



Policy Paper

Co-creating national bioeconomy roadmaps and contributions to the EU Bioeconomy Strategy

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Executive Summary

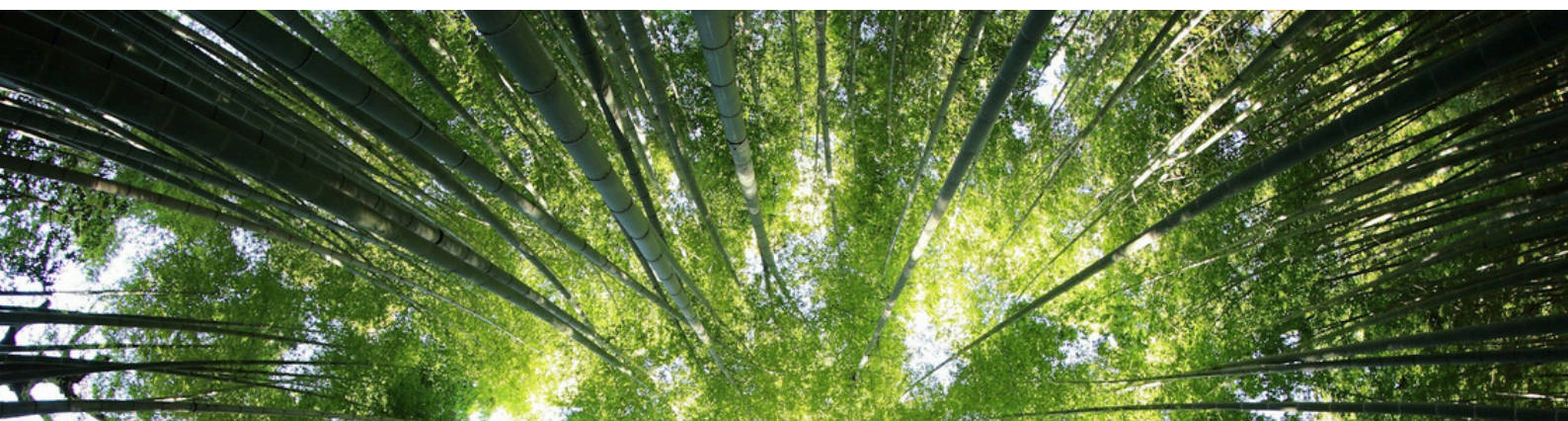
The bioeconomy represents around 5% of the EU's GDP and is poised for major growth as Europe transitions towards a circular and decarbonised economy. The CEE2ACT project plays a key role in supporting this transition by helping Central and Eastern European (CEE) countries harness their bioeconomy potential through innovation, collaboration, and structured governance.

The upcoming Bioeconomy Strategy aims to strengthen long-term competitiveness, ensure sustainable biomass supply, and accelerate the EU's position as a global bioeconomy leader. It must tackle several key challenges: scaling up bio-based innovations, addressing fragmented regulatory frameworks, ensuring sustainable biomass use, and improving investment conditions, especially in CEE countries. Despite their abundant biomass and growing R&D capacity, CEE countries face hurdles such as inconsistent regulation, limited financing, and varying levels of policy integration.

CEE2ACT established ten National Bioeconomy Hubs that co-created tailored national roadmaps outlining visions, strategic goals, and action plans for bioeconomy development. These roadmaps follow a phased implementation approach – short-term (policy frameworks, pilots), medium-term (scaling, training, networks), and long-term (mainstreaming and market integration). Developed in a participatory manner, the roadmaps provide a structured framework for aligning national initiatives with EU priorities and strengthening policy coherence.

