D2.4 Report on the Energy area in the Bi-regional STI cooperation addressing societal challenges

ALCUE NET
Latin America, Caribbean and European Union Network on Research and Innovation

Latin America, Caribbean and European Union
Network on Research and Innovation

EU-CELAC SOM Working Group on Renewable Energy Thematic Report

CONACYT – MINECO - MEC

ALCUE NET: Latin America, Caribbean and European Union Network on Research and Innovation

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Disclaimer

Contents

1 Objective of the thematic report

The present thematic report has been prepared to provide the EU-CELAC Senior Official Meetings (SOM) representatives with the insights found by the EU-CELAC Senior Officials Meetings Working Group on Renewable Energies (SOM WGRE) a concrete overview of the activities carried out in the renewable energies area and to serve as supporting element for the decision making process which will be carried out during the Senior Officials Meeting that will take place on the 25th and 26th of November 2015 in Brussels, Belgium.

The SOM WGRE co-leaded by Mexico (CONACYT) and Spain (MINECO) was created in 2011 with the objectives of providing R&D background knowledge and strategic objectives in removable energies (not including bioenergy) to Determine basic lines of cooperation between EU and LAC Institutions, identify research and innovation topics for potential collaboration, formulate pilot activities in renewable energies, identification of funding instrument, establish a common energy framework, contribute to mobilize expertise and resources between EU and LAC countries and develop joint initiatives/programmes, promote an operative platform to implement joint initiatives in emerging technologies, foster cooperation and coordination among EU-LAC countries could impact on: smart regions development while assure a sustainable energy supply.

2 Bi-regional Cooperation Activities in the Renewable Energies Area

- **Thematic area background in Latin America, Caribbean and the European Union**

The energy present situation is one of the greatest challenges faced by our society today. Social progress and well-being of people, industry and economy depend on safe, secure, sustainable and affordable energy. Addressing energy challenges through transformative science and technology solutions has become a priority for both governments of developed countries and emerging economies. Countries are increasingly recognising the potential role of emerging energy technologies capable of responding to the major challenges of climate change, energy security, and access to energy. Energy solutions, comprising not only energy production but also energy efficiency, namely the existing building stock and transport sector, would make energy consumption more affordable for consumers as well as create employment. Appropriate management of the energy resources, a proper infrastructure (smart grids), energy storage systems and market regulations are needed as well.

The analysis of research issues, priorities and emerging energy technologies, as well as the activities of several energy agencies and key actors, are increasingly focus on policy and market analysis and system integration issues.

The work is rapidly expanding as a response to the present challenges of an unsustainable global energy structure and the expansive clean energy economy. Clean energy investments are building the foundation for new industries and job growth. The EU agreed to implement the 20-20-20 objectives: reducing emissions of greenhouse gases by 20%, increasing energy efficiency to save 20% of energy consumption, and to reach 20% of renewable energy in the total energy consumption in the EU by 2020. To reach these goals, both federal governments and the private sector will have to invest in clean energy development and deployment for major new energy efficiency benefits.

Intensified RTD cooperation between research institutions, universities and the private sector from Europe and Latin America and the Caribbean is crucial to establish the pathway of the policies in the field of emerging energies.

The Working Group on Renewable Energies for Societal Challenges aims at fostering cooperation and coordination among EU-CELAC countries which could impact on smart regions development while assuring

a sustainable energy supply thus contributing to the mutual development of policies, fostering synergies between EU and LAC countries helping to develop joint initiatives/programmes and foster innovations for social benefit in order to:

- Address specific problems that have a global character, on the basis of mutual interest for EU-CE-LAC region, with a win-win perspective.
- Support bi-regional competitiveness through strategic partnerships in the field of energy by engaging the CELAC countries´ scientists to work in and with Europe and vice versa.
- Integrate the scientific community working in the energy field and support the JIRI process.
- Promote an EU-CELAC operative platform to implement joint initiatives in the renewable energies area.

The activities carried out in support to the scientific policy bi-regional dialogue between the European Union and Latin America and the Caribbean for the renewable energies area in the frame of Working Group on Renewable Energies for Societal Challenges have sought the following objectives:

- Generating a thematic bi-regional dialogue both at a technical and a political level in support to the implementation of the JIRI´s Road Map in the renewable energies area, particularly in bio-energy, wind energy, solar –photovoltaic and thermal energy, and energy efficiency.

