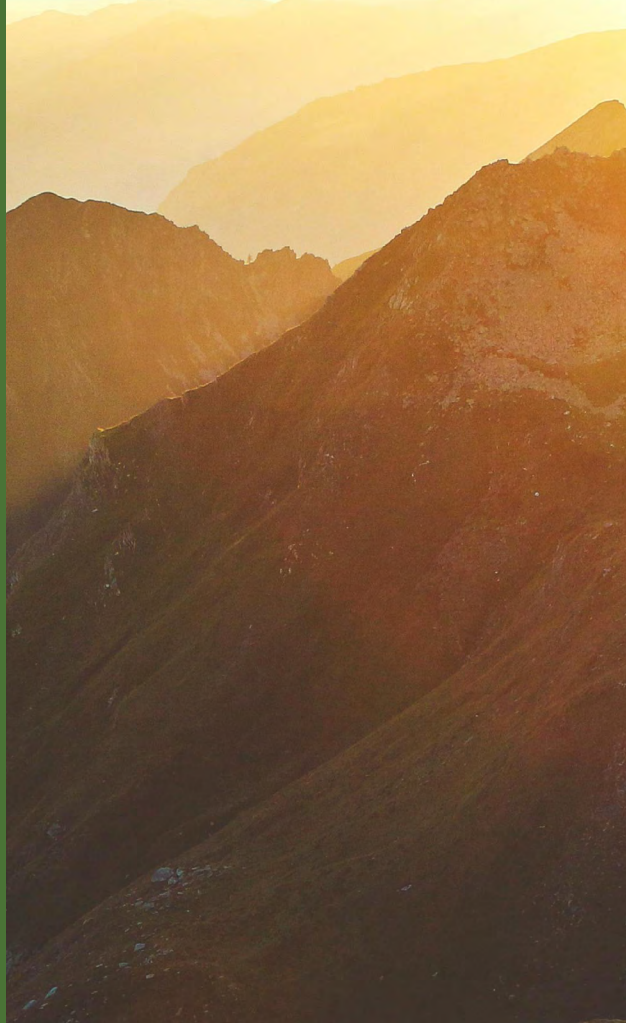
KEY MESSAGES REPORT

SCALING UP FOREST-BASED INNOVATIONS IN EUROPE: OVERCOMING THE VALLEY OF DEATH



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Introduction

The forest bioeconomy holds significant potential to drive the green transition, enhance industrial competitiveness, strengthen strategic autonomy, and promote well-being.

Forest management can enhance terrestrial carbon sinks, address the biodiversity crisis, and produce wood and other bio-based materials necessary to transform Europe's main economic sectors (construction, manufacturing, mobility, chemicals, textiles, packaging) through circular economy principles.

Fulfilling this potential requires innovation. However, despite having a world-class research ecosystem, Europe still faces significant challenges in developing and bringing new bio-based products and services to the market. Bioeconomy innovation requires substantial investments in physical infrastructures and involves high technological and market risks. As a result, a large share of bioeconomy innovations fails to traverse the so-called *"valley of death"*, a critical phase between earlier-stage R&D and commercial viability, where limited public funding and high private investment risk hinder scale-up and commercialisation.

Therefore, the question remains: *How can Europe overcome the most critical barriers hindering the scale-up of the European bioeconomy?* This report tries to answer this question through actionable recommendations for different stakeholder groups.

How to foster innovation and scale up forest bioeconomy

What forest- sector barriers need to be addressed?

While not totally dissimilar from other sectors, the forest-based sector faces specific barriers in piloting and scaling up innovations. Wood and other forest materials are produced in a context of increasing demand for multifunctionality and social scrutiny, through long growth cycles, with significant biophysical risks, regulatory uncertainty, market fragmentation, and a frequent lack of skilled workforce.

Moreover, investments in new forest-based products are characterised by high capital expenditure, illiquidity, technological risks, market volatility, and cost competitiveness challenges. This is due to tough competition with fossil-based alternatives that benefit from established economies of scale, lower costs, stronger advocacy groups and larger research and innovation communities.

To fully unlock the potential of the bioeconomy in Europe, it is important to identify and overcome these critical barriers that prevent bioeconomy innovators from crossing the "*valley of death*".

