

2025



# Policy recommendations

From islands to ecosystems: coordinating training, outreach, and governance for bioeconomy transitions



# Regions at the heart of the bioeconomy

Europe's transition to a sustainable and circular bioeconomy is not just desirable—it is essential. As we confront the challenges of climate change, resource scarcity, and economic vulnerability, bio-based solutions offer a pathway to long-term resilience and green growth. By replacing fossil-based resources with renewable, bio-based alternatives across key sectors—agriculture, forestry, textiles, construction, food, and packaging—we can build more self-reliant and regionally rooted economies.

However, this transformation is complex. Creating new bio-based value chains requires aligning diverse actors—producers, processors, policymakers, researchers, and citizens—while overcoming technological, financial, and institutional barriers. Fragmentation, skill gaps, and low public awareness continue to slow progress.

The Engage4BIO project addresses this challenge by focusing on the regional level, where local strengths and cooperation can drive innovation. Across five hubs—wood (Austria), sustainable packaging (Finland), food and agriculture (Hungary), blue bioeconomy (Italy), and circular textiles (Netherlands)—a shared pattern emerged: while bio-based potential exists, enabling conditions often fall short.

To unlock this potential, three strategic actions are critical:

- 1. Build Skills and Capacity:** Regions need a workforce equipped with interdisciplinary knowledge that connects bio-based production, circular principles, and governance. This means expanding vocational training, university curricula, and lifelong learning, while linking education with industry needs.
- 2. Strengthen Public Awareness:** The bioeconomy cannot succeed without societal support. Clear communication, targeted campaigns, and community engagement are essential to build understanding, trust, and demand for sustainable, bio-based products.
- 3. Foster Regional Governance:** Effective collaboration across the public sector, business, academia, and civil society is key. Regional governance must become more integrated and aligned with national and EU strategies, enabling cross-sector innovation and long-term investment.

Engage4BIO's experience shows that regional hubs—supported by inclusive governance and clear strategic direction—can lead the transition to bio-based economies. This policy brief presents actionable recommendations to help regions move from potential to practice, ensuring that Europe's green transition is both sustainable and inclusive.

*“To build a circular future, we must start in our regions - with people, ideas, and cooperation.”*



# From experiences to recommendations

The recommendations are based on the practical experiences and insights gained by the Engage4BIO consortium, which worked across five bioeconomy value chains and initiated targeted communication and support activities. The recommendations are grounded in both, an initial analysis and, more importantly, the implementation of 89 activities in five regional hubs. The implementation of these communication, training and support activities were discussed and analysed in a comprehensive cross-fertilisation workshop, in March 2025 in Budapest, where all partners engaged in a collaborative reflection process—sharing lessons learned, identifying common challenges, and highlighting successful approaches.

This resulted in a set of actionable, experience-based recommendations aimed at supporting policy- and decision-makers, pioneers, initiators, regional managers, stakeholders, practitioners, and other key actors in further developing inclusive, resilient, and sustainable bioeconomy systems across Europe. They address stakeholders across all governance levels—from local to national and European—who aim at shaping enabling conditions for sustainable, bio-based value chains. Whether developing strategies, managing programmes, or initiating grassroots action, these actors play a vital role in advancing circular and inclusive regional bioeconomy ecosystems.



# Training & education

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Between September 2024 and July 2025, the five Engage4BIO hubs implemented a variety of educational activities. These activities were co-created with regional partners and therefore tailored to the specific needs and knowledge levels of local stakeholders, resulting in notable differences with regards to target groups, duration, structure, and content.

When discussing, assessing and reflecting our training activities the consortium realised that many of the co-created formats would be beneficial across hubs, value-chains and regions and that most of them also could be adapted quite easily and are therefore scalable across different regional contexts and stakeholder needs. Together, the formats target a range of stakeholders and contribute to foster new competences and in depth understanding for citizens, institutions and key practitioners of the local bio-based sector. With this the educational activities support strengthening regional value chains, and the successful implementation of bio-based innovations. Grounded in hands-on experience with diverse stakeholder groups, these five educational activity categories offer valuable strategies for long-term capacity development in the sustainable bioeconomy.

## Exhibition-based learning for inclusive engagement

Exhibitions and interactive formats, such as Fossil Free Textiles and the Textile Surgery, created accessible spaces for sharing expert knowledge with diverse audiences. They enabled clear communication of complex bioeconomy topics, reduced institutional siloes, and encouraged participation across education, business, and the public. Financial incentives and visibility measures supported replication and regional transferability.

## Modular non-formal adult education

Modular training for SMEs in Austria and teachers in Italy combined theory, hands-on work, and short excursions. Focusing on practical materials and business applications strengthened relevance. The flexible structure supports regional adaptation while maintaining quality. Training materials will be published to enable replication, with local-language delivery ensuring inclusivity and English versions supporting wider uptake.

## Academic credit-based MOOC

The Finnish hub's credit-bearing MOOC on sustainable packaging showed that flexible, case-based online learning effectively builds cross-disciplinary skills. Accessibility features and expert contributions supported broad participation. Long-term sustainability requires cross-disciplinary teaching support, as faculty time remains limited. The model is scalable and adaptable to regional needs.

## Interactive learning formats beginners

Mixed-method formats tested in Hungary, including games and visual activities, made bioeconomy concepts tangible for students and urban residents. They helped connect bioeconomy to familiar themes and worked effectively in both schools and informal settings. These accessible formats raise awareness, support early engagement, and can be scaled and adapted to different groups and contexts.

# Awareness raising

Raising awareness and enhancing outreach proves critical in building societal support for bioeconomy initiatives. Public awareness of bio-based products and sustainable consumption patterns remains limited, which slows down market adoption and investment in bio-based solutions. Developing targeted communication strategies, public campaigns, and co-creation initiatives with local communities will help bridge this knowledge gap. Leveraging media, digital platforms, and educational outreach programmes will further reinforce public understanding and engagement in bioeconomy transitions.

