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DanuBioValNet

Cross-clustering partnership for boosting eco-innovation by developing a joint bio-based value-added network for the Danube region

interreg-danube.eu/danubiovalnet

Handbook/Report with a list of suited follow-up measures

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Activity 6.2 Measures to ensure durability and transferability

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1. POST PROJECT IMPLEMENTATION

The objective of this report is to ensure durability and transferability of the project DanuBioValNet. The report offers an effective post-project implementation guide and provides follow-up measures for further development of the bio-based industry. Further responsibility for implementation and management lays not within the consortium of the DanuBioValNet project team, but within individual partners engagement that observe and identify valuable inputs from the project as well as external stakeholders, that are interested to join the bio-based network in the Danube Region. Those committed partners shall develop their own strategies and draw their own conclusions from the project to develop a sustainable and desirable future.

Although DanuBioValNet is not directly responsible for implementation, partners are committed to ensure durability and transferability as well as carry the project outputs to the next level. Project partners remain regional contact persons for questions about the project.

Newly acquired knowledge and skills need to be translated into practice to fully take up the idea of cross-regional and cross-sectoral cooperation to support the development of the bio-based industry to foster eco-innovation.

The follow-up report provides target group oriented support as well as business sector oriented support for developing the bio-based industry. The report is an outline document which shall help to present and identify the most promising measures for regions. Ideally, the report helps to develop a coherent strategy for single institutions or regions to engage and embrace the bio-based economy.

In the bio-based economy, new bio-based value chains from primary production to consumer markets need to be developed. This can only be achieved if businesses are connected effectively, cooperate with research institution and are set into the right policy framework. Therefore, one fundamental recommendation is that even though the report addresses specific fields, actors should eventually seek and develop strong alliances to holistically develop the bio-based economy, from products to value chains to value added networks.

The report aims to provide an implementation agenda and takes input from findings of WP3 – Value Chain Mapping and WP6 – Pilot Actions into account.

2. TARGET GROUP ORIENTED FOLLOW-UP MEASURES

Topics mentioned in chapter 2 give an overall recommendation for almost all industries and actors that are already active (or should be active in the future) or are related for developing a bio-based industry in the Danube Region. Recommendations were extracted from expert interviews and workshops conducted during the implementation of the DanuBioValNet project.

2.1 INDUSTRY

Developing the raw material basis for production: The raw material basis for a bio-based industry needs to be established. Possible sources originate from forestry, agriculture, aquaculture and waste. To ensure adequate quantity of resources for downstream processing, industry needs to develop, together with the supply side, and prioritize bio-based raw materials for high value applications[1]. Cascading principles as well as multifunctional use of resource streams, to also use biobased side streams should be developed[2].

Cooperation with R&D: Industry actors of the Danube Region are generally micro-, small- and medium-size companies, which do not have the resources to invest or alter processes in order to make prototypes that could demonstrate the potential of new bio-based materials. It is important to improve the linkages to R&D institutions[3] and to be involved in joint R&D projects in order to be on the forefront of innovation and competitiveness[4].

Market Development: Industry shall make use of the vast available R&D activities and results in the region to enter faster into the commercialisation phase of a product.

2.2 BUSINESS SUPPORT

Within the project, the Joint Bio-Based Cluster Policy Strategy (JBCS)[5] and its Action Plan was developed, that give profound recommendations for the transition of the cluster landscape towards the bio-based economy to obtain a critical mass of actors active in the field of bio-based industry. The JBCS provides a strategic document and the Action Plan contains a list of measures to fulfil the strategy, including a proposal for a new funding scheme to support the implementation of the JBCS[6]. The following set of measures can be regarded as supporting the before mentioned activities as well as regards a set of actions, that includes besides clusters, overall recommendations for various forms of business support organisations. A Cluster Tool Box[7] developed within the project further provides elaborate best practice services of successful business support organisation for their member to support the bio-based industry.

A new role: Clusters should take the leading role in provision of new services like internationalization, networking and matchmaking events (e.g. supplier - buyer), training, project development, offering comprehensive information (e.g. best practices) and education by covering the topic of bio-based materials[3,4]. The growing trends of using natural resources ("bio" and "eco" labels of products are attractive for customers) should be exploited by cluster services to focus more on bio-orientation of their projects and eco-innovations of their products.

[1] Eder, K., Rogl, D., Švajger, G. & Osvald, D. (2019). Pilot actions for closing bio-based value chains: Bio-based Packaging. DanuBioValNet.