Recommendations for action

The following recommendations stem from the expert exchanges and stakeholder discussions held during the workshop *Scaling up Forest-based Innovations in Europe – Overcoming the Valley of Death*, held in Brussels on 15 May 2025 – which brought together quadruple helix actors committed to advancing the forest bioeconomy. The event was organised by the European Investment Bank and the European Forest Institute's Bioregions Facility, in collaboration with the ShapingBio project and the Pilots4U initiative with the view to contributing to the revised EU Bioeconomy Strategy.

The recommendations reflect shared insights on how to overcome key barriers to scaling up forest-based innovations. Structured around five key themes, these recommendations aim to guide stakeholder action in driving the green transition of Europe's main economic sectors.

1. Create a supportive financial framework for scale-up
2. Maximise the impact of open-access scaling facilities
3. Build strategic partnerships to catalyse scaling up
4. Ensure coherent regulation to enable market development
5. Invest in capacity building and training to create cross-sectoral profiles


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1. Create a supportive financial framework for scale-up

Forest-based innovations are capital expenditure (CAPEX) intensive, requiring substantial investment in infrastructure and equipment to move from *pilot* projects to *demonstrators*, and eventually to *first-of-a-kind* (FOAK) commercial facilities. Public research and innovation grants, though relatively abundant, typically end at pilot phase, while venture capital firms often hesitate to invest in later-stage scale-up due to high technological and market risks, long return horizons, and a frequent lack of sector-specific expertise.

Recommendations:

1.1. De-risk investments along the complex lab-to-fab process

- Leverage public and/or philanthropic funds to mobilise private capital for investment, encouraging blended finance models.
- Co-design and implement risk-sharing mechanisms – such as guarantees, first-loss capital and milestone-based financing – to incentivise private capital participation in otherwise high-risk pilots, demonstrators and FOAK projects.
- Stimulate the emergence and collaboration of sector-specific investors in the forest-bioeconomy, including *angel investors*, who can play a critical role in early-stage financing and in bridging knowledge gaps through their industry expertise.
- Signal and demonstrate credible long-term commitment through sectoral policy roadmaps, long-term public procurement schemes, and related instruments.
- Foster a shared culture of risk-taking across the innovation ecosystem – including policymakers, public agencies, researchers, entrepreneurs, and investors – by promoting transparency around risk-sharing mechanisms, managing success expectations, celebrating smart failures as learning opportunities, and sharing lessons learned to reduce perceived sectoral risks.

1.2. Streamline the investment pipeline and fill the gaps

- Introduce milestone-based funding programmes that provide support in stages – such as the EIC Accelerator that offers phased funding tied to technical and commercial milestones. This helps to reduce entry barriers due to lower upfront requirements, while providing long-term support to the most impactful innovations to progress along the *lab-to-fab* pathway, and avoiding gaps between development stages.
- Develop coherent eligibility criteria for impact and thematic scope across the different public and private funding instruments – including grants, loans, and equity – to ensure smoother transition between financing stages (i.e. from start-up to scale-up processes). This can prevent deadlocks where promising start-ups are unable to progress due to mismatched requirements.
- Address delays and administrative burdens in public funding through simplified regulations, standardised eligibility criteria, and more agile proposal evaluations. For instance, adopting fast-track procedures for projects aligned with strategic bioeconomy goals could accelerate deployment and reduce time-to-market.

1.3. Increase funding efficiency by fostering business mindsets as early as possible

- Blend early-stage financial instruments, such as research and innovation grants, and pre-seed or seed funding with entrepreneurial training and business mentoring to help innovators develop viable business models from the outset.
- Establish regional bioeconomy hubs that provide financial literacy training, investment readiness support, and matchmaking with investors. These hubs can act as bridges between technical innovators and the financial ecosystem, helping scale-ups navigate funding options and pitch effectively.
- Introduce safeguards to avoid repeated reliance on research grants by setting clear progression criteria and encouraging transition to market-oriented financing. This helps prevent the phenomenon of "*eternally promising*" innovations addicted to research grants that remain stuck in early-stage development without a path to commercialisation.



PC: THANIT / Adobe Stock

2. Maximise the impact of open-access scaling facilities

Europe has a growing network of over 120 open-access pilot and demonstration infrastructures, coordinated through the Pilots4U initiative. Collectively, they cover a wide range of technologies. While the network does not encompass the entire bioeconomy – notably missing coverage for engineered wood products and other construction solutions – it offers a valuable opportunity to reduce the investment needs for piloting and scaling up many bioeconomy technologies. However, these infrastructures remain underutilised due to limited awareness, lack of dedicated funding lines, barriers to cross-border and inter-regional collaboration, and other administrative bottlenecks.

