POSITION PAPER

June 2025

Cefic proposals for the Bioeconomy Strategy Update

SUMMARY

The bioeconomy holds significant importance for both the European Union and its Chemical Industry. The EU is currently a leader in implementing bio-based solutions, and it is imperative to establish the right framework conditions to maintain this position. Scaling up bio-based chemistry and biomanufacturing presents an opportunity to improve competitiveness, achieve circularity, long-term resilience, and net-zero objectives, increase resource security, and support environmental, social, and economic sustainability.

The revision of the Bioeconomy Strategy should be mainstreamed into all forthcoming legislations and should prioritise actionable and implementable measures for developing an industrial bioeconomy, fostering the international competitiveness and resilience of the EU while adhering to planetary boundaries, and serve both as an industrial and competitiveness strategy.

Besides the already announced main aims of the strategy, we call for further consideration of the following.

- **Developing new value chains and new market opportunities by creating efficient demand.** This includes incorporating measures to support bioeconomy industrialisation, fostering demand for biomass-derived products in product-specific legislation, aiding the transformation of existing industrial assets, and establishing high-performing bioeconomy clusters.
- **Creating agile and coherent regulations and government policy.** The strategy should establish a regulatory framework that facilitates the scaling-up and industrial implementation of the bioeconomy, streamlining and harmonising initiatives, promoting cross-border cooperation, and establishing a single coordination body within the EU Commission.
- **Promoting sustainable sourcing of and access to biomass.** Ensuring access to all types of biobased feedstocks through sustainability criteria, recognising synergies across various sectors, supporting innovative management practices in agriculture and forestry, including "Agritech", maximising the valorisation of by-products and wastes, while regenerating the health of agroecosystems, and reducing import duties via Free Trade Agreements (FTAs).
- **Enabling innovations to move from the lab to the market.** Continuing and increasing funding for CBE-JU, de-risking the scaling up of new bio-based innovations and optimising funding synergies, strengthening open-access infrastructures, and fostering the transformative potential of New Genomic Techniques (NGTs), enabling the development of precise microbial production systems.
- **Ensuring the long-term competitiveness of the European Chemical industry.** European chemical companies need a compelling business case and improved competitive conditions with other sectors and international competitors to achieve the growth potential offered by the Bioeconomy.

European Chemical Industry Council - Cefic aisbl
Rue Belliard 40 b.15 B-1040 Brussels Belgium
Tel. +32.2.436.93.00 mail@cefic.be www.cefic.org
EU Transparency Register n° 64879142323-90

Introduction

Biomass-derived chemicals[1] cover a vast array of molecules, ranging from platform chemicals and intermediates to fine and specialty chemicals, plastics, and polymers, and are produced with different technologies[2] such as chemical synthesis, thermochemical conversion, biological conversion, and extraction. They have diverse applications, such as home and personal care products, agrochemicals, pharmaceuticals, textiles, and packaging. They are therefore essential to different sectors, and the scale-up of biobased chemistry and biomanufacturing represents a strategic opportunity for the EU chemical industry to enhance its competitiveness, reach its circularity ambitions and the net-zero targets, increase resource security and diversify supply, and pursue sustainability – environmental, social, and economic [3].

However, many biomass-derived chemicals are still produced on a small scale, and the challenge is to expand their use [4] [5] and grow the bioeconomy by moving beyond research and development into wider markets. European chemical companies need a strong business case and an increased level playing field with other sectors and global competitors to achieve that. Therefore, it is essential to advance the bioeconomy strategy as both an industrial and competitiveness strategy, positioning it as the foundation for the industrial deployment of the bioeconomy within the EU.

To this end, mainstreaming the bioeconomy strategy into all the upcoming legislation announced in the Clean Industrial Deal (such as the Circular Economy Act, the Industrial Decarbonisation Act, the Biotech Act, and the European Competitiveness Fund), creating a market for biomass-derived chemicals and materials, ensuring access to biomass feedstock, and having the appropriate regulatory and financial framework to be truly innovative and internationally competitive are key measures that can foster the international competitiveness and resilience of the European Union whilst respecting planetary boundaries.

