# *THE IMPORTANCE OF LEGAL METROLOGY TO THE CARIBBEAN, BY DAVID TOMLINSON, TECHNICAL OFFICER – METROLOGY, CARICOM REGIONAL ORGANISATION FOR STANDARDS AND QUALITY (CROSQ)*

## *Weights and Measures*

The importance of metrology - the science of measurement, to the development of national economies and its critical role in international trade has been receiving increasing international attention and promotion since the signing of the Metre Convention on 20 May 1875. Recent advances in modern technology have both contributed to and benefited from significant leaps in how accurately mankind measures however, the fundamental need to ensure confidence in trade has not changed in the over 5000 years since the first metrology systems were developed in ancient Egypt.

During colonial times, the Caribbean played a significant role in international trade as the major supplier of the most highly prized and traded products of that time such as sugar, cotton and spices. Although the Caribbean has significant influences from the four (4) largest metropoles, Britain has left the strongest legacy on the governance of the majority of countries within CARIFORUM, the Caribbean Forum of the African, Caribbean and Pacific (ACP) Group of States. Many Caribbean countries inherited a system of Weights and Measures that gave the State the sovereign right to declare a national measurement standard without contest or need for international traceability and where the National Police Force was responsible for the promulgation and enforcement of these standards.

After independence, the Caribbean continued to be a major source of natural resources and products trading mostly with European countries. During this time the Caribbean benefitted from preferential trade agreements, which provided a favourable environment for the growth of the Caribbean export and manufacturing sector. As a part of the framework set up to regulate the manufacturing industry, National Standards Bureaus (NSBs) were established with the responsibility to ensure that these products did not jeopardise the health and safety of citizens. At inception the NSBs focused primarily on three (3) areas: Standardisation - the production of written specifications, Weights & Measures - ensuring the accuracy of the mass and volume measurements, and Market Surveillance - the monitoring of products presented for local sale. When it came to export, the Caribbean exported a limited number of finished products with the majority of exports being agricultural products or raw materials. The quality of these exports was determined by the buyer on arrival in the foreign market and the price paid to the supplier was based on this determination. All of these combined elements meant that legal metrology was the sole subfield of metrology on which the Governments in the Caribbean focusedi.


*Picture 1: showing the national half pint standard of 1890 for Saint*

As the global marketplace changed and the Caribbean lost its prominent role in world trade, the Governments of the Caribbean had to begin grappling with the peculiar vulnerabilities arising mostly from the disproportionate impact of globalisation and climate change, insularity, high per unit transportation costs, limited natural resources and high import levels and costs. In a response to these and other shared challenges, the countries of the English speaking Caribbean banded together to form the Caribbean Community (CARICOM) and this organisation eventually expanded to include Haiti and Suriname. The Dominican Republic is not currently a member of CARICOM but they have applied to join and benefit from cooperation with CARICOM under the framework of the CARIFORUM. To support the growth of quality infrastructure within the region, the CARICOM Regional Organisation for Standards and Quality (CROSQ) was established in July 2001. CROSQ and the Dominican Republic represented by the Instituto Dominicano para la Calidad (INDOCAL) have been closely cooperating since 2010 under the framework of CARIFORUM projects and German Federal Government funded projects managed by the Physikalisch-Technische Bundesanstalt (PTB).

During the last five (5) years of CARIFORUM wide technical cooperation in metrology, the other subfields of metrology became a priority in order to ensure the traceability of all measurements used nationally. This was due to the fact that the majority of countries had weak capabilities in the two other subfields of metrology (i.e. scientific and industrial metrology). To assist with this regional development, the position of Technical Officer – Metrology was created at CROSQ Secretariat to coordinate all the regional and national efforts in metrology development. In addition to the technical work, States began to see the need for their regulations to evolve from a Weights and Measures Regime to a Metrology System harmonised with the work being done in the global metrology community and as such as Legal Officer was hired to provide guidance in this harmonisation process.

