Spurring green bio-industrial symbiosis in Zemgale Planning Region, Latvia

This brief is a part of the Blue-Green Bio Lab Tool Kit, that represents the findings in the Blue Green Bio Lab project. The project targets the urgent challenges of reducing nutrients to waters of the Baltic Sea Region, limiting greenhouse gas emissions, and enhancing European self-supply with food, feed, and energy. Together, aquaculture, agriculture and industry can provide solutions to these challenges through industrial symbiosis based on the sustainable exploitation of local blue and green biomasses initially grown and/or harvested with the objective to produce positive ecosystem services. The Blue-Green Bio Lab project is co-financed by Inter-Reg Baltic Sea Region with partners in Denmark, Latvia, and Sweden.

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This brief focuses on developing conducive policy environments and policy practices to spur bio-industrial symbioses in the Zemgale Planning Region of Latvia. The activities discussed in the brief build upon challenges and opportunities for bio-industrial symbiosis identified earlier in the Blue Green Bio Lab project via workshops and discussions with local stakeholders.

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Choice of biomass

Zemgale region is the central agricultural production area in Latvia. Due to intensive land use and fertilization the impact of nutrient loads on water bodies of Zemgale is considerable. About 20 % of water bodies in Lielupe River basin have unfavorable or bad ecological status, mostly due to eutrophication. Therefore, the region is searching ways to improve the quality of the marine environment and develop business approaches through green solutions. Increasing the share of grassland in the total pool of agricultural land could be one approach. Bio-industrial symbiosis requires selecting a biomass, and in a scoping meeting for symbiosis the grass was chosen as a potential biomass for Zemgale. The initial idea was to use grass mostly as a resource for biogas production.

Co-creative workshop

A co-creative online meeting was held on November 24th, 2023, via ZOOM (see Figure 1). The meeting was attended by 21 participants and organized as part of the Zemgale regional climate, energy and environment issues coordination working group meeting. The attendees represented the Ministry of Climate and Energy, local municipalities (environmental and energy specialists), energy producers and respective professional associations. The participants were chosen based on an assessment of stakeholders that might have key importance for the development of bio-industrial symbioses in Zemgale region.

Figure 1. Screenshot of online meeting in November 2023

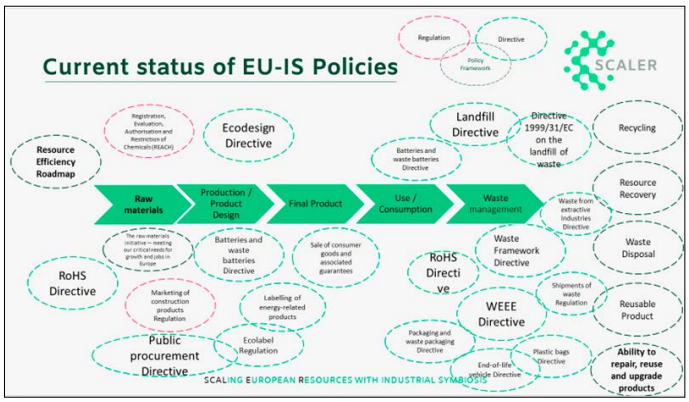

Figure 2. Diagram used to explain EU industrial symbiosis policies

The Ministry of Climate and Energy is the leading institution in the management of climate and energy policy areas and the director of the department was an active participant in the Zemgale meeting. The director discussed with participants that Latvia, like all member states, needs to fulfill the European Union goals for climate policy. In the discussion with participants, the director Indicated that he believes the goals for climate policy can be fulfilled by all member states and there should be no concerns on the part of Latvia.

During the discussion opinions differed on topic of energy and climate. State representatives emphasized the importance of current laws and common European conditions. In general, legally following EU conditions does not limit practical actions in Latvia, because people and society in general want to live more in harmony with nature.
Local government specialists asked the Ministry of Climate and Energy about the renewable electricity produced in the country that is not fully utilized and why we should continue to use Nord Pool AS, a European scale electricity stock exchange. Energy prices are a big concern in Latvia, and it is difficult to say whether this market works for consumers and businesses or more for electricity producers, who want to sell electricity as expensively as possible. The ministry explained that renewable electricity production (from hydro, solar and wind) in Latvia is not stable enough year-round and that as we still lack solutions for advanced electricity storage, there is a need to continue using Nord Pool.

On the topic of the use of green biomasses for some form of energy the representatives of the local municipalities maintained a skeptical and pragmatic point of view- until there are working plants for processing green biomass, even if they are small by Latvian or European standards, our hay, bushes, reeds will not be used cost-effectively and energy-efficiently.

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Challenges and opportunities

Legal barriers at the national level

National regulations do not specifically target bio-industrial symbiosis although achievement of climate goals together with economic development in environmentally friendly way are acknowledged in policy documents and Cabinet of Ministers decrees. Particular attention is devoted to industrial symbiosis as a part of waste management policy when framing the circular economy. Biomass is treated as biowaste and for municipalities composting is the dominant way of handling it.

Climate policy has been recently developed in Latvia and the ultimate goal is reduce greenhouse gas emissions. Two new climate acts are now in the process of adoption in Latvia with the expectation to achieve the European climate objective of zero emissions in 2050. However, the sectoral responsibility in Latvia is a barrier to the necessary holistic approach needed to implement circular policies.

Environment protection regulations could also be the challenge if wildly growing biomass is used for symbiosis. Certain types of vegetation (like common reed) are regarded as habitat forming species and not allowed for harvest. Danish Fisheries Agency, which is preparing a new permitting process, after the adoption of a new Danish Martime Spatial Plan, possibly in the fall of 2024.

Communication and outreach

The need for communication about circular bio-industrial symbiosis ideas and potentials is without a doubt important. Outreach to specialists in local municipalities with information and knowledge about bio-industrial symbiosis can play an important role in the future development of the circular economy strategy of the local areas. The proven best practices of other regions make clear the possible ways of collaboration among various stakeholders and the products that might be developed during the bio-industrial symbiosis processes. Currently Latvia is in the very early stage of green biomass usage in bio-industrial symbiosis. Furthermore, at the moment some biomasses cultivated for energy production are not in harmony with sustainability goals.

Next steps

The Zemgale Planning Region sees a need for additional education and training on concepts about bio-industrial symbiosis for stakeholders. The concept still is new in Latvia, and it requires a longer process than the Blue Green Bio Lab project to begin using biomass differently than traditional uses, moving beyond that grass only as a hay for cattle.

Reflections and learning

The online meeting was well attended, and participants were genuinely interested in the topic. However, the knowledge and options for using green biomass in bio-industrial symbiosis is currently limited. Thus, more communication is needed with relevant parties with various knowledge and perspectives on for example: the availability of green biomasses, new value chain actors, logistics, innovation around final products and sustainability issues.

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Project facts

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