PROMOFER

Issue #1 - NOVEMBER 2024

newsletter

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Editorial

Dear Readers,

It is with great joy that we welcome you to our project and the first edition of the PROMOFER newsletter. We hope that you will follow and support us in our 4-year journey towards a circular bio-based economy.

In this issue you can get to know the PROMOFER project and meet the project partners. Dr Rafael Jiménez Lorenzo, from AIMPLAS Biotechnology Group, is being "bioprocessed" by giving a short interview to our editorial team.

We also offer the latest biobased news and high impact events that you should not miss out. Lastly don't forget to subscribe to our newsletter and follow us on social media.

Let's pave the way for a biobased economy!!!

the editorial team

Circular Bio-based Europe Joint Undertaking

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Bio-based Industries Consortium

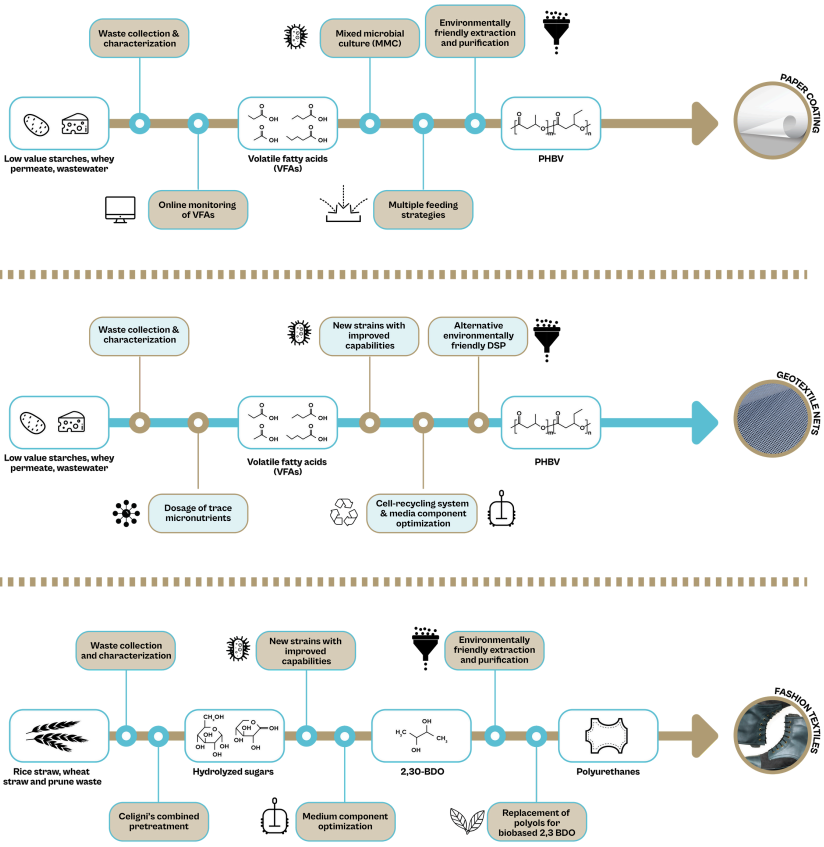
Co-funded by the European Union

Get to know the PROMOFER project

A circular bio-based economy is a key element of a European low carbon economy and is projected to increasingly contribute to greenhouse gas (GHG) emissions reductions, decreased dependence on fossil resources and drive economic growth over the next decades. It can help meet the European Green Deal's goals, including its plan to reduce EU greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. It also contributes to other EU initiatives, including the Circular Economy Action Plan, the Biodiversity Strategy, Zero Pollution action plan and the Farm to Fork Strategy.

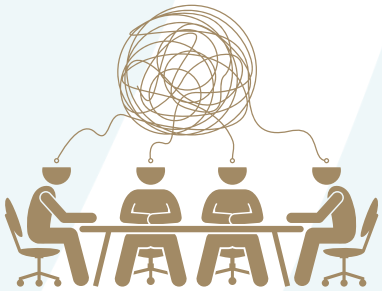
EU biorefineries producing bio-based products are expected to be an important part of the circular bio-based economy. Moreover, deployment of biorefineries that utilise EU biomass will increase safe supply of raw materials, decrease emissions, and create jobs and business opportunities, especially in rural areas. Approximately 300 chemical and material driven biorefineries at commercial or demonstration scale are located in the EU.

