

VALORLEGNO Project Press Release



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REGIONE DEL VENETO

VALORLEGNO delivers new circular solutions for the Veneto wood value chain

Interim results combine low-value wood valorisation, blockchain traceability, reversible timber construction and biochar-based water treatment

Veneto, Italy – [28/08/2026] – The VALORLEGNO research and development project is delivering new technological solutions to make the Veneto forest and wood value chain more circular, traceable and resource-efficient. Its latest interim results show progress from research and design towards functional prototypes, experimental validation and industrial applications.

The project addresses a set of interconnected challenges affecting European forest-based industries. Climate-related disturbances and bark beetle outbreaks are increasing the availability of low-value wood, while companies face growing requirements relating to resource efficiency, environmental performance, traceability and responsible sourcing. VALORLEGNO approaches these challenges as opportunities for circular innovation, connecting forest resources with digital technologies, sustainable construction and new bio-based materials.

VALORLEGNO is a Multi-Cluster project involving the Regional Innovative Networks ForestaOroVeneto and Veneto Green Cluster. The project is led by Progetto Legno Veneto, representing ForestaOroVeneto, with Green Tech Italy representing Veneto Green Cluster. Companies work alongside research teams from the University of Padua and the University of Verona, creating a multidisciplinary environment in which research results can be tested against real industrial needs.



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The project is supported under PR Veneto FESR 2021–2027, Action 1.1.1, within the regional framework for collaborative research and innovation between companies and research organisations.

Turning low-value wood into new resources

A first area of research is focused on the valorisation of low-value wood and forest by-products, including material affected by extreme weather events and bark beetle outbreaks. Rather than directing these resources exclusively towards low-value energy recovery, VALORLEGNO is investigating higher-value applications consistent with circular bioeconomy principles.

The project has analysed technologies and logistics already emerging at European level and developed 20 technology factsheets for companies, covering innovative pathways including bio-based materials and biochar. Research is also examining the role of long-lived wood products in carbon storage and the opportunities arising from emerging European carbon-removal certification frameworks.

Combining blockchain and satellite data for wood traceability

VALORLEGNO has also moved from conceptual design to the first functional release of WoodSwap, a digital platform based on blockchain technology for recording material flows throughout the wood value chain.

The prototype can manage users and trace the transformation of wood from original forest lots to subsequent batches. Development is continuing with additional territorial and cadastral information.

In parallel, researchers are developing anomaly-detection methods supported by Copernicus satellite imagery. The aim is to compare information recorded in the traceability system with actual forest conditions, increasing the reliability of data and supporting responsible sourcing and due diligence.

The approach is intended not only to improve regulatory compliance but also to strengthen the value of transparent and verifiable territorial origin.

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Designing timber buildings for reversibility

Circularity is also being integrated into construction.

At an experimental site in Vigonza, Veneto, the project has validated dry foundation systems based on chestnut-wood piles through static load tests, horizontal pull tests and dynamic analysis. These systems are being investigated as alternatives to conventional concrete foundations, with the objective of reducing the use of energy-intensive materials and improving reversibility.

The structural design of the prototype building also introduces engineered-wood connections that reduce reliance on conventional metal components and facilitate future disassembly.

A second construction innovation concerns MHM solid-wood walls with inclined layers. Project testing indicates that this configuration can provide high structural performance while potentially reducing both the amount of wood and the structural metal reinforcement required by approximately 20–30%.

From forest residues to PFAS water treatment

One of the project's most distinctive circular pathways is being developed around biochar.

VALORLEGNO has developed an adsorbent material combining a mineral matrix with biochar derived from forest residues. The material is being applied to the design of a filtration system for groundwater contaminated by PFAS.

The circular approach does not end with water treatment. The project foresees the reuse of spent filtering granules as aggregates for construction applications. This creates a cascade pathway in which a forest residue is converted into a functional material, used for environmental remediation and subsequently returned to a second material cycle.

A regional demonstrator with wider European relevance

VALORLEGNO demonstrates how circular innovation can be developed across an entire value chain rather than through isolated technologies. Its activities connect resource valorisation, digital traceability, industrial efficiency, circular construction and advanced materials.

The project will continue through April 2027, when ongoing field trials, life-cycle assessments, industrial validation and final prototype testing will provide further evidence on the technical, environmental and economic performance of the solutions developed.



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The results are intended to support companies in the Veneto wood value chain while also providing technologies, methodologies and demonstrators that may be transferable to other European forest-based regions.

About VALORLEGNO

VALORLEGNO – “Veneto Wood Value Chain: Advanced Systems for Enhancing Production” is a research and development project structured around six complementary areas: valorisation of low-value wood; digital traceability; sustainable timber construction; innovation in industrial processes and machinery; advanced materials and biochar; and research into the relationship between wood and psychophysical well-being.

The project brings together the Regional Innovative Networks ForestaOroVeneto and Veneto Green Cluster, companies and research organisations, including the Universities of Padua and Verona.

VALORLEGNO is supported under PR Veneto FESR 2021–2027 – Action 1.1.1, DGR No. 729 of 26 June 2024.

The **Companies** participating in the project are:

- Artuso Legnami s.r.l. www.artusolegnami.it
- Bigondry s.r.l. www.bigondry.com
- Bozza s.r.l. www.bozzalegnami.it
- Centro Consorzi www.centroconsorzi.it
- Chemicambiente s.r.l. www.chemicambiente.net
- Consorzio CATA www.catasicurezza.it
- Ecomanagement s.r.l. www.eco-management.it
- FBE s.n.c. www.fbecaseinlegno.com
- Galvan Imballaggi s.r.l. www.galvanimballaggi.it
- Joutech s.r.l. www.joutech.com
- Opigeo s.r.l. www.opigeo.eu
- STUDIO GALLIAN s.n.c. www.studiogallian.it
- WOODN Greenwood s.r.l. woodngreenwood.com



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The **Research Organisations** participating in the project are:

- **University of Padua**

- Department of Civil, Environmental and Architectural Engineering
- Department of Industrial Engineering
- Department of Land, Environment, Agriculture and Forestry
- Department of Psychology
- Department of Cultural Heritage

- **University of Verona**

- Department of Computer Science
- Department of Management

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