1

Comprehensive QI Assessment

1.1 INTRODUCTION

This annex contains the methodology for a comprehensive assessment of a country's quality infrastructure (QI) based on the detailed description thereof in modules 3–8 of *Ensuring Quality to Gain Access to Global Markets: A Reform Toolkit* (henceforth, QI Toolkit). Hence, the comprehensive assessment should not be conducted without having carefully studied modules 3–8 of the QI Toolkit.

Nevertheless, to evaluate the QI of a country with this Comprehensive Diagnostic Tool will require the involvement of knowledgeable experts, the full support of the country to be assessed, and quite a long time—at least a few weeks in the field. The outcome of such an evaluation will be a detailed report on the status and efficacy of the QI of a country (see also module 9, section 9.2, of the QI Toolkit).

The Comprehensive Diagnostic Tool has a companion—the Rapid Diagnostic Tool (see module 9, section 9.1, of the QI Toolkit)—that allows for a much quicker but less detailed assessment of a country's QI. The Rapid Diagnostic Tool can be used for a quick assessment that would enable a better decision to be made regarding the need for a more detailed assessment, which would be much more resource-intensive.

The QI Toolkit, as well as the Rapid Diagnostic Tool, can be downloaded from the World Bank website (http://www.worldbank.org/qi) and the National Metrology Institute of Germany (PTB) website (https://www.ptb.de/qitoolkit).

1.2 COMPREHENSIVE DIAGNOSTIC TOOL

1.2.1 Elements of the Comprehensive Diagnostic Tool

The Comprehensive Diagnostic Tool provides information on the evaluation of the QI in a number of important elements:

- National policy and legal environment
- The fundamentals
  - Standards
  - Metrology
  - Accreditation

- Conformity assessment
  - Inspection
  - Testing
  - Product certification
  - Management system certification
- Technical regulation framework
  - Technical regulation
  - Legal metrology

The Comprehensive Diagnostic Tool questionnaire is provided as an online tool for practitioners. The questionnaire and details of its use can be found in this annex, available on the World Bank website (http://www.worldbank.org/qi), as well as on the PTB website (https://www.ptb.de/qitoolkit).

1.2.2 Approach of the Comprehensive Diagnostic Tool

The Comprehensive Diagnostic Tool follows a specific logic, starting from the policy and legal environment before dealing with each of the QI elements. The outcome of the evaluation provides qualitative results that an expert can turn into quantitative results. Over and above in-depth reports, the results can therefore also be made visible in dashboard-type images for a more rapid understanding of situations when discussing them with counterparts.

Coordinating the QI: The policy and legal environment

The various elements of the QI are interrelated, and coordination of their responsibilities and services is an important parameter. Hence, while dealing with the various elements of the QI individually, their overall coordination should not be neglected.

Such coordination is usually provided for in government policy, such as a national quality policy, that clarifies the interdependence between the fundamentals, QI services, technical regulations, and the market. It should also be related to the broader trade or export development policies. Furthermore, the coordination between (a) the fundamentals and QI services, and (b) the technical regulation (the mandatory manifestation of the QI) is provided for in what is generally known as a technical regulation framework. Therefore, evaluation of the quality policy and the technical regulation framework are included in the Comprehensive Diagnostic Tool.

The "pillar and building block" approach

In constructing a diagnostic tool for each of the identified elements of the QI, it is useful to consider the "effectiveness" of each of the QI elements in relation to four pillars:

- *Pillar 1: Legal and institutional framework*, in which the broader environment within which the entity is legally established and operating is considered
- *Pillar 2: Administration and infrastructure*, in which the organizational structure and the necessary infrastructure of the entity to fulfill its responsibilities are considered

- *Pillar 3: Service delivery and technical competency*, in which the output and services of the entity are considered, with special emphasis on their demonstrable quality
- *Pillar 4: External relations and recognition*, in which the important liaisons of the entity with relevant regional and international organizations are considered in view of the need to be acknowledged for its output and services