Recommendations:

2.1. Support access to existing scaling infrastructures

- Avoid duplicating pilot and scale-up infrastructures. Instead, prioritise improved accessibility to already existing open-access facilities to optimise resource use and provide cost-efficient, faster, and more flexible paths to market.
- Support start-ups and SMEs to use existing piloting and scaling infrastructures – including those located in other regions or countries – through targeted public grant schemes and mobility support.
- Deepen partnerships with existing infrastructures and their networks to pool resources, secure investments in complementary infrastructure, and upgrade current facilities with state-of-the-art equipment. Encourage private financial actors, such as venture capital firms and corporate investors, to participate in infrastructure access schemes and co-investment models.

2.2. Provide more holistic scaling support, beyond technology

- Scaling programmes such as the EIC Scaling Club can complement technology development by connecting innovators with finance, infrastructure, and expert mentors. This integrated support helps optimise the growth journey for scale-ups, focusing on investment readiness, business development, and deployment strategies.
- Transform technological upscaling infrastructures into fully-fledged support hubs, by integrating entrepreneurship and business support services – such as due diligence, communication and outreach, testing and licencing, access to finance, strategic partnerships and mentoring.



PC: Bio Base Europe Pilot Plant



3. Build strategic partnerships to catalyse scaling up

Strategic partnerships play a crucial role in scaling up forest-based innovations. *Public-private partnerships* can be pivotal for cross-sectoral collaboration, particularly through thematic regional innovation hubs or inter-cluster collaboration platforms. *Private sector innovation partnerships* are equally important, as they connect well-established companies with start-ups and other risk-taking entrepreneurs, helping to validate the market, signal early demand, boost investor confidence, and provide access to piloting infrastructures.

Recommendations:

- Leverage industrial players as co-developers and early *adopters* of bio-based innovations. Matchmaking platforms and innovation brokerage services can facilitate connections between innovators, corporates and regional clusters.
- Promote industry-start-up collaborations through venture *clienting* and related approaches, enabling start-ups to gain early revenues and sector-specific insights. These collaborations allow corporates to test emerging technologies in controlled environments, reducing risk for both sides.
- Strengthen *public-private partnerships* to foster knowledge sharing and collaboration across the main regional sectors related to the bioeconomy – such as forestry, construction, cosmetics, and manufacturing. This can be achieved through bioeconomy innovation hubs or platforms interconnecting existing clusters, research centres and industry associations.

4. Ensure coherent regulation to enable market development

Regulatory complexity, uncertainty, and fragmentation across European countries are often identified as key barriers to the development of the circular bioeconomy. While regulation plays a vital role in ensuring safety and standards, the compliance process often proves lengthy and challenging for start-ups and SMEs to navigate. On the other hand, well-designed regulation can mitigate market failures and create a more even playing field for bio-based and circular solutions in an economy still dominated by fossil fuels and linear models.

Recommendations:

- Systematically identify and address regulatory barriers related to the production, market entry, re-use, and recycling of biomass, bio-based products and side streams across Europe.
- Review and adapt regulatory frameworks to facilitate the adoption of innovative, renewable and bio-based solutions in high-impact sectors, such as construction, cosmetics, or manufacturing. This requires inter-governmental collaboration and support for generating the necessary evidence base to inform policy change.
- Stimulate demand for sustainable products, incorporating bio-based products into green public procurement rules, expanding the use of innovative public procurement mechanisms, setting bio-based material quotas, and exploring green taxation-based mechanisms as a market incentive.
- Reduce administrative burdens wherever possible, accelerate regulatory processes, and provide targeted support to SMEs in navigating regulatory compliance requirements – including advisory services, simplified procedures and digital tools.



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5. Invest in capacity building and training to create cross-sectoral profiles

A robust forest bioeconomy depends not only on technology and capital, but also on skilled and entrepreneurial talent. The shortage of life-science researchers and professionals with business training and appetite, combined with a limited pool of investors and entrepreneurs who fully understand the risks and opportunities of the bioeconomy, hinders innovation and jeopardises successful scale-up.