Based on the shared experiences across the Engage4BIO hubs, six core policy recommendations have been identified that can significantly strengthen awareness-raising activities in the field of sustainable bioeconomy. These recommendations draw on the Engage4BIO consortium's experiences, the innovative awareness-raising activities piloted during the project, cross-cutting insights and practical challenges.

## Interdisciplinary and cross-sector collaboration

Collaboration between artists, designers, scientists, educators, influencers, and business actors consistently strengthened outreach impact. Interdisciplinary teams contributed new perspectives, visualisation skills, and access to different communities. Partnerships with design and communication fields helped translate technical concepts into accessible messages, while cooperation with businesses ensured sector relevance. Such collaboration broadens reach and grounds communication in real-world challenges.



## Audience-centred communication

Effective bioeconomy communication requires tailoring messages to specific audiences and adapting language, tone, and channels accordingly. Youth, businesses, and policymakers respond to different narratives, making cultural and professional sensitivity essential. Using multiple platforms—from TikTok and Instagram to exhibitions and Facebook—helps reach diverse groups. Explaining personal relevance and practical benefits strengthens engagement and makes complex concepts more tangible.

## Participatory engagement

Participatory formats, such as textile surgery or mapping workshops, create active involvement rather than one-way communication. These methods foster dialogue, emotional engagement, and hands-on learning, leading to stronger and more memorable connections to bioeconomy themes. Co-creation with schools, artists, influencers, and businesses builds shared ownership and improves relevance. Early expert feedback supports quality and allows iterative refinement.

# Awareness raising

## Integration into existing contexts and events

Embedding awareness activities in established events, museums, festivals, or online platforms enables cost-effective outreach and long-term visibility. This approach reaches audiences in their everyday environments and reduces the need for stand-alone events. Examples include museum collaborations and festival installations attracting people beyond scientific communities. Leveraging existing infrastructures increases impact, avoids duplication, and strengthens contextual relevance.



## Consistency through iteration and repetition

Repeating effective formats—such as exhibitions, school workshops, or influencer collaborations—enhances quality, recognition, and trust. Iteration allows refinement based on feedback and leads to stronger long-term visibility. Successful formats gain momentum as stakeholders request them again or adapt them for new contexts. Consistent repetition embeds messages more firmly than one-off activities.

## Resource-smart strategies and sustainable scaling

Addressing financial and time constraints requires resource-efficient planning, shared costs, and strategic partnerships. Clustering activities, leveraging networks, and involving stakeholders who bring their own resources help extend reach. Smaller in-person events often generate deeper engagement than broad but less interactive formats. Demonstrating impact supports continued investment and enables sustainable scaling.

# Stable & inclusive governance

The Engage4BIO map and gap analysis across five hubs highlighted governance alignment as a central priority. Regional bioeconomy governance remains fragmented, with limited coordination between local, national, and EU levels. Strengthening regional frameworks—supported by cross-sectoral councils—and embedding bioeconomy strategies in regional development plans would enable strategic, mission-oriented action and improve collaboration across the quadruple helix.

Integration along value chains also requires attention, as many initiatives remain isolated. Facilitating clusters and regional bioeconomy hubs can connect resource providers, enterprises, and innovators, supporting joint development and shared resources.

Engage4BIO supported emerging governance structures through three perspectives: coordinating regional innovation ecosystems, guiding innovation processes from vision to application, and integrating resources while building stakeholder capacities. Although EU project funding is time limited and long-term impacts cannot yet be assessed, participant feedback indicates promising potential for sustained effects.

## Comprehensive mapping and gap analysis

Effective governance begins with a clear understanding of regional biobased value chains. Systematic mapping of resources, actors, competencies, and infrastructure, combined with targeted gap analysis, reveals strengths, weaknesses, and missing links. This evidence base helps identify regional unique selling points and ensures that governance interventions align with local opportunities.



## Quadruple helix collaboration

Governance benefits from strong collaboration across government, industry, academia, and civil society. Successful implementation requires mechanisms that support aligned participation, reduce fragmentation, and build trust. Engagement should span entire value chains and include actors beyond the traditional bioeconomy. Shared narratives and neutral, well-moderated spaces help connect diverse stakeholders and anchor global ambitions in locally feasible solutions.

# Stable & inclusive governance

## Mission-oriented flexibility

Shared missions help coordinate governance efforts toward circular and sustainable outcomes, but structures must remain adaptable. Missions should guide strategy without imposing rigid prescriptions. Regular reflection and adjustment in response to changing contexts maintain momentum while enabling innovation and responsiveness.

## Transparent circularity labelling

Clear, intuitive labelling systems help consumers make informed choices and support market shifts toward circularity. Simple rating schemes, applicable across sectors and age groups, improve understanding of lifecycle impacts. Harmonised national or EU-level frameworks enhance comparability, while regulatory and incentive structures encourage producers to align with sustainability goals.

## Best practice communication networks

Showcasing successful initiatives strengthens alignment and offers concrete models for replication. Framing governance missions through shared narratives fosters coordinated action, while documenting and sharing “lighthouse” projects supports knowledge transfer. Communities of practice—especially at municipal level—encourage peer learning and provide actionable examples for wider adoption.

## Coordination mechanisms

Sustained governance requires long-term continuity. Permanent governance boards with key stakeholders should operate beyond individual project cycles to maintain coordination, oversee implementation, and connect education, industry, and policy. Long-term governmental commitment is essential to preserve momentum and strengthen resilient regional networks.



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A thriving bioeconomy depends on joining forces in training, communication, and governance to turn local value chains into engines of sustainable change.

