



Bio-based strategies and roadmaps for enhanced rural
and regional development in the EU



Inspiring regional agendas for inclusive bioeconomies

Proceedings from the BE-Rural Final Conference

11-14 July 2022



This project has received funding from the European Union's Horizon 2020
research and innovation programme under grant agreement No 818478.

ACKNOWLEDGMENT & DISCLAIMER

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818478.

The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

Reproduction is authorised provided the source is acknowledged.

1 Introduction

On 11-14 July 2022, BE-Rural's Final Conference took place in Frombork, Poland, titled "Inspiring regional agendas for inclusive bioeconomies". The objective of the event was to look back at the activities and outputs of the BE-Rural project, and to discuss how the experiences and lessons learned can inform future initiatives and ongoing policy developments. Through expert talks and dedicated working sessions in small groups, the conference aimed to review and validate selected results of the BE-Rural project, and to outline concrete steps for future collaboration. The conference was framed by two field trips, which provided participants with insights on regional development initiatives in the Vistula lagoon region.

The conference was attended by approximately 40 bioeconomy stakeholders associated with BE-Rural's Open Innovation Platforms (OIPs). Most represented research organisations and universities, regional clusters and cluster associations, local action groups, and regional authorities. Overall, stakeholders from eight different EU Member States and EU candidate countries participated in the conference. Due to the ongoing COVID-19 pandemic, participation in the conference was limited to invited stakeholders, the BE-Rural consortium, and the Commission services.

Holger Gerdes and **Zoritz Kiresiewa**, Ecologic Institute, welcomed the participants and kicked off the conference with a brief introduction to the BE-Rural project and outlining the objectives and structure of the conference (see [conference agenda](#)). They drew participants' attention to the fact that, due to the COVID-19 pandemic, the organisation of international events in BE-Rural had largely been limited to virtual formats. While these formats have proven effective, Holger Gerdes and Zoritz Kiresiewa emphasised their appreciation for the opportunity to see everyone in person at this final project event.

The introductory session was complemented by a presentation by **Tomasz Calikowski**, DG Research & Innovation, titled "State-of-play on EU bioeconomy including within Horizon Europe". In his presentation, Tomasz Calikowski gave an overview of the current EU Bioeconomy landscape as well as of relevant bioeconomy-related topics in [Horizon Europe Cluster 6](#). He linked the bioeconomy to the objectives of the European Green Deal, discussed the history and ambition of the EU's Bioeconomy Strategy, and provided an overview of existing national and regional bioeconomy strategies across the EU. In the second part of his presentation, Tomasz Calikowski demonstrated how the bioeconomy is reflected in the current work programme of Cluster 6 "Food, Bioeconomy, Natural Resources, Agriculture and Environment" within the EU's new Framework Programme for Research and Technological Development, Horizon Europe. He also introduced the [Circular Cities and Regions Initiative](#) (CCRI) and invited the conference participants to join a high-level Bioeconomy Conference, "The bioeconomy – Enabling the European Green Deal in challenging times", which will take place on 6-7 October 2022 in Brussels.

2 Project highlights

Following the introductory session, the BE-Rural consortium, represented by the work package leaders, presented key outputs and activities of the BE-Rural project. **Chuan Ma**, WIP Renewable Energies, briefly introduced the objectives of WP2 "*Regional potentials & business models*" and presented BE-Rural's "Handbook on regional and local bio-based economies", which is available in seven languages. **Lily Teitelbaum**, BIOCOM, gave a brief overview of the public engagement activities under WP3 "*Education, awareness & engagement*" and presented BE-Rural's teaching materials on bioeconomy, circularity and sustainability, as well as highlights from the implementation of five bio-based pop-up stores. **Stefan Kah**, University of Strathclyde, introduced WP4 "*Knowledge exchange & capacity building*" and summarised the results and lessons learned from the implementation of BE-Rural's capacity-building workshop for researchers and SMEs, which took place under the heading "How to participate in international research". **Gerardo Anzaldúa**, Ecologic Institute, presented the structure of WP5 "*Regional strategies & roadmaps*". He then focussed on the implementation of the Market Analysis Framework (MAF+) and the elaboration of bio-based business ideas in the five OIPs, as well as on the development and application of the "BE-Rural Sustainability Screening".