Recommendations:

- Train researchers and innovators in entrepreneurship to help them better understand social, market and investor expectations. Crucially, they should be equipped with cash flow management skills, as being cash-strapped is one of the main reasons for failure in the path from lab-to-fab.
- Improve European risk culture by training professionals in risk management, helping them to build confidence in when, where, and how much risk to take.
- Increase the knowledge of venture capitalists and other investors, business coaches, and advisors on the ecological and social implications of the bioeconomy, its associated risks, and its technical and market potential to transform key economic sectors.
- Promote the emergence of thematic acceleration and scale-up programmes, specialised venture capital firms and other investment funds, investment forums, and related initiatives, dedicated to forestry and bioeconomy.
- In the longer term, integrate entrepreneurship and innovation training into life-science education, including agriculture and forestry, and promote interdisciplinary curricula that bridge science, business, and policy.

Recommendations for stakeholder groups

Policymakers

- Address regulatory barriers and accelerate regulatory processes.
- Overcome regulatory uncertainties and signal long-term commitment through policy roadmaps.
- Implement innovation-friendly and adaptive regulation.
- Simplify administrative procedures for accessing public funds.
- Design adaptive, long-term and flexible funding programmes, aligned with innovation cycles.
- Provide public funds to facilitate cross-border use of open-access scaling facilities.
- Use public procurement, fiscal incentives and other policy tools to drive market demand.
- Support a streamlined investment pipeline by establishing coherent eligibility criteria across funding instruments.
- Promote blended funding and risk-sharing mechanisms to de-risk private investment.
- Complement research and innovation grants with entrepreneurial training and business support.



Research and Academia

- Support the transition of innovations from lab to market through specialised offices and business mentors.
- Engage early with industry partners to co-develop market-ready innovations.
- Integrate commercialisation and entrepreneurship training into curricula and research projects.
- Provide easy and equitable access to R&D infrastructures.



Corporate and Industry

- Act as early adopters of forest bioeconomy innovations.
- Participate in venture *clienting* programmes to test new technologies.
- Share technological infrastructure and expertise with scale-ups.
- Co-invest in piloting and *first-of-a-kind* facilities.
- Join *public-private partnerships* to foster knowledge sharing and collaboration across sectors.



Investors and Fund managers

- Co-invest alongside public funding instruments.
- Build expertise in the forest-based bioeconomy sector.
- Join sector-specific investor networks for knowledge sharing and co-investment opportunities.
- Treat failures as learning opportunities and share insights across the ecosystem.
- Engage with scaling facilities to identify investable innovations early.



