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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). A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment. Updated Bioeconomy Strategy. 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). Internal Market, Industry, Entrepreneurship and SMEs. Bio-based products. 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). On Competition, Updated and Expanded Edition. Harvard Business Review Book, 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). The Cluster Initiative Greenbook , 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). Uncovering excellence in cluster management, 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). Uncovering excellence in cluster management, 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). Eco-innovation, When business meets the environment. FAQ: What is Eco-Innovation? 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). What is a value chain? Definitions and characteristics. 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). Research and innovation, Participant Portal FAQ ID: 2890. Online)*

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TOP bio-based products
Austria

The DanuBioValNet project partner:

Business Upper Austria (Biz-Up) is the Business agency for the region of Upper Austria with the mission to strenghten and further develop the local economy. The Services accelerate innovations, strengthen the competitiveness and support diversification.
www.biz-up.at

Furniture and Timber Construction Cluster

www.m-h-c.at

The Furniture and Timber Construction Cluster is a cross-industry network that increases the companies' innovative potential and competitiveness. It works in the furniture and timber construction sectors and is also active in these sectors' networks of suppliers and specialist providers, training institutions and research facilities. It has 255 members.
Topics: architecture, design, furniture, series furniture production, wood construction, carpenters, suppliers.
The legal body of the Furniture and Timber Construction Cluster is Business Upper Austria - The Business Agency of Upper Austria.

Erich Gaffal
Cluster Manager

© Naporo Klima Dämmstoff GmbH

Insulation board with hemp fibres

Product: Insulation boards for facades and interior insulation

Raw material: Hemp straw

TRL: 9

Producer: **Naporo Klima Dämmstoff GmbH**, Perg, a member of the Cleantech Cluster (Energy department) via Capatect Sales Partner

For the insulation of buildings renewable raw materials like hemp or sheep´s wool can be used. The special advantages are the excellent thermal, heat and sound insulation. The raw material for the sustainable material is hemp, a fast-growing annual plant. Components: Hemp, a binding fibre (approx. 10%) and a salt that improves the fire protection of the material. The high-quality insulating material is therefore free of harmful additives.

"Hemp can handle moisture very well. It can absorb and release moisture. This distinguishes it from other fossil based insulating materials. Hemp does not need fertilizer and plant protection, therefore there is an additional environmental benefit."

Robert Schwemmer,
CEO Naporo

Plastics-Cluster

www.kunststoff-cluster.at

The Plastics Cluster (Kunststoff-Cluster) is a cross-industry network for the plastics sector. We initiate, promote and coordinate successful cooperation between companies. As a hub connecting member companies, research institutes and decision-makers, we are also committed to creating better conditions in the plastics industry in Austria. The Plastics-Cluster is an initiative of the countries of Upper Austria and Lower Austria. The legal bodies of the Plastics Cluster are Business Upper Austria - The Business Agency of Upper Austria and ecoplus. The Business Agency of Lower Austria.

Bioplastics are one of the focus topics of the Plastics Cluster. Since 10 years the topic has been continually deepened from the international research project "CORNET Biopacking", which focused on polylactic acid (PLA) packaging. The focus is on knowledge building and the transfer of know-how to small and medium-sized enterprises in Austria and to build up collaborations.

One initiative in the field of bioplastics is "the biopolymer team" a group of cluster partners from industry, business and research, who regularly meet to discuss current developments and trends for project initiatives.

Wolfgang Bohmayr
Cluster Manager,
Upper Austria

Harald Bleier
Cluster Manager,
Lower Austria

Joma Nature®

Product: Spice Grinders, packaging systems (containers) for pharmaceutical, chemotechnical and food industries

Raw material: Based on sugarcane and corn starch; PLA (lactic acid base)

Producer: **Joma Kunststofftechnik GmbH**, Brunn am Gebirge, a member of the Kunststoff-Cluster

The privately-owned Austrian company, Joma, has been synonymous with outstanding product developments in plastics technology for several decades and is an internationally recognised specialist in high-quality packaging. At our production site in Brunn/Gebirge near Vienna, we develop and manufacture high-quality plastic products for the pharmaceutical and chemical industries, as well as for the food industry and we are faced with many new challenges in today's packaging industry: We must treat existing resources in a sustainable and responsible manner. Since the beginning of industrialization, the concentration of CO_2 in the atmosphere has increased dramatically due to the processing of fossil energy resources. Plants absorb CO_2 and thus effectively reduce the greenhouse effect. As a producer of high-quality plastic products, we have an important responsibility. Our competence contributes to environmentally conscious, resource saving and sustainable production. And we do even more than that!

Our Joma Nature® product range is produced exclusively from pure plant-based, renewable resources – sustainable and nearly CO_2-neutral. With Joma Nature® we offer a selected range of our Spice Grinders and our Securibox® as an environmentally conscious alternative to conventional products – by keeping the proven functionality and outstanding quality. We meet diverse product requirements using specific biopolymers. All raw materials originate from controlled, environmentally friendly and GMO-free farming. This is how we contribute even more to improving our ecological footprint with Joma Nature®.

"It's our aim to set sustainability on the top of our focus in the future. We are responsible to find methods and ways to minimize the pollution for the next generation and this is our answer to meet this goal."

