self-sufficient, because the common-good services will suffer as money-making services are pursued for purely financial reasons. Long-term financial planning (for at least 5–10 years) and the unstinting support of the government in this regard are important for the establishment and maintenance of an effective metrology system in any country.

Calibration, however, is different. Even though the legal metrology and scientific metrology entities initially have to provide calibration services, in modern QI systems, calibration services are largely provided by private sector calibration laboratories. The NMI provides the technological link between international measurement standards and these calibration laboratories through the calibration of the laboratories' working standards, and the national accreditation body ensures their technical competence through accreditation. The major challenge for a country seeking to establish a vibrant and market-related calibration infrastructure is for the two governmental metrology entities to relinquish any actual or perceived monopoly on calibration services. This is a government policy issue as well as an operational challenge on the part of governmental metrology entities, with government funding for scientific and legal metrology at the core of it.

8.3 STANDARDS

The next step in the evolution of the QI is the establishment of a national standards body (NSB) (as also shown in figure 8.1). NSBs are responsible for the development of national standards and provide the link to the international standardization world. Looking at the membership of the International Organization for Standardization (ISO), for example, it is abundantly clear that most NSBs are either government bodies or organizations mandated by public law. Private sector NSBs are in the minority, and those that do exist are registered as organizations without a profit motive. This underscores the notion that NSBs are also part of the common good for the country's QI system.

In industrialized nations, NSBs established by the private sector have evolved (for example, in Germany and the United States); but even there, a formal agreement exists between the state and these NSBs for the provision of national standards and liaison with the international standardization environment, coupled with state funding. Some of these NSBs may obtain the bulk of their funding through the sales of standards and standards-related information, but they have the backing of a well-developed and standards-knowledgeable industry. This is certainly not the case in low- and middle-income countries and is also the exception in many high-income countries.

Hence, either the state has to provide the bulk of the funding for national standardization activities (development of national standards, liaison with the international standardization environment, operation of a standards information center, provision of a World Trade Organization [WTO] Technical Barriers to Trade [TBT] Inquiry Point, and so on), or the NSB needs to obtain funds from other sources such as the provision of conformity assessment services. The concept of "core funding" evolved in this respect, with the state providing finances for the common-good activities of such NSBs, whereas their conformity assessment services are not cross-subsidized by the state and have to operate as financially self-sufficient services (ISO 2010).

In recent decades, several private sector standardization bodies—removed from the general needs environment—have been established. These consortiums and nongovernmental organization (NGO)–type standards bodies develop standards mostly for use in private sector certification schemes, either as a business venture or as a result of socioeconomic pressures from consumers who are worried about environmental and social issues. Although these standards have become important in trade, they are not the responsibility of the state. Hence, the state generally does not support their development.

The relationship between private standards and national standards is an evolving one, and more collaboration may develop as both sides realize, on the one hand, that standards need to be harmonized internationally to foster trade but, on the other hand, that the needs of industry and society also have to be addressed much more rapidly than international or even national standards currently are capable of doing (von Hagen and Alvarez 2012).

8.4 ACCREDITATION

The most recent step in the development of the fundamental QI services is accreditation. It developed really only in the aftermath of World War II, in the wake of increased trade among trading partners. It is now the preferred methodology to demonstrate the technical competency of conformity assessment bodies, both within common markets and beyond those markets' boundaries. This is so because, in most industrialized countries, conformity assessment activities increasingly migrated from the public to the private domain during this time, and some type of independent verification of their technical competence became necessary (Racine 2011).

Accreditation services are generally provided in a noncompetitive manner worldwide, even though they did not start that way. When a national accreditation body (NAB) has been established and has been internationally recognized, it typically retains a monopoly over its activities. This is so because accreditation plays such an important role in determining the technical competency of conformity assessment bodies, initially in the regulatory domain (from which governments are slowly extracting themselves, even though they still like to keep oversight over service delivery). Accreditation has in the meantime developed to the stage where it is also a factor for industries wishing to export and needing conformity assessment services that are internationally recognized.

In some countries, a number of accreditation bodies that developed sectorally over the years have been merged into one national body, such as in Germany and Italy, albeit at the instigation of the European Commission. Private sector accreditation bodies still do exist, and some have been designated as their countries' NABs and given a measure of regulatory authority, such as in Germany and the Netherlands. Some other private sector accreditation bodies operate only within a given conformity assessment scheme, such as the SA 8000 (social accountability), the Marine Stewardship Council (sustainable seafood), and the IATF 16949 (automotive components), among others.

