



## **Sustainable chemistry for life**

### ***The role of chemistry in the European bioeconomy***

Congress Declaration  
13<sup>th</sup> ECRN Congress

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On the occasion of the 13<sup>th</sup> ECRN Congress, our network presents the following declaration to voice the common interests of the chemical regions regarding sustainability and the future of the European bioeconomy.

#### **(1) Bioeconomy provides opportunities in the present and vast potential for the future**

- a. The bioeconomy already accounts for a market estimated at €2 trillion and 22 million jobs across the EU. This covers a range of sectors from agriculture, food and beverage, agro-industrial products, fisheries and aquaculture, forestry, wood-based industry, biochemicals, biotechnology, enzymes, biopharmaceutical, to biofuels and bioenergy.
- b. The bioeconomy also provides potential for smart and sustainable future growth and can thus contribute to the EU and local economies by providing growth and jobs and transforming value chains.
- c. Europe has a strong position for leveraging the potential of the bioeconomy. Many European regions host a number of well-established traditional bio-based industries, ranging from agriculture, food, feed, fibre and forest-based industries. Europe's international advantage stems from the strong knowledge base of highly qualified scientists, skilled workers and high quality education in schools and universities. This is complemented by an extensive landscape of international first class research institutes, good cooperation and partnerships between ministries, universities and industry demonstrated e.g. by the Bioindustries PPP. Moreover, the strong chemical industry in Europe in comparison to countries as USA, China, Japan, our important competitors, can play a strong catalytic role in speeding up sustainable innovations.
- d. The bioeconomy develops globally. In order for Europe to keep up with the development, it is necessary to look beyond European ventures and be prepared to meet competition from other parts of the world (e.g. the United States, Brazil, Malaysia, China and other markets).

## **(2) The bioeconomy calls for systemic thinking**

- a. The bioeconomy can best be conceived from a systemic perspective<sup>1</sup>. It offers an approach that can bind together complex systems and inter-connected challenges. The bioeconomy spans multiple sectors and processes from the production of carbon-neutral and renewable biological resources and the conversion of these resources and waste streams into value added products such as food, feed, bio-based products (materials, chemicals, fibres) and energy in a sustainable manner.
- b. Recently, the EU Bioeconomy has been joined by a larger sibling, the Circular Economy. The bioeconomy is seen by many as an integral part of the circular economy, when it deals with waste, recycling, multi-use in form of cascades and when closing value chains. Others insist on the complementarity of both forms of an economy, because of the unique features of the bioeconomy such as carbon neutrality using renewable resources and the biological creation of new properties of materials.
- c. The bioeconomy contributes to the circular economy and represents important elements of this economy e.g. in terms of dealing with waste, its reuse and minimization, the use of biomass in cascade formats and closing cycles and value chains. It is a part of the economic shift to use sustainable biomass and e.g. organic wastes via sustainable processes to biobased products respecting end of life systems.
- d. Circular economy entails a cultural change from linear thinking to circular production and consumption models. However, beyond recycling, circular economy should encompass broader systemic change and re-thinking of design, use of raw materials and consumption or reuse.
- e. To efficiently integrate the bioeconomy and circular economy, products and materials should not only be used efficiently and recycled, but they should also be biodegradable and biobased and sourced from renewable resources whenever possible. New approaches to use renewable feedstocks in chemical production should be part of the bioeconomy, when they contribute to sustainability and resource efficiency.
- f. The bioeconomy and circular economy complement each other and contribute to sustainable low-carbon economy with a strong emphasis on renewable biological resources. The advantages and potential of the bioeconomy and the circular economy should be combined and jointly leveraged. The circular economy addresses not only all fields of material processes and recycling (inorganic as well as organic), but also new product design for any product type leading to circular use and recycling. Both the bioeconomy and the circular economy should join their potential and forces.
- g. In addition to sustainable sourcing and production, the bioeconomy also entails smart and efficient use of innovative technologies. Moreover, bioeconomy requires a solid skills base and a capacity to apply biobased innovations to market solutions. Therefore, both technical and human capacities are of vital importance.