PROMOFER project will address the valorisation of two kinds of feedstock (lignocellulosic biomass and food industry waste) through the improvement of the fermentation processes and downstream purification. It will produce two SSbD, circular bio-based products polyhydroxyalkanoates (PHAs) to be used in geotextile nets applications (agriculture sector) and coated paper packaging applications (packaging sectors) and 2,3-Butanediol (2,3-BDO) to produce bio-based PU for the technical textile applications in the fashion industry sector.



The integration of these waste streams as biorefinery feedstocks will allow reducing the volumes of landfilled waste, improving competitiveness, resource efficiency and opening new opportunities for the bioplastics production with added advantages of environmental performances and social acceptance.

PROMOFER



The PROMOFER Consortium

The consortium is made up of 13 different partners from 7 countries (Belgium, France, Greece, Ireland, Italy,, Spain and the Netherlarnds.

PROMOFER is a collaborative initiative that brings together an interdisciplinary consortium, strategically grouped in 7 categories:

- feedstock providers and upstream processes (HELLABIOM, CELIGNIS)
- strains production and modification (UCD)
- fermentation and downstream processes (PAQUES, IRIAF/GEACAM, BBEPP, AIMPLAS)
- bio-based products (NOVAMONT, VEGEA)
- process design, economic and environmental assessment (PDC)
- business and market developer and a communication and dissemination facilitator (ETAM)
- social acceptance and analysis (RIGHTCLICK)

Explore the **project website**
to learn more about each partner and their specific role in the project.

AIMPLAS · Castilla-La Mancha Consejería de Agricultura, Ganadería y Desarrollo Rural · Instituto Regional de Investigación y Desarrollo Agroalimentario y Forestal de Castilla-La Mancha IRIAF · CLaMber · geacam Gestión Ambiental de Castilla-La Mancha

PAQUES biomaterials · Bio Base Europe Pilot Plant · UCD Dublin University College Dublin An Coláiste Ollscoile, Baile Átha Cliath · Celignis Analytical · NOVAMONT A Versalis Company

VEGEA · PDC Process Design Center · HellaBiom · etam s.a. consulting services · WE RIGHT CLICK

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Expert's corner

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What can PROMOFER offer to the biobased industry?

PROMOFER is an innovative project that distinguishes itself from other waste valorization initiatives through its unique strategies. To achieve this, the PROMOFER team has identified key bottlenecks in the production of bioplastics via fermentation: pretreatment processes, fermentation yields, and purification techniques. The project addresses these challenges with innovative approaches across the entire value chain of waste-to-bioplastic valorization.

For example, **PROMOFER employs genetic engineering tools and traditional techniques to develop new microbial strains.** These enhanced strains are designed to transform waste into bioplastics more efficiently, thereby improving overall yield. **Higher yields directly correlate with lower production costs**, making bioplastics more economically viable. Additionally, the project incorporates strategies like **cell-recycling systems and media component optimization** to further boost process efficiency.

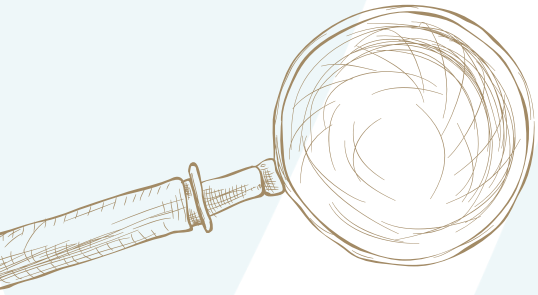
Another significant focus is on **environmentally friendly purification techniques**, which aim to minimize the use of harsh chemicals typically required for compound purification. By integrating all these strategies, PROMOFER strives to reduce the cost of bioplastics, facilitating their gradual adoption in commercial markets.

What are the main challenges you expect to face?

Transforming waste into bioplastics presents several inherent challenges. A primary obstacle is the variability in the characteristics of waste feedstocks, which requires the development of a versatile and robust process to handle this heterogeneity effectively.