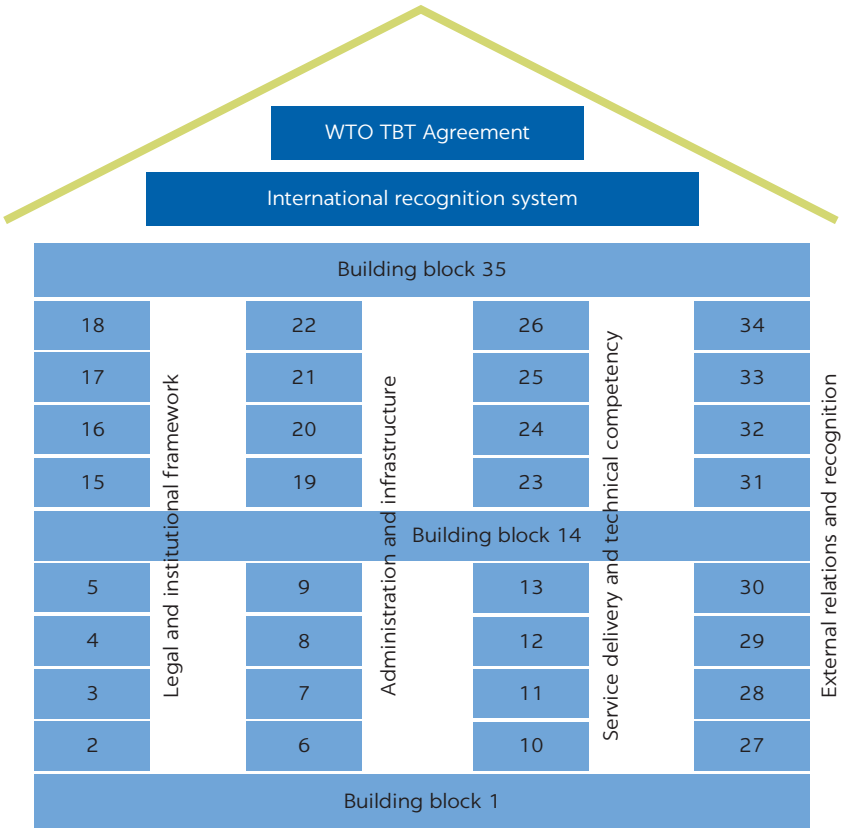
Each of these pillars consists of building blocks that have to be in place for the QI element to function optimally and to comply with international good practices and requirements. Some of the building blocks for each of the QI elements would be similar, but there will also be quite a few differences. Such an approach can be illustrated as being a "building" (figure 1.1).

Weighted or not weighted

In allocating a quantitative measure to the various building blocks, the question of whether all of them are of equal weight needs to be clarified. Arguably, some of the building blocks must be in place; otherwise, the QI element has no chance of being considered established or recognized. These could be considered "fundamental." At a second level are the "major" building blocks, those

FIGURE 1.1

Building blocks of a QI (conceptual)



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Note: QI = quality infrastructure. WTO TBT Agreement = World Trade Organization Agreement on Technical Barriers to Trade.

necessary for the service delivery to be effective and efficient. At the third level are the "minor" building blocks, those in which the custom and practice of the country play a role rather than international practices. The quantitative evaluation will have to take cognizance of such differences.

A supplementary way of looking at the absolute necessity or otherwise of a specific element or service of the QI would be to consider it as part of (a) the *basic QI* (relevant for a low- or middle-income country approach); (b) an *advanced QI* (relevant for an economywide approach); or (c) ultimately as a *mature or innovative QI* (relevant for a high-income economy or world-class approach). If there is virtually no QI established, then a *rudimentary* state exists, which is a major challenge for the country irrespective of its development status (see also module 2, section 2.2.2, of the QI Toolkit). The country's development status is not equally relevant for all the QI elements; it is more relevant for those of a more technical nature, such as metrology. It certainly influences the decision about which level of technical support a country needs. This evaluation is included in all of the elements of the QI because of the differences; it is difficult to provide a structure that is valid for all.

Assessment and infrastructure

A comprehensive assessment of the QI of a country is a complex undertaking. It is virtually impossible to reduce the outcome of such an assessment to a single figure or a simple pronouncement. There are just too many possibilities and nuances that have to be considered, too many externalities that have an influence.

Therefore, the Comprehensive Diagnostic Tool endeavors to provide for a qualitative and quantitative approach for each of the QI elements, which can be made visible in a "building" showing the state of implementation through color-coded "bricks" (figure 1.2), a radar-type diagram (figure 1.3) for the individual elements, or a dashboard illustration for the QI collectively (figure 1.4), supported by extensive narrative.

