

In this page the interested people will find information about projects already accomplished or in process in the scope of the SIM.

## **Technical Cooperation Profile**

**Regional**  
**April 18th, 2001**

### **I. BASIC PROJECT DATA**

**Title: Improving the Inter-American Metrology System towards the Free Trade Area of the Americas**

**Regional Team: Leader:**

Armando Mariante Carvalho, President, INMETRO, Brazil, Past President of SIM

**Other members:**

Felipe Urresta, INEN, Ecuador, President of SIM;  
B. Stephen Carpenter, NIST, USA, SIM Technical Committee Chairman;  
Oscar Harasic, OEA, USA, SIM Executive Secretariat  
Yoshito Mitani, CENAM, Mexico, SIM Professional Development Committee Chairman;  
Willie May, NIST, USA, SIM NORAMET Sub-region Coordinator;  
Roberto Ochoa, CONACyT, El Salvador, SIM CAMET Sub-region Coordinator;  
Roosevelt DaCosta, JBS, Jamaica, SIM CARIMET Sub-region Coordinator;  
José A. Dajes Castro, INDECOPI, Peru, SIM ANDIMET Sub-region Coordinator;  
Luis Mussio, LATU, Uruguay, SIM SURAMET Sub-region Coordinator;  
Léa Contier de Freitas, INMETRO, Brazil, SIM Secretary.

**Executing Agency:** Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, INMETRO, Brazil.

**Beneficiaries:** National Metrology Institutes (NMIs) of the Western Hemisphere

<b>Financing Plan:</b>	IDB	US\$ 170,000.00
	Local counterpart funding	US\$ 260,000.00
	<b>TOTAL</b>	<b>US\$ 430,000.00</b>

**Application Date: May 2001**

## II. BACKGROUND

**The Inter-American Metrology System (SIM)** was created in 1979 as part of a special project on Metrology, supported by the Organization of the American States (OAS), involving thirteen Latin American countries. In 1995 SIM was re-activated and its membership grew from 13 to 34 countries of the Americas ([Appendix A](#)). Ever since, SIM has been counting on financial support granted by OAS coupled with in kind participations of each member country, which has enabled it to conduct training seminars, comparisons of national measurement standards, publications, and purchase of measurement instrumentation.

The Inter-American Metrology System is divided into five geographical sub-regions, which respond to the most important economic block in existence, namely **ANDIMET** (Bolivia, Colombia, Ecuador, Peru and Venezuela), **CAMET** (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), **CARIMET** (Antigua & Barbuda, Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Lucia, St. Kitts & Nevis, St. Vincent & Grenadines, Suriname and Trinidad & Tobago), **NORAMET** (Canada, Mexico and United States) and **SURAMET** (Argentina, Brazil, Chile, Paraguay and Uruguay). The participation at SIM is carried out by either the National Institution/Organization of each OAS member responsible for the custody and the maintenance of its National Measurement Standards or, in its absence, the organization responsible for the National Weights and Measures System. SIM brings together metrology organizations from 34 countries in the Americas.

A Council, under the approval of a General Assembly that meets every year, governs SIM. The Council consists of the SIM President, the past President, the Coordinator from each sub region, the Chairman of the Technical Committee (TC), the Chairman of the Professional Development Committee (PDC) and the Executive Secretariat (OAS representative).. Activities are decided by the TC and the PDC, approved by the Council and ratified by the General Assembly. SIM is represented at the Joint Committee of the Metrology Regional Organizations and the International Bureau of Weights and Measures (JCRB) that provides access for SIM in a world agreement for the comparison of measurement standards at the highest metrology level. The operational Secretariat is maintained at INMETRO.

The OAS funds, although welcome, have not been sufficient to provide the necessary means to the improvement of metrology, especially in the less developed countries, so that the adequate measurement infrastructure is in place by 2005, when the Free Trade Area of the Americas (FTAA) comes into force. An important part of a country's infrastructure necessary to achieve free trade, support its production and protect its citizens and environment implies the existence of a National Metrology Institute (NMIs), which maintains the national measurement standards and provides traceability at the accuracy level adequate to that country's needs. In larger countries, the NMI provides measurement traceability to accredited laboratories which, in their turn, provide services to different sectors and institutions such as industry, trade, health sector, research institutions, regulation bodies etc., thus assuring reliable and fit for their purpose physical and chemical measurements. The equivalence of measurement standards throughout an economic block and, furthermore, throughout the world is absolutely necessary if, again, free trade is to be achieved. This represents a major challenge within the Americas when one considers the diversity of countries, with different levels of development and, consequently, of metrology

capabilities. It is SIM's utmost goal to improve metrology activities so that the mentioned differences decrease.