In the case of PHBV production, while this biopolymer is highly appealing due to its biodegradability across diverse environments, its production yield remains relatively low. PHBV accumulates within cells, necessitating the production of a large amount of biomass. Thus, **one key challenge is increasing biomass concentration during fermentation while simultaneously boosting the PHBV content within the cells**. Achieving this balance is complicated by the need to limit nitrogen or phosphorus in the fermentation medium, which promotes PHBV accumulation but inhibits cell growth.

Another **critical issue is the presence of impurities in waste feedstocks, which can inhibit microbial growth and interfere with the process**. Overcoming these hurdles will require innovative solutions to optimize fermentation conditions, improve microbial resilience, and ensure consistent feedstock quality.



What we are reading

A European valuable feedstock ending up in waste

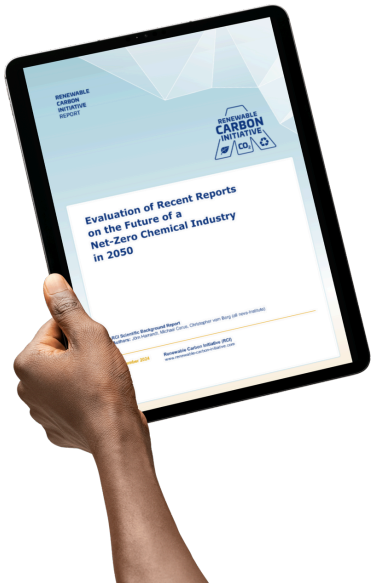
The Bio-based Industries Consortium (BIC), along with Zero Waste Europe (ZWE) published in November the 2nd edition of the report that identifies the untapped potential to valorise bio-waste in Europe "Bio-waste generation in the EU: Current capture levels and future potential".

The collection of bio-waste is mandatory in EU Member States in accordance with the Waste Framework Directive (WFD) since January 1st, 2024. Nevertheless, the current capture across the EU27 (including Norway and the UK) is below 26% of the theoretical potential, at around 5 million tonnes per year.

According to the REPORT bio-waste remains deprioritised across much of the EU and it is clear much stronger action is needed. It includes country factsheets and provides examples of how the bio-based industries contribute to tackling this waste challenge.

The Future of a Net-Zero Chemical Industry in 2050

The Renewable Carbon Initiative (RCI) has published a pioneering report titled "Evaluation of Recent Reports on the Future of a Net-Zero Chemical Industry in 2050". This report evaluates existing studies with net-zero 2050 visions and scenarios for chemicals or plastics, focusing on overall growth and renewable carbon shares.



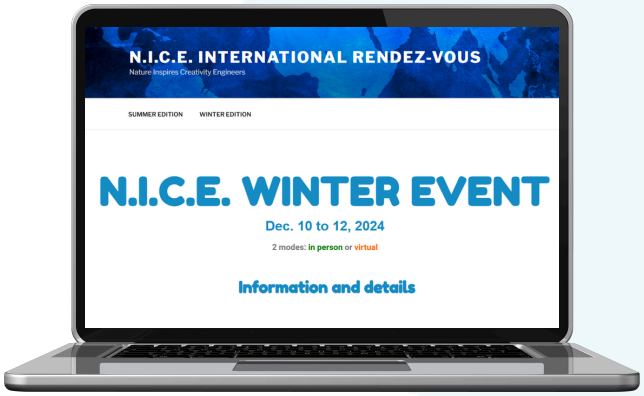
According to this report the average annual growth rate of the global feedstock demand for the chemical or plastics industry is projected at 2.9 %. Overall, this translates into an approximate 2.4-fold increase in global feedstock demand from the chemical industry by 2050 compared to 2020 levels.

For the entire chemical sector, the average feedstock shares of 16 scenarios across 9 reports are 22 % biomass, 33 % CCU, 20 % recycling and 24 % fossil & CCS. For the plastics sector, 10 scenarios across 7 reports project shares of: 21 % biomass, 17 % CCU, 42 % recycling and 19 % fossil & CCS.

Biomass, CCU and recycling are consistently identified as the pillars of this transition and beyond and the urgent need for continued innovation and investment in renewable carbon technologies to meet the ambitious goals set for 2050 is identified.