Christian Scheck,
Joma Kunststofftechnik GmbH

TOP bio-based products

Baden-Württemberg, Germany

The DanuBioValNet project partners:

BIOPRO Baden-Württemberg GmbH comes under the auspices of the Baden-Württemberg government and is specifically focused on the following themes: bioeconomy, biotechnology, pharmaceutical industry and medical technology (healthcare industry). www.bio-pro.de/en/

ClusterAgentur Baden-Württemberg was established to provide support to cluster initiatives and regional networks contributing to their further development. It aims to promote the development of clusters in the strategic growth areas of Baden-Württemberg.
www.clusterportal-bw.de/clusteragentur/

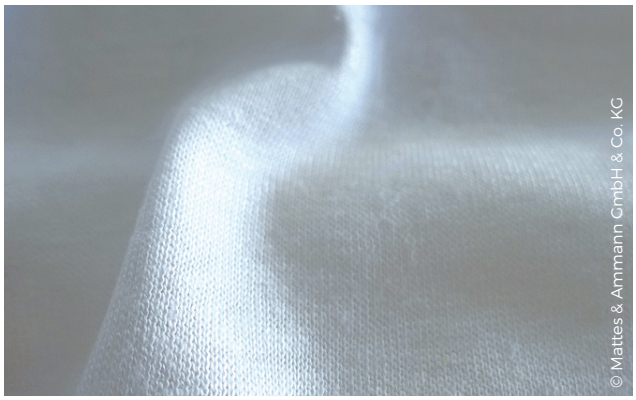
Cluster AFBW – Allianz Faserbasierte Werkstoffe Baden-Württemberg e.V.

www.afbw.eu

AFBW is a cross-industry technology network and covers the whole value chain of fiber-based materials – from suppliers to end producers and research institutes. Therefore AFBW offers a platform for dialogue and knowledge transfer and views itself as a driver for innovations. Together with enterprises, academia and knowledge institutes AFBW offers new solutions and supports the „renaissance of fibers". As a crossover technology provider AFBW acts cross-sectorial and gives impulses for material- and product innovations with the aim of increasing competitiveness of enterprises and the region.

„We campaign for the goals and tasks of AFBW. Intelligent fibres represent the future. We help to shape it – cross-sectoral, country-wide, sustainable."

Ulrike Möller
Cluster Manager



© Mattes & Ammann GmbH & Co. KG

Yarn made of nettle fibers

Product: Yarn

Raw material: Nettle fiber

TRL: 3

Producer: **Mattes & Ammann GmbH & Co. KG,** Meßstetten-Tieringen, a member of the AFBW

Out of the bast fibers from nettle fibers it is possible to produce nettle yarns. Those fibers, which are produced out of the stem of stinging nettle, are woven together with cotton or viscose to mixed yarns. The textiles out of nettle fibers are especially soft and are characterized by a high wearing comfort. But in principle also technical applications for e.g. automotive interiors are possible.

„Additionally to the yarn fibers, also the short fibers of the nettle fiber can be used for fiber composite materials, the residues for fuel and the leaves and seeds as food or for phytopharmaceutical products. Exactly this multipurpose usage makes this plant so interesting for a bioeconomy."

Werner Moser
Mattes & Ammann GmbH & Co. KG

© Tecnaro GmbH

New applications for biopolymers

Product: Biopolymers

Raw material: Raw materials from agriculture and forestry

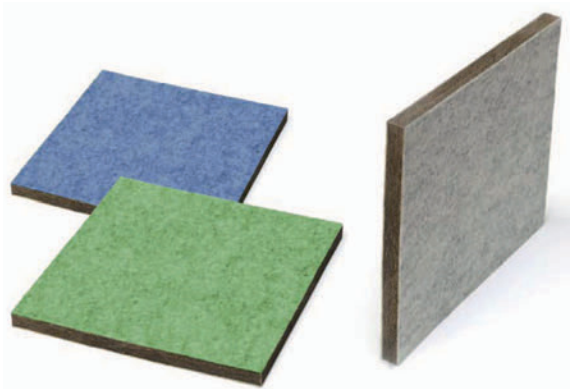
TRL: 9

Producer: **TECNARO GmbH**, Ilsfeld, a member of the AFBW

Biopolymers can also be produced out of raw materials of agriculture or forestry. Together with natural fibers like hemp and bio-based additives like waxes it is possible to produce out of starch, poly lactic acid or lignin fiber composite materials which are 100% bio-based. These biopolymers are processed in injection molding machines to molded parts and can be used in all sectors using plastics.

„The example of the Mockmill-flour mill shows that out of our ARBOBLEND-biopolymers even technically demanding and design oriented casing parts can be produced und therefore contribute to a bioeconomy."

Helmut Nägele, Jürgen Pfitzer, TECNARO GmbH



© Fiber Engineering GmbH

Insulation with sheep wool

Product: Insulation and carrier parts

Raw material: Sheep wool, hemp

TRL: 9

Producer: **Fiber Engineering GmbH**, Karlsruhe, a member of the AFBW

For the insulation of buildings renewable raw materials like hemp or sheep´s wool can be used. Sheep´s wool can be molded by modern processing technologies so that it can be used for the production of made to measure acoustic insulation boards for ceilings. So the advantages of sheep´s wool can be used for insulating without loosing functionality through molding.

„By fiber blowing technology we can produce also with renewable raw materials und recycling materials 3D molded parts energy- and material-efficient. The 3D shapes are already used as insulation and carrier parts by automotive, aviation and textile industry as well as in medical technology"

Egon Förster, CEO Fiber Engineering GmbH

TOP bio-based products
Bulgaria

The DanuBioValNet project partner:

Association of Business Clusters is the Bulgarian platform for cluster collaboration, information exchange and networking. It unites and protects the interests of clusters, stimulates cluster development and is actively involved in the creation of cluster policies in Bulgaria.
www.abclusters.org

Bulgarian National Association Essential Oils, Perfumery and Cosmetics (BNAEOPC)

www.bnaeopc.com

Bulgarian National Association Essential Oils, Perfumery and Cosmetics is the only official representative in Bulgaria of the producers and traders of essential oils and aromatherapy; perfumery and cosmetics; packaging and raw materials for cosmetics; scientific institutions in the branch.
The main purpose of BNAEOPC is uniting and supporting the efforts of its members for the protection of their creative and professional interests and for the promotion of their public image by being an active participant in the development of the essential oils and perfumery and cosmetic industries in Bulgaria.

Bulgarian National Association
Essential Oils, Perfumery & Cosmetics

Phytocode Rose Kiss line

Product: Cosmetic line based on Bulgarian Rose Oil

Raw material: Rose essential oil / roses

Producer: **Phytocode Ltd**, Burgas, www.phytocode.net, a member of the Bulgarian National Association Essential oils, Perfumery and Cosmetics

Phytocode Rose Kiss is cosmetic line based on Bulgarian Rose Oil.
Rose essential oil has been used in natural beauty treatments for thousands of years. The Bulgarian Rose Oil is well known because of its properties: hydrates skin and hair; reduces inflammation; supports the regeneration of new skin cells; promotes an even skin tone and healthy complexion; helps treat acne and acne-prone skin by cleansing the skin from bacteria that incite acne.
The products in the range are pleasant to use, bring visible results and have long-lasting effects. They are suitable even for sensitive skin and sensitive scalp.