Therefore, to overcome all the above mentioned challenges and reach the major goal of each country in the Americas having its own National Laboratory of Institute, mutually recognized, it is necessary to assist the smaller economies towards understanding the role of metrology and the importance of technical standards to globalized trade and assist them towards a higher technical capability of its metrology staff.

The SIM Council grouped the American countries into five categories according to the metrology infrastructure they have available as compared to their needs. The table that follows presents such grouping, where columns 1 to 5 show those countries that have:

1. fully developed national metrology facilities
  2. well developed national metrology facilities
  3. reasonably developed national metrology facilities
  4. minimal national metrology facilities
  5. no national metrology facilities
- ( ) main economy sectors

<b>Classification of countries according to their metrology infrastructure</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Canada	Argentina	Chile (agriculture, agro-industry, mining, fishing)	Bahamas (tourism)	Antigua and Barbuda (tourism)
USA	Brazil	Colombia (agriculture, industry, oil, mining)	Barbados (tourism, agro-industry, oil)	Belize (agriculture, agro-industry)
	Mexico	Costa Rica (agriculture, agro-industry, textile industry, hardware)	Bolivia (mining, gas, agriculture)	Dominica (agriculture)
		Ecuador (mining, oil, agriculture, fishing)	Grenada (agro-industry, tourism)	Dominican Republic (tourism, mining, agriculture)
		El Salvador (agriculture)	Guatemala (agriculture, agro-industry, tourism, oil)	Haiti (tourism, agriculture)
		Jamaica (mining, agriculture, agro-industry, tourism)	Guyana (agriculture, agro-industry, mining)	Honduras (agriculture, textile industry)
		Panama (tourism, agriculture, agro-industry)	Paraguay (agriculture)	Nicaragua (agriculture, agro-industry, tourism)
		Peru (agriculture, mining, oil, fishing)	St Lucia (agriculture, agro-industry)	Suriname (agriculture, mining, oil)
		Trinidad and Tobago (oil, manufacturing, agriculture, agro-industry)	Venezuela (oil, agriculture, agro-industry, mining, manufacturing)	St. Kitts and Nevis (agriculture)
		Uruguay (agriculture, agro-industry, textiles industry, manufacturing)		St Vincent and Grenadines (agriculture)

*Obs. The countries selected for technical support by SIM (items III and VI) are shown in bold and those also selected for training are shown in italics.*

### III. PROJECT BENEFICIARIES AND ACTIVITIES

This project will benefit 30 SIM country members but the actions will be focused on six countries having minimal or no metrological infrastructure as mentioned below.

IDB funds will support the following activities:

1. technical meetings in four countries (Barbados, Bolivia, Dominican Republic and Honduras) to create awareness of the importance of metrology at governmental and industrial levels and to perform an assessment of the existing metrology infrastructure, through workshops and discussions with different professional groups (government, laboratories, industry, academy, universities);
2. regional technical workshops on the international framework of metrology and mutual recognition agreements in service of free trade, to be held in two countries (Bolivia and Honduras) with the participation of policy makers from 20 countries;
3. technical training for metrologists, laboratory teams, scientists and university teachers on chemical (spectrophotometry) and physical (mass and volume) metrology necessary to assure reliability of chemical tests for 10 countries.

It should be noted that targeted countries are from categories 4 and 5 of the table in section II, which include: Antigua & Barbuda, Bahamas, Barbados, Belize, Bolivia, Dominican Republic, Dominica, Grenada, Guatemala, Guyana, Haiti, Honduras, Nicaragua, Panama, Saint Kitts & Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Venezuela.

### IV. PROJECT OBJECTIVES AND DESCRIPTION

The main objective of the project is to initiate a process under which countries will gradually prepare themselves for the achievement of a Free Trade Area for the Americas (FTAA) as far as the metrological infrastructures necessary to support that aim are concerned. The long-term goal of the whole process now initiated can be expressed in a word: reliability. Measurement reliability is the first step in the chain of conformity assessment and product testing, essential tools for fair trade in compliance with the World Trade Organization rules. The objectives listed below have a direct relation to the activities mentioned above:

