

# ANDIMET



## Workshop: Renewable Energy and Climate Science for the Americas: Metrology and Technology Challenges

*CENAM, October 8-9, 2013*



| Question  | Answer   | Source   |
|---|--|----------|
| <b>What are the most important issues /technologies for your country or region?</b> | Solar heating, wind and photovoltaic energy. These issues are being leaded by the government in items such as policy, laws and incentives  | INM      |
|   | Hydraulic energy, solar energy, wind energy and biofuels.  | INDECOPI |
|   | The use of renewable energy: solar energy, Biomass, wind and geothermal  | INEN     |
|   | Solar heating, wind energy, photovoltaic and geothermal energy.  | IBMETRO  |
| <b>How do these impact economic developments for your country or region?</b>        | These constitutes an important share of GDP. Currently the Country is exporting electric energy to neighboring countries, but this production can increase with renewable integration. Stable and reasonable energy prices are necessary to sustain and expand economic growth.  | INM      |
|   | Energy is necessary for almost all the productive activities in Peru. So these issues greatly impact the economic development, for example, hydraulic energy is one of the main sources of energy in our country considering it even in comparison with typical non renewable energy, such as petroleum (hydraulic energy is about 25% of petroleum energy). | INDECOPI |
|   | The replacement of thermal power plants by hydro power plants in order to produce electricity let to reduce costs, so the consumer services are more accessible to the entire population.  | INEN     |
|   | To provide power to the production units across the country is important to have alternative energy, which become an excellent choice considering the geographical advantages that exist in the country  | IBMETRO  |

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| <b>Are there other driving forces for renewable energy and climate science?</b>       | Colombia has The National Development Plan 2010 - 2014 <i>Prosperidad Para Todos</i> , that "identify and prioritize adaptation measures to climate change, from vulnerability analysis"  | INM      |
|   | Ecuador has as potential source of energy the geothermal energy because has an active volcanic chain (82 monitored volcanoes).<br>Research Process for energy generation, solar, biomass, wind and geothermal energy  | INEN     |
|   | Yes, for example bio energy where there are some studies done.  | INDECOPI |
|   | Development of government policies and actions for the protection of the genetic heritage of agro-biodiversity.   | IBMETRO  |
| <b>What is the regulatory climate or situation in your country and in the region?</b> | Colombia is working in the legal framework "Regulation to foster renewable energy and distributed generation in Colombia". The government is thinking about the possibility to create a resources fund coming from taxes on fossil fuels or from the national budget to subsidize the high costs of generation of the renewable energy, so the prices will not move to users.   | INM      |
|   | <ul style="list-style-type: none"> <li>-The climate changes has been very noticeable adverse effects such as the amount of snow that have fallen sharply in both quality and quantity over the Andean mountains. This has caused changes in natural water supplies and these changes have caused problems in several human communities which have been unsupplied of these waters sources, which are very important for the existence of their seedlings, their animals and for themselves as human beings</li> <li>-There are agreements with foreign agencies such as PNUD to achieve better energy efficiency, for labeling products in order consumers know which products are more energetically efficient.</li> </ul> | INDECOPI |

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| What is the regulatory climate or situation in your country and in the region? | The country is in the process of implementing regulations for which there must be an appropriate infrastructure testing laboratories  | INEN     |
|  | The Government enacted the Law on Mother Earth, to promote visions, strategies and innovative business models strongly, especially in regard to the care and protection of the environment.   | IBMETRO  |
| How do they impact metrology needs for renewable energy and climate science?   | The formation of joint research projects between different NMIs and other organizations. This will accelerate innovation in order to make power plants more efficient.  | INM      |
|  | Impacts on Metrology are technologically several but mainly is that as NMIs, should be prepared to give the metrological services and technological information needed to our country in these important areas (hydraulic energy, solar energy, wind energy, bioenergy, biofuels, tidal energy, ...) but we are not prepared.<br>We should have trained staff; proper laboratories; standards to give suitable traceability trough calibration and proper metrology technological information and other services but we don't have. | INDECOPI |
|  | Give traceability to testing laboratories performing energy efficiency testing (Implementation of a laboratory for the traceability of equipment related to energy quality)   | INEN     |
|  | Impacts on Metrology are technologically several but mainly is that as NMIs, should be prepared to give the metrological services and technological information needed to our country in these important areas (hydraulic energy, solar energy, wind energy, bioenergy, biofuels, tidal energy, ...) but we are not prepared.<br>We should have trained staff; proper laboratories; standards to give   | IBMETRO  |