In this context, Cefic expresses its support for the European Commission's upcoming proposal for a new European Bioeconomy Strategy and the introduction of a Circular Economy Act and a Biotech Act. These long-anticipated initiatives are a response to the Letta and Draghi Reports and aim to advance the objectives outlined in the Competitiveness Compass, the Clean Industrial Deal, the RePowerEU Plan, the European Climate Law, and the Vision for Agriculture and Food.

This document presents key policy measures to further develop the bioeconomy, providing suggestions for an effective update of the Bioeconomy strategy.

Cefic proposal for the Bioeconomy Strategy update

The 2018 strategy outlined several actions, although they were only partially implemented. Building on the objectives of that strategy and the already announced main aims, the updated version should prioritise actionable and implementable measures for developing an industrial bioeconomy. These measures should be based on five key pillars[6]:

[1] Biomass-derived chemicals are chemicals wholly or partly derived from biomass, encompassing bio-based and bio-attributed chemicals.

[2] Santosh O. Ramchuran, Frances O'Brien, Nonwabiso Dube, Veshara Ramdas - An overview of green processes and technologies, biobased chemicals and products for industrial applications - Current opinion in Green and Sustainable Chemistry, Volume 41, 2023

[3] Further details can be found in Annex 1.

[4] Raphael Rodrigues Philippini et. Al - Agroindustrial Byproducts for the Generation of Biobased Products: Alternatives for Sustainable Biorefineries - Front. Energy Res., 29 July 2020, Sec. Bioenergy and Biofuels, Volume 8 - 2020

[5] Francisco G. Calvo-Flores, Francisco J. Martin Martinez - Biorefineries: Achievements and challenges for a bio-based economy - Front. Chem., 10 November 2022 - Sec. Green and Sustainable Chemistry Volume 10

[6] An additional list of measures for each pillar can be found in Annex 1.

- Developing new value chains and new market opportunities by creating efficient demand
- Creating agile and coherent regulations and government policy to support innovation and realise the opportunities brought by the bioeconomy
- Promoting sustainable sourcing of and access to biomass to support scale-up and industrialisation
- Enabling innovations to move from the lab to the market
- Ensuring the long-term competitiveness of the European Chemical industry

Developing new value chains and new market opportunities by creating efficient demand

The development of new value chains, either valorising different feedstocks or introducing new and/or improved chemicals, and the introduction of demand creation measures are essential components of an industry-focused strategy. This addresses the needs of EU biomass-derived businesses as they scale up or convert their business model to a biomass-derived one, aiming to become world-leading firms. This issue is pressing; significant investments are needed, however, there appears to be a reluctance in the market to absorb the green premium independently.

We therefore recommend:

- Favor the bioeconomy industrialisation by considering the incorporation into product-specific legislation (such as PPWR, ELVR, etc.), and sector-specific legislation addressing the biomass-derived value chains, of measures such as:
    - Dedicated targets for biomass-derived products, not competing with other circular carbon sources (recycled and carbon capture). Such targets should aim to increase the use of biomass as feedstock in products (e.g., in plastic packaging as foreseen in the Packaging & Packaging Waste Regulation - PPWR) and should consider the contribution of both bio-based[7] and bio-attributed[8] products, thus allowing all technologies to contribute to the transition towards circular carbon sources. Targets should be set at a realistic level based on a comprehensive impact assessment, considering (sustainable) biomass availability, technical and economic feasibility of biomass conversion to chemicals and products, market development, existing national legislations, and broader socio-economic factors.
    - Incentivise the use of biodegradable and compostable plastics, where it proves to be valuable (e.g., where the latter are highly food-soiled), beneficial from an LCA perspective, and consistent with circular economy principles and aspirations derived from other legislative initiatives (infrastructure requirements, additional sorting, contamination issues for recyclers)[9].
    - Support selected uses of biodegradable and compostable products for specific applications.
    - Minimum Green Public Procurement (GPP) requirements for biomass-derived products in public procurement, similar to what already exists in the US with the Biopreferred program[10].
    - Other market pull measures[11], such as reduced VAT rates, for biomass-derived products.