Subsequently, representatives of BE-Rural's Open Innovation Platforms gave brief presentations of the strategy and roadmap documents that have been developed during the project, as well as of the regional stakeholder processes which the participatory development of the documents was based on (cf. [BE-Rural Deliverable 5.3](#)). This took the form of a moderated session, with a short "frontal" pitch by each region, followed by a series of questions from the moderator (**Daniel Coșniță**, Romanian Cluster Association) and the audience, and a final discussion round highlighting the most relevant aspects from each region.

Emilija Mihajloska, SDEWES-Skopje, explained that the Bioeconomy Development Roadmap of the Strumica Region, North Macedonia, was created in the context of the New Programming Period. However, the fact that the region is not part of the European Union creates an additional burden for the identification of appropriate resources for the implementation of the strategy. The main factor for the success of the agriculture-focused strategy lies in the capacity-building process at the level of relevant stakeholders, which has been ongoing with each step of the strategy development.

Dagnija Lazdina, Latvian State Forest Research Institute, pointed out that the elaboration of the Bioeconomy Strategy in the regions of Vidzeme and Kurzeme was performed within the wider Latvian context, where a National Bioeconomy Strategy has been in place since 2017. Hence, the challenge was to contextualise the national strategy according to regional specificities. The Latvian situation raised the question whether cross-cutting strategies (such as the bioeconomy) should take precedence over sectoral strategies. As the latter have dedicated funding attached, they tend to be regarded as more important, although the former are vision-building documents. Therefore, they should be developed first, creating a framework for the sectoral strategies. This is an important lesson for the time horizon beyond 2027.

Martin Stoyanov, Bulgarian Industrial Association, highlighted that the Strategy for the Development of the Bioeconomy in Stara Zagora was elaborated in the absence of a relevant national Bulgarian policy document. The most difficult challenge is the change of mindsets towards bioeconomy; hence education is to be regarded as a most important objective; bioeconomy should be included in the school curriculum from the 9th grade at the latest.

Tihamér Sebestyen, Green Energy Innovative Biomass Cluster, stressed that the Roadmap for a Bioeconomy Strategy in the Covasna County in Romania was a 100% bottom-up approach relying on the regional clusters (wood & furniture, green energy, textiles, agri-food, etc), which in turn have integrated the bioeconomy into their own cluster strategies. The role of clusters is twofold; on the one hand, they act towards increasing the innovation level of SMEs, allowing them to shift to bioeconomy-based business models; on the other hand, they provide input to relevant regional and national policy documents. As a result of cluster activities, bioeconomy has been included in the smart specialisation strategies both at national and regional levels.

Marcin Rakowski, National Marine Fisheries Research Institute, explained that the Strategy for the development of circular bioeconomy through the use of low-value fish species from the Szczecin and Vistula lagoons brought together two regions that ultimately developed a joint strategy. This was possible mainly due to an exemplary mobilisation of stakeholders, which was carried out in a very well-executed participatory approach. The exercise built up competences at the regional level, the involved stakeholders now being able to provide external expertise for the elaboration of strategic documents at regional and national levels.

3 Co-development of the BE-Rural Policy Paper

A key activity of the conference was the validation and further elaboration of four targeted policy recommendations on the promotion of effective co-creation spaces in the bioeconomy, which had been drafted by the BE-Rural consortium based on the results of and lessons learned in the project (cf. [BE-Rural Deliverable 6.3](#)). In the context of a *World Café*, the conference participants discussed the draft policy recommendations and exchanged views regarding their practical relevance and potentials for implementation. The discussions were structured along a number of guiding questions, which had been defined for each of the four recommendations. The key outcomes of the discussions are highlighted below:

1. Recommendation #1: Increase support for innovative formats to encourage citizen dialogue and better capture feedback on regional bioeconomy issues

The discussion around recommendation #1 covered a broad range of topics relating to improving citizen engagement for the bioeconomy in rural areas. Representatives from the regions shared their experiences interacting with citizens during the pop-up stores and educational events organised in the frame of BE-Rural. Key lessons to improve overall communication on bioeconomy included:

- Better tailor communication to citizens' backgrounds and knowledge levels, e.g., simplify, be less abstract by directly addressing their concerns.
- Create a better balance between local and innovative. It was difficult to relate to the highly innovative bio-based products displayed in the pop-up stores that did not use local resources (e.g., pineapple leather etc.). Increase the number of local products, where available, and focus more on local issues.
- Use the economic profit motive to generate farmer interest. However, interest is often lost when risks are perceived or a long waiting period is necessary.
- Reach out to local leaders (e.g., key fisherman from the LAGs) and work with local CSOs/NGOs. However, the capacities of local civil society are often very limited or they may at times even be viewed as competition with regard to winning outside funding.
- It is important to use multiple communication channels, both traditional and new (e.g. older populations in rural areas tend to use local radio/TV while younger age groups use Facebook).
- Lack of trust not only in political institutions but also in biotechnology. Need to continue building trust between citizens, politicians and biotech innovations.

Key ideas for improving formats includes:

- Focus on less formal areas of education such as hubs for educational, practical and social interactions (e.g., incubator spaces, environment-based educational centres such as [ASHA centres](#)).
- Find ways of bringing industry along with entrepreneurs to schools (e.g., make use of events such as school entrepreneurial days in Latvia).
- Need to find more exciting and tangible spaces/events for public consultations. Strategy development is overly complex whereas an event such as the cutting down of a local tree is tangible and emotional for the public.
- Gathering citizen feedback in more developed countries (e.g., Germany) involves massive campaigns, even financial incentives in order to garner representative citizen feedback.
- Successful formats such as "science shops" (*Wissenschaftsladen*) help bridge the gap between science and the public.

While open-ended engagement is seen as important for increasing knowledge on the bioeconomy, the participants also emphasised the need to clearly incentivise citizens by rewarding "good" behaviour in implementing sustainable practices, whether through tax exemptions or financial rewards for recycling etc. Inclusivity seems to be a goal that remains difficult to achieve in practice. The multi-actor approach is crucial; however, conflicting interests must also be negotiated. Communication can be improved by focusing on day-to-day rural life and surrounding resources. This requires more input and collaboration with local partners to ensure the events and formats are in line with citizens' needs and interests.

2. Recommendation #2: Create new or promote existing frameworks at regional level that support bioeconomy stakeholders in implementing capacity building activities

As the bioeconomy is a relatively new field, there are many perceptions about what the bioeconomy is, which can make it difficult for different groups to interact based on a common understanding. Different stakeholders can struggle to find a shared language, which requires significant interactive engagement to create a common ground. This is needed to allow the interaction between, on the one hand, local stakeholders and producers who are dealing with bioeconomy on a daily basis but lack the capital and knowledge about the opportunities offered by bio-based products, and, on the other hand, industry and business actors who lack the feedstock and local connections. Networking between these

two groups is crucial to develop new projects and potentially create start-up businesses related to the bioeconomy.

The use of the media in communicating the rural bioeconomy can be improved. Journalists who are familiar with the bioeconomy can be used as multipliers, bringing the topic closer to the population. At the same time, for those involved in the bio-based sector, capacity building could be offered to those working in the bio-based sector to work with the media, both traditional and social media. The role of social networks is crucial, but two-way communication is needed, enabling stakeholder feedback and articulating on-the-ground challenges. This could include Q&A sessions, e.g. on Facebook, led by experts in the field, but also sharing good practices from those who have already implemented projects or developed products in the bio-based sector, as an inspiration for others. Online exchanges have their limits, but they allow stakeholders to exchange experiences with actors from other regions in a cost-effective way. Other useful ways to communicate the bioeconomy are pop-up stores, i.e. by displaying bio-based products, competitions such as “best circular story of the year” or study visits. Anything visual is likely to have a positive impact, as people look for good practices to implement in their region. It is more productive to create something that catches the eye and shows practical examples instead of providing theory.

