PRESS RELEASE

Midway through the REDYSIGN journey: milestones reached and the path to circularity ahead

The REDYSIGN consortium met in Valladolid to share progress, highlighting advances in eco-designed fibre packaging for fresh meat, smart sorting tools, and high-quality sustainable pulp.

Valladolid, October 2025 — The REDYSIGN Project has reached its halfway point in the journey to create recyclable, bio-based and smart packaging solutions for fresh meat products. To mark this stage, project partners met in Valladolid, Spain, on 1–2 October 2025, for a Consortium Meeting hosted by PackBenefit. Over the past two years, REDYSIGN has made remarkable progress, achieving several key milestones: the eco-design of fibre-based packaging (FBP) for fresh meat, developing innovative identification markers and digital tools to optimise sorting, and producing high-quality, functional thermomechanical pulp (TMP) from renewable resources.

PROJECT ACHIEVEMENTS OVER TWO YEARS

The project continues to move forward with solid achievements, marking the successful completion of two major technical work packages. These results lay a strong foundation for the upcoming activities, which will focus on the integration of the most promising solutions developed into the packaging products, their validation in relevant conditions of these resulting solutions and the recycling and upcycling of the developed solutions, key steps towards advancing our sustainability objectives.

During recent partner presentations, several notable outcomes were shared, in particular, within the work dealing with maximising the transformation of wood into high-value biomaterials. The most relevant breakthroughs of this work package, generally dedicated to the resource-efficient conversion of wood into functional macro-micro-nanofibres, lignin and sugars, were (i) an enzymatic pretreatment of wood chips which allows a 20% reduction in the energy consumption during production of TMP fibres; (ii) a new MCC produced as part of the highly sustainable Sunburst® process which has shown excellent performance across various applications; and (iii) a new scalable process to functionalize lignocellulosic fibres with minimum water use and thus much reduced effluent generated. Other interesting developments will only be properly assessed upon their upcoming integration in the resulting products.

The project is supported by the Circular Bio-based Europe Joint Undertaking and its members. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.

Additionally, the working lines focusing on improving the smartization of the new FBP have concluded with excellent results that will advance to the next months of the project. Roll-to-roll printable food spoilage sensors were developed and successfully tested in rabbit meat packaging. In the upcoming phase, recyclable and compostable cellulosic films will be used as supporting substrates, allowing the integration of these sensors directly into the lidding film. In parallel, a reusable and flexible cold chain sensor was developed to monitor temperature and other critical conditions during food transportation and storage. Finally, a new marker-based sorting technology that allows traceability of Fiber-Based Packaging was developed, reaching a key milestone of the project. The multifactorial system designed combines low-cost identification markers, integration via wet-thermoforming, and detection technology using predictive models. This breakthrough has the potential to improve sorting of contaminated packaging residues, facilitating recycling and advancing sustainable packaging solutions.

Under the environmental dimension, work has progressed with the preparation of the Preliminary Environmental LCA Report for FBP products. At this stage, the focus was on the development of an environmental hotspot analysis to identify the most significant process areas with potential for improvement throughout the life cycle of the packaging solutions. As for the economic dimension, the Preliminary Economic LCC Report has provided early insights into the economic viability and cost structure of circular and bio-based packaging alternatives for fresh meat. These findings will help guide future development strategies and investment decisions. Finally, in the social dimension, the assessment of the social inventory for the packaging sector is currently underway based on secondary data sources. This analysis aims to map potential social impacts and stakeholder concerns across the entire packaging value chain.

These preliminary assessments reflect steady and parallel progress across all three sustainability dimensions — environmental, economic, and social — strengthening the foundation for a holistic understanding of the sustainability performance of FBP products.

DISCOVERING THE FUTURE OF PACKAGING AT PACKBENEFIT PLANT

Over two days of lively discussion and collaboration, the REDYSIGN consortium gathered for a hybrid meeting that brought together both in-person and online participants. The sessions focused on reviewing the technical work packages, assessing the progress made over the past six months, addressing ongoing challenges, and setting priorities for the next phase. New work lines were also introduced for the months ahead, aiming to enhance sorting, recycling and upcycling processes in the pursuit of an efficient FBP solution.

In addition to the technical sessions, partners had the chance to visit PackBenefit's new production plant, which is set to be officially inaugurated on 24 October 2025. The visit began with a short presentation on the company's values, manufacturing processes and innovative technologies.

The project is supported by the Circular Bio-based Europe Joint Undertaking and its members. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.

Participants were able to witness first-hand the production of PackBenefit's advanced wet-moulded trays made from virgin cellulose and laminated with bio-based, compostable materials. These trays offer a balanced combination of practical features: they have a cool surface, are structurally firm, and allow the sealing film to be removed easily and cleanly. Compatible with the most widely used sealing films, they are suitable for a broad range of applications and can withstand temperatures from –30°C to over +200°C. The visit to PackBenefit's factory helped the consortium understanding the key features of an industrial production process and provided unvaluable insights towards the adjustments needed to the lab-scale developments.

The project is now entering a crucial phase in which the research conducted on the different components of the fibre-based packaging — the tray, barrier coating, absorbent pad and flexible film, all made from wood-based materials — advances into a new stage focused on validating their use in relevant environment, assessing their recyclability and demonstrating their circularity.

Representatives of the REDYSIGN Project visited PackBenefit's new plant in Valladolid, Spain.

The project is supported by the Circular Bio-based Europe Joint Undertaking and its members. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.

SOCIAL MEDIA

LinkedIn: @REDYSIGN Project
YouTube: @REDYSIGNProject

PRESS CONTACTS

Álvaro Tejado Etayo
REDYSIGN Project Coordinator
Tecnalia Research & Innovation
alvaro.tejado@tecnalia.com

Ana Báscones Ursúa
REDYSIGN Communication Manager
Zabala Innovation
abascones@zabala.es

The project is supported by the Circular Bio-based Europe Joint Undertaking and its members. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.