The Hubs have proven instrumental in building trust, connecting stakeholders, and influencing policy at national levels. To ensure sustainability beyond CEE2ACT, hubs are pursuing continued collaboration through EU funding, national integration, and peer-to-peer exchanges. Their success underscores the need for institutional continuity, stable financing, and regional cooperation mechanisms to sustain momentum in bioeconomy transition. Based on experience of developing and operating these hubs, the project makes the following recommendations for long-term bioeconomy development:

1. **Institutionalise National Bioeconomy Hubs** – Recognise and fund hubs as permanent national structures for coordination, stakeholder engagement, and innovation.
2. **Integrate Roadmaps into EU Strategy** – Incorporate bottom-up national insights and concept papers into the EU Bioeconomy Strategy to reflect regional diversity and local realities.
3. **Establish EU-National Monitoring Systems** – Create harmonised data systems for tracking biomass availability, sustainability, and bioeconomy performance.
4. **Improve Investment Conditions in CEE** – Provide stable policy frameworks and incentives to de-risk bioeconomy investments and unlock the region's biomass potential.



Introduction

The bioeconomy is an important part of Europe's economy, representing around 5% of EU GDP, but set to become even more important as bio-based innovation sectors continue to expand. The main challenge these sectors lies in scaling up innovations and enhancing circularity along entire value chains. The EU's current focus is on strengthening competitiveness while advancing decarbonisation and ensuring economic security.

By strengthening innovation capacities and fostering connections between bioeconomy stakeholders and policy makers from Central, Eastern and Western Europe, the CEE2ACT project is helping countries in Central and Eastern Europe (CEE) to unlock their untapped bioeconomy potential. Through **place-based innovations and bottom-up approaches**, the project supports CEE's integration in the wider EU bioeconomy. Achieving this requires structured bioeconomy governance, as well as policy synergies and coordination across ministries, to ensure that regulations facilitate, rather than hinder, the sustainable use of biomass and accelerate the bioeconomy transition.

This policy paper provides good practices, guidance and policy recommendations to support the development of bioeconomy strategies and roadmaps at national level, based on CEE2ACT project outcomes. Drawing on extensive consultations, national dialogues and the project's regional experience, CEE2ACT also contributes with insights and recommendations for the forthcoming EU Bioeconomy Strategy.

European policy context and current challenges

The European Commission is preparing a new EU Bioeconomy Strategy to be released by the end of 2025. The revised strategy will focus on long-term competitiveness, investment security and sustainable biomass supply, while promoting resource efficiency and circularity. The strategy will aim to accelerate the EU bioeconomy and position the EU as a global leader in bio-based materials, biomanufacturing and biotechnology.

To achieve this, the strategy will propose actions to unlock the potential of bioeconomy innovations, stimulate demand for bio-based products, support bioeconomy startups, entrepreneurs and new business models, and generate green jobs and growth. It will also ensure that biomass use remains within ecological boundaries, contributing to the EU's decarbonisation goals.



This strategy is aligned with key European initiatives such as the [Competitiveness Compass](#), [Clean Industrial Deal](#), [Ocean Pact](#), [Life Sciences Strategy](#), [Vision for Agriculture and Food](#), the [Circular Economy Act](#) (to be released in 2026), and the [Startup and Scaleup Strategy](#). As part of this broader framework, the [Vision for agriculture and food](#) (2025) aims at reinforcing the role of the bioeconomy in transforming agriculture, forestry and food systems, focusing on reducing dependencies, unlocking new value streams and driving rural job creation, ensuring these sectors contribute to a more sustainable and resilient economy.

The new Bioeconomy Strategy must address major drivers of resource consumption and CO₂ emissions, such as **construction, food, and transport**, where bio-based innovations can play a transformative role. By using food waste, agricultural residues and forest by-products, these bio-based innovations will be crucial in reducing reliance on non-renewable resources and supporting the shift toward circular and low-carbon practices. However, the large-scale adoption of these innovations comes with challenges.

These challenges are exemplified in the agrifood sector. Side streams from the agrifood industry offer significant potential for valorisation, however, limited access to capital, research and infrastructure, as well as the dispersed availability of exploitable biomass, constrain scale-up and commercial deployment of bio-based value chains. Therefore, the need to ensure a consistent and affordable supply of waste makes upcycling operations of residual biomass and side streams particularly challenging.