For each of the building blocks, the comprehensive diagnostic

- Provides details about the best practices against which the building block should be compared, under the heading "What is meant";
- Shows how the building block can be demonstrated (that is, describing the elements that indicate that the practice exists), under the heading "How can it be demonstrated"; and
- Shows where the assessor could find information to support the existence of such practices, under the heading "Existing information/reporting/monitoring."

For each building block, an indication as to whether it is "fundamental," "major," or "minor" is also provided. This will help the assessor to determine the extent and significance of the gap between the current situation and international good practices, which in turn will be an indication of the "effectiveness" or otherwise of the QI elements in the country, leading ultimately to a judgment call on how much support the country would need to develop its QI to the point where it meets the needs of its stakeholders.

The evaluation is therefore a complex array of levels of (a) *implementation* ("implemented," "mostly implemented," "partially implemented," or "not implemented"); and (b) *classification* ("fundamental," "major," or "minor"). A judgment call will have to made to determine how far a project wishes to take the capacity-building exercise. A reasonable approach would be that the

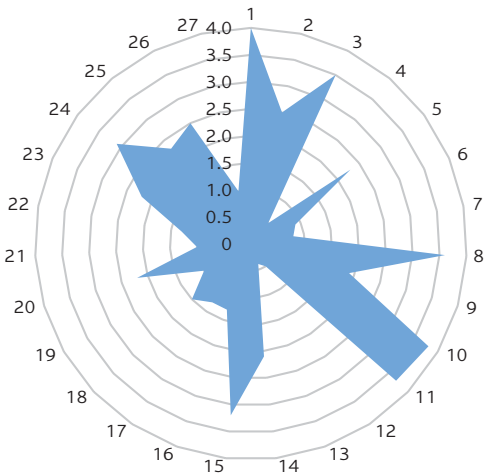
FIGURE 1.2

Implementation of a QI entity, by building block status (conceptual)

Source: Adapted from PTB 2007. ©National Metrology Institute of Germany (PTB). Reproduced with permission from PTB; further permission required for reuse.
Note: QI = quality infrastructure. WTO TBT Agreement = World Trade Organization Agreement on Technical Barriers to Trade. Figure shows a "dashboard"-type illustration that tells the viewer at a glance what the implementation status is without having to read through lengthy reports. Once all building blocks are green, then implementation is complete.

FIGURE 1.3

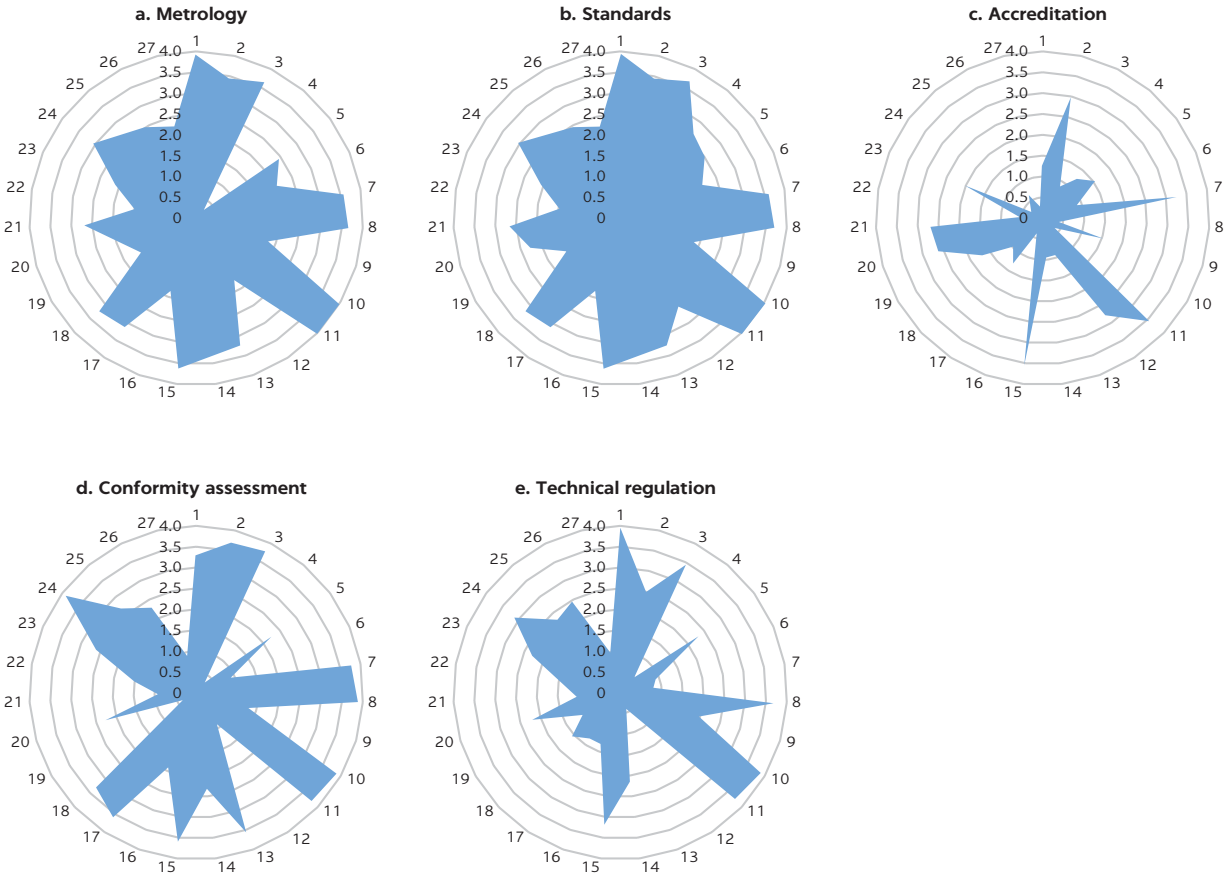
Radar diagram of QI entity's implementation status (conceptual)