This increased focus on the other metrology subfields meant that legal metrology development became the responsibility of the individual States but now these States have requested increased regional cooperation and technical support in legal metrology. This demand is due to its important role in the regulatory framework of the country and also due to the challenges being faced in meeting the national demands for industrial calibrations. In many cases the accuracy and type of calibration services demanded by industry are not sustainable on the national level so to support this CROSQ has been developing regional calibration centres called Caribbean Reference Laboratories (CaRLs) and strengthening industry quality management systems and laboratory accreditation. Each country would then develop only those calibration services that their local industry can sustain but regardless of this, legal metrology will be the most important subfield of metrology due to its strong foundation in the regulatory framework of each country. In response to the region's request, CROSQ began by conducting a survey of the national areas of demand. From this survey it was learned that there is still a significant demand for the basic areas of legal metrology due to the high number of developing and emergent legal metrology systems. Of the fifteen (15) CARIFORUM States there are three (3) with very developed legal metrology systems. The remaining twelve countries are evenly split between those with developing and newly emergent legal metrology systems. The three advanced states have a long history of providing verifications of scales, fuel dispensers, compression testers, potable water meters, pre-packaged goods and electrical power meters. As CROSQ begins work to create and implement a capacity development programme for the region, the Member States have responded on their own by increasing their cooperation on a bilateral level by providing technical assistance in the previously mentioned areas of competence.

To support the regional development of legal metrology, CROSQ is currently constructing a Knowledge Management

System (KMS) with support from the 10th European Development Fund – Caribbean Regional Indicative Programme (EDF-CRIP) Economic Partnership Agreement - Technical Barriers to Trade (EPA-TBT) Project. One important aspect of this important KMS will be to house the training documentation and electronic learning platform for metrology. At the same time as the KMS is being procured and installed, CROSQ was approached by the ACP-EU TBT Programme to cooperate on a legal metrology e-learning project being developed by the TBT Programme. This e-learning initiative coupled with a strong quality management system in each country will greatly improve the region's ability to assist developing NMIs and minimise the risks presented by the high staff turnover by ensuring that staff have access to all the theoretical aspects of legal metrology. CROSQ and the NMIs would then complement this theoretical aspect with practical training through either internship opportunities or workshops. To this end a module based capacity building proposal was developed for which funding and assistance from development partners is now being sought.

## *Conclusion*

As the countries of the CARIFORUM region look to ensure the sustainable development of their economies, legal metrology has been and will continue to be one of the fundamental pillars in a harmonised internationally recognised quality infrastructure. The lower infrastructure costs in comparison to the other subfields of metrology and the regulatory structures that require periodic verifications will ensure the sustainability of any resources invested nationally and regionally. To assist in improving the competence in all CARIFORUM States, many NMIs have started cooperating bilaterally in areas of shared interest and from the advanced to the developing NMIs. CROSQ has complemented this initiative by developing a KMS which will be housed at the CROSQ Secretariat in Barbados with the first metrology training initiative being developed by the ACP-EU TBT Programme. Having this theoretical information at hand will mean that States can begin training as the need arose either because of deciding to expand into a new area or because of hiring new staff. To complement this CROSQ would then support the NMIs with practical training opportunities with support for regional and international partners. All the efforts being made within CARIFORUM to develop an internationally recognised metrology system with legal metrology being the most important subfield will ensure the development of a strong regional quality infrastructure that will support the sustainable economic development of all the economies of the region.

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*i Metrology is divided into three (3) subfields. Scientific metrology covers general theoretical and practical problems concerning the establishment of units of measurement including the realisation and dissemination through scientific methods the estimation of uncertainty in measurement. Industrial metrology is the proper maintenance and control of industrial measurement equipment including calibration instruments and working measurement standards. Legal metrology is the practice and process of applying statutory and regulatory structure and enforcement to metrology.*