Green Synergy Cluster

www.en.greensynergycluster.eu

Green Synergy Cluster (GSC) is a science-based organization developing technical, social and environmental innovations and energy engineering solutions for advanced biofuels, renewable energies and products. It concentrates 35 members, including suppliers and manufacturers of green technologies, research entities and universities, working together in promoting sustainable energy, resource efficiency and smart cities. The cluster enhances the competitiveness of its network by facilitation, research and implementation of innovative projects and by creation of starts-up.

The cluster is currently implementing feasibility studies within the LCBA Mexico initiative about

1) Cogeneration biogas plant based on agave and waste from tequila production;
2) AD plant based on napier grass in the Philippines;
3) Used tires utilisation throught plasma processing. The cluster itself has managed 3 EU funded projects and several national. GSC is member of ESCP NATUREEF.

Stoyan Dimitrov,
the chair of Green Synergy Cluster

Klinovital

© InoBioTech

Product: Food supplement for diabetes and obesity prevention, prevention of both the cardiovascular system and the chronic inflammatory processes in the body, leading to reductions in high blood pressure and cholesterol. The Klinovital food supplement is a great way to prevent and combat modern diseases before they occur.

Raw material: It contains an innovative standardized extract of a Clinopodium vulgare ("cat step") plant, and retains its bioactive components, as well as concentrated juices from the special grape Mavrud and aronia, with preserved biological activity.

Producer: **InoBioTech**, Sofia, a member of the Green Synergy Cluster

Klinovital is a powerful antioxidant, antimutagen, and an antibacterial agent. It creates daily effective protection of the body against toxins and stress. It contributes to maintaining a normal physiological cell cycle and a stable DNA structure through its strongly expressed DNA protective action. It strengthens non-specific immunity, making it a universal tool in the fight against pathogens. It favors the natural immune functions and activity of T-cells. It acts as an anti-hypoallergenic. It creates reliable anti-tumor protection. It strengthens sex, the secretory and the circulatory systems.
Klinovital is a 100% natural product based on many years of scientific examinations of the plant Clinopodium vulgare (CV). It does not contain preservatives, colorants, extra flavors and artificial additives. Chromatographic analyses of plant extracts show over 1,000 registered chemical compounds. More than 30 biologically active substances with known biological activity have been identified. Gas and mass chromatographic mass spectral analysis showed that the plant contained Rosmarinic Acid, Betulic Acid, Ursoic Acid, Betulin, high Saponin concentration, and other substances with known biological activity. The product is tested on animals for acute and chronic toxicity and for one year among consumers (with feedback) and has shown no side effects and lack of toxicity while all clients are satisfied.
The fact that the preparation is completely natural makes it easily acceptable and efficient. It could be produced in an Organic certified environment with organic certificate although even now the ingredients are organic.

TOP bio-based products
Croatia

The DanuBioValNet project partners:

Croatian Wood Cluster creates a long term business model for strengthening competitiveness of wood processing sector by encouraging the activities linked to R&D&I and commercialisation of innovations, technology and investments development. www.drvniklaster.hr

The Ministry of Economy, Entrepreneurship and Crafts performs tasks related to the development and advancement of the competitiveness of the Croatian economy, dedicating a great deal of attention to development of innovations and investments. The Ministry also participates in the activities by the EU's bodies. www.mingo.hr

Croatian Wood Cluster (CWC)

www.drvniklaster.hr

CWC is the oldest cluster at all in Croatia. It is a non-profit professional association established in 2003 and one of the rare clusters established by following the bottom-up principle. The membership fees represent only 15 percent of the income and the rest of the income is the result of the different market activities such as the organization of the specialized events and publications linked to the forest-based industries. Since CWC is strongly oriented towards members' needs, it is one of the pioneers among clusters in the promotion of the R&D&I activities within the industry in Croatia. The accent is put on the cross-sectoral approach and cascade use of the forest-based resources, as well as on the commercialization of innovations. CWC actively develops technology and knowledge transfer models because it's mission is to contribute to the implementation of the long-term sustainable business model which will ensure the competitiveness of the companies, not just in Croatia but the whole Southeast European region.

"Forests are our gold, green gold. Let's treat them that way and give them the added value by using it in a smart and sustainable way. It is a legacy of eternity. And one of the most valuable gifts to our children."

Marijan Kavran,
Cluster Manager

Re-used wooden houses

Product: Re-used wooden house

Raw material: Wood, oak from the Turopolje area

Producer: **Private initiative,** Donji Dragonožec, www.ekokucatrpuci.com/en, that is supported by Croatian Wood Cluster

In the heart of Vukomericke Gorice, surrounded by beautiful forests and numerous meadows, lies the Eco house Trpuci. The house is more than 100 years old. It was moved from the City of Velika Buna to the City of Trpuci. Plank by plank the house was dismantled; The planks are protected by eco-coatings and then the house is constructed again. An additional part was added in the form of the entrance hall. The house is built from the famous oak from the Turopolje area and is being used for touristic purposes.

"It is a private family initiative and with the proper state policy framework, there is room to expand the activities and to build more houses in order to develop a further bio-based touristic offer."

Ms. Petra Markulin,
the owner

SLAVONIAN OAK wood cluster

www.slavonski-hrast.com

In the area of Vukovar-Srijem County exists Spačva basin – one of the largest oak forests in Europe with high quality raw wood material of Slavonian oak (lat. Quercus robur). SLAVONIAN OAK wood cluster was established in 2010 and today gathers 36 members including wood processing companies, education institutions, scientific and research organisations, business supporting organisations as well as representatives of the regional and local government. SLAVONIAN OAK wood cluster supports knowledge and technology transfer, innovation management and innovation processes (internal and external).
The mission of the cluster is to promote sustainable development, environmental protection and increase of the competitiveness of forestry and wood industry.