1. Create awareness of the need for a basic, recognized metrological infrastructure in all countries for the improvement and competitiveness of industrial products, fair-trading in commerce, health maintenance and environmental care. Furthermore, to create awareness of the increasing importance of reliable measurement and testing, both physical and chemical, as tariff barriers are continuously eliminated along the establishment of free trade areas such as FTAA.
2. Create awareness of the importance of the linkage of a country's measurement references with the international measurement standards maintained by the International Bureau of Weights and Measures (BIPM); explain how equivalence of standards can be achieved (measurement, technical and quality system requirements); encourage countries to invest in order to meet the technical requirements of the Mutual Recognition Agreement (MRA-CIPM) developed to establish the equivalence of national measurement standards and of calibration and measurement certificates issued by national metrology institutes signatories of the Convention du Mètre, including those that agree to become Associates of the Convention du Mètre;
3. Improve the level of basic metrology for chemical laboratories in at least ten countries, by training and organization of a proficiency test to help establish measurements capabilities considered as one of the basic measurements needed for conformity assessment of agricultural and industrial product, thus helping to avoid non-tariff barriers to trade, and for evaluation of environmental conditions.

### V. PROJECT PREPARATION, EXECUTION AND ANALYSIS

All activities are to **be coordinated on a regional basis** and **conducted on a sub-regional basis**, following the structure of SIM, as explained before. Although the project shall be coordinated by INMETRO, the SIM Council will be supervising it on a continuous basis. The SIM Council and Technical and Professional Development Committees already have contributed to the definition of the project and will continue to do so

during execution. It is important to note that much of the discussion with delegates and sub-regional coordinators was done during the SIM General Assembly, which took place from 28th to 29th September 2000, in Ocho Rios, Jamaica, and during the SIM council meeting held from 5th to 10th of March 2001 in Washington, USA.

The lines of activities include technical meetings with government, industry, laboratories and universities, seminars, workshops and courses, as mentioned in the previous item.

The technical meetings (1) and workshops (2) will be aimed at creating awareness at the governmental level authorities in the countries, industrial chambers, agriculture chambers, and final users of metrology, and to help in the diagnosis of the country's metrology infrastructure. The course (3) will provide direct training towards the improvement of chemical laboratories since they are very much requested for analysis of products to be exported by the chosen countries, which have their economy mostly based on the production and processing of agricultural products.

Although all the institutions to be involved have already been identified, it is estimated that, upon approval of funds, at the most two months will be necessary for preparation of initial activities. Preparation shall entail contracting the project, choosing expert teams, and making final contact and arrangements with the institutions to be involved in the different countries. It is intended that partially different visiting teams be used in order to optimize project implementation time.

The technical meetings and regional workshops will be conducted simultaneously during September and October 2001. The course will be held in November 2001.

The final analysis of results will be done in December 2001 by the SIM Council based on the reports prepared by the different expert teams responsible for the activities in the chosen countries and by the course coordinator.

### **1. Technical meetings**

The technical meetings shall be held over two days with different groups (government, industry, laboratories and universities). The agenda shall cover the following topics among others:

- importance of measurement traceability and reliability to free trade and protection of citizens and environment;
- impact of metrology on the country's economy;
- need of national metrology infrastructure and consequent need of government ommitment;
- importance of investment to the establishment of reliable measurements;
- advantages of mutual recognition of measurements for free trade;

The meetings shall be held at different institutions (Ministry of Economy, Ministry of Foreign Affairs dealing with Trade, Ministry of Health, Ministry of Agriculture, Ministry of Industry, Ministry of Commerce, universities that have calibration, measurement or testing capabilities, other laboratories, industry and trade associations, main industries and congressmen) so that the measurement infrastructure of the country can also be mapped and evaluated.

The technical meetings in the first country will be followed by the regional workshop, after which the expert team will proceed to conduct similar technical meetings in another neighboring country.

The expert team shall consist of four top representatives of the SIM Council. \*\*\*\*\*

### **2. Regional Workshops**

The workshop shall bring together around 30 representatives of the countries surrounding that chosen for the first technical meetings and around 100 from the country itself. The workshop shall be designed to cover the issues listed below in one and a half days followed by a half day discussion:

- importance of metrology to support social and economical development; integration; and science and technology cooperation;
- importance of measurement traceability and reliability to free trade and protection of citizens and the environment;
- the correlation between a country's needs and its best measurement capability;
- physical metrology and chemical metrology;
- industrial metrology and legal metrology;-infrastructure of metrology in the world (BIPM, OIML and regional organizations) and in the Americas (SIM);
- equivalence of measurements and mutual recognition agreements;-importance of a national metrology infrastructure (National Metrology Institute, calibration laboratories and legal metrology inspections);
- investments needed for the establishment of a basic national metrology infrastructure.

