CONCEPT NOTE

Strengthening Nordic-Southern Cone[1]

Research and Innovation Cooperation in Bioeconomy

18-19 October 2018, Buenos Aires, Argentina

I. BACKGROUND

Various factors are shaping a new global context with unprecedented traits. The most influential of these factors is not just a set of new geopolitical conditions within the framework of a multipolar world, but several mega-trends that are redefining the logics of production, exchange and business models with strong impact on countries, governments and citizens everywhere. Three trends particularly stand out:

- The demographic evolution, which shows a fast population growth in developing countries -specially the Asian ones-, which brings into the picture the "demographic bonus": greater access to education and health, longevity, mobility and urbanization;
- The persistence and reconfiguration of globalization entailing a greater scientific/ technological interdependence, the reshaping of "global value chains" (GVC), substantial though volatile trade and investment flows, the revaluation of "global public goods", new protectionist buds and the search for novel forms of regionalism and trade agreements with a greater activism of Southern countries, the BRICS in particular;
- And, overall, knowledge as the key factor of value creation, within the setting of an extremely fast and frequently disruptive process of technological change and an unprecedented uncertainty in all domains of social life that rewards the shortening of learning cycles and fosters the articulation of network-like, cross-sectoral and interdisciplinary innovation ecosystems.[2]

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[1] Southern Cone (Spanish: Cono Sur) is a geographic and cultural region composed of Argentina, Chile and Uruguay. Parts of Southern and Southeastern Brazil and Paraguay can politically and socially also be considered to be part of the Southern Cone.

[2] See, for instance, UNDP, *National Report on Human Development*, 2013; KPMG, *Future State 2030: The Global megatrends shaping governments*, 2016, and Sabel, C. "The new organization of production, productive development policies and job creation or thinking about industrial policy as industry becomes less central to development", 2015. In parallel, the above trends go hand in hand with significant risks such as an increasing global inequality, the exhaustion of non-renewable resources, global warming, and the financial and food crises.

In this new setting, several developed countries posit that bioeconomy is a highly likely solution to current and future challenges–i.e., "a new economic paradigm for a new global era" - that will help to address both societal and environmental challenges, while facilitating innovations and creating novel business opportunities[3]. The Europe 2020 strategy published and monitored by the European Commission characterizes bioeconomy as a key component for smart and green growth.[4]

The notion of bioeconomy is not unequivocal, ranging from broad versions that regard it as the result of the transformation of renewable natural resources (RNR) into products on the basis of biological processes, to more restrictive versions that exclusively link it to the modern biotechnology as the leading technology in the transformation processes. An intermediate view stresses the innovative use of biomass to add value locally and generate new, sustainable production opportunities; from this standpoint the bioeconomy domain gathers a bundle of RNR-based activities –agricultural, agroindustry, forestry, food, energy and aquaculture, among the most relevant- that affect and involve other sectors –chemical, pharmaceutical, materials industry, energy, etc.- related to the generation of renewable resources of biological origin (RRBO) as a large platform of production development.

Latin American bioeconomy potential

As stated in the Thematic Report prepared by the EU-CELAC Joint Initiative for Research and Innovation's Senior Officials Working Group on Bioeconomy[5] in 2015, elaborated by MINCyT (Argentina) and CIRAD (France), "[t]he Latin American and Caribbean region is particularly well placed to contribute and benefit from the emerging bioeconomy. Its extensive and diverse natural resources paired with a dynamic economy and growing human resources offer a good foundation for a robust future bioeconomy. The region has over 50% of its lands classified as having agricultural potential, with projections for 2050 highlighting that more than 300 million has could be brought into production, offering a basis for a strong bioeconomy contributing both to food security and energy objectives, and with important social opportunities. Biodiversity resources in the region are also significant, with some of the world's most important biodiversity hotspots."

Both the broad gamut of RNR and the fact that Argentina[6] and its neighbors are gaining expertise and can already exhibit various technological developments and innovations in this field is rapidly

[3] See for example the European Bioeconomy Stakeholders Manifesto (11/2017): https://ec.europa.eu/research/bioeconomy/pdf/european_bioeconomy_stakeholders_manifesto.pdf

[4] The strategy is available at: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/framework/europe-2020-strategy_en

[5] The full report is available at: http://eranet-lac.eu/assets/moxiemanager/SOM%20Thematic%20Report-%20Bioeconomy%202015.pdf

[6] Estimates indicate that the bioeconomy in Argentina exceeds 15% of GDP and the country is facing a positive scenario to undertake a biological-based sustained growth in the medium term. Argentina has 2% of the biocapacity of the planet and is extremely rich in territorial extension, biological and environmental diversity and possession of assets for the generation of bioresources. In addition, the country has successfully joined the first wave of biotechnological progress, being currently a leading country in the use of biotechnology particularly in the agricultural sector. By way of illustration it is worth mentioning that in 2014 the National Advisory Commission on Agricultural Biotechnology (CONABIO) was

opening the space of bioeconomy in the development agenda. Bioeconomy could provide crucial solutions to several of these countries' development shortcomings or bottlenecks.[7] The choice of bioeconomy as the centerpiece of a new development path can be empowered considerably through cooperation in selected themes of shared strategic interests with developed countries that have leading expertise in different bioeconomy sub-fields, as it is the case of Finland[8] and the other Nordic countries[9].