Upcoming events

International N.I.C.E. Conference on Bioinspiration & Biobased Materials – winter 2024



10-12 December 2024

Nice, FRANCE

The International Bio-Inspiration N.I.C.E. Winter Event will be held in Nice "Le port", FRANCE, December 10 to 12, 2024 and online. The Conference takes place every two years since 2012 in Nice located in the French riviera (FRANCE) and brings together researchers, managers, manufacturers with different backgrounds.

The aim of this Conference is to convene chemists, physicists, biologists, material scientists, and engineers from both academic and industrial institutes to share new developments and techniques in the domain of bio-inspired, bio-based, and bio-sourced chemistry and materials development. The Conference will highlight recent advances in engineering and materials science that employ bio-inspired techniques and materials. **MORE INFO...**

EBC 24 The European Bioplastics Conference 2024

10-11 December 2024

Berlin, GERMANY (hybrid)

The 2024 edition of the leading business and networking event for the bioplastics industry in Europe, the European Bioplastics Conference (EBC) 2024 will take place on 10-11 December 2024 in Berlin, Germany and online.

The Conference will showcase how biopolymers are driving innovation forward for more sustainability, resource efficiency, and functionality. The areas of focus in this year's edition include amongst others the future of bioplastics relative to bridging policy, science, and society, advancing compostable plastics through new collaborations and innovations, exploring environmental impacts and sustainability of bioplastics, championing performance and sustainability and feedstock trends of the global landscape.

A highlight of the EBC 24 is the exhibition, which is dedicated exclusively to bioplastics providing the opportunity to demonstrate your products and services, increase brand awareness, build new business relationships, and gain instant market feedback.
MORE INFO...

Upcoming events

Bio-based Textiles in Clothing: Europe 2025

15-16 January 2025

Helsinki, FINLAND

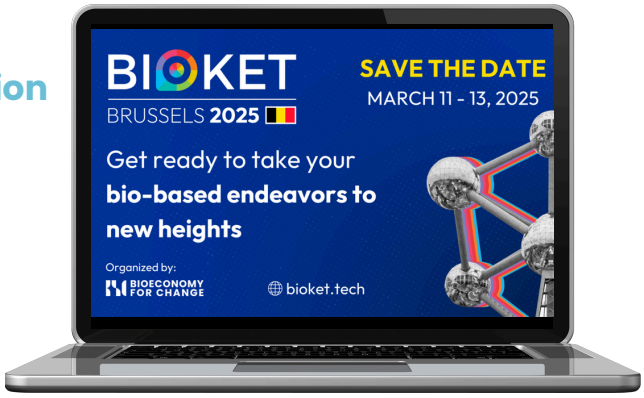
The Bio-based Textiles in Clothing: Europe 2025 Conference will take place on 15-16 January 2025, in Helsinki, Finland. It will explore the latest advancements in sustainable clothing made from renewable resources. The conference will launch just after the EU's pivotal Textile EPR Directive on 1 January 2025, and as such it will take a deep dive into the world of bio-based textiles, examining how plants, microbes, and other novel organic feedstock are being revolutionised into sustainable, stylish garments. The 2-day in-person conference will host senior-executives from Bio-based Textile Manufacturers, Bio-based Feedstock Suppliers, Brand Owners, Textile Recyclers, Mechanical and Digital Technology Providers, Associations, Policy-Makers Senior Chemical Consultants and Research Academics. **MORE INFO...**

The Bioeconomy's Key Enabling Technologies Conference & Exhibition

11-13 March 2025

Brussels, BELGIUM

BIOKET is an annual international Conference that serves as a premier platform dedicated to advancing Key Enabling Technologies and innovations applied to biomass valorisation.



It will be held on March 11 to 13, 2025 in Brussels, Belgium and it is organized by BIOECONOMY FOR CHANGE. The conference aims to promote the production of high added value products across diverse sectors of the economy through sustainable practices and cutting-edge technologies.

The core focus of BIOKET is on technologies and innovations that enhance the value of biomass, transforming it into valuable products that benefit a wide range of industries. BIOKET provides a platform for professionals, researchers, and industry leaders to connect, exchange knowledge, and build sustainable business partnerships globally. By facilitating discussions and showcasing the latest advancements in biomass valorisation, BIOKET contributes to the growth and sustainability of the bioeconomy sector. **MORE INFO...**

PROMOFER

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PROJECT KICK-OFF MEETING | 4-5 JULY 2024 | VALENCIA, SPAIN

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