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| How do they impact the work for your NMI and the NMIs in your region? | It would generate needs of infrastructure, standards, traceability and learning.   | INM      |
|   | The impact to our NMI is that we are aware that we must will prepare to meet these challenges  | INDECOPI |
|   | A laboratory which give calibration services for instruments, patterns of energy, is expensive, this is a great challenge for an NMI, it is necessary to consider that achieving adequate technical competence requires several factors such as: equipment, traceability, personnel, facilities , knowledge, as the principal. A coordinated and complementary work between NMIs in the region for activities such as training, coaching, intercomparisons, consulting, assessments, audited, it becomes necessary and is a very viable alternative to meet the needs. | INEN     |
|   | Represents challenges to strengthen existing services and implement other metrological services and conformity assessment in a range and accuracy could not yet dimensioned  | IBMETRO  |

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|---|--|----------|
| <p>What are the strengths of your country and region (in terms of technology, infrastructure, natural resources, etc.) that would help meet the measurements and standards challenges in these areas?</p> | <p>Colombia is one of South America's windiest countries. The Colombia's north coast is the second one followed by La Patagonia, if the whole potential of La Guajira's wind energy would be exploited, the country's whole electricity demand could be covered twice, However, at the moment only an approximate 0,4% of the country's potential is taken advantage of.</p> <p>The northern coast is, apart from being the windiest, also the sunniest, and the potential is up to 6 kWh/m<sup>2</sup>/day, year-round. Currently about 78.000 photovoltaic panels have been installed in the country, producing around 6 GW of energy, but it is clear that most of the potential still is unused.</p> | INM      |
|   | <p>We have limited standards and we know their uses and applications in a few energy-related measurements such as:</p> <p><b>Directly related to the energy</b> for example in electrical energy, electrical power and flow , volume , time, temperature for hydraulic energy</p> <p><b>Indirectly related:</b> standards in temperature, pressure, humidity, electrical parameters such as voltage &amp; current, DC&amp;AC; force, volumen. flow, chemical metrology, time.</p>  | INDECOPI |
|   | <p>Ecuador is in an investigative process to determine the best alternatives to replace fossil fuels and determine the most efficient energy savings in different areas using solar energy, Biomass, Wind, Geothermal</p>  | IBMETRO  |
|   | <p>Through energy efficiency policies are expected to reduce emissions of greenhouse gases by more than 30,000 tons of CO2 and save more than 13.000 MWh annually.</p>   | IBMETRO  |

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| <p>What are your short term and long term needs for capacity development to meet these challenges (in terms of technology, infrastructure, metrology, training, financial resources, etc.)? How do these impact the work of your NMI and NMIs in your region?</p> | <p>The needs has been divided into four principal environmental areas – air (quality, including particulate sensing), water, soil and the biosphere - categories commonly used by researchers in the environmental sector.</p>  | INM      |
|   | <p><b>Short Term:</b><br/> * Training staff on all matters related to those renewables energies (hydraulic, solar, wind, bioenergy, tidal)</p> <p><b>Medium and Long Term:</b><br/> * Implement a basic infrastructure to meet these needs (hydraulic, solar, wind, bioenergy, tidal energies) .<br/> It would require funding for laboratories and equipment and put in starting the system possibly with the assistance of experts.<br/> This impacts strongly the INM`s work in our country and in the region because it is a key issue of great importance for the development of the country and the region.</p> | INDECOPI |
|   | <p>The principles capacities to develop in Ecuador are infrastructure technology, training the personal, budget to finance the implementation of these areas. The INEN as NMI of Ecuador will prepare projects to get financial resources for 2014, 2015</p>  | INEN     |
|   | <p>In the short term: Training staff on all matters related to those renewable energies (solar, wind, geothermal.<br/> In the long term: implementation of basic infrastructure to attend the requirements of reliable traceability measurements (facilities and equipment) and assistance of exerts</p>  | IBMETRO  |

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|  | <p>Unifying methodologies of analyze of data sets and crating synergy between each NMI's across the region, will help implementing renewable energies and the development of low coal.</p>   | INM      |
| <p>What do you see as opportunities for regional, and perhaps hemispheric, collaboration in these areas?</p> | <p>We see many opportunities for regional and hemispheric cooperation in these important areas as there are some countries that have developed more in some specific areas and others) and could be many cooperation in:</p> <ul style="list-style-type: none"> <li>a) Motivation strategies to involve other sectors in each country which should be more related to these important issues.</li> <li>b) International training on these important issues</li> <li>c) Use and experience of infraestructure and equipments related to these technologies</li> <li>d)Exchange of experts</li> <li>e) Crossing of information at different levels</li> <li>f) Publication of research works.</li> </ul> | INDECOPI |
|  | <p>Between the region exists some NMI that can help us in the implementation and development of the areas.</p>   | INEN     |
|  | <p>identify a baseline that allows for actions that could be developed with the cooperation of all NMI</p>   |          |

**thank you very  
much for your  
attention**