„We aspire to become famous for our final products with high level of added value, and not only for our high quality raw material."

Ivan Ambroš,
Cluster Manager

SPAČVA

Innovative massive doors produced from Slavonian oak

Product: Innovative massive doors of Slavonian oak

Raw material: Slavonian oak

TRL: 3

Producer: **Spačva plc.**, Vinkovci, a member of the SLAVONIAN OAK wood cluster

The most known product of Spačva plc. with the highest added value is the massive oak door produced of appraised Slavonian oak. Spačva plc. applied RDI project co-financed by the EU "Research in Spačva plc. with the aim of development of innovative massive doors produced from Slavonian oak". Partners in the project are Faculty of Forestry Zagreb and Faculty of Electrical Engineering, Computer Science and Information Technology Osijek.
The project represents an investment in research and development of innovative products (oak doors with high quality and high added value) with significantly improved functionality applying the "dry processing" of Slavonian oak. The research within the project is extremely significant as this type of research has never been conducted in the Republic of Croatia.

„We are very happy to work on this RDI project and proud as well because with starting this kind of innovative process in our company we are once again demonstrating the importance of technology development and production development in order to add high quality to our final products."

Josip Faletar,
CEO Spačva plc.

TOP bio-based products
Czech Republic

The DanuBioValNet project partner:

National Cluster Association (NCA-CZ) brings together cluster organisations and cluster supporting bodies with the purpose to coordinate the sustainable development of cluster policy in the Czech Republic. NCA focuses on the role of clusters in innovations and new strategies, such as bioeconomy. www.nca.cz

Czech Hemp Cluster (CzecHemp)

www.czechemp.cz/english/

The CzecHemp cluster organisation was established in May 2018 as a cross-industry network of businesses and individuals, public sector, R&D and educational institutions. Its aim is to recover and extend the industrial hemp cultivation and exploitation along the whole value chain of the hemp industry in the Czech Republic so that it becomes one of the important feedstocks for the new era of bioeconomy in the conditions of the post-oil society. Equally, further research and development of the medical hemp and its availability to relevant patients is among the strategic goals of the CzecHemp agenda. CzecHemp will strive for the renaissance of hemp production regarding its broad range of application beyond the traditional textile industry, such as construction, food & beverage, paper, bioplastics, pharmacy and cosmetics and also as the biomass for energy generation. No less important is the role of the hemp growing for the contaminated soil remediation, fight against droughts and soil erosion.

„We want to build the future of the European bioeconomy on the cultivation of hemp as a traditional crop that makes no harm to the environment and leads our responsibility to sustainable development".

Hana Gabrielová,
President of the Czech Hemp cluster organisation

© EcoFuel Laboratories s.r.o.

CBD Anti-Cellulite & Slimming Body Serum

Product: Serum based on microalgae and CBD extract

Raw material: Microalgae, Cannabis

TRL: 9

Producer: **EcoFuel Laboratories s.r.o.**, Prague, a member of the Czech Hemp Cluster

EcoFuel Laboratories has a unique set of laboratory and processing equipment for the development and formulation of liquid food supplements, microemulsions, nano-micellar and liposomal encapsulated active compound application forms as well as final cosmetic products such as serum, body milk, creams, gels and balsams. Company services include product stability and bioactivity testing and preparation of documentation and product certification.

„I founded EcoFuel Labs in 2009 with the vision to research and industrially use unique feature of microalgae - their ability to convert carbon dioxide, greenhouse gas co-responsible for global warming, into range of desired pharmaceutical, feed, food and cosmetic products and biofuels."

Petr Kaštánek, CEO
EcoFuel Laboratories, s.r.o.,

© Annabis s.r.o.

Balcann Ointment

Product: Ointment based on Hemp seed extract & Hemp seed oil

Raw material: Hemp seed, Olive oil, Sandalwood oil, Atlantic cedar oil, Lavender oil, Common myrtle oil

TRL: 9

Producer: **Annabis s.r.o.**, Olomouc, a member of the Czech Hemp Cluster

Organic Balcann hemp ointment, with a high content of Omega 3-6 unsaturated fatty acids and a unique combination of botanicals, effectively nourishes and soothes the skin. If used regularly it visibly improves the overall condition of the skin. Hemp ointment for both adults and children suffering from dry, irritated and prone to flaking skin. It is suitable for complementary care of skin affected by atopic dermatitis and psoriasis. It is suitable for all skin types, including sensitive skin. The ointment is intended primarily for topical treatment of spots on the skin. Balcann effectively treats dry skin on the elbows, knees and heels.

„Our cosmetic company deals with research, development, manufacture and production of high-quality hemp cosmetics and food supplements. Our products are based on many years' experience and long-lasting relations with cosmetics experts and our customers use hemp products for a wide range of needs with outstanding results. High specialization, professionalism and intense orientation on customers have enabled a dynamic development of the company and its place among market leaders."

Robin Kazík, CEO
Annabis s.r.o,

© Mabeko s.r.o.

HempCrete

Product: Hemp & Lime building and thermal insulation material

Raw material: Hemp shives, Lime

TRL: 9

Producer: **Mabeko s.r.o.**, Svor, a member of the Czech Hemp Cluster

Revolutionary building and thermal insulation material that can be used to build the whole house, no bricks or other thermal insulation are needed. From the stem, the pure hemp shives obtained after blending with lime building materials form a solid, durable and highly usable structural insulator. Lime-hemp materials have gained increasing popularity in recent years with both environmentalists (a significant contributor to CO_2 emissions) and home users.

„We deal with business, development, sales, distribution, training and application of natural products and building materials for a healthy life with a respectful approach to our environment."