Innovators and SMEs

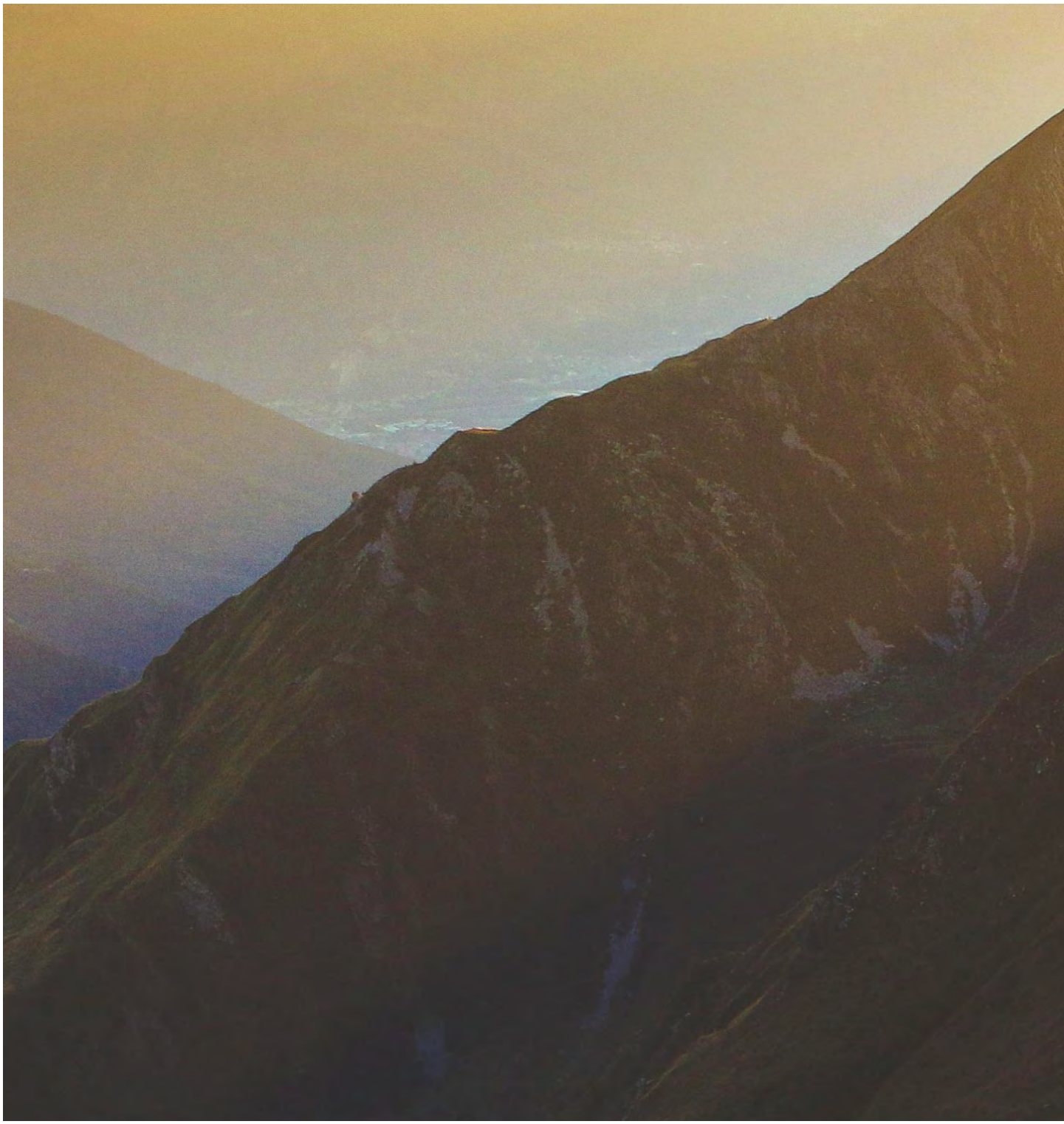
- Combine grants with other funding sources to build robust financial strategies.
- Build diverse teams with entrepreneurial skills and strong cash flow management capabilities.
- Use open-access scaling infrastructures and business mentoring to speed up the transition from *lab-to-fab*.
- Partner with industry leaders to gain market access and validation.
- Focus on commercialisation outcomes and investor readiness.



PC: unDraw Illustrations

Conclusion

To unlock the full potential of the forest-based bioeconomy, Europe must support innovations to bridge the valley of death. A coordinated strategy involving a supportive financial framework, coherent regulation, strategic partnerships, capacity building and better use of existing scaling infrastructures will accelerate the scale-up of bio-based innovations in Europe and drive the green transition of high-impact sectors.



Cases

Explore the case studies presented at the *Scaling up Forest-based Innovation in Europe* workshop, held on 15 May 2025 in Brussels, Belgium. Discover the summaries, download the PowerPoint presentations, and find the contact information of each presenter by visiting the Bioregions Facility website at tr.ee/scalingupreport25.

See below the list of case studies:



- Strong by Form
- Biocon
- Biocastanea
- CMPC Venture Client
- Bio Base Europe Pilot Plant
- Forestry Hub of Catalonia
- PhotonHub & EIC Scaling Club
- Green Angel Ventures Limited
- European Circular Bioeconomy Fund
- Circular Bio-based Europe Joint Undertaking
- Keynote presentations, further reading and watch

PC: Kasuma / Pexels

This document highlights the main discussion points from the *Scaling up Forest-based Innovation in Europe: Overcoming the Valley of Death* workshop, held on 15 May 2025 in Brussels, Belgium. The event followed the earlier *Overcoming Investment Barriers in the Forest Sector* workshop in 2024. Read the previous report at **tr.ee/investbarrierreport24**.

Explore the Key message report *Scaling up Forest-based Innovations in Europe: Overcoming the Valley of Death* or listen to the audio version by visiting **tr.ee/scalingupreport25** or by scanning the QR code. Note that this report does not necessarily reflect the position or opinion of the organisers or the workshop participants.

Both reports have been possible thanks to the support of the Bioregions members. Learn more about them at **bioregions.efi.int/bioregions**.



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