### **3. Practical courses on metrology for chemical laboratories**

The course shall last one week (minimum of forty hours) and shall be held in a top metrology laboratory. It shall consist of theoretical and practical classes. Participants shall receive full course written material and shall take home a set of calibrated masses, a small calibrated vessel and a calibrated coloured filter, so that they can

implement routine calibrations (balances, glassware volumes and ultraviolet spectrophotometers) in their own laboratories. Topics of the course shall include:

- measurement traceability from the national institute to the chemical laboratory bench (2 hours);
- measurement reliability (standards, intercomparisons, reference materials and proficiency tests) (2 hours);
- measurement uncertainty and best measurement capability (8 hours);
- basic instrumentation and quality requirements for a chemical laboratory (4 hours);
- mass measurements and calibration of laboratory scales (8 hours);
- small volume measurements and calibration of glassware (8 hours);
- amount of substance measurements and calibration of spectrophotometers (8 hours).

## VI. PROJECT COST, FINANCING AND EXECUTION TIME

1. The funds requested to IDB amount to US \$ 170,000.00 (one hundred and seventy thousand dollars) over a period of seven months.

The tables that follow show the application of the various funds and the calendar for 2001:

Application	Counterpart Funding	IDB	TOTAL
Technical meetings with government and industry	120 000	20 000	140 000
Regional workshops	100 000	57 000	157 000
Training courses	40 000	93 000	133 000
<b>TOTAL</b>	<b>260 000</b>	<b>170 000</b>	<b>430 000</b>

Activities	Year 2001		
	2nd trimester	3 rd trimester	4th trimester
Contracting and preparation together with the SIM Council	Brazil		
Technical meetings with government, industry, laboratories and universities		HondurasBoliviaDominican Republic	Barbados
Regional workshops		Honduras(CAMET)	Bolivia(ANDIMET)
Training courses (venue)		Mexico	Mexico
Analysis of reports from coordinators of each activity and preparation of final report together with the SIM Council			Brazil

## VII. EXECUTING AGENCY:

National Institute for Metrology, Standardization and Industrial Quality, INMETRO, Brazil (see also appendix B) The executing agency shall be INMETRO, the institution responsible for the national measurement standards, legal metrology and accreditation of laboratories and of certification bodies in Brazil, and whose president is Armando Mariante Carvalho.

Created in 1973, INMETRO has a staff of around 1000, 350 of which work in scientific, industrial and legal metrology. INMETRO was one of the founder members of SIM, played a strong role in its reactivation in 1995, and has been continuously contributing to its strengthening, even holding its secretariat. INMETRO represents the Brazilian Government in both Meter Convention, under which the International Bureau of Weights and Measures (BIPM) works, and the International Organization for Legal Metrology (OIML). INMETRO is also a member of all the relevant international forums and has signed all the international Mutual Recognition Arrangements available in the fields related to metrology and accreditation. The large experience in these fields has turned INMETRO into a training institution as well, where other American countries have sought the improvement of their human resources. INMETRO is presently coordinating a large multinational and multi-program cooperation project between Mercosur and the European Union and has training demands from Bolivia, El Salvador, Nicaragua, Paraguay and Peru. All such achievements give INMETRO the technical foundation and experience from which to manage the proposed project.

The project shall be managed by the International Affairs Coordination, the unit of INMETRO where the SIM secretariat is located. The unit has a staff of 13 people, two of which will be directly involved with the project:

Léa Contier de Freitas, Head, who will hold the direct responsibility, and Josefa Paredes Villalobos, who will take care of all the logistical arrangements.

#### **VIII. EXPECTED PROJECT RESULT**

The SIM Council expects that the present project will increase awareness of the importance of metrology in the countries selected so that they decide to invest in establishing a national metrology infrastructure or improving the existing one, not only with instrumentation adequate to the metrological needs of the country but also with capable staff. The project will also contribute to establish a closer cooperation among SIM members, especially those of smaller economies and in which metrology is not yet available as it should in order to increase the country's competitiveness.

Another important result shall be the improvement of the quality of the measurements made by chemical laboratories, as a consequence of the training courses. Such chemical measurement results have a direct impact in the food and agro business and in the protection of the environment, fields of the utmost importance in the countries selected.

The final report shall contain, among other items, a description of the status of metrology in the visited countries and recommendations for the establishment or improvement of their metrological capabilities. Such recommendations shall make explicit the technical fields of metrology which would cause greater impact in the economy of each country, therefore being those where investment should be made first.