- Identify and bring together stakeholders representing industry, researchers and policy makers from EU and LAC, the European Commission and the EU and LAC technology platforms.
- Developing relevant background documentation for the identification of current principal policy, institutional and technical limitations and opportunities; possibilities for policy coordination (policy components, sharing of experiences and best practices).
- Identify cooperation activities to be developed in renewable energies among EU and Latin American and Caribbean countries and iidentify appropriate instruments, mechanisms and funding schemes for coordinating and financing joint research, technology development and innovation activities.

- Discuss European and Latin American public policies concerning the renewable energies

- Produce inputs for the Renewable Energies SOM working group.

Specific research and innovation areas in bioenergy, wind energy, solar energy (as described in the Working document 1 integrated in the Energy WG thematic report) and energy efficiency identified as priorities of common interest and on which the cooperation should focus include:

Bioenergy

1. Biomass availability and supply
2. Conversion processes
3. Markets and regulatory framework
4. Sustainability

Photovoltaic

1. Solar resources prediction and monitoring
2. Quality Assurance Procedures
3. Stands alone systems
4. Advanced grid integration & large integration of PV in building areas

Solar thermal

1. Quality Assurance Procedures oriented to the use of certified equipment and its certification, certifications integration, installers harmonization, equipments and installers.
2. Thermal energy storage mainly in distributed generation

Wind energy

1. Wind Resource Assessment and short term forecasting
2. Wind Turbines: technology for regional manufacturing
3. Removing barriers and promoting deployment and acceptance of wind energy: market obstacles, environmental issues, capacities

Energy efficiency focused on areas:

1. Increasing energy efficiency in buildings
2. Heating and cooling
3. Increasing energy efficiency in industry and SMEs
4. Increasing energy efficiency of energy-related products
5. Innovative financing for energy efficiency
6. Citizen Engagement, capacity building, governance and communication for energy efficiency main energy

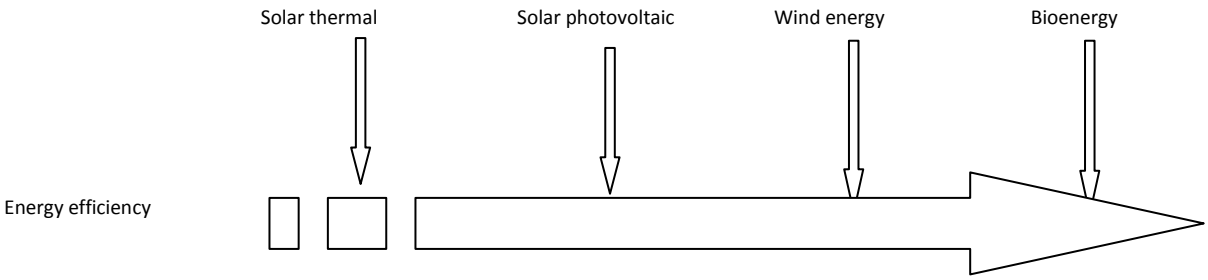
Geothermal

1. Capacity Building: increasing geothermal human capacities in Latin America and Caribbean countries.
2. Fostering networks (EU-CELAC) for knowledge exchange

Following the great interest on energy efficiency demonstrated by the European Commission in its last communication about energy technologies and innovation sent to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions, two strategic approaches towards Energy Efficiency have been proposed within the implementation plan of the activities in the frame of ALCUE NET project in the energy area.

Two strategic approaches to energy efficiency:

i) the “Integrated Road Map” by the EC that will put forward key research and innovation actions to be undertaken in the next 6 years and will be the basis for EU, national and multi-Member State activities (the latter based on the variable geometry model), and can serve as well, as a basis for private investments in energy research and innovation. In this approach energy efficiency is horizontal to solar thermal, solar photovoltaic, wind and bioenergy;



ii) Energy efficiency approached based on the EU energy efficiency policy, where the full potential of energy efficiency, focusing on end use consumption is prioritized and according to the "Secure, clean and efficient energy Challenge". These areas are related to buildings: heating & cooling, industry aspects and products development. This approach has been further elaborated through a series of documents prepared by the experts supporting the SOM Working Group in Renewable Energies. Full description in the "Position paper on energy efficiency non-paper" integrated into the Energy WG thematic report.

The formulation of recommendations, activities and narrowing down of areas has taken into consideration the SET Plan which since 2008 has been the centre-piece of the EU research and innovation policy in the field of energy. It is the reference point for European, national, regional and private investment.