While the importance of international and interdisciplinary collaboration for the development of bioeconomy is evident, the range of potential cooperation in research and innovation in bioeconomy is *a priori* very vast, both in terms of subthemes and possible collaboration modalities (please see section II. for more details). Furthermore, a number of mostly bilateral research cooperation initiatives between the Southern Cone and Nordic countries already exist. In the case of Finland, research teams in various universities and research institutions have close connections to counterparts in Argentina, Chile, Uruguay and Brazil, in several sub-topics under the bioeconomy umbrella. A greater synergy and impact could be generated by interlinking expert networks and enhancing the dialogue between existing initiatives to pave way for new collaborations and the expansion of a more articulated and self-reinforcing critical mass of bioeconomy development undertakings.

EU-CELAC[10] Policy Dialogue on Science, Technology and Innovation

The relevance of strengthening cooperation between the Nordic and the Southern Cone countries in the field of bioeconomy is also both timely and highly relevant when considering the wider EU-CELAC policy framework and priorities regarding cooperation on Science, Technology and Innovation. Bioeconomy has been one of the priority themes for EU-CELAC collaboration since the Adoption of the Madrid Action Plan by the European Union (EU) – Latin America and Caribbean (LAC) Summit in 2010. On the same occasion, the two regions endorsed the EU-CELAC Joint Initiative for Research and Innovation (JIRI) in order to develop and reinforce bi-regional cooperation in Science, Research, Innovation and Technology. The main objective of the JIRI is to develop the "EU-LAC Knowledge Area" through:

appointed by the FAO as the Reference Center on Biosafety of Genetically Modified Organisms (GMOs).

[7] In this sense, the country today faces the double challenge of recomposing the strategic balance in energy and territorial matters, as well as finding new sources of sustainable growth in terms of income and job creation. Therefore, and just to illustrate, bioeconomy emerges as a potential option of industrial development on the basis of biomass production that can be translated into opportunities to generate knowledge and add value both "upstream" and "downstream" in the production of biologically-rooted renewable resources with positive effects for the creation of higher qualified, better paid employment. Additionally, the transportation of biomass is not profitable, what calls for establishing its processing and transformation –in the so-called "bio refineries"- in places close to its site of generation/ production. This would open the door, in turn, for the establishment of production undertakings along the whole Argentine territory as diverse possibilities of biomass production are broadly spread out.

[8] Bioeconomy accounts for more than 10% of the Finnish economy and a quarter of its exports. According to the government, Finland's goal is to increase the turnover from EUR 60 billion to EUR 100 billion by 2025, thereby creating 100.000 new jobs in the process. This would translate into an annual growth rate of 4%.

[9] The Nordic countries have already experience of working closely together in bioeconomy-related issues for example through the Nordic Bioeconomy Panel working under the Nordic Council of Ministers.

[10] Community of Latin American and Caribbean States.

- Improving cooperation in research and innovation;
- Strengthening scientific and technological capacities, and infrastructures;
- Supporting research, innovation and knowledge sharing taking into account the contribution of ancestral and traditional knowledge;
- Boosting the use of new technologies and technology transfer underpinning sustainable socio-economic development;
- Fostering cooperation between both regions with respect to the digital economy and the reduction of the digital divide for improving competitiveness while making social inclusion a cross-cutting issue.

The JIRI dialogue has focused on specific priority themes of mutual interest, each managed by their respective Working Groups: Bioeconomy, as already mentioned, as well as Renewable Energies, Biodiversity and Climate Change, Health, Information and Communication Technologies (ICT) for societal challenges, and more recently also Sustainable Urbanization. It is through the JIRI and its support project Alcue-Net (Latin America, Caribbean and European Union Network on Research and Innovation, 2013-2017) that funding priorities for the bi-regional funding agencies platform ERA Net LAC and certain Horizon2020 calls have been determined.

II. LINES FOR COOPERATION

Against this background, CIECTI has outlined a preliminary, open-to-discussion selection of subtopics that could be of particular interest for both the Southern Cone and Nordic countries. This includes three "strategic activity nuclei" (eventually four depending on organizational possibilities and resources availability) with priority sub-topics in each nucleus indicated in brackets, and three transversal subthemes, as shown in the following table. These Nuclei and subthemes will frame the activities presented in section III.