[2] Dijan, A. (2019). Pilot actions for closing bio-based value chains: Challenges and Opportunities of Eco-construction in the Southeast Europe. DanuBioValNet.

[3] Osvald, D. & Dermastia, M. (2018). Roadmap Report. Bio-based Advanced Packaging Value Chain. DanuBioValNet.

[4] Bruckner, A., Rogl, D., Eder, K. & Schönmayr, D. (2018). Roadmap Report. Eco-Construction Value Chain. DanuBioValNet

[5] Meier zu Köcker, G., Patzelt, D., Dermastia, M. Osvald, D., Švajger, G. & Keller, M. (2019). Joint Bio-Based Industry Cluster Policy Strategy. DanuBioValNet.

[6] Meier zu Köcker, G.. (2019). StressTest Tool & Synchronised BIIE Scheme. DanuBioValNet.

[7] Cosnita, D. (2019). Cluster Tool Box „New Cluster Services to support SMEs in bio-based industries". DanuBioValNet.

Furthermore, learning programmes and trainings on bioeconomy topics could be provided by cluster managers to their members as a new cluster service. The mediation of the cross-sectoral cooperation will accelerate the innovations and improve competitiveness of the members and the bio-based industry in general[8].

Applying the multi-stakeholder approach: Better integration of multi stakeholders into innovation ecosystems could greatly improve the adequacy of the material developments upon their launch into the market[3].

Offering follow-up support: Research has indicated that participants of projects/events/workshops etc. are more likely to use what they've learned when they receive follow-up support. Follow-up support could be provided by business support organizations in various forms, such as mentoring programmes, coaching programmes, communities of practice, refresher courses, technical assistance[9], project development, identification of funding opportunities, etc[10].

Coordinated effort: To professionalize clusters and their managements for the bio-based industry, cluster actors and cluster organisation should be backed by a cluster support programme on regional, national and transnational level, to develop a smart strategy for the cluster, its services and strategic focus in a regional and transnational dimension[8].

Macroregional Support: A transnational mega-cluster with a mapping of existing SMEs (thus developing a key data-base for specific sectors) could bring the cooperation closer between the cluster and its SMEs between different countries[11].

2.3 POLICY

From research to the market: To enhance the cooperation between science and business, (especially the applied research for concrete products, processes or services) specialized tools need to be developed for streamlined projects. Tools could be, among others, Innovation vouchers, contracted research and rewarding professional performance of R&D institutions to potentially increase the output of joint projects[3].

Political ownership: The political awareness of bioeconomy in the Danube countries is very low. Targeted promotion of bioeconomy should be an inter-ministerial effort and should cover all relevant ministries (agriculture, economy, industry, environment, local development, science, ...) and inform about the EU bio-based actions, documents, and achievements to stimulate the development of national bioeconomy strategies. As a first step, the creation of National Bioeconomy Platforms could be realized in order to engage in a coordinated effort and to involve relevant policy makers, experts, clusters and other stakeholders[8].

[8] Polova, Z., & Bruskova, P. (2018). Roadmap Report. Hemp Value Chain. DanuBioValNet.

[9] http://www.fao.org/capacity-development/resources/practical-tools/follow-up/en/ (06/2019)

[10] Maric, Z., Osvald, D., Miric, A., & Dermastia, M. (2018). Roadmap Report. Phytopharma Value Chain. DanuBioValNet.

[11] Boyarintseva, O., Ranguelov, S. & Vladimirova, M. (2019). Pilot actions for closing bio-based value chains: Phytopharma. DanuBioValNet.

Synchronization of legislation: Legislation should be synchronized regarding sustainability and environmental impacts to set the legal framework for the industry[12]. Legal and binding regulations on EU, Danube Region and national level (positive regulation, incentives) need to be formulated[1] to support common efforts to reach the Sustainable Development Goals. Certification, control and labelling of sustainable products could give customers tools at hand to make better choices when purchasing a sustainable and effective product[11].

Green public procurement: A significant role is assigned to improved green public procurement, that could serve as role model for the industry. On national level, it is still not of highest importance and could be developed further to boost sustainable products and markets[12].

Synchronised funding: To effectively support the development of bio-based industries or the bioeconomisation of existing industries in the Danube Region, regional competences and capacities, in terms of actors, but also in terms of investments, need to be bundled in order to gain critical mass. Alignment of the implementation of (not yet transnationally) connected Smart Specialization Strategies, national funding connected to (national) Bioeconomy strategies. Here, the European Regional Development Fund could close the persistent funding gap to obtain critical mass of actors[6].