As per tools, traditional classroom-style knowledge exchange & capacity building (KE & CB) events appear to have worked better or at least have been more readily accepted by stakeholders. More interactive and less formal ways of exchange, such as group work and collecting input through, for instance, sticky notes, met with more reluctance, especially among older stakeholders. Younger people, on the other hand, preferred this type of engagement and found this approach effective and productive. Online pitching sessions, short presentations with local people, streaming on Facebook and allowing comments from the audience could be practical options to encourage engagement. However, stakeholder fatigue resulting from the involvement of a limited group of key actors in many similar projects and activities is increasingly problematic and requires a synchronised approach in the relevant organisations. Overlapping projects are not necessarily problematic, but they require coordination and coherence. Knowledge gathered in one project can be transferred and upgraded to another synergetic project rather than starting from scratch.

In terms of existing frameworks into which support for capacity-building could be integrated, the processes to formulate smart specialisation strategies in particular can be ways to embed the bioeconomy. Synchronising bioeconomy strategies or roadmaps with S3 at national or regional level can create partnerships. However, entrepreneurial discovery processes to develop S3 are not directly linked to financial resources. Alternatively, linking up with Local Action Groups (LAGs), in traditional rural LEADER or fisheries contexts, can enable building on existing stakeholder networks and expertise. Specific EU funded projects, e.g. via Interreg or Horizon, such as BE-Rural, can be useful to increase knowledge and build capacity. Sometimes, domestic actors such as environmental associations or training centres can provide more appropriate support, and relevant domestic frameworks such as clusters allow for easy linkages with the industrial sector.

Clustering and grouping are necessary preconditions for the development of strategic documents and frameworks. While this should entail inclusive participation, many NGOs lack openness and there is insufficient communication about their activities. There are cases where only a limited number of people benefit financially from their activities. Yet, all rural and agricultural actors need to benefit and be given more influence, otherwise industry actors will dominate bioeconomy developments.

3. *Recommendation #3: Enable regional multi-actor partnerships to formulate inclusive bioeconomy strategies and roadmaps*

The discussion around recommendation #3 centred on the question of how multi-regional partnerships such as clusters, local action groups and other existing networks can be enabled to develop regional bioeconomy strategies and how, at the same time, new actors can be involved, thereby ensuring inclusiveness of the activities and outputs.

The participants agreed that clusters and other existing multi-actor partnerships are an excellent entry point to initiate an inclusive co-creation of regional bioeconomy strategies and small-scale bio-based business models. Many regions, however, lack such structures. While, for example, the Covasna County in Romania has a strong cluster network with more than seven clusters working together, there are no active clusters in the Stara Zagora region of Bulgaria. Here, local action groups and multi-actor

partnerships that are actively supported by the EU Research and Innovation Programme Horizon Europe could be important contributors to a strategy development process. The participants suggested that the sub-regional level (e.g. involving a small number of municipalities) could be an appropriate place to initiate a strategy development process. Individual experts or Digital Innovation Hubs could be facilitators of such a process.

Participants agreed that, despite all communication and dissemination efforts undertaken in the context of European and national projects since the adoption of the EU Bioeconomy Strategy in 2012, there is still a need for additional awareness-raising, educational and capacity-building campaigns, as well as knowledge exchange across regions, countries, and stakeholders. These activities provide the basis for an informed co-creation process.

Formulating the objectives of the bioeconomy and explaining how they fit into the specific sphere of interest of the stakeholders is another important prerequisite for motivating them. Clusters, for instance, have their own strategies, and the bioeconomy may be found among the objectives or envisaged actions in several of them, depending on the specific industrial sector and regional context. For clusters to play an active role in the development of the regional bioeconomy in the context of a wider co-creation process, relevant initiatives should pursue objectives and goals that match the ones of the cluster strategies. Identifying shared objectives could not only increase stakeholders' motivation, but also build empowerment. Ideally, the intervention points for integrating bioeconomy priorities in clusters' agendas should be aligned with the update of a cluster's strategy. Also, the development of the national Partnership Agreements¹ (PA) for the new EU Programming Periods provides a window of opportunity for countries and regions to place more bioeconomy-targeted actions on their agendas. Having the bioeconomy as a strategic objective in the PAs and the EU Operational Programmes may encourage more LAGs and clusters to apply for funds and initiate bioeconomy-related projects.