Jan Bešík, CEO
Mabeko, s.r.o.,

TOP bio-based products
Romania

The DanuBioValNet project partners:

Romanian Cluster Association is the representative body of Romanian clusters and the main platform of cooperation, exchange of information and support towards the development of the national cluster landscape based on innovation and internationalisation.
http://clustero.eu/

Institute for Economic Forecasting under National Institute for Economic Research, Romanian Academy. Focus on: macroeconomic analysis and international comparisons; regional development; economic modelling&forecasting; economic agents' behaviour.
www.ipe.ro/enmain.html

The Ministry of Economy is a synthesis institution of the Romanian Government, in charge with elaboration and implementation of the National Strategy for Competitiveness. ME is a coordinator of cluster policy and the national coordinator of PA8 - EUSDR. www.economie.gov.ro

Pro Wood Cluster

www.prowood.ro

Our cluster is a bottom-up initiative of the Association of SME's from the Covasna county. The main point, the need for cooperation in order to solve common issues like trainings, new technologies, access to new markets etc. The cluster has been founded as a result of an FP7 framework programme. Currently we have different types of companies members in our cluster: forest owners, wood-workers, furniture producers.
PRO WOOD is the first innovative cluster in the wood processing and furniture sector in Romania. Its generation methodology has become a national model and has already been disseminated as best practice in several INTERREG, SEE projects. Innovation and internationalisation represent the main development vectors. The creation of a value chain and the integration into an international industrial chain based on the cross-cutting cluster cooperation represent main objectives of Pro Wood.
The internationalisation of the cluster is a main objective. We also aim at, the creation of a value chain on regional level in order to have an efficient industry, with a good-working raw material acquisition system, use of wood waste coming from the wood or after the wood processing, and look forward to strengthen this by cooperation with other clusters on national and international level. The products of our cluster members are of a wide range, from raw materials to furniture and wood houses.

CASArbor Berivoi Project

Product: Modular wooden house

Raw material: Wood

Producer: **CASArbor S.R.L.**, Sfântu Gheorghe, a member of the Pro Wood Cluster

CASArbor builds healthy, modular houses which are insulated carefully and skilfully. Our houses have large, intelligently divided spaces which are as independent from an energy standpoint as possible.
CASArbor's wood houses fit easily into any landscape.
We build sustainable houses according to the EU laws, durable and healthy which you can afford.

"You are a complete person when You raise someone, You plant a tree and You build a house"

Kádár Rezső
Cluster Manager

Transylvanian Furniture Cluster

www.transylvanianfurniture.com

The Transylvanian Furniture Cluster was established in 2012 as a legal entity association type and its main activity resides in the furniture manufacturing sector. The Cluster represents a platform for cooperation, networking and representation of their interests of wood furniture industries, educational institutions, research and public administration. The unique feature that distinguishes the Transylvanian Furniture Cluster consists in its organisational and functional strategy, achieved through implementation of strategic investments and programmes which aim to create innovative products and solutions as a result of materials used, design and functionality, through R&D units that are or will be part of the cluster.

The general objective of the cluster is to boost its economic competitiveness, on both domestic and foreign markets, based on quality, innovation and sustainable development, for the considered 2012-2022 timeline.

Therefore, in order to achieve the main goal of the cluster, the partnership organisation has applied for European funds in 2012, summing a total of 24 projects through which companies' productivity will grow based on modern technology and infrastructure, innovation and sustainable development that will lead in the end to competitive products on the national and global market.

"Intensifying the exchange of experience through clusters and directly targeting members of these structures (especially those from the private area) we significantly contribute to greater integration at the European level and also generate partnerships to support business models that address jointly extra-EU markets".

Morcan Ciprian,
Cluster Manager

© SC Taparo SA

Composite material from natural fiber

Product: Composite material from natural fiber

Raw material: Vegetable fibre (hemp, jute, coconut, willow fibre, etc.) and thermoplastic fibre

Producer: **SC Taparo SA**, Borcut, a member of the Transylvanian Furniture Cluster

The composite material is based on two types of fibre: vegetable fibre (hemp, jute, coconut, willow fibre, etc.) as well as thermoplastic fibre that binds the vegetable fibre and provides the finished product with resistance.

The main advantages of this composite material are:

- Recyclability and a very good mechanical strength, which can be enlarged and reshaped, it can be thermofixed in the final form of a structure (material + workmanship in one phase, generating a lower cost of the resistance structure compared to classical materials);
- It reduces the wood usage by using the perennial plant fibres (wood 80-100 years, increase 3 tons / year, annual fibre 6-10 tons per year);
- The superior capitalization of agricultural or less fertile land;
- Reducing the transport price of the raw material because the weight per square meter of the composite is lower than the classical structure;
- Reducing pollution by reducing transport;
- By using other consolidation methods, it significantly reduces the amount of plastic used and implicitly the consumption of hydrocarbons.

„We have been considering using natural raw materials and reducing as much as possible the amount of wood in the resistance structure of our products. We grew up in an area where we enjoyed the beauty of forests and I would like our children to enjoy a cleaner and more comfortable environment".

Ioan Filip,
General Director
of SC Taparo SA

TOP bio-based products

Serbia

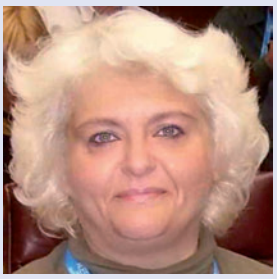
The DanuBioValNet project partner:

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 then 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

© Pinter-Odplast

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

ISORETEX - 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.

„KONOPLJA“ Association of the producers and processors of hempwood cluster

www.udruzenjekonoplja.net/o-nama

Founded in 2015 with the aim of supporing the competitiveness of hemp producers, preserving ecological stability, creating new jobs and investing in agriculture. The members of the network are more than a hundred small farmers and processors. KONOPLJA offers a platform for dialogue and knowledge transfer, provides trainings and advisory services, orgaises joint presentation at fairs and exhibitions, also, advocates the interests of the members in negotiations with customers, state or local authorities. The members of the association have developed a joint brand of GRAMINA and sell the poducts under this name.