3. BUSINESS SECTOR ORIENTED FOLLOW-UP MEASURES

Chapter 2 gives an overall recommendation that is valid for a broad variety of bio-based value chains and sectors. Thus, to avoid doubling of recommendations, only sector specific recommendations of high relevance are mentioned in chapter 3. Topics mentioned in chapter 3 give recommendation for three exemplary value chains that were analyzed in the DanuBioValNet project: Eco-Construction, Bio-Based Packaging, Phytopharma. Nevertheless, sector specific recommendations could, in one way or the other, also give added value to other business sectors. Chapter 3 gives an overview of recommended measures, more detailed information as well as background information for each value chain can be found here: http://www.interreg-danube.eu/danubiovalnet.

3.1 ECO-CONSTRUCTION

Certification: Better integration of Eco-Construction parameters into a building certificate should be developed. Besides the issue of energy efficiency, there should be an indicator for material efficiency and renewable materials, probably connected to housing subsidies or other incentives[4].

Involvement of regional stakeholders: Involvement of regional energy consultants to better inform consumers in order to attract interest in Eco-Construction[4].

Study tours: Establishing a programme for international study tours for policy makers and other experts in order to get to know best practice examples both in actual wood construction and

[12] Bruckner, A. & Boyarintseva, O. (2019). Pilot actions for closing bio-based value chains: Eco Construction – building with wood, recycling and reuse. DanuBioValNet.

regional support programmes, as well as the political framework in implementing resource-efficiency[4].

Stronger multi-stakeholder linkages: A specific focus in the field of eco-construction should be given to the close collaboration of architects, technicians and policy makers as well as construction developers to initiate further pilot projects in Danube countries and facilitate knowledge transfer to eventually facilitate a common strategy for eco-construction in the Danube Region[12].

Demonstrator projects: To increase awareness and demonstrate the cost-efficiency and effectiveness as well as comfortable way of living and working, demonstrator projects in the field of wooden multi-storey buildings in urban areas and wooden public buildings, e.g. community centers or kindergartens should be developed[12].

3.2 BIO-BASED PACKAGING

Increasing the use of bio-based packaging materials: Measures, such as subsidies and quotas, must be developed for bioplastics and the bio-based packaging industry. An example is the so-called Dutch example "PlusPunten" or German "pay-as-you- throw" (PAYT) scheme – on the national and Danube region level[3].

Measuring environmental impact of packaging: Sustainability measurements should be developed on the national and Danube Region level to make a knowledge-based decision on packaging materials. Assuring data inputs and outputs for basic Life Cycle Assessment for different bio-based packaging products compared to fossil products could lead to socio-economic pressure using more sustainable packaging[3].

Recycling: Advanced recycling strategies should be set, for waste in general as well as new bio-plastics polymers[3]. Improvement of standardization of the collecting and separation systems in Europe should be one of the priorities[1].

Public Awareness: Developing measures to better inform consumers about different packaging materials should be fostered by involvement of NGOs and consumer organisations[3].

3.3 PHYTOPHARMACEUTICALS

Stronger multi-stakeholder linkages: There is a need to interlink actors/stakeholders with related support institutions: laboratories, certification bodies, advisory services on national level and throughout the Danube Region[10].

Plant Production: National and international harmonized procedures for obtaining high quality plant material and simplification of administration for compliance should be developed[10].

Capacity Building: Review and benchmark of the existing training programmes as well as implementation of further qualification measures for farmers and pickers in the Danube

Region should be developed e.g. the development and availability of on-site trainings in line with incentives for businesses to engage in provision of such trainings[10]. To engage and enhance the qualified workforce, career fairs could advertise the phytopharma sector on the job market. This needs to be interlaced with providing a reasonable environment for young people working in the least attractive segments of the phytopharma industry[11].

Public Awareness: To increase the attractiveness of the sector, media work, publicity and promotion of good practice examples should be implemented. Branding and selling phytopharmaceuticals on local and regional markets have the possibility to earn direct consumer engagement. Branding via fair trade principles and also via regional marketing can increase the regional visibility[11].

4. *OVERALL RECOMMENDATION*

Topics mentioned in chapter 4 give overall recommendation for the effective and streamlined development of a bio-based industry, that needs common efforts of various stakeholders (policy, industry, research, public) and are not coupled to a specific business sector.