Topics identification:

Energy Research Areas	Topics
WIND ENERGY	- Advancement of small/medium-scale wind turbines in EULAC countries - Integration of wind generation into existing electricity grids
BIOENERGY	- Development of cost-effective and sustainable advanced bioenergy technologies with biomass feedstock flexibility - Cost-effective biomass availability, supply and storage systems optimization to reduce feedstock uncertainty for bioenergy production. - Assessing and monitoring the four dimensions of sustainability (economic, environmental, social and institutional) for bioenergy to ensure governance and compliance with biomass value chains sustainability goals.
SOLAR THERMAL	- Solar technology development for industrial process heat - Solar resource assessment - Energy Storage technologies
SOLAR PHOTOVOLTAIC	- Novel concept in cost-effective constructive systems based on solar technology in buildings and urban areas
ENERGY EFFICIENCY	- Novel concept in cost-effective constructive systems based on solar technology for the built environment
GEOTHERMAL	- Capacity Building: increasing geothermal human capacities in Latin America and Caribbean countries.

	- Fostering networks (EU-CELAC) for knowledge exchange

- **Description of activities**

- **1st ERANet-LAC Joint Call**. The first transnational call under the ERANet-LAC project was successfully completed on 27th November 2014. The 20 participating funding organizations from Europe, Latin America and the Caribbean countries received a total of 90 proposals. The proposals submitted in the first joint call address the following thematic fields: Biodiversity (18%) Bioeconomy/Energy (57%) and Health (25%). Each consortium is composed of experts from at least two countries in each region. Approximately a quarter of the proposals involve innovation actors. Since ERANet-LAC has a particular focus on the innovation dimension, the project strives to involve innovation actors in all types of activities of the project.

  In total, 20 national/regional funding organizations have agreed to participate in the first ERANet-LAC Joint Call for funding research projects. In concrete, in the energy topic "Towards Zero Carbon Energy Systems for heating and cooling in industrial processes by means of solar technologies including the envelopes of the buildings" participated Argentina, Chile, Dominican Republic, France, Mexico, Norway, Panama, Peru, Portugal, Romania, Spain, Turkey, Uruguay.

  As a result of the 1st ERANet-LAC joint call, 20 funding organizations from Europe, Latin America and the Caribbean countries funded 14 transnational research and innovation projects. 79 research institutions and small and medium enterprises (SMEs) from both regions are involved in the international consortia. The total financial volume amounts to 10.4 million €. The projects address the thematic fields Bioeconomy, Health, Biodiversity and Energy. In total, 90 proposals involving 533 applicants from research institutions and SMEs were submitted. Approximately a quarter of the proposals involve innovation actors.

The narrowing down of areas has been the result of expert consultations and the organization thematic focused workshops/meetings in the frame of previous INCO NETs and ALCUENET bringing together relevant stakeholders from EU-LAC countries in order to:

(i) identify pilot funding initiatives for cooperation on renewable energies,
(ii) identify priority areas for cooperation in energy efficiency,
(iii) address and design top-down synergies, initiatives and measures.

Three **workshops** have taken since the last SOM **(November 2014 in Seville, Spain (ALCUE NET), December 2014 in Salta, Argentina (ALCUENET)**; and June 2015, in Brussels, Belgium **(EU-MEX INNOVA) focused on Renewable Energies** taking stock from the priority areas identified through several activities carried out under previous INCO NETs (EULARINET, EUCARINET, ENLACE). Additional expert meetings will be focused on the identification and design of further joint initiatives for cooperation and promoting innovation.

As part of the activities in the frame of the ALCUE NET project in energy, a mapping and analysis of country potential is in process. It includes:

- Collection, processing and centralization of key information focused on the renewable energies in LAC and European Union (1st phase)
- Analysis of country potential - ccritical mass of researchers and research organizations from both the private and public sectors; and current cooperation with European counterparts -irrespective of whether funded by the Framework Programme (exhaustive list of on-going relevant -national, regional and EU-LAC- STI programs, projects platforms (ETPs) with relevance to the thematic areas) (2nd phase)
- Strategic analysis for STI cooperation in the energy field by analyzing the current status of energy research based in their research base whether academic or industrial potential and interest towards international cooperation within key areas of bi-regional interest in energy to support the development of a strategy for cooperation in STI on energy issues between both regions.

- Follow up of the activities of existing "Observatories"- "Observatorio de Energía Renovable para América Latina y el Caribe" under OLADE (Organización Latinoamericana de Energía), several observatories on energy for energy indicators, new sectoral regulations, etc. operated in Spain, other.

- **Development of a strategy for cooperation in STI in energy** issues between both regions.