„Cultivating hemp we preserve nature, enrich the air, produce large amounts of green mass for food, fiber and products for other purposes. “

Danica Milutinov,
Marketing Manager and Project Manager

„The number of new hemp producers grows day by day, because this is a plant that requires little, but it gives a lot. Legislation should be conducive to development of the sector, new legislation on Food Safety and on Psychoactive Substances is urgently needed.“

Dr Maja Timotijević,
Cluster president

GRAMINA cold-pressed hemp oil

© Konoplja

Product: Cold pressed hemp oil, brand name GRAMINA

Raw material: Hemp

Producer: **KONOPLJA Association**, Serbia - Vojvodina Region

The raw material is exclusively locally grown, laboratory tested. It is prossesed in very small batches, to shorten the time between the opening of the hemp seed and the distribution of the final product to customers. No pesticides or herbicides have been used in processing, the material is mechanicaly treated at temperatures up to 40˚C, no additives or preservatives are added, it is 100% hemp product suitable for vegan diet.

For health and beauty, hemp oil is a great source of high-quality nutrients and can be used as a multi-purpose natural remedy. Product quality can be achieved only if it is based on the quality of the raw material. Therefore, the raw material that is used is of the highest quality hemp. It is cultivated by farmers on several locations throughout Serbia. Before entering the warehouses, all raw materials are analyzed in authorized laboratories to determine whether they meet the criteria for human consumption. The packaging that has all the necessary certificates ensure durability and preserve product quality.

TOP bio-based products
Slovakia

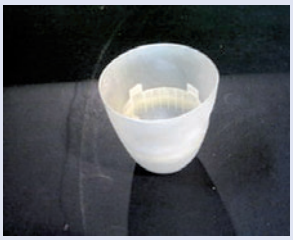
The DanuBioValNet project partner:

PROUNION is an innovative consulting company focused on development of national and regional policies, research and innovation, networking including clusters, support to SMEs through technology transfer, consulting and project management.
http://prounion.sk/

Slovak Plastic Cluster

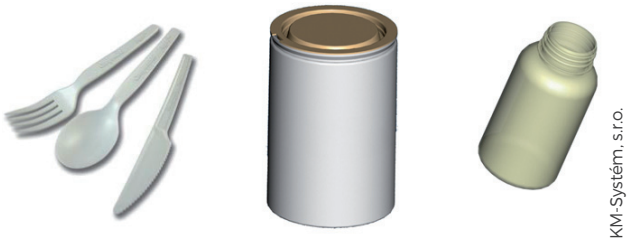
www.spklaster.sk

Slovak Plastic Cluster (SPC) was founded on 13 March 2009 in Nitra with the aim to unite companies and organisations active in the plastics industry and associated sectors. Although the subjects compete with each other, they also solve similar problems and share common resources. Thanks to the co-operation, companies overcome a lot of their limitations and achieve the competitive benefit.
SPC initiates the cooperation with the Centre for applied research of environmentally friendly Polymeric Materials „CEPOMA", which was established in Nitra as a detached workplace of the Slovak University of Technology in Bratislava, of which the Faculty of Chemical and Food Technology is the member of SPC.
SPC has realised the project „Testing of available elaboration of laboratory-developed biodegradable material by technology of injection and material preparation for operative test to transfer results of research into practice". The project was supported by the Ministry of Education, Science, Research and Sport of the Slovak Republic and dealt with the development of new (biodegradable) material based on renewable resources of products. In comparison to similar materials, it has much better mechanical properties – particularly high flexibility and the sturdiness.



Prof. Alexy, the representative of the Institute of Natural and Synthetic Polymers, the Faculty of Chemical and Food Technology & the sample of biodegradable plastic cap.

SPK
SLOVAK PLASTIC CLUSTER



© KM-Systém, s.r.o.

BIO Material Cutlery and Container

Product: Bioplastic containers for packaging of vitamin products, drugs, cosmetics, etc.

Raw material: BIO-based PLA material

Producer: **KM-SYSTÉM, s.r.o.**, Prešov,
a member of the Slovak Plastic Cluster

KM-SYSTÉM, s.r.o. operates in the field of plastics processing with a focus on the plastics injection moulding for more than 20 years. The company has a long-term experience in manufacturing moulds for multi-component injection molding. Furthermore, it has developed the innovative original technology Injection Blow Moulding, for production of small plastic containers used for packaging of vitamin products, drugs, cosmetics, etc. Given technology allows to exploit also other materials, such as PP/PE or bio-based PLA materials. Currently, the company is working together with the Slovak University of Technology in Bratislava, with the Faculty of Chemical and Food Technology as testing partner for their newly developed Bio-based PLA material for injection moulding technology.

"There is a huge and unexploited potential within the area of biodegradable materials. Due to various environmental concerns, the use of biodegradable materials may contribute to the sustainability and the reduction of environmental impacts, to the greenhouse gas balances, etc."

Jozef Kráľ, CEO of KM-SYSTÉM, s.r.o.

Bioeconomy Cluster

www.bioeconomy.sk

The main mission of Bioeconomy Cluster (BEC) is networking of different stakeholders, in particular the members of BEC, which involve universities, research centers, advisory companies, but mainly small and medium sized enterprises in the sector of agriculture, food, paper industry, eco-construction, bio-polymers, etc., therefore covering wide bioeconomy sector. The core activities of BEC include the promotion of innovation and partnership, promotion of internationalisation of its members, provision of advisory services related to financing opportunities and implementation of international projects. BEC facilitates a good interconnection of different partners in the area of bioeconomy at national, macro-regional, as well as European level and it is strong in agricultural and bioeconomy policy research, rural development research, cluster development and value chain development.

Bioeconomy Cluster

Motto:
Coming together is a beginning.
Keeping together is progress.
Working together is success.
(Henry Ford)

Katarína Blicklingová,
Director

© Hemp Cluster

Pressed boards and panels from hemp-shives and recycled materials

Product: Pressed boards and panels

Raw material: Hemp-shives and recycled materials

TRL: 7 - system prototype demonstration in operational environment

Producer: **Hemp Cluster**, Viničné,
a member of the Bioeconomy Cluster

International Hemp Cluster based in Slovakia is focused on the research and development of new and innovative hemp products. The main role of the cluster is to develop the hemp industry and its technologically oriented companies, to ensure the sustainable development of hemp-based production with high added and ecological value, all through strong and synergistic network of businesses and research institutes in Slovakia and neighbouring countries. Based on the principle of cooperative economy, the cluster aims to support the interaction of specialists in the development and production of bio-based products from regional raw materials.
Currently, the cluster is focused on the production of pressed boards and panels from hemp-shives (85-98% by volume) and recycled materials. The testing phase of different volume ratios, densities and binders for diverse uses in building and furniture production is currently in progress.
In the future, the products with given features and lower weight will help to reduce the ecological burden, then reduce emissions from processing, production, shipping and also contribute to the reduction of forest harvesting.