[7] Bio-based products are those for which the share of bio-based content can be measured via established radiocarbon methods (^{14}C tracing). These may be fully or partially bio-based.

[8] Bio-attributed products are those for which the use of bio-based feedstocks, substituting part of the raw material needed in the manufacturing process, has been attributed to the product via the mass balance method and is certified according to a third-party certification scheme.

[9] The use of biodegradable and compostable plastics should be targeted to applications where other plastics would get so contaminated with compostable matter that they can no longer be recycled, and incineration would be the fate of the plastic and its compostable contamination otherwise.

[10] BioPreferred website – Last viewed April 2025

[11] An extensive list of market pull measures can be found in the related Cefic's position paper - Cefic priorities on market pull measures for low-carbon and circular products - cefic.

- Enabling all business models, including bio-based and bio-attributed, to support the increase of circular carbon[12] sources used by the chemical industry. This includes making incentives available to both bio-based and bio-attributed products and businesses. Additionally, establish a unified term "biomass-derived" to cover both categories across policies.
- Finalising the revision of the PEF/PCF calculation methods and claims to accurately account for biogenic carbon (-1/+1 approach).
- Establishing high-performing bioeconomy clusters throughout the European Union to enable companies across the value chain to collaborate, thereby enhancing opportunities for entering both international and domestic markets and reducing costs.

Creating agile and coherent regulations and government policy to support innovation and realise the opportunities brought by the bioeconomy

The strategy should establish a regulatory framework that facilitates the creation of a viable business case and the scaling-up and industrial implementation of the bioeconomy, while ensuring alignment across various departments and current or forthcoming legislation. The strengthening of the harmonisation and coordination efforts should occur at different levels:

- Within the European Commission. The bioeconomy encompasses various interconnected sectors, ranging from agriculture to industry, involving different actors such as primary producers, technology developers, production and manufacturing companies, and end-users, which span numerous policy areas. The EU Commission should focus on streamlining and harmonising upcoming and existing initiatives related to the Bioeconomy. These initiatives include the review of the EU's Bioeconomy Strategy, the Circular Economy Act, the Biotech Act, the Industrial Decarbonisation Accelerator Act, and the forthcoming Life Sciences strategy. Establishing a single coordination body, such as a 'Chief Bioeconomy & Biotechnology Officer', within the Commission is recommended.
- With the stakeholders. The chemical industry is prepared to collaborate with the EU Commission on advancing the bioeconomy. This collaboration could be facilitated by establishing an industry advisory group dedicated to the bioeconomy. The group's mandate would include working with the EU Commission, offering technical expertise, and providing informed guidance on regulations and policies impacting the bioeconomy's development[13].
- Among national and local authorities:
    - To enhance the overall effectiveness of Europe's bioeconomy, coordination should strengthen complementarities between EU-level instruments, such as the EU Bioeconomy strategy, and Member States' strategies. The European Commission should act as a facilitator, enabling knowledge exchange, aligning support instruments, and fostering mutual learning to create a predictable, transparent, and consistent regulatory environment for business growth.
    - Acknowledge the significance of regions in the bioeconomy by promoting their collaboration within macro-areas or clusters. Regions are strategically positioned to develop value chains and facilitate industrial symbiosis.
    - Support cross-border, transnational, and interregional cooperation to promote biomass-derived value chains among neighbouring regions, creating value at the EU level.

[12] Circular carbon is defined as all carbon sources that are not derived from a virgin fossil feedstock and, which are currently present in the biosphere, atmosphere and anthroposphere. This includes biomass, waste and recycled materials, CO_2 captured from industrial processes or from the atmosphere, even if they originally come from a fossil source.