The participants emphasised that, overall, the effective mobilisation of stakeholders depends to a large extent on the (perceived) benefits which could accompany active engagement. These benefits might relate to income opportunities of individual businesses, but also to overall development opportunities and a resulting competitive advantage of a region (e.g. benefits of being known as a 'sustainability frontrunner'). Initiators or facilitators of a bottom-up co-creation process should therefore define and explain the utilisation potential of the expected outputs and outcomes. Thus, showcasing the benefits of bio-based products, processes and development pathways is important, whereas targeted approaches are needed for different stakeholder groups.

It was further stressed that the role of scientific partners within local action groups needs to be strengthened, as they can have a sustainable impact on the development of rural regions, e.g. by linking research topics to business needs, taking into account the social, economic and environmental implications of business developments. For university departments to play a meaningful role in the activities of local action groups, they need to embrace a transdisciplinary approach, ensuring that research activities reflect the priorities of the LAGs and that research outputs can be implemented in a timely manner. Efforts to match scientific and/or technical experts with local practitioners could also be organised at the national level, e.g. through moderated discussion forums on social media, where invited speakers explain relevant concepts and approaches. Expert contributions should ideally be organised well in advance of the start of a new Programming Period, so that they can feed into the development of the new LAG or cluster strategy.

Involving socially or economically marginalised or vulnerable groups in project activities and identifying and integrating their needs in political agendas is an important step towards social justice and inclusiveness. During the discussions, it became clear that these groups are region-specific and gaining the participation and trust of those groups is very challenging. Here, the social enterprise model as well as community-led approaches could be an important instrument. Clean Tech, a social enterprise based in Ghelinta, Romania, which was established with aim to create an energy self-sufficient community by including vulnerable people in the activities and providing them with jobs, was put forward as a good-practice example.

¹ The Partnership Agreements define the strategy and investment priorities of the Member States and present a list of national and regional operational programmes (OPs) which a Member State is seeking to implement, as well as an indicative annual financial allocation for each OP. Source: https://ec.europa.eu/regional_policy/en/policy/what/glossary/p/partnership-agreement.

4. Recommendation #4: Upskill entrepreneurs to design their bioeconomy products and business models on the basis of a) real market needs and b) with serious consideration of ecological limits

Much like the other topics, the recommendation on upskilling entrepreneurs generated a wide-ranging discussion on experiences and needs in the OIP regions. Some key highlights from the discussion are presented below.

- The development of cooperative endeavours (agricultural cooperatives, for example) is seen as a potential opportunity for fostering beneficial business environments. Not only can these generate new business opportunities, but they can also encourage: new leadership initiatives, a purpose-driven sense of community, and a forum for sharing knowledge and examples on business experiences.
- Similarly, participants pointed to the challenge of navigating collaboration vs. competition dynamics between businesses and producers. It is important that entrepreneurs are able to develop bioeconomy products in an environment where collaboration and cooperation are seen as avenues for positive impacts, as well as opportunities for growth.
- Engaging and motivating young people in the regions is critical to the development of new and innovative bioeconomy products and business models. Generational change can be a key driver of innovation. Furthermore, participants noted that young people tend to share experiences and inspiration that they have gained from travelling and visiting other regions, so grants and training should be made available to encourage such exchange.
- Participants pointed out that the scientific framework for consideration of ecological limits already exists. However, the influence of lobbying can be strong and may lead to these ecological limits not being considered.
- Occasionally, top-down changes can lead to new demand for products. The example of plastic straws was highlighted as one instance where top-down changes generated a demand for new, non-plastic products, thus creating a market need for product development.

4 Sustainability Screening

To open the second day, **Gerardo Anzaldúa**, Ecologic Institute, delivered a presentation on the BE-Rural Sustainability Screening exercise (cf. [BE-Rural Deliverable 5.4](#)). The aim of the screening was to develop a framework which can support decision-makers and practitioners in incorporating considerations of ecological limits in their regional bioeconomy strategies and roadmaps. In his presentation, Gerardo Anzaldúa gave an overview of the rationale behind the screening process. He discussed the relationship between the concept of sustainability and the bioeconomy, the importance of the regional dimension, and existing approaches to assessing sustainability. Subsequently, he introduced the approach undertaken in BE-Rural and the structure of the sustainability screening. Additionally, with the support of the screening team, a brief overview of the screening results for two OIP regions – Stara Zagora and Vidzeme – was presented in relation to four key resources: water, land resources (soil), biodiversity, and biomass. Finally, the team presented some lessons learned from the experience, and the regional partners offered some reflections on their experience with the process.