## **(3) Developing the European Bioeconomy requires novel approaches and decisive action at all levels**

- a. It will take time for the bioeconomy to mature and challenge the conventional fossil-based models. Therefore, long-term commitment, investments and a solid, predictable

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<sup>1</sup> As outlined for instance by the European Commission in COM(2014) 398 final

and robust policy framework is a key prerequisite for the bioeconomy to fulfill its potential.

- b. Enabling policy framework necessitates synergies across European, national and regional strategies. Beyond strategic cooperation and overarching common vision, cooperation among all stakeholders along the value chain in novel ways is crucially important. ECRN strives to enhance this type of overarching cooperation, illustrated for instance by this Congress and our workshop “Cross-sectorial and cross-border cooperation of clusters in support of green chemicals industries” organised in collaboration with the European Commission on 27 February 2014 in Brussels.
- c. Further growth of the bioeconomy can be supported by providing a holistic, coherent and harmonised framework in a range of policy fields: agriculture, forestry, industry, climate, environment, energy, research, innovation and regional development. All these fields and sectors and integral elements of the bioeconomy and development of circular economy, as demonstrated for instance by the Novamont project *Matrica* on integrating local agriculture with industrial processes.
- d. A central requirement for bioeconomy is the sufficient and sustainable availability of biomass. In this area, policy incentives and R&D advancements can contribute to sustainable and innovative utilisation models for biomasses from various sources.
- e. Policy measures can also stimulate the uptake of biobased products and speed up market adoption. Instruments to support market uptake include among others standardisation, certification, labels, public procurement and awareness raising among consumers, the public and decision-makers. Initiatives such as limiting use of plastic bags (as has been done for instance in Italy) and stimulating use of more environmentally friendly alternatives can yield good results.
- f. Bioeconomy is both global and local. Local production, suitable logistic systems and interconnected value chains and production facilities are an imperative for efficient use of biomass. While the operations must be efficiently organised at the local level, the market potential of the bioeconomy and biobased products is global. This should be recognised by policies at all levels.

#### **(4) Chemistry plays an important role across value chains in the bioeconomy and circular economy**

- a. The EU chemicals industry supplies virtually all sectors of the economy. It is an integral part of biorefining and value added chemical make biorefineries economically feasible: raw materials and feedstock are transformed into tailor-made solutions for customers in the chemicals industry itself, as well as all other industries further down the value chain for food- and feed additives as well as for fuels. This explains why its technological breakthroughs induce further innovation in its customers or lead to demands for the development of new substances or materials from the chemicals industry itself.
- b. Chemistry and the chemical industry can contribute to new innovations in various frontiers, ranging from agriculture and food production to preparation and product safety, as well as conversion and re-utilisation of waste in value-added processes.
- c. Sustainability requires interdisciplinary innovations and cooperation throughout the value chain. As such, it is also linked to broader questions about resource use and environmental, social and economic phenomena. The chemical industry plays an

important, enabling role throughout the value chains and serves a vital function in achieving new improvements.

- d. The immense know-how within the chemical industry is applied in a myriad of ways in the context of the bioeconomy. Bioeconomy is in many ways based on chemistry. However, even broader multi-sectoral collaboration is also required.