[13] See the Technology council for advanced materials as a potential reference for such a group. Technology Council for Advanced Materials holds Inaugural Meeting - European Commission – Last visit June 2025

Promoting sustainable sourcing of biomass to support scale-up

In Europe, in 2023, only 5.5% of the carbon demand for the chemical and derived industries was covered by biomass, while globally, that accounts for about 10% [14] [15]. Looking at specific sectors, e.g., plastics, only 1% derives from biobased feedstock, accounting for just 0.029% of the global biomass demand in 2021[16]. Various studies[17] have indicated that the share of carbon derived from biomass to support the chemical industry is likely to increase in the pursuit of net-zero by 2050. Though the extent of this increase is debated due to the long-term nature of the forecast, sufficient and affordable sustainable biomass must be available and accessible to the chemical industry at competitive prices to enable the scale-up of biomass-derived chemical production. The bioeconomy strategy should aim to ensure access to all types of biobased feedstocks through:

- Synergies related to the utilisation of biomass across different sectors
    - Processing in integrated facilities, such as biorefineries, significantly enhances the efficiency of biomass use and maximises its valorisation.
    - Fostering the use of Agritech innovative technologies, including the use of New Genomic Techniques (NGTs), should be fostered and supported, as they are a key instrument that can deliver on the EU bioeconomy objectives by providing higher yields and higher sustainability for crop cultivation.
    - Biomass-derived value chains often stem from agricultural and forestry resources; hence, the implementation of innovative management practices in these sectors is essential for effective climate mitigation and the regeneration of agroecosystems' health. The Common Agricultural Policy (CAP) plays a critical role in achieving this goal and should be integrally connected to the bioeconomy strategy.
- Recognition of the role of primary biomass sources, such as starch, sugars, and natural oils, which are essential feedstocks today and will continue to be significant in the future, even with the advancement of lignocellulosic and waste-based value chains. Therefore, they should be regarded as part of the solution portfolio to enhance the biomass supply for industrial use.
- Establishing a clear set of sustainability criteria for biomass sourcing that apply to all biomass regardless of its final use is essential. It is the first step to reach a level playing field for all sectors using biomass, whether for energy or material uses. Cefic supports using sustainability criteria to define the boundaries for sustainable biomass sourcing, in coherence with Article 29 (2-7) of Directive (EU) 2018/2001 (RED III)[18].
- Ensuring that biomass is used according to its highest efficiency, following a synergic approach in line with the cascading principle as delineated in the Cefic paper on biomass-derived plastics[19].
- Trade policy and raw material policies should support access to EU-compliant (sustainable sourcing, production, EUDR, ...) bio-based raw materials, including sugar, bioethanol, and palm (kernel) oil, and address barriers to their import by reducing import duties, e.g., via Free Trade Agreements (FTAs).

---

[14] (Carus et al. 2025); Carus, M., Porc, O., vom Berg, C., Kempen, M., Schier, F. and Tandetzki, J.: Is there enough biomass to defossilise the chemicals and derived materials sector by 2050. nova-Institut GmbH (Ed.), Hürth, Germany, 2025-02

[15] The lower figure in the EU is a consequence of the easy access to cheap fossil feedstocks from which Europe benefited until recently and can also be a consequence of tariffs and import barriers on readily available bio-based feedstocks—such as sugar, starches, bioethanol, and organic oils.

[16] Pia Skoczinski, Michael Carus, Gillian Tweddle, Pauline Ruiz, Nicolas Hark, Ann Zhang, Doris de Guzman, Jan Ravenstijn, Harald Käb and Achim Raschka (March 2024) - *Biomass utilization worldwide*. Biomass Utilisation Worldwide (PNG) | Renewable Carbon Publications (renewable-carbon.eu) – Last viewed April 2025

[17] Among others: «The Carbon Managers » report by Cefic, Page 97-98 - Ibid 9

[18] Directive (EU) 2018/2001 "on the promotion of the use of energy from renewable sources"

[19] https://cefic.org/app/uploads/2025/03/Cefic-position-on-biomass-derived-plastics.pdf - Last viewed May 2025

Enabling innovations to move from the lab to the market

Innovation across bioeconomy sectors has the potential to enhance competitiveness and increase the number of biomass-derived products available in the market, thereby contributing to EU growth. Nonetheless, especially in sectors such as chemicals and packaging, bioeconomy-related innovations frequently do not reach industrial scale, which is necessary for making biomass-derived products competitive.