5 Network of Knowledge

The BE-Rural Network of Knowledge (NoK) aims to contribute to identifying and disseminating good practices and to facilitating knowledge sharing across European regions. The NoK aims to provide a forum for the exchange of experiences with designing and implementing regional bioeconomy strategies in rural areas. The NoK gathers the BE-Rural consortium partners, especially the OIP regional facilitators and their stakeholders, but it is also aimed at other rural regions from across Europe engaging in the bioeconomy. The consortium has chosen the Facebook group “[Sustainable Development Goals Network Romania](#)” as a suitable, low-maintenance platform for discussion. Stakeholders are invited to use the #berural hashtag when posting or searching for relevant content.

The aim of this session was to facilitate the exchange between stakeholders on issues of interest, and to identify topics on which participants would like to exchange in the future.

1. Policy group: translating bioeconomy strategies and roadmaps into policy and public funding streams

The group discussed the challenges of integrating the regions' bioeconomy activities into existing policy frameworks and linking them to other strategies. The potential links to different related policies with associated funding streams are very diverse in the different OIPs: in Covasna, the process was linked closely to cluster policies and smart specialisation activities. In Poland and Bulgaria, the activities are linked to the Local Action Groups (LAGs). In Bulgaria, these are LEADER LAGs and in Poland, the Fisheries Local Action Groups (FLAGs) represent the main development framework in the project regions. There, the forthcoming Polish European Maritime, Fisheries and Aquaculture Fund (EMFAF) programme should provide funding opportunities in the 2021-27 programme period. In Strumica, there is potential funding coming from the Instrument for Pre-Accession Assistance (IPA), including some that is specifically dedicated to rural development, and the national network for rural development is a key stakeholder in this. In any case, for Latvia, it is important to first define the "what" and then the "how": any funding options should be linked to the identified potentials and needs. Not all instruments need to be based on concrete funding. Instead, providing information and sharing knowledge can also be regarded as useful instruments. An important framework could be the forthcoming **Circular Bio-based Europe Joint Undertaking (CBE JU)**, which is building on its predecessor Bio-based Industries Joint Undertaking (BBI JU).

The OIP representatives agreed that their regions can be seen as pilots or pioneers in their respective countries in developing regional bioeconomy strategies or roadmaps. This represents an **opportunity to share the OIP experiences amongst peers in their countries**. There is a perceived lack of long-term thinking, which is a crucial aspect of strategy development. The process of developing these strategies can be more valuable as the actual finalised paper. In terms of involving stakeholders at different stages, experience shows that it appears to be easier to involve them in designing rather than implementing strategies. Yet, in some cases it can be the opposite and stakeholder engagement is stronger at later stage. For some of the key stakeholders, especially public ones and businesses, the strategies can act as practical guidance and incentive to participate actively in their implementation.

Participants agreed that the BE-Rural NoK exchanges can close a gap in the range of current networking and knowledge exchange opportunities: most exchange takes place at national level and **the NoK will be useful in giving the regional level a platform to engage in the field of bioeconomy**. Exchange would benefit from sharing actual "stories" from the regions about bioeconomy development, focusing on practical experiences.

2. Research group: integrating the bioeconomy in educational systems and collaboration with the private sector

In terms of potential areas of interest for teachers and academic stakeholders from the OIP regions, participants agreed that facilitating collaboration at EU level between academics and other stakeholders (e.g. industry) and between academics themselves would be useful. For instance, exchanges about ways to join European consortia and access EU-funded projects or research would be of interest. The capacity-building workshop organised within the scope of the BE-Rural project for early-career researchers and research-orientated SMEs on how to participate in international research and innovation was taken as an example. A similar workshop, this time for academics only, could be organised in the context of the NoK.