Moreover, tailored measures and incentives are needed to tackle structural barriers to market development such as uneven playing field, capital gaps, and fragmented regulatory frameworks. Other key factors that influence the scalability of bio-based innovation include economic viability due to high production costs and limited market adoption, the high impact on biodiversity and ecosystem services, and limited or geographically dispersed bio-waste.

To unlock the full potential of the EU Bioeconomy, it will be crucial to deploy national bioeconomies in Central and Eastern European countries.

The region has great potential: abundant and high-quality biomass, and growing R&D investment, with increasing SMEs participation. Increased biomass demand, which could be provided by CEE countries, could further expand these opportunities.

Challenges in the CEE region include different understandings of 'bioeconomy' and difficulties in engaging investors, acquiring financing and derisking investments. It can also be difficult to overcome slow and inconsistent regulatory processes and to navigate different policies and regulations between countries, hindering replication.



CEE2ACT bottom-up approach and co-creation process to develop bioeconomy roadmaps

Within CEE2ACT, ten National Bioeconomy Hubs in CEE countries are developing strategic roadmaps that advance emerging strategies towards official national bioeconomy strategies. These processes combine results and knowledge generated during the co-creational process of the national hubs' work. The ten national bioeconomy roadmaps contain vision setting and strategic goals, as well as concrete action plans that further specify actions and measures to be undertaken to achieve the vision of the roadmap. These may include actions that foster innovation, circular business models, skills development, and stronger networks between industry, research, and public authorities.

A timeline for implementation is also included and defined in the roadmaps. Short term actions may include preparation of policy frameworks, awareness campaigns, and pilots. Medium term may include scaling of solutions, training programmes, and cross-sector platforms, and long-term actions are meant to ensure mainstreaming of bio-based solutions and full market integration. Furthermore, potential financing is defined and may include EU funds, national programmes, private investments, and mechanisms such as green bonds. Roadmaps also define monitoring and evaluation measures. Progress will be tracked through following key indicators (e.g. bioeconomy's GDP share, jobs, renewable energy, patents, and biomass productivity). Risks must also be defined, and risk management is conducted through tailored actions, e.g., governance, digital tools, and cross-country collaboration.

Overall, the main aim of the roadmap is to provide a collectively agreed perspective on how the national hubs consider bioeconomy to be developed in each CEE country that is also embedded in data and results from the CEE2ACT project. The roadmap conveys the perceptions of the project and national hub members with the aim of supporting national strategy development.

Key steps of the co-creation process

The CEE2ACT roadmaps were developed through multi-stage and iterative processes in CEE countries, combining desk research, expert contributions, knowledge transfer and exchange workshops, and broad stakeholder engagement through the Hubs. The first steps were taken by using developments and insights from national and European bioeconomy progress as benchmarks. Furthermore, insights from other EU-funded projects such as [BOOST4BIOEAST](#), [BioEcoN](#), [NBSOIL](#), [BIOBec](#), [BIOECO-UP](#) were utilised.