#### **(5) Cooperation across sectors, regions and institutions is vital for further development of bioeconomy**

- a. The bioeconomy requires cooperation and combination of technologies from different industrial sectors. Due to its cross-sectoral nature, the bioeconomy benefits from innovations in the fields of chemistry, forestry, technology, construction and energy as well as sciences for nutrition and health, among others. Industrial symbiosis, cooperation across industry boundaries and across sectors and clusters is a defining characteristic of the bioeconomy.
- b. As multisectoral engagement is required, it is necessary to find operational models for collaboration to overcome sectoral barriers and work in cooperation with actors from industry as well as from agriculture and everything in between.
- c. The necessary value chains and optimised resource flows can only be achieved through close interaction between the agricultural, industrial and science sectors. The key role of policy and public authorities or the triple helix cooperation should not be ignored in this context.
- d. Cooperation should seek to enable synergies also across European, national and regional policies and strategies. In the area of bioeconomy, all levels should complement one another. At the regional level, instruments such as smart specialisation strategies should be leveraged whenever possible. Strategies, policies, regulation and incentives at different levels and across sectors should support holistic development of the bioeconomy.
- e. In other words, an integrated and cross-sectoral, inter-disciplinary policy approach to the bioeconomy is needed. Regional competences, subsidiarity and multilevel governance instruments should be respected in European policy making also in the context of bioeconomy. This requires continuous dialogue, long-term political commitment and integration between overarching European policies and sectors. All this is supported by ECRN and we encourage exchange across different spheres of policy making through our activities, initiatives and joint interregional projects.

#### **(6) Regions, clusters and networks can act as prime catalysts of the bioeconomy**

- a. Regional networks and clusters provide good basis for implementation of the bioeconomy. Moreover, they can act as important sources of information, knowledge generation and experiences. Regional experiences and approaches can be shared beyond the clusters and developed into broader strategies. The cross-cutting nature of the bioeconomy should be recognised in regional policy making in terms of sufficient coordination that spans also the policy implementation phase.
- b. One of Europe's greatest strengths lies in the diversity across its regions and trans-border and trans-sectorial cooperation. The existing good practices and solutions implemented across Europe such as e.g. 3BI intercluster between the IAR in France, BioVale in UK,

Biobased Delta in the Netherlands and the Bioeconomy Cluster in Central Germany, or the interregional mega-cluster BIG-C between the Netherlands, Flanders and North Rhine-Westphalia. Both intersectoral co-operations are a great source of information and inspiration. As an interregional network, ECRN is committed to facilitating exchange of experiences and scouting good practices across European regions.

- c. Regional strengths and their diversity should be acknowledged in broader policy making. Policies become practice through implementation, and this important step occurs often at the regional level. Regional actors are thus very well positioned to enable further development of the bioeconomy and circular economy. Local bottom-up initiatives are an important part of the process towards a bio-based society.
- d. Clusters and regional industries and actors play a key role in driving the European bioeconomy. Innovations are not born only within large companies, but increasingly among SMEs and interconnected value chains with economic and non-economic actors. Clusters are a prime breeding ground for such innovation.
- e. Clusters and technological parks accelerate development and innovation by building partnerships between different actors and facilitate the exchange and transfer of knowledge. In addition to speeding up innovation, they also create favorable opportunities for new businesses and new job creation.
- f. Clusters are regionally embedded. They may be geographically bound within one region or country, but they also cross borders and build more extensive linkages. Nonetheless, the regional element is central. For the bioeconomy, this provides an excellent ground for setting up regional structures for resource-efficient material flows and value chains.
- g. Interregional cooperation is important. Regions and interregional networks such as ECRN can bring valuable inputs into the broader bioeconomy discussion and policy making processes. Through cooperation across regions, we can map and share information on best practices or piloting and testing facilities and thus provide support to policy makers as well as SMEs and other actors. Public-private partnerships, triple helix cooperation and other types of structured forms of engagement across academia, industry and authorities can also be encouraged at the regional level. The engagement of civil society and societal actors is very important, especially in order to build awareness and acceptance.

The European Chemical Regions Network seeks to foster and enable cooperation between regions and to encourage activities to enhance sustainability and the competitiveness of chemical regions. Cross-border collaboration and cooperation across regions and clusters is at the core of our activities. We wish to highlight the importance of mutual learning and partnerships within networks like ECRN, as platforms that bring chemical stakeholders together can serve as important catalysts of new innovation and forward-looking action. We remain committed to working towards mutual benefits and sustainable, prosperous European regions.

13<sup>th</sup> ECRN Congress, Milan, 9 October 2015