The accreditation environment is also still evolving, but the notion of it being noncompetitive will probably be strengthened rather than weakened. That is, NABs will refrain more and more from providing services other than in their own countries, and regional accreditation bodies will remain within their regions.

In addition, international recognition will remain as a peer review process; that is, at some point the oversight function has to be contained and not be subjected to ever-increasing layers of national, regional, or international bureaucracy. The establishment of an NAB is a long-term process, with quite a few years needed to gain international recognition through the International Laboratory Accreditation Cooperation (ILAC) and International Accreditation Forum (IAF) multilateral recognition arrangements. This means government financing for the short to medium terms is essential even after such recognition has been achieved. With the accreditation body frequently limited in the fees it may charge (because of its regulatory-related activity), state support is usually required also in the medium to long term for regional and international liaison and recognition activities.

8.5 PRIVATE SECTOR INVOLVEMENT IN THE QI

As can be deduced from figure 8.1, in high-income countries, conformity assessment services (testing and inspection, product certification, and so on) are largely established and funded by the private sector. This does not come about all by itself; it is the combined result of (a) a liberalization policy rigorously implemented by government, and (b) the growth of the market for such services to a size that will attract private sector investments.

8.5.1 Liberalization of conformity assessment services

In the initial stages of the establishment of the QI in a country, the government has to take the lead not only in establishing the fundamentals (standards, metrology, and accreditation services) but also in establishing conformity assessment services (inspection, testing, and certification), because there is not yet a market for such services that would entice the private sector to do so. The growth of the market for conformity assessment services comes only with time, as industries develop to the point where they require it or as technical regulation regimes are implemented that demand proof of compliance from suppliers of products.

Such conformity assessment services are provided by various government-type institutions, such as the NSB, the NMI, the legal metrology authority, scientific research organizations, various regulatory authorities, and the like. Increasingly, however, the possibilities for the private sector to invest in conformity assessment bodies will manifest themselves. The government then needs to make and forcefully implement the policy decision that it will also use conformity assessment services from independent private sector conformity assessment bodies, and not only from state-owned ones—in other words, that it will liberalize the conformity assessment market.

This takes a fair amount of political resolve, because state-owned bodies will invariably be subjected to increased competition, when in previous times they enjoyed a real or perceived monopoly. This may have an impact on state finances, as state-owned institutions can no longer rely on their privileged position to extract fees and levies from suppliers without worrying too much about quality of service and hence become more reliant on financial support from the state. Alternatively, state-owned institutions may have to downsize—a move with political consequences in many countries where the state is a major provider of secure employment opportunities.

Once such a liberalization of conformity assessment service delivery has taken root, the country will benefit from one or more of the following as the private sector plays an increasing role in providing such services:

- Private sector conformity assessment bodies generally operate much more efficiently than public sector bodies, thereby cutting down on the time taken to deliver the service.
- Private sector bodies usually are able to react much faster to changing markets than public sector bodies subject to multilevel government decision-making processes, thereby aligning their service delivery in real time instead of months or years after the fact.
- Suppliers may be able to access the services of more than one conformity assessment body, thereby invoking market forces to optimize service delivery versus price decisions.
- The state is no longer required to invest heavily in laboratory infrastructure, thereby relieving some pressure on state finances.
- Remuneration levels for scarce human resources become market-related, and trained and experienced technical staff are more likely to remain in conformity assessment rather than migrating from the civil service to unrelated but better-paying jobs.

Failure to liberalize conformity assessment services (that is, retaining them solely within the public service) will result in fewer choices for the clients of such services. In addition, market forces will not be brought to bear on the level and quality of service delivery, and it is debatable whether the public service's technical competency can be maintained in the long run. The government may choose to retain some high-level testing services as a reference laboratory in specific regulatory areas. In many low- and middle-income countries, the government is also the only organization that funds precompetitive research. Such laboratories can obviously also provide the more mundane testing services when so requested by industry or regulatory authorities.

In such a liberalized conformity assessment market, the need for an independent demonstration of the technical capabilities of the conformity assessment bodies becomes more important from both public and private sector perspectives. Accreditation by an independent accreditation body is the vehicle that has evolved in the past few decades for this purpose, slowly replacing other government department-specific type systems.