To tackle this aspect, the EU should:

- Build on CBE-JU's success by continuing it and increasing its funding, for example by using the recently announced competitiveness fund and updating the scope of the joint undertaking by dedicating it to high-TRL projects (> TRL 6) and extending it to bio-attributed products, thereby also facilitating the conversion of existing industrial assets.
- Open funding programs (e.g., Innovation Fund) of higher TRL Level (TRL 9) for investment in demonstration and first-of-its-kind production plants of innovative biomanufacturing solutions.
- Optimise synergies of the bioeconomy funding across the Common Agricultural Policy (CAP) and the Common Fisheries Policy (CFP), and across instruments such as the European Maritime and Fisheries and Aquaculture Fund (EMFAF) and Horizon Europe.
- De-risk the scaling up of new bio-based innovations by further strengthening and investing in (existing) open-access infrastructures. To do so, it is recommended to:
    - Evaluate which value chains (e.g., lignin, ...) are covered by existing open-access testing infrastructures and evaluate the necessary interventions to optimise the network of infrastructure. Such evaluation could build on existing studies on the matter, like Pilots4u.
    - Further strengthen and invest in existing open-access infrastructures to keep them state-of-the-art and increase their flexibility.
    - Investigate how to make open-access testing facilities accessible to all European companies/SMEs, wherever they are located, even if they are using regional funding.
- Ensure a more coordinated approach to research and innovation funding. Synchronize funding at different levels (regional, national,…).
- Ensure better and strategic mobility of funding across Europe, especially on a cross-regional basis, by extending the remit of existing regional funding mechanisms.
- NGTs are not only relevant for breeding sustainable crops, but they are also crucial for the industrial bioeconomy. Here, they enable the development of precise microbial production systems that can replace or enhance conventional processes, recycle waste, and efficiently produce new biomass-derived products. A forward-looking bioeconomy strategy should take into account the transformative potential of NGTs across the biotechnological innovation spectrum.

Ensuring the long-term competitiveness of the European Chemical Industry

For European chemical companies to achieve the growth potential offered by the bioeconomy, there needs to be a compelling business case and improved competitive conditions with other sectors and international competitors. While the EU is still a leader in deploying bio-based solutions[20], it must act swiftly to create the right framework conditions to maintain its leadership and prevent becoming reliant on third countries for biomass-derived chemicals.

[20] EU Bioeconomy strategy progress report – JRC – 2022

Some of the measures that can address this aspect are listed below, and are integrating the proposals listed under the previous 4 pillars. Further details about Cefic's view on how to ensure the competitiveness of the EU Chemical Industry are covered in other dedicated papers (see e.g., [21] [22]).

- Recognising the importance of gradually transforming existing industrial assets to enhance EU competitiveness involves providing incentives for this transition, with a particular focus on developing integrated processing facilities. Transforming current facilities enables industries to utilise their existing infrastructure, making it more cost-effective than constructing new green-field facilities, and facilitates the gradual implementation of new technologies. Integration offers reduced investment risks, optimised resource utilisation, and the creation of synergies across various sectors and value chains.
- Market pull measures can only work if production-side support has been implemented (e.g., competitive energy prices, access to feedstock); if so, the demand side contributes to the return on investment [23].
- Any circular carbon content requirement should also apply to imported products and be enforceable: a credible verification system must be in place to guarantee any claims related to imports [24].

For more information please contact:

Marco Pellegrini - Bioeconomy Manager

mpe@cefic.be

About Cefic

Cefic, the European Chemical Industry Council, is the forum of large, medium and small chemical companies across Europe, accounting for 1.2 million jobs and 13% of world chemicals production.

[21] Cefic View Paper on Raw Material Access - Cefic – Last visit June 2025

[22] Cefic Views - Towards a simpler, faster and more supportive legislative framework to help restore Europe's competitiveness - Cefic – Last visit June 2025

[23] See Cefic detailed views on Market Pull: https://cefic.org/library-item/cefic-views-on-market-pull/ - Last visit Hune 20205

[24] See Cefic views on circular carbon feedstocks: https://cefic.org/resources/cefic-views-on-circular-carbon-feedstock/ - Last visit June 2025

Annex 1 – Additional measures

The use of biomass for the production of chemicals is key to supporting the transition towards net-zero in 2050, as shown in Cefic's iC2050 model[25] and by other stakeholders [26].

