



Assessing metrology needs that support national priorities

The purpose of an NMS is to support measurement related activity across a country's economy. One of the first tasks of a government in establishing its NMS is to develop a national metrology policy. Establishing a national metrology policy begins with assessing the priorities of the country and specific needs as they relate to the economic sectors, technological infrastructure, population size, and geography, mapping those priorities against metrological needs and whether there are existing metrology capabilities, and finally, establishing (or shaping, if it exists) the national metrology system to meet these needs.

Assessing metrology needs related to sectoral priorities

The starting point for drawing up a national metrology policy should be an understanding of which sectors are the most important to the country's economy, both currently and in the future. The assessment of the country's priorities and specific needs gives a clear understanding of the context in which to focus metrology activities. In determining these priorities, governments may wish to take account of the following factors:

- Many economic sectors are very dependent on metrology for their ability to demonstrate the quantity of a sellable product, allowing them to compete in export markets. In particular, bulk agricultural products and extractive industries (for example minerals or energy products) need a solid weighing infrastructure to demonstrate quantity.
- Industrial products, including components that will be exported or imported, require world-class industrial metrology to be competitive. The metrology needs for industrial production are likely to be broader than a just a weighing infrastructure, and could include length, temperature and pressure metrology, as well as material and chemical metrology. High-quality semiconductor components require accurate dimensional metrology.
- If goods are pre-packaged prior to export, this requires a legal framework for verifying the amount of contents according to international standards.
- Security, environmental and health sectors often require radiation metrology in addition to more traditional physical and chemical metrology.
- Food and agricultural products are often obliged to meet demanding quality requirements (to determine value, safety or nutritional content) in export markets.
- Perceptions of consumer protection can be important for the tourism industry.
- The country's regulatory sector will likely require metrology support (safety, health, environment, consumer protection etc.).

Mapping the priority sectors against the existing national metrology system

Different areas of metrology are relevant to different sectors of industry, commerce, scientific research and innovation. Even in large economies it is not possible to support every possible need, so priorities must be set, and choices made. Once the priority sectors have been identified, the assessment should focus on parts of the national quality infrastructure which are most important to those sectors. This requires examination of availability of internationally harmonized documentary standards (including mandatory standards in the form of regulations), and availability of accredited calibration laboratories and conformity assessment bodies linked with ILAC, as well as the availability of national institutions (these can be both public and private) that carry out metrology activities.

It is recommended that assessment includes:

- Defining which measurements are mainly concerned with legal metrology and which are concerned with scientific and industrial metrology.
- Further multilayered assessment of needs in metrology activities (what metrological services are needed, level of measurement, required measurement range and measurement uncertainty).
- Assessment of national metrology capabilities already existing in the country (private, semi-public and public laboratories, staff required, technical and financial resources etc.).

Shaping and establishing the national metrology system

The result of mapping the priority sectors against the existing capability (if any) gives appropriate knowledge for creation of the law on metrology; this should include the framework in which metrology in a country operates and regulatory aspects of metrology. Having undertaken the assessment, a country will be in the position to describe its NMS, including the law on metrology and physical institutions that carry out metrology in the country.

Where to go for expertise?

Policy-making is by definition the exclusive role of governments, although it will usually be desirable to develop policies in consultation with the other bodies and companies that provide metrology services and with the users of the metrology system. It is recommended to seek advice from regional organizations. International organizations that specialize in scientific and legal metrology (BIPM and OIML), scientific universities, as well as UNIDO and the World Bank Group are excellent resources when determining best practices in establishing an NMS.

www.bipm.org



For further information:

This insert has been developed from the BIPM and OIML joint publication:
National Metrology Systems - Developing the institutional and legislative framework.

For more complete information, please refer to this document and its references.
The document is available through the BIPM and OIML websites.

www.oiml.org