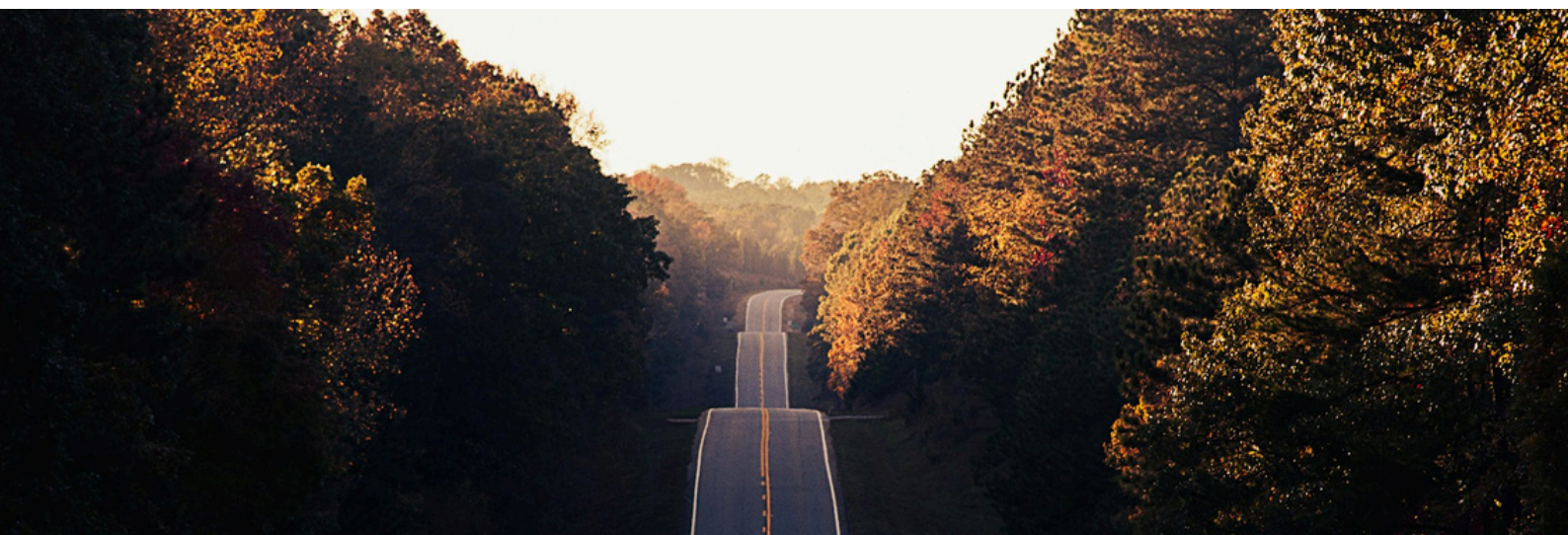
The roadmap process in CEE2ACT proceeded in three main phases. First, the initial phase of roadmap development involved the project partners developing background materials, definitions, co-creation methodologies, and workshop contents, drawing also from BIOEASTsUP concept papers. For example, a roadmap template and a workshop outline (i.e., the iterative third national workshops conducted by the CEE2ACT project) were designed, and internal training and Q&A sessions were conducted. Second, in the preparation phase of the roadmap ten national workshops were organised in target countries in Spring 2025, followed by drafting and review by National Bioeconomy Hub members, with feedback integrated into drafts.

Furthermore, a SWOT analysis was used to systemically analyse the current state of the work on roadmap construction. Results of the SWOT analysis present ways of overcoming barriers and supporting strengths in each CEE country. In practice, the analysis helps the target countries to identify key enablers (strengths and opportunities), and possible barriers (weaknesses and threats) of the current roadmaps.

The draft roadmaps were circulated among Hub experts for targeted feedback until finalised in October 2025. In practice, the roadmap methodology includes: (1) knowledge base consolidation, (2) expert-driven inputs, (3) iterative consultations, (4) progressive validation, and (5) final integration and dissemination at EU and national levels. Each national bioeconomy hub developed a tailored process based on their own needs and current status of national bioeconomy development, and therefore, the process and the role of the roadmap in the national strategy development may differ considering national priorities and contexts.

Ensuring the long-term impact of the National Bioeconomy Roadmaps

The National Bioeconomy Hubs have been central to CEE2ACT's stakeholder engagement approach, providing inclusive, bottom-up platforms that connect government, academia, industry, and civil society. Across the ten Central and Eastern European countries, hubs have successfully mapped and mobilised diverse actors, often building on existing networks and expanding strategically. As the Greek coordinator explained: *"It's impossible to engage everyone from the start, so we begin with the 'low-hanging fruit' – stakeholders already open to collaboration, such as ministries or sectoral actors. Good mapping from the outset allows us to start small and gradually expand to others over time."*