Countries like China and India have already prioritised and heavily invested in the bioeconomy, the former in its latest Five-Year Plan, resulting in rapid growth of the biomass-derived industries, supported by a strong government investment (more than 280 billion € spent in science & technology, approximately equal to 2.2-2.4% of GDP [27] [28]) and a supportive policy environment[29], and the latter in its BioRide scheme[30] announcing the ambition to be a 300 billion US$ Bioeconomy by 2030.

Biomass-derived chemicals, as highlighted in the introduction, represent a strategic opportunity for the EU chemical industry to:

- **Enhance its competitiveness.** The bioeconomy fosters innovation in biomanufacturing, biotechnologies, and process optimisation, thereby enabling the development of new, high-value products and processes, and provides economic opportunities by tapping into the significant growth potential of biobased products and materials.
- **Reach its circularity ambitions and the net-zero targets.** As already highlighted in Cefic's iC2050 study[31], switching to circular carbon[32] sources, including bio-based feedstocks, is part of the solutions to reduce the GHG footprint of chemical production.
- **Increase resource security and diversify supply.** Biological resources are usually more widely and more uniformly geographically distributed when compared to other feedstocks; moreover, a wide range of biological materials can be used.
- **Become more sustainable not only from an environmental point of view, but also from a social and economic one.** For example, the bioeconomy creates new economic opportunities in rural and coastal areas and, by being a highly innovative sector, fosters a culture of continuous learning and skill development, enhancing the knowledge base and capabilities of the workforce.

However, several challenges must be overcome if the use of biomass in the chemical industry and the uptake of biomass-derived chemicals are to increase:

- Higher cost than fossil-based alternatives
- New infrastructure and large, high-risk capital investments
- Concerns around feedstock availability and sustainability
- Feedstock heterogeneity, seasonality, and distribution
- Low TRL technologies
- Challenges scaling up and deploying new technologies

---

[25] «The Carbon Managers » report by Cefic, Page 97-98

[26] (Carus et al. 2025); Carus, M., Porc, O., vom Berg, C., Kempen, M., Schier, F. and Tandetzki, J.: Is there enough biomass to defossilise the chemicals and derived materials sector by 2050. nova-Institut GmbH (Ed.), Hürth, Germany, 2025-02

[27] Xu Zhang, Cuihuan Zhao, Ming-Wei Shao, Yi-Ling Chen, Puyuan Liu, Guo-Qiang Chen - The roadmap of bioeconomy in China – Engineering Biology – November 2022- 6(4)

[28] Benelux Chamber of commerce in China website - China's Bioeconomy Development and Implications for Benelux Businesses | BenCham Shanghai – Last viewed April 2025

[29] Rolf D. Schmid, Xin Xiong – Biotech in China 2021, at the beginning of the 14th five-year period ("145") – Applied microbiology and biotechnology – Volume 105 (3971-3985)

[30] Press Release:Press Information Bureau

[31] «The Carbon Managers » report by Cefic - 2025

[32] Circular carbon is defined as all carbon sources that are not derived from a virgin fossil feedstock and, which are currently present in the biosphere, atmosphere and anthroposphere. This includes biomass, waste and recycled materials, CO_2 captured from industrial processes or from the atmosphere, even if they originally come from a fossil source.

- Lack of an appropriately skilled workforce
- Lack of awareness of the benefits of biomass-derived chemicals, biotechnologies, and biomanufacturing
- Lack of policy support (for example, on market development)
- Outdated and unclear regulatory framework

Further details on addressing these challenges under the proposed bioeconomy strategy pillars are reported below.

Developing new value chains and new market opportunities by creating efficient demand

- Assess the feasibility of augmenting the Knowledge Centre for Bioeconomy webpage or merging it with the recently established biotech and biomanufacturing hub, creating a unified bioeconomy web-based platform. This integration aims to facilitate businesses in navigating the regulatory system by providing pertinent EU regulatory information in an accessible manner. Additionally, this platform should enable businesses and developers of biomass