8.5.2 Conformity assessment services and the NSB

The national standards body often leverages its knowledge about standards by providing conformity assessment services. If this is not a decision by the NSB itself, it is often predestined by its founding legislation, if it is a government-type organization. Any government obviously also wishes to optimize scarce human and other resources in the delivery of conformity assessment services. A question that invariably surfaces every now and again is whether this is a useful solution or whether this constitutes a conflict of interest.

In some countries, conformity assessment services are heavily subsidized by the state to support industrial development, especially in the small and medium enterprise (SME) sector. When industry has developed to the point where it could and should pay market-related prices for such services, government conformity assessment bodies should start charging such prices in order to not

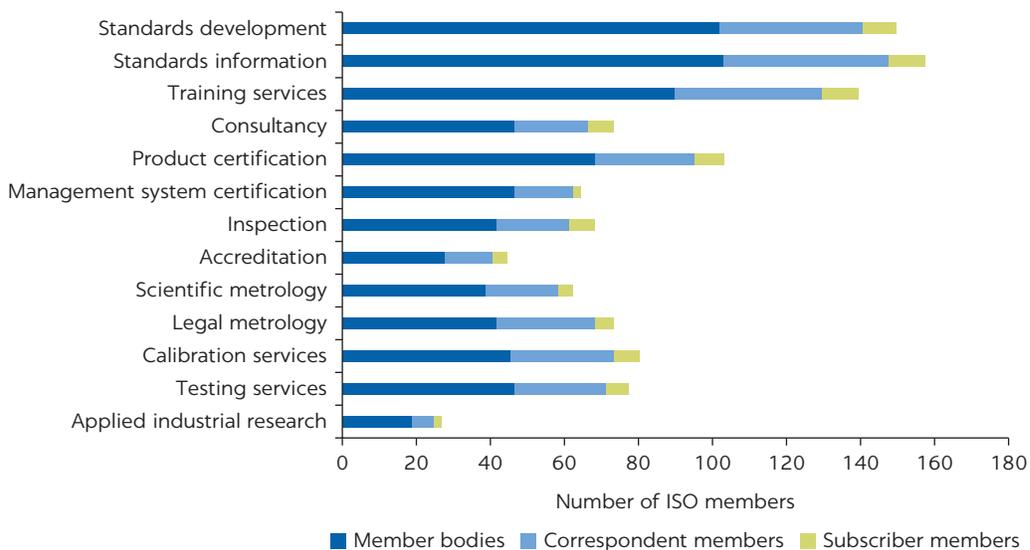
continue distorting the market; that is, government subsidies should fall away. In many high-income countries, such as OECD members, the governments have even withdrawn from the conformity assessment market, leaving service delivery totally to the private sector.

Two points of view regarding the provision of conformity assessment services by NSBs have emerged. On the one hand, critics argue that testing and certification should be separated from the NSB to ensure that the NSB stays focused on its core (but not very lucrative) function, namely, the development and publication of national standards. If the NSB also provides conformity assessment services, this focus tends to shift to the development of standards needed by the NSB rather than by industry or the authorities. The situation is even worse if national standards are designated as mandatory or compulsory standards by the relevant ministry but the implementation thereof is vested in the NSB.

On the other hand, the rationale for the NSB to offer conformity assessment services is that (a) the industry is not yet at a stage of development where such services can be offered through the market, or (b) the surplus income from such services can help subsidize standards development. In low- and middle-income countries, this approach can provide a more effective “one-stop shop” approach and give more visibility to the NSB. This approach also limits the number of directors, other executives, and buildings that otherwise would have to be funded by the state.

Considering the membership of the ISO, the latter is the situation for many of the NSBs making up its membership, even though there are NSBs that only develop and publish standards, mostly in highly industrialized countries or where operating as government departments. A breakdown of services that ISO members offered in 2009 is shown graphically in figure 8.2. (More recent information is not available, but it probably has not changed much.)

FIGURE 8.2
Services offered by ISO members, by membership type, 2009



Source: ISO 2009.
 Note: ISO = International Organization for Standardization.

Even in some OECD and European Union countries, NSBs are sometimes involved in providing conformity assessment services. However, they are never involved in activities linked directly to the implementation of technical regulations or mandatory or compulsory standards, such as premarket approval of products, market surveillance, or the imposition of sanctions. These activities are considered to be a conflict of interest in more than one way, and industry tends to see the NSB as a regulator rather than as an organization established to support business and product development. Therefore, in countries where this is still the case, governments should seriously consider separating these technical regulation tasks from the NSB. The NSB may still provide conformity assessment services, but it should do so in competition with others, and it should be accredited for such services, just like all the others.

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