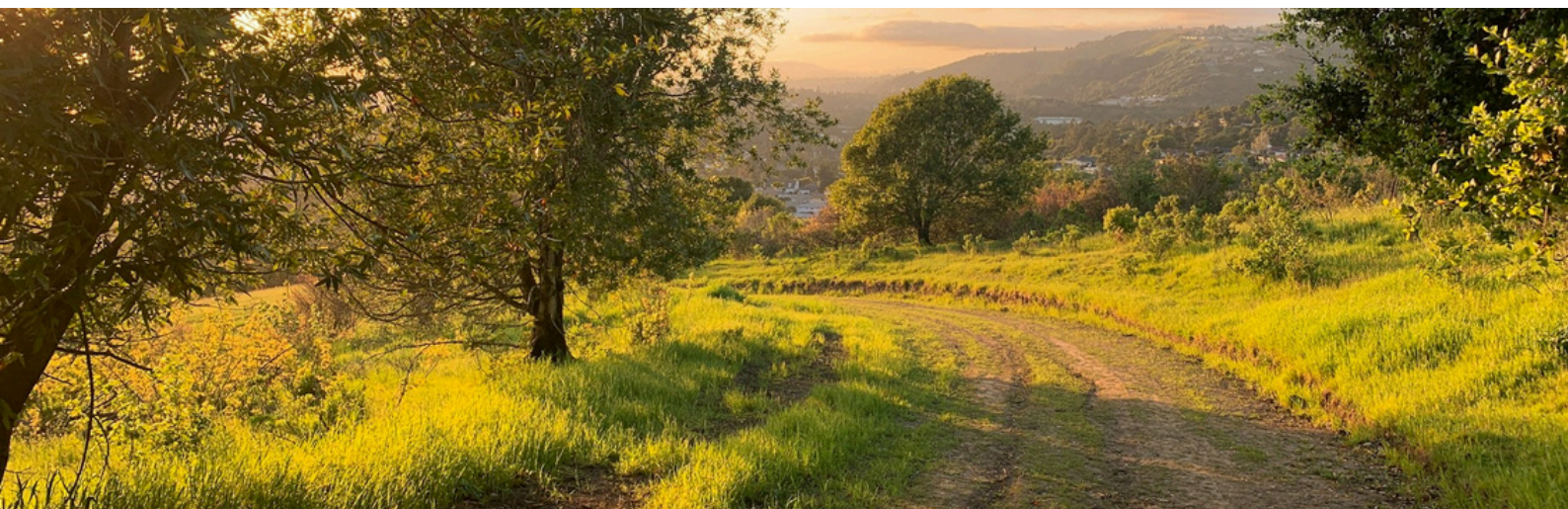
Good practices include tailoring content to national contexts, combining in-person meetings for trust-building with hybrid formats for broader participation, and embedding hubs within trusted structures. Romanian experience reinforces this point: *“In-person meetings are the most relevant to our activities because they are highly interactive. Participants can openly share opinions on the topics under discussion, not just receive information.”* These approaches have improved stakeholder motivation, strengthened relationships with public authorities, and enhanced the credibility of the hubs.

The hubs have delivered tangible results in policy influence, networking, and awareness-raising. In Serbia, *“through our efforts, the bioeconomy concept was included for the first time in an official national document - a new circular economy programme developed by the Ministry of Environmental Protection. This milestone was the result of joint work by all hub members.”* In Poland, conference participation grew significantly: *“Two years ago the national conference had around fifty-sixty participants. This year it attracted one hundred and fifty participants and ten business partners.”*

All hubs have outlined plans to continue beyond the project’s lifetime. Strategies vary from maintaining informal alliances to integrating activities into established national or regional structures, securing funding through Horizon Europe proposals, and formalising collaboration via Memoranda of Understanding. In Slovenia, *“by including key organisations in coordination, we have secured the hub’s longevity for at least three years and are now discussing its integration into a national circular economy centre funded until 2029.”* These forward-looking plans, combined with alignment to national strategies and EU priorities, position the hubs as enduring mechanisms for driving the bioeconomy transition locally.

The CEE2ACT project points toward the essential role of national hubs as a means for bottom-up engagement for bioeconomy development. By nature, hubs can offer space for and facilitate inclusive dialogues, streamline collaboration, improve information access, and manage relationships among a variety of stakeholder groups - some vital functions needing to be further endorsed when promoting and advancing a circular bioeconomy in Europe.