The NoK could **support the integration of bioeconomy in educational systems and curricula**, for instance by learning from the "eco-school" initiatives, which are quite popular in Romania. These eco-schools encourage school students to engage in eco-friendly actions aimed at protecting the environment around their schools. An important question to consider in this endeavour is how to make the bioeconomy concept appealing to the teachers so that they subsequently incorporate it into their teaching. It was argued that the economic potential and value of the bioeconomy has the highest potential of getting teachers excited enough about it. Equipping them with real-life, successful business cases would be the right rationale for teaching bioeconomy in schools and universities. Another recommendation was making the case for out-of-school experiences to promote bioeconomy to the students and trigger their curiosity and enthusiasm. In Romania, for example, the innovation clusters

established in the Covasna region have successfully organised field trips for students. These can be useful tools to provide on-the-ground examples of bioeconomy developments and can be more inspiring for students than theoretical aspects of the bioeconomy. There is also a successful programme led by an institute at Trakia University in Stara Zagora, Bulgaria, which intends to connect teachers and researchers with industry, by making them meet via open days, company visits, etc.

All these examples pointed towards the **need for creating more connections between the academic and the business communities in the context of bioeconomy education**. These connections can be initiated through different formats, as illustrated in the various examples described during the brainstorming session. It was concluded that the NoK could also be the appropriate venue for academics to exchange their experiences and best practices acquired in creating connections with the industry, learning from teachers from other countries how to teach bioeconomy in an efficient and stimulating way. If teachers from different countries are to be attracted to the NoK, then the clear benefits of participation need to be highlighted. Emphasising the incentives for this community to be part of the group and anticipating the limitations implied by possible language barriers are two points to keep in mind when inviting teachers and academic contacts.

3. *Business group: regional business opportunities and funding for the bioeconomy*

The group, mainly consisting of business stakeholders, aimed to identify common collaboration points between the participants, focusing on regional business opportunities and available funding for the bioeconomy. However, the activities of the participants are very diverse and they interact/represent businesses differently. The discussion started with presenting each region's bioeconomy potential from a business point of view and the specific interest of the entity concerning collaboration. The participants also shared their experiences and expectations concerning cross-border cooperation. A questionnaire has been provided to the participants with a list of available public funding programmes and they were asked to mark the relevant ones. Taking into account the shared inputs and the answers from the questionnaires, the group agreed that improving business-related services in the context of sustainable development is necessary. Furthermore, it has been highlighted that there is a gap on the European market concerning business support services, especially business idea and model validation in terms of sustainability. One idea that the group would like to continue discussing is **designing a sustainability checklist targeted at early-stage ventures**. The tool should allow start-ups to assess themselves. The second idea is strongly linked to the checklist: there is an interest in **developing a comprehensive and multidisciplinary assessment tool**. The partners would contribute complementarily to the design, testing and implementation phases, based on their specific expertise. The following possible aspects could be part of this tool: waste management, energy efficiency, ecological footprint analyses, financial sustainability, social impact, etc. Designing and using the sustainability assessment tool can become the topic of a joint project. The participants are interested in providing advocacy services to SMEs and having such a tool could increase the effectiveness of their activity in this regard.

6 Field trips

The conference participants were able to participate in two field trips organised by **Marcin Rakowski**, National Marine Fisheries Institute. The first field trip led the participants to Piaski (Krynica Morska), where they were able to visit the harbour and a traditional fish smokery. Due to the weather conditions, the planned demonstration of fishing techniques had to be cancelled. Later that day, in Nowa Pasłęka, the participants met with a local fisherman, who provided a guided tour through a newly constructed fish processing plant and presented the new, family-owned fish restaurant, showcasing how fisherman families can extend their traditional business by covering additional, attractive parts of the value chain. The second field trip led participants to Gdańsk, where they visited a company called **VEGEVEK**, a small manufacturer of vegetarian dishes. The company management introduced the participants to the underlying business model and its inherent values, which relate to sustainability (environmental and health impacts of food production and consumption) and circularity (implementation of a deposit-refund system for food containers). Combined, the two field trips provided participants with insights into private regional development initiatives in the **Vistula Lagoon region**, which aim to create regional environmental and socio-economic added value.