3 Cooperation Actions and instruments: Road Map for implementation

Activity	Concrete Actions	Work progress	Instruments & resources	Indicators + Impact	Timeline
2nd ERANet-LAC Joint Call on Research and Innovation.	- The objective of the joint call is to develop cooperative research and innovation activities in the thematic fields of Biodiversity/Climate, Bioeconomy, Energy, Health and ICT. The topics were selected by the participating funding organizations out of a pool of topics proposed by the working groups of the last EU-CELAC SOM (Senior Officials Meeting), which were created to implement the Joint Initiative for Research and Innovation (JIRI). In renewable energies the topics are Wind Energy - Advancement of small/medium-scale wind turbines in EULAC countries and solar thermal energy - Energy storage technologies. The countries that confirmed their interest in participating are: Belgium, Finland, France, Germany, Italy, Latvia, Norway, Poland, Portugal, Romania, Spain and Turkey, and in Latin-	To be launched on December	ERANET LAC	Number and quality of the projects presented	2015 (Dec.)

	America / Caribbean: Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Guatemala, Mexico, Panama, Peru, Trinidad and Tobago and Uruguay.				
Energy Report	Perform a strategic analysis of the potential in Science, Technology and Innovation (CTI), in the energy sector, particularly renewable energy, the countries of Latin America and the Caribbean (LAC) ALCUE NET participants by analyzing state current status of research in this sector. This analysis will provide an overview on the basis of research, both academic and industrial, as well as interest towards international cooperation in key areas of the energy sector, identified by the European Union.	First ideas	ALCUENET-EU-CELAC policy-dialogue implementation through the Joint Initiative for Research and Innovation	Increase of collaboration between the regions in medium and long term	2016
Capacity Building	Promotion of capacity building activities such as: • Scientific training, Exchange, Secondments • Training on international projects (H2020)	Foreseen activities	ERANET-LAC	Increase the collaboration between researchers from EU and LAC	2016-2017
Promote opening of energy infrastructures	Build a coordination action aimed at opening existing research infrastructures (e.g. laboratories) with a view to establish joint structures in the long-term and to	First ideas	ERANET LAC	Increase the collaboration between researchers from	2016

	keep an 'open door' policy, trying to reinforce EU and LAC researchers access to infrastructures (e.g. ESFRI). Build a long-term frame for coordination of funding programmes that support the creation of International or Joint Laboratories, including mechanisms to share information on national funding for infrastructures Elaborate recommendations and measures to overcome barriers to cooperation in research infrastructure, such as legal barriers to data sharing and regulations that cannot be dealt with at the researcher.			EU and LAC	
Promote opening and coordination of innovation programmes	Within this task the innovation system, particularly the industrial sector, will be addressed and integrated in the project activities to respond to societal challenges and economic development. Innovation agencies will be asked to coordinate part of their activities (i.e. programmes fostering cluster internationalisation; exchange programmes targeting Technology and/or Knowledge Transfer Offices; initiatives oriented to promote cooperation between SMEs and research institutions) with potential partner agencies in both regions. A specific Innovation Forum open to public and private institutions and involving innovation agencies and private sector	First ideas	ERANET LAC	Increase of innovation projects between agents from both regions	2016

	organizations, will be organized in order to receive expressions of interest and identify future collaborations and establish a long term strategic cooperation frame.				

4 Summary of EU-CELAC SOM decisions-making issues

The Renewable Energies SOM Working Group has worked in a series of recommendations for activities and lines for action for potential EU-LAC collaboration in renewable energies which include:

- Recommendation 1: Detect strategic interregional actions in renewables R&D and innovation actions between stakeholders from EU CLAC regions. Develop a long term strategic proposals in order to better linking research and technological cooperation structures and nets in the medium or long term.
- Recommendation 2: Integrate the different ERANETS that focus their activity in the EU CELAC areas in only one ERANET.
- Recommendation 3: Strengthen capacity building, thematic networks and regulatory framework in order to promote and support exchanges between research organisations.
- Recommendation 4: Continue with the coordination of activities funded through specific projects, joint/coordinated calls and 'twinning'.
- Recommendation 5: Reconfirm the membership of the Renewable Energies WG group and appoint representatives both at institutional and technical levels. Include CELAC Energy NCPs officially nominated due to their expertise in cooperation with the EU.
- Recommendation 6: Strengthen dialogue with national funding agencies to develop joint activities on renewable energies and energy efficiency defining legal frames and possible modalities for implementation
- Recommendation 7: Encourage the opening of European initiatives like ERANets and Joint Programming Initiatives to CELAC countries participation .
- Recommendation 8: Participation of CELAC countries in specific calls within the next Work Programme of the Horizon2020: promoting dedicated coordinated action(s) in support to the implementation of the EU-CELAC JIRI in the energy thematic field –geothermal energy, bioenergy, wind energy