General Awareness: Information, explanation and awareness on biobased products must be spread by involvement of all actors including NGOs and consumer organizations in the bio-based ecosystem[3].

Local opportunities: "Think global, act local" – this motto should also be applied to the bio-based economy[12] via distributed bioeconomic manufacturing environments. Local biobased product/supply-chain scenarios offer the possibility of diversification of local economies and create employment opportunities in rural areas, but many goods and services are still only produced in specific areas of the Danube region. Therefore, thanks to the transformation of the global economy into distinct transnational and local solutions, regions can benefit from local or regional excellence and competencies via cross-sectoral and cross-border cooperation.

Pilot installations: Demonstrators of the bio-based economy should be developed through demonstration and pilot installations to address the demands to develop new technologies and services for obtaining high quality products and services from bio-based materials[3]. One example are biorefineries, such as the "Sunliquid® Cellulosic Ethanol" plant in Romania, with an investment that represents the single biggest industrial commitment by an international corporation in the region of Craiova, with a "technology ... pioneering not only in Europe but also globally..."[13]. Further pilot installation should be developed to produce high quality materials as basis for the downstream industries.

Incubators: Incubators, which could work in different segments of the bio-based industry, can offer quick access to state-of-the-art technology and could play a role to support industry and science by bringing together relevant stakeholders in a physical work space to implement

13 https://www.clariant.com/en/Corporate/News/2018/09/Groundbreaking-for-Clariantrsquos-sunliquidreg-cellulosic-ethanol-plant-in-Romanianbsp

hands-on projects. The incubators should go along with a general regional development strategy, where innovation support via funding, tax incentives for e.g. start-ups, networking and fabrication labs can trigger innovation[11].

Responsible Contact Points: National and Danube Region wide platforms for providing and extending knowledge about current technologies, processes, and process parameters, information about suppliers of raw bio-based materials, opportunities and contacts for cross-sectoral collaboration and innovation, legislation regulatory affairs, e-learnings and others should be developed. These could be central points of contact that can provide adequate knowledge on existing national and international initiatives along bio-based value chains in general or specifically for one sector throughout the Danube Region. These platforms should be developed by interested SMEs, academia and NGOs and supported by a political framework[3,10].

5. ABOUT DANUBIOVALNET PROJECT

The DanuBioValNet project is a cross-clustering partnership for boosting eco-innovation by developing a joint bio-based value-added network for the Danube Region. DanuBioValNet stands for the development of a joint bio-based industry cluster policy strategy, for clusters connecting enterprises transnationally, new bio-based value chains in the Danube Region and eco-innovations for supporting regional development.

The DanuBioValNet project, launched in 2017 through a cross-regional partnership involving 17 partners from 10 Danube regions, will enhance transformation from a fossil-based economy towards an economy using renewable resources by creating bio-based value-added networks. The project will connect Danube Region actors in bio-based industries to minimize greenhouse gases and to optimize biomass resource utilization. These measures are intended to improve regional sustainability and development through diversification of local economies while positively affecting the workforce. The focus on emerging transnational cooperation of clusters should serve the bio-economy and foster eco-innovations and ultimately strengthen regional economy.

The development of new bio-based value chains from primary production to consumer markets needs to be done by connecting enterprises from different regions and industries. However, due to a missing holistic transnational approach, Danube Region actors in the current bio-based industry still operate disconnected and cannot properly benefit from their potential. Therefore, the aim of this project is to develop new methods, strategies and tools to connect enterprises transnationally. Clusters represent groups of industries that are closely linked by common products, markets, technologies and interests. They are chosen to organize and carry forward necessary industry cooperation for the creation of new value chains. Properly performing clusters can help to upgrade industrial practices, generate new knowledge and contribute to regional policy-making.

The partners of DanuBioValNet agreed that phytopharma, eco-construction and bio-plastic/advanced packing (bio-based packaging) have a high potential for improvement of their respective value chains. Hemp is considered as a raw material suitable for all the three value chains. Project efforts are designed to allow partners to connect SMEs, farmers, universities, and research institutes within a value-added network. The partners intend to develop and implement a long-term, industry-driven roadmap for such collaboration along the entire value chain based on cluster partnerships for these processes. Focusing on the selected high potential sectors, and harnessing the nature of regional clusters within wider cross-regional selected value chains, DanuBioValNet will implement pilot actions, involving SMEs, universities, research institutions, policymakers and civil society among others. The pilot actions serve as the prerequisite for creating a blueprint for cross-regional cooperation.