Note: QI = quality infrastructure. Each number around the outside corresponds to a building block, whereas the values 0–4 are either a direct result of the rapid diagnostic or the representation of the percentile-based results of the comprehensive diagnostic (4 being 100 percent and 2 being 50 percent).

FIGURE 1.4

Dashboard illustration of QI implementation status, by QI element (conceptual)



Note: QI = quality infrastructure. In each radar diagram, the numbers around the outside correspond to building block numbers, whereas the values 0–4 are either a direct result of the rapid diagnostic or the representation of the percentile-based results of the comprehensive diagnostic (4 being 100 percent and 2 being 50 percent).

"fundamentals" must be dealt with, and the "major" issues likewise. The "minor" issues are, to some extent, "nice-to-haves" or "nonmandatory" and would be included, resources permitting.

To depict the "building" (figure 1.2) or construct a radar diagram (figure 1.3), the implementation status of each of the building blocks has to be given a numerical value (that is, the percentage implemented). In this Comprehensive Diagnostic Tool, the expert assessing the QI will have to provide a quantitative and qualitative result based on the expert's experience, as well as the narrative in the various sections of this diagnostic tool, and it has to be an evaluation based on a matrix-type approach. The question-and-answer methodology in the Rapid Diagnostic Tool (discussed in module 9, section 9.1, of the QI Toolkit) can provide some guidance in this respect.

Once the percentages are determined, it is fairly easy to construct a radar diagram (figure 1.3). To depict the "building" will take an additional step. The percentages can be grouped into four categories, such as the following:

- *More than 75.1 percent:* Implemented
- *50.1–75 percent:* Mostly implemented

- *25.1–50 percent:* Partially implemented
- *0–25 percent:* Not implemented

The four groups (or more, if the four are considered too coarse a grading) can then be given different colors in the "building" (as in figure 1.2). It helps if the colors are chosen to coincide with a color scheme that can be psychologically understood by the potential readers.

1.3 The need for expert knowledge

The comprehensive evaluation criteria contained in this annex do not negate the necessity of expert knowledge when conducting a comprehensive evaluation of a country's QI. The criteria are, to a large extent, guidelines that endeavor to ensure that all the important issues are included in such an evaluation. It is especially the difference between the country's QI and (a) its compliance with stated or formal criteria; and (b) criteria for competent, effective, and efficient working structures that are important to highlight during such an evaluation. The former can be provided on paper as a checklist to be ticked off, but the latter depends on the judgment, and hence experience, of the evaluator, as well as quantitative evidence. These are not easy to encompass in a publication such as this.