The ten National Bioeconomy Hubs showcase the importance of trust building among local stakeholders, pragmatic collaboration that leads to concrete thematic projects. CEE2ACT has managed to leverage existing initiatives and platforms to establish multi-level connections that link bioeconomy to local, regional, and national priorities. A continuity beyond the lifetime of CEE2ACT is indispensable in supporting national governments to update and adopt national bioeconomy strategies that will guide bioeconomy implementation in their countries.



Securing stable financing for the running of the national hubs, promoting continuous peer-to-peer exchanges on bioeconomy best practices among CEE countries, through a facilitated cross-pollination of ideas among EU-funded initiatives and matchmaking events with financiers, as well as establishing joint initiatives within and between CEE countries are activities that the ten CEE2ACT hub coordinators viewed as vital for Europe's transition toward the circular bioeconomy. All these factors need to be considered in future initiatives endorsed by the EU.

Future impacts of bioeconomy development

The development of the bioeconomy can bring socio-economic benefits such as job creation, rural revitalisation, and environmental restoration. Establishing a national strategy will enhance coordination, clarify responsibilities, and improve implementation and monitoring. Market incentives and funding mechanisms are essential to stimulate innovation, support businesses and especially start-ups, and foster collaboration between science and business.

Continued stakeholder engagement can ensure inclusivity and long-term commitment, while expanding education and training can build human capital and support sector-wide transition. Together, these efforts can create a robust foundation for national bioeconomy advancement, aligning national priorities with EU and global sustainability goals.

Key lessons learned based on the SWOT analysis

In order to advance the bioeconomy there is a need for a unified national strategy prepared together with key stakeholders to overcome fragmented efforts and unclear coordination. Stable and well-defined funding sources are essential, as financial uncertainty can stall even the most promising areas and business opportunities in bioeconomy.

Clear roles and coordination among stakeholders are vital to avoid overlaps and inefficiencies. It is also important that strategic goals must be measurable and regularly monitored and updated to remain effective.



Education and outreach programs, while valuable, need broader reach and practical, localised training to engage relevant target groups. Digital tools possess potential but can be underutilised and need better access and user training. Finally, implementation timelines in bioeconomy roadmap must be realistic and aligned with actual capacities to avoid delays.

Policy recommendations and contributions to the new EU Bioeconomy Strategy

1. Institutionalise national bioeconomy Hubs

The CEE2ACT project has demonstrated that national bioeconomy hubs can be a bottom-up driving force of national level bioeconomy. The Hubs provide a platform for dialogue between industry, research, policy makers and society. It is important to ensure the continuity of these Hubs as beacons of the bioeconomy and to expand them and utilise them to their best. Recognition in EU and national strategies would allow these hubs to continue facilitating stakeholder engagement, knowledge transfer and co-creation of policies. Future EU funded projects can build on existing Hubs instead of developing their own, maintaining a single and effective national bioeconomy Hub.

2. Integrate bioeconomy roadmaps and concept papers into the EU strategy

Through the CEE2ACT project, but also through other previous projects and ongoing projects, countless studies, concept papers and roadmaps have been developed at a national level, reflecting bottom-up priorities. These works should be studied and integrated into the EU bioeconomy strategy to reflect not only EU wide but regional and national level contexts, opportunities and challenges.

3. Implement an EU wide, regional and national bioeconomy monitoring systems

Reliable data on the availability, quality and sustainable use of biomass is a prerequisite for the bioeconomy. Member States should establish national biomass monitoring systems and mapping systems that feed into EU level mapping and monitoring systems to make sure data is harmonised across the EU. These systems could identify opportunities and challenges, avoid resource competition and help make better strategic decisions on biomass allocation.

4. Create favourable investment conditions for the bioeconomy transition in the CEE region

In the CEE region bioeconomy investment or transitioning into bioeconomy has higher perceived risks due to regulatory uncertainty, limited national level strategies and long-term goals, and a weaker innovation ecosystem. At the national level, governments should establish stable strategies and frameworks and a favourable legal context that provide incentives for bioeconomy stakeholders to transition to bioeconomy thus unlocking the CEE's biomass potential.



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