- Recommendation 9: Raise awareness of the JIRI process and opportunities for EU-CELAC cooperation in the field of technology development and scientific research, among stakeholders in the energy sector – Ministries of energy of the respective countries, academia and industry.
- Recommendation 10: Enhanced interaction with regional initiatives in the field and regional thematic nets in the energy field. In particular with the Regional Observatory on Renewable Energy in LAC initiated as a UNIDO regional Program most notably with regard the implementation of the activities carried out in support of the Energy working Group in the frame of the ALCUENT project linked with to the promotion of cooperation between countries of the region and among energy agents of each country and the development of a tool to share technologies, successful experiences, information on specific projects, existing financing mechanisms, successful legal practices and any information aimed at harnessing the potential of renewable energy technologies to meet the energy needs.
- Recommendation 11: Support the establishment of the Platform of Funding Agencies for the implementation of the EU-CELAC JIRI in the frame of the ERANet-LAC project activities, particularly in the energy thematic area.
- Recommendation 12: Explore the possibilities of implementing a strategic pilot project of bi-regional interest in renewable energy within the framework of the activities of the Ibero-American Programme for Science and Technology Development (CYTED). First steps done through the 1st ALCUENET-CYTED Thematic Meeting with the co-leaders of the EU-CELAC Energy working group, together with the thematic area managers of CYTED, and key thematic experts.
- Recommendation 13: Capacity building in geothermal energy and wind energy.
- Recommendation 14: Policy dialogue meetings and regulatory frameworks aimed ensuring continuity to the policy convergence between EU and LAC countries.

5 Annexes

Ministerio de Ciencia, Tecnología e Innovación Productiva
Argentina

TEKNOLOGIAN TUTKIMUSKESKUS VTT
Participation ended
Finland

INSTITUTO COLOMBIANO PARA EL DESARROLLO DE LA CIENCIA Y LA TECNOLOGIA - COLCIENCIEAS
Participation ended
Colombia

ZENTRUM FUER SOZIALE INNOVATION
Participation ended
Austria
CARIBEAN SCIENCE FOUNDATION INC.
Barbados

"CAVE HILL, CARICOM RESEARCH BUILDING"
ST. MICHAEL
Barbados

Conselho Nacional de Desenvolvimento Cientifico e Tecnologico
Brazil

COMISION NACIONAL DE INVESTIGACION CIENTIFICA Y TECNOLOGICA
Chile

"DEPARTAMENTO ADMINISTRATIVO DE CIENCIA, TECNOLOGIA E INNOVACION - COLCIENCIAS"
Colombia

Ministerio de Ciencia y Tecnología de Costa Rica
Costa Rica

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Finland

CENTRE DE COOPERATION INTERNATIONAL EN RECHERCHE AGRONOMIQUE POUR LE DEVELOPPEMENT
France

DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV
Germany

CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA
Mexico
NORGES FORSKNINGSRAD
Norway

"SECRETARIA NACIONAL DE CIENCIA, TECNOLOGIA E INNOVACION"
Panama

FUNDACAO PARA A CIENCIA E A TECNOLOGIA
Portugal

MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Spain

MINISTERIO DE EDUCACION Y CULTURA
Uruguay

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Germany

6 Acronyms

ALCUE	América Latina y Caribe – Unión Europea
ALCUE NET	Latin America, Caribbean and European Union Network on Research and Innovation
CYTED	Ibero- American Programme for Science, Technology and Development
EC	European Commission
ENLACE	Enhancing Scientific Cooperation between European Union and Latin America.
ERA	European Research Area
ERANet-LAC	Network of the European Union, Latin America and the Caribbean Countries on Joint Innovation and Research Activities
ERA-Nets	European Research Area Networks
ETPs	European Technology Platforms
EU	European Union
EUCARINET	Strengthening the Sustainable Scientific Cooperation between Europe and the Caribbean
EULAC	European Union, Latin America and the Caribbean
FP7	Seventh Framework Programme
INCO-NETs	Platforms bringing together policy makers and stakeholders of an individual targeted region
JIRI	Joint Initiative for Research and Innovation
LA	Latin America
LAC	Latin America and the Caribbean
LATPS	Latin America Technological Platforms
NCPs	National Contact Points for the Seventh Framework Programme
RTD	Research & Technological Development
S&T	Science & Technology
S,T&I	Science, Technology and Innovation
SMEs	Small and Medium Enterprises
SOM	Senior Officials Meetings
STI	Science Technology and Innovation
TP	Technology Platform
WG	Working Groups
WP	Work Programme