Plasttechnics Cluster Slovenia

www.giz-grozd-plasttehnika.si

Plasttechnics Cluster Slovenia (PCS) is a non-profit association with 80 associated companies (the majority of them are SMEs). PCS has offered its services to the plastics industry sector since 2002 in the field of technological research and development on plastic materials, products and its transformation processes. Cluster's mission is to assure the exchange of information, cooperation in the field of production and service, with the goal of growing and enlarging competitive abilities of partners. PCS unites the most important companies and accompanying institutions from the field of the plastics industry and is becoming an important European part of the global offer of high-demanding products/service of plast-technics and integral solutions (idea, development, production) for the most demanding purchasers on the global market. The cluster companies master the most up-to-date technologies from the field of plastics remodelling, tool making and construction, laser and tool technologies. PCS provides a partnership from the planning of the product through toolmaking to production. PCS also facilitates the establishment of links with potential customers, primarily with partners in development projects. The aim of establishing links is to increase competitiveness through the synergy of development and marketing activities, the flow of knowledge and information, and establishing links with other companies and institutions in order to enable integration into the broader European projects on future technology from the fields of polymer materials, bio-based materials, plastics processing and recycling. Other activities are market research and analysis in plastics industry, engineering, advising and education on the field of plastic transforming, new materials and technologies, managing the business relations between EU companies and Slovenian SMEs, realisation of investments and feasibility studies for various specific projects.

Mr. Janez Navodnik, manager of Plasttechnics Cluster Slovenia

The DanuBioValNet project partners:

Anteja / Poly4EmI promotes the transition to bio-economy through cross-fertilization of sectors and digitalization of value chains. It guides policies and strategies for all-inclusive growth and sustainability through clusters and cross-regional cooperation. www.anteja-ecg.com

Ministry of Education, Science and Sport is responsible for regulating all levels of Education, Science and Sport, and defines the adoption of political documents in the field of Research and Innovation. MIZS has also become an active supporter of bioeconomy in Europe. www.mizs.gov.si/en/

Bio-based laminate tube

© Lajovic Tuba

Product: Bio-based laminate tube, Wheylayer® for cosmetics and phytopharma product

Raw material: Whey by-product of cheese production containing 7% dry matter of which 13% are proteins

Producer: **Lajovic Tuba, d.o.o.,** Ljubljana, www.lajovictuba.com, a member of the Plasttechnics Cluster Slovenia and the SRIP Circular Economy

Slovenian manufacturer Lajovic Tuba is marketing an innovative laminate tube. The Wheylayer barrier laminate (WBL) tube has a protein coating for use with plastic films that have barrier properties. According to the manufacturer these coatings are superior to those of existing biopolymers and offer a promising alternative to expensive synthetic barrier layers. This innovation promises a range of benefits and having barrier properties superior to those of other bioplastic oxygen barrier layers from an ecological point of view. It promotes recyclability or composability and reduces the environmental impact of packaging.

Janez Perčič, Director of Lajovic Tuba

ECO POT

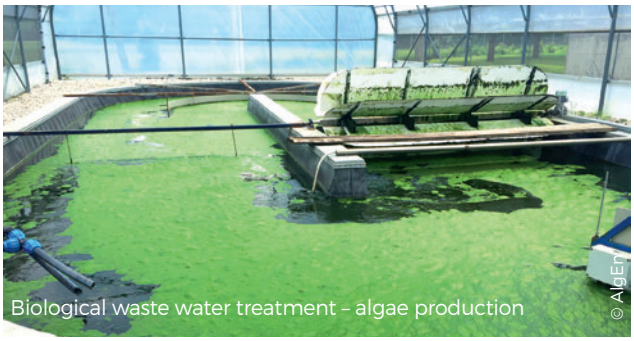
Product: 100% biodegradable ECO pot, made by proteins

Raw material: Protein rich discarded foods

Producer: **Evegreen, Eva Štraser s.p.**, Mislinja, Start-up Company - www.bioplasticpot.com, a member of the Plasttechnics Cluster Slovenia

Evegreen, in cooperation with Slovene and European partners, developed a formula and the technology for the production of biodegradable plastics from protein-rich discarded foods (beans). From this material Evegreen designed an eco-flower pot, which three months after planting in the soil becomes food for microorganisms, and transforms itself into plant fertilizer. Additionally, it protects the young sapling from pest.

Evegreen team



Algal Pond Systems:
Algae from the wastewater

Product: Algae for the production of bio-fertilizers, bio-fuel, bioplastics, coatings, and high-value compounds for pharmacy, cosmetics, food additives, animal feed, agronomy (bio-stimulants), etc.

