



Danube Transnational Programme

DanuBioValNet



TOP bio-based products in the **Danube Region**

Project co-funded by European Union funds (ERDF, IPA)
www.interreg-danube.eu/danubiovalnet



TOP bio-based products in the Danube Region

WELCOME TO THE WORLD OF BIOECONOMY

The partners of the DanuBioValNet project are proud to publish the first of its kind catalogue of TOP bio-based products in the Danube Region. It is a showcase of innovative solutions applying biological renewable resources in three project-focused value chains, i.e. phytopharma, bio-based packaging and eco-construction. Each of the nine represented partnering regions/countries introduces its successful cluster organisations specialised in some sector of bioeconomy and their particular member companies with the unique bio-based products.

Get inspired and follow our efforts to create cross-regional and cross-sectoral networks of collaborating clusters and businesses enabling the Danube Region to prosper and be competitive in a bioeconomic way.

*Pavla Bruskova, National Cluster Association - CZ,
Communication Manager of the DanuBioValNet project*



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For further information about the DanuBioValNet project, you will find a short description in the document. To learn more and to download additional resources please refer to the project website <http://www.interreg-danube.eu/approved-projects/danubiovalnet>.

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Introduction

The bioeconomy, or bio-based economy, is a new model for industry and the economy. It involves the sustainable use of renewable biological resources (including crops, microalgae and plant species that are barely used nowadays, among others) for producing food, energy and industrial goods. It also exploits the untapped potential within millions of tons of biological waste and residual materials as well as production side streams.

The transition from a fossil-based to a bio-based economy is expected to reduce society's dependency on fossil fuels, increase sustainability and contribute to climate and environmental protection.

More than ever before, industry and science have to act together as a single system, and previously non-existent connections need to be established alongside and between value-added chains. The bioeconomy goes far beyond value creation chains and seeks to interconnect all economic sectors. Therefore, the bioeconomy concept must be understood as an interdisciplinary and multifaceted system in which many subsystems and processes are interlinked.

Nowadays, bio-based materials can be used for a very broad range of applications. Many industries are already involved in the bioeconomy, such as the automotive, building, plastics, plant manufacturing, mechanical engineering, chemical and associated industries.

The concept is gaining in importance worldwide. A number of countries have already launched bioeconomy strategies, and many more are working towards this. The European Union promotes the bioeconomy in a variety of ways; national and European governments have established many programmes in recent years aimed at fostering the bio-based economy.

The Danube region is also seeking to build an innovative economic system that makes sustainable agriculture and the industrial use of renewable resources possible while also protecting the environment and biological diversity. Furthermore, eco-innovations are likely to boost regional growth by diversifying local economies and creating new employment opportunities. New bio-based value chains from primary production to consumer markets need to be developed by bringing together enterprises from different regions and industries. However, as there is currently no holistic transnational approach, stakeholders in the bio-based industry in the Danube region cannot act in a connected way or properly benefit from existing potential.

This is where the DanuBioValNet project ("Cross-clustering partnership for boosting eco-innovation by developing a joint bio-based value-added network for the Danube region"), financed by the EU under the Danube Transnational Programme, comes in.

Its main aim is to elaborate new methods and tools to connect businesses (SMEs) from different regions and countries involved in the bio-based industry. This can only be achieved through joint and effective interaction between relevant stakeholders including policymakers, the industry, public institutions and academia. The stakeholders in the DanuBioValNet consortium come from ten countries around the Danube. Clusters representing a number of companies are sustainable partners that guarantee upgradeability across industry, science and government, and, as such, are chosen to organize the cooperation among industrial players and the creation of new value chains. The vision for the Danube region is to become a front-runner in the bioeconomy by supporting "bioeconomic distributed manufacturing environments" to achieve manufacturing scenarios that use locally available renewable raw and residual materials for conversion into locally required materials.

This brochure features examples of best practice in the application of bio-based materials as well as the cluster initiatives that represent businesses in the Danube region bioeconomy. I hope that you will enjoy reading the brochure and that it will inspire you to join the bioeconomy.



Prof. Dr. Ralf Kindervater
CEO BIOPRO Baden-Württemberg GmbH,
Lead Partner of the DanuBioValNet project

Glossary

Bioeconomy	The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services. (Source: European Commission (2018). <i>A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment. Updated Bioeconomy Strategy</i> , p. 4)
Bio-based product	Bio-based products are wholly or partly derived from materials of biological origin, excluding materials embedded in geological formations and/or fossilised. Bio-based products can make the economy more sustainable and lower its dependence on fossil fuels. (Source: European Commission (2019). <i>Internal Market, Industry, Entrepreneurship and SMEs. Bio-based products</i> . Online)
Cluster	Clusters are geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate. (Source: M. Porter (1998). <i>On Competition, Updated and Expanded Edition. Harvard Business Review Book</i> , p. 213)
Cluster initiative	Cluster initiatives are organised effort to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community. (Source: Ö. Sölvell, G. Lindqvist and Ch. Ketels (2003). <i>The Cluster Initiative Greenbook</i> , p. 9)
Cluster organisation	By a cluster organisation one should understand organised efforts to facilitate cluster development, which can take various forms, ranging from non-profit associations, through public agencies to companies. (Source: PricewaterhouseCoopers (2011). <i>Uncovering excellence in cluster management</i> , p. 6) Cluster management can be defined as the organisation and coordination of the activities of a cluster in accordance with certain strategy, in order to achieve clearly defined objectives. (Source: PricewaterhouseCoopers (2011). <i>Uncovering excellence in cluster management</i> , p. 3)
Eco-innovation	Eco-innovation aiming at significant and demonstrable progress towards the goal of sustainable development. Eco-innovation projects will therefore aim to produce quality products with less environmental impact, whilst innovation can also include moving towards more environmentally friendly production processes and services. Ultimately, they will contribute towards the reduction of greenhouse gases or the more efficient use of various resources. (Source: European Commission (2015). <i>Eco-innovation, When business meets the environment. FAQ: What is Eco-Innovation?</i> Online).
SRIP Strategic Research and Innovation Partnership	The Strategic Research and Innovation Partnership connects different stakeholders, business subjects, educational and research institutions, non-governmental organisations and others interested into value chains of interconnected material flows and new business models.
Value Chain	The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. A value chain refers to the full lifecycle of a product or process, including material sourcing, production, consumption and disposal/recycling processes. This also includes activities such as design, production, marketing, distribution and support to the final consumer. (Source: University of Cambridge (2017). <i>What is a value chain? Definitions and characteristics</i> . Online).
TRL Technology Readiness Level	Technology Readiness Levels (TRLs) are indicators of the maturity level of particular technologies. This measurement system provides a common understanding of technology status and addresses the entire innovation chain. There are nine technology readiness levels; TRL 1 being the lowest and TRL 9 the highest. (Source: European Commission (2016). <i>Research and innovation, Participant Portal FAQ ID: 2890</i> . Online)

TOP bio-based products

Serbia

The DanuBioValNet project partner:

The Innovation Center of the Faculty of Mechanical Engineering, Belgrade, aims to apply scientific, technical and technological knowledge and inventions to create and realise new and improved products, processes or services and support the creation of new business. www.inovacionicentar.rs

Construction Cluster DUNDJER www.dundjer.co.rs

Construction Cluster DUNDJER, based in Niš, South and East Serbia, is the country-wide, cross-industry technology network that covers the whole value chain in the construction process, from designing and planning, material fabrication to the construction works completion. According to the cluster benchmarking method used by European Cluster Observatory, DUNDJER has the highest index of specialization (8,7) of all clusters in the Serbia. Together with enterprises, academia and knowledge institutes, DUNDJER promotes public-private partnership model and successfully completed more than 30 projects related to energy efficiency, new methods of quality assessment, construction sustainability, development of new insulation construction material, building and construction of the first solar power plant.

It won the first prize in the national competition for the best technological innovation in 2010; awarded for the Project: On-line Dictionary by the Ministry of Information in 2012; selected as the finalist for the best annual investment AUREA 2011 for its innovation called Biotoxinomer. All above mentioned awards are a result of collaboration between industry and academia facilitated by the DUNDJER cluster. DUNDJER has developed good international cooperation with relevant organisations from Italy, Slovenia, Spain, Greece and Germany.

„Our goals are sustainable, energy efficient and environmentally friendly construction, we connect partners and make the projects happen.“



Biljana Avramović,
Cluster Manager



Insulation material made of textile waste IZORETEX

Product: Insulation panels and granulats

Raw material: Sorted and recycled bio-textile waste

TRL: 9

Producer: [Pinter-Odplast](#), Niš, a member of the Cluster DUNDJER

IZORETEX - a cheap thermal enhanced and "ready-to-use" composite insulation combines 3 main features: thermal insulation capability, outstanding sound control and vibration resistance. The diversity of the concept makes this material adaptable to heating and cooling, allowing this product to behave well in different climatic patterns and in different geographic markets by adjusting its composition, dimension, density and thickness. ISORETEX is produced in the form of ready to build in insulation panels or granulats that are applied by injection into the wall openings. IZORETEKS is a solution for textile waste, release of landfills, energy savings for heating and cooling the buildings, savings in raw materials supply, environmental protection, new employment. Recycling of industrial textile waste is important for the entire local community in terms of reducing pressure on landfills and opening up new opportunities for many clothing producers operating in the region.



DanuBioValNet

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

The DanuBioValNet project is aiming at establishing bio-based industry networks across the Danube Region. The emerging transnational cooperation of clusters will foster bioeconomy and eco-innovations and lead to a strengthening of the regional economies.

Consequently, with this project the partners pursue a strong strategic orientation beyond the immediate and medium-term economic objective of strengthening the regional economy. It is the strategic goal to establish cross-border strategic partnerships, particularly in developing regions, with the help of powerful cluster organisations. In this way, project results will be sustained beyond an immediate effect and the creation of strategic investments, especially in emerging industries, such as the bio-industry, will be enabled and facilitated. This will be achieved mainly by newly emerging or transforming value-added chains, which are increasingly being transnationally established and further developed as a result of the increasing internationalisation of value-added processes.

In this way, long-term economic effects are achieved, based on a network of agile clusters, which prepare the investment approaches in a targeted manner and implement them with high efficiency. One example of the present project is the establishment of bio-refineries in the regions, which can form a strategic technological backbone of a successful independent bio-industry.

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. With the project, a pilot function of the implementation is taken over and the prerequisite for creating a blueprint for similar and similar cross-national cooperation, also in other industries, is created.

For achieving these tasks, 17 project partners from 10 countries have joined forces. The project will pave the way from an economy based on fossil resources towards an economy using renewable resources. The striving of the partners to minimise greenhouse gases and resource-saving as well

as resource-efficient utilisation of available biomass will result in synergistic effects. These effects will improve the sustainability, regional development through diversification of the local economy and will also positively affect the workforce. 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. But due to a missing holistic transnational approach, Danube actors in bio-based industry still operate disconnected and cannot properly benefit from the potential. Therefore, the aim of this project is to develop new methods, strategies and tools to connect enterprises transnationally.

Clusters as the strong representatives of a group of industries that are closely linked by common products, markets, technologies and interests are chosen to organise and bear the industry cooperation and creation of new value chains. Due to their productivity and sustainability of partners they guarantee the upgradeability in the dimension of industry, sciences and also policies.

One of the planned outputs of this project will be the development of a Joint Bio-based Industry Cluster Policy Strategy (JBICS) to describe the procedure and to make it actionable and reusable. Furthermore, a bundle of new methods and tools to support clusters for transnational working will be developed and joined into a strategy. They will be tested in three pilot actions where it is planned to create new bio-based value chains in the Danube Region.

The main target groups are on the one hand the policy-makers four Ministries are involved on the other hand clusters and their SMEs – nine cluster organisations are involved. The policy level will benefit from the JBICS, which can be used as a political framework.

The clusters and SMEs will benefit from the new innovative tools and methods developed for transnational cross-clustering. Successfully established new bio-based value chains in the pilot actions can motivate other clusters and SMEs to test this newly developed approach in the future.