STRATEGIC ACTIVITY NUCLEI

Forest bioeconomy	***Agro-based sustainable innovations***	***Blue bioeconomy***
- Innovative wood-based new materials chemicals, and products including those developed from the exploitation of forest waste - Forest bio-energy - Genetic development of new forest plant varieties	- Clean agriculture (including exploitation of agricultural waste) - Third generation biofuels and small scale refineries (including the production of bio-fertilizers drugs and materials) - Food 4.0 (functional and nutraceutic food)	- Bioremediation for clean water, and value-added blue bioproducts - New technologies for the sustainable use of water; - Use of sea biodiversity for new products
Conditions for fostering private and public investment in bioeconomy and long-term prospects for the development of new international bioeconomy markets		
Regulatory frameworks and technological knowledge for the transition towards a circular economy, including a long-term prospective approach to bioeconomy development opportunities		
Sustainability assessment of new value chains in a growing global bioeconomy		
Social returns of bioeconomy-led development		

TRANSVERSAL SUBTHEMES

III. OBJECTIVE AND ACTIVITIES

- In view of all the former the general goal of this proposal is to call for the strengthening of cooperation between Nordic and Southern Cone countries –with Finland and Argentina as the convening partners- in order to identify opportunities for advances in technology and innovation under the emerging bioeconomy paradigm, as well as to suggest certain concrete activities to be implemented. This implies knowledge sharing and collaborative research to:

  - Take advantage of the existing capacities in the topics to be jointly addressed in each of the countries involved;

  - Identify the main drivers of technological upgrading and innovation in the topics selected, addressing both cases in which significant progress has already been achieved and cases involving new development opportunities;

  - Define prioritized points of intervention in view of their actual or potential impact for the development of smart, sustainable, inclusive and outward-looking bioeconomy business models;

  - Underscore the implications of the bioeconomy paradigm in terms of public policies and institutional frameworks for boosting the emergence/consolidation of new activities, technologies and productive agents;

  - Identify the main the investment conditions for unlocking the potential of bioeconomy companies, particularly when working in a network-like form of organization

In order to address the aforementioned issues, CIECTI, FinCEAL+, LUKE Natural Resources Institute Finland and Lund University are organizing a high level Nordic-Southern Cone bioeconomy seminar in Buenos Aires on 18-19 October 2018. The aim of the seminar is to offer forum for knowledge sharing, networking and a seed platform for the development of new projects.

The duration of the event will be 2 working days, with the possibility of organizing additional meetings, workshops or field visits afterwards. The program of the event will be organized in plenary sessions, in which high-level experts will address the strategic dimensions of the nuclei selected, and parallel thematic working groups focused on the subthemes and topics within each nucleus, led by prominent experts from Southern Cone and Nordic countries. The target groups of the seminar are researchers, private sector representatives and policy makers/government representatives working in the bioeconomy field.

About the organizers

CIECTI (Argentina) is an interdisciplinary research center that works as a platform for knowledge generation to strengthening policies which add value to the production of goods and services and stimulate a culture of innovation; CIECTI seeks also to impulse public-private synergies, favor social inclusion, protect the natural bases of development and produce socially appropriable knowledge. To those ends, CIECTI research is organized in three main areas related to STI: design, formulation and prospective analysis of policies and institutions; information, monitoring and evaluation, and impact assessment; and strategic, institutional and government planning. Key thematic research areas CIECTI is interested include: natural resources and development, technological development and innovation in cutting edge manufacturing; development of strategies for the development of high socio-economic impact sectors; and novel organizational designs, practices and regulations to foster innovation. More information: http://www.ciecti.org.ar/en/

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FinCEAL+ LAC (Finland) is a project funded by the Finnish Ministry of Education and Culture, that supports cooperation in science, technology and innovation between Finland, Europe and countries in Latin America and the Caribbean. FinCEAL+ is a national initiative coordinated by Finnish University Partnership for International Development (UniPID) network, and serves all Finnish universities and research institutes. FinCEAL+ activities focus on priority themes defined in the EU-CELAC science policy dialogues: bioeconomy, renewable energy, ICT, health, climate change, biodiversity and sustainable urbanization. More information: www.unipid.fi/finceal

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The Natural Resources Institute Finland (LUKE) is a non-profitable public research and expert organisation that works to advance the bioeconomy and the sustainable use of natural resources. Luke's strategic objectives are new bio-based products and new business activities; productivity through digital solutions; revitalising regions through the circular economy; wellbeing from immaterial values; healthy and profitable food production. Luke's research is conducted in four large thematic programmes: Boreal Green Bioeconomy, Innovative Food Chain, Blue Bioeconomy, and Natural Resources Economy in the Society. LUKE is the second largest research institute in Finland and one of the biggest clusters of bioeconomy expertise in Europe. Luke employs more than 1,300 person-years, and the turnover for the year 2015 was approximately EUR 130 million. The institute operates in 30 different locations across the country. LUKE has vast experience in international research co-operation, there are currently 34 ongoing FP7/H2020 projects and 11 Interreg projects, and LUKE is coordinating 4 of these.

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