Raw material: Wastewater

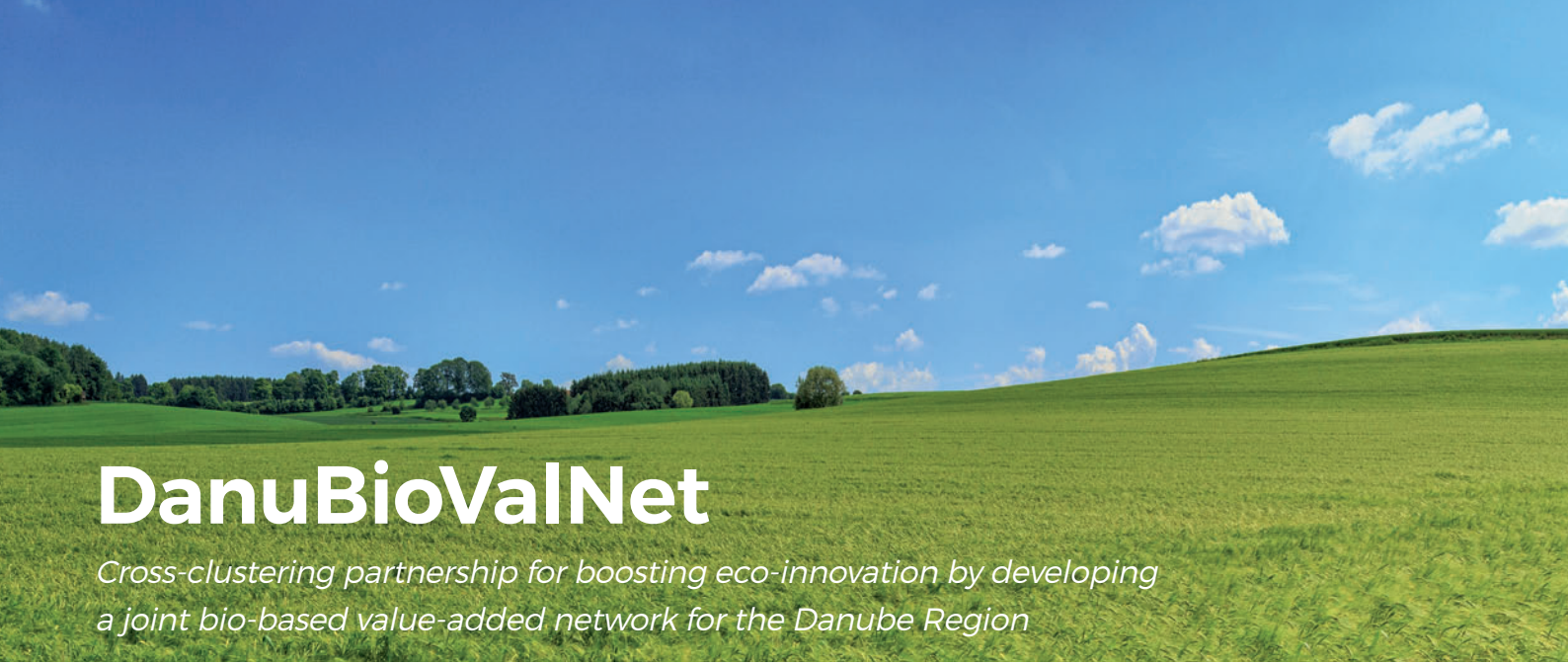
TRL: 9

Producer: **AlgEn**, algal technology centre, d.o.o., Ljubljana, www.algen.eu, a member of the SRIP Circular Economy

The innovative technology of algal ponds with a fully automated control and sensor system is being utilized for the production of algal biomass. Algae are used for the food, production of biofuels, bioplastics, fertilizers, animal feed additives and coatings as well as a source of high-value products like lipids, proteins, pigments, pharmaceutical and cosmetic compounds. The technology utilizes wastewater as a nutrient and energy source for the production. In this way, a discharge from industry, sewage plants or agriculture becomes a feedstock instead of being conventional waste. Additionally, the remaining water can be recycled back to the technological processes or used for the irrigation of agricultural surfaces. The biological process is based on a symbiotic relationship between algae and bacteria. This community removes the nutrients, heavy metals and organic matter from the wastewater. Instead of energy demanding aeration, the system uses algal photosynthesis to provide the necessary oxygen to bacteria. Algae use CO_2 from the fuel/industry gases, improving carbon footprint by reducing the environmental CO_2 levels. When feeding algae with anaerobic digestate from a biogas plant for example, there is a 91% N, 64% P, and 90% COD reduction in the wastewater. The excess heat is effectively used, and the unpleasant wastewater odour is eliminated. The system can treat various wastewaters, and can be tailor-made to meet wastewater characteristics, geographic location and customer needs. The pond system is used also for the algal food production, but in such case, wastewater is replaced by a controlled growth medium.

Borut Lazar, Director of AlgEn

AlgEn Team



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 (JBCS) 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 JBCS, 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.

The following partners commit to the implementation of the cluster partnership and transnational cooperation in favour of the bioeconomy development in the Danube Region:

Role	Official Name in English	Acronym	Country
LP	BIOPRO Baden-Württemberg GmbH	BIOPRO	Germany
ERDF PP1	ClusterAgentur Baden-Württemberg	CABW	Germany
ERDF PP2	Anteja ECG	ANT	Slovenia
ERDF PP3	PROUNION	PU	Slovakia
ERDF PP4	Romanian Cluster Association	CLUSTERO	Romania
ERDF PP5	Association of Business Clusters	ABC	Bulgaria
ERDF PP6	National Cluster Association – CZ	NCA	Czech Republic
ERDF PP7	Business Upper Austria – OÖ Wirtschaftsagentur GmbH - Upper Austrian Food Cluster	UAFC	Austria
ERDF PP8	Ministry of Economy	ME	Romania
ERDF PP9	Ministry of Economy, Entrepreneurship and Crafts	MEEC	Croatia
ERDF PP10	Ministry of Education, Science and Sport	MIZS	Slovenia
ERDF PP11	Croatian Wood Cluster	CWC	Croatia
ERDF PP12	Institute for Economic Forecasting	IPE	Romania
ERDF PP13	Business Upper Austria – OÖ Wirtschaftsagentur GmbH – Cleantech-Cluster	BizUp	Austria
IPA PP1	Innovation Center of Faculty of Mechanical Engineering	ICME	Serbia
ASP1	Montenegro Vine Cluster	MVC	Montenegro
ASP2	Ministry of Economic Affairs, Labour and Housing Baden-Württemberg	WM	Germany

LP = Lead Partner, PP = Project Partner, IPA = Instrument for Pre-Accession, ASP = Associated Strategic Partner, ERDF = European Regional Development Fund

National Cluster Association
U Tiskarny 616/9, 702 00 Ostrava, Czech Republic | E-mail: info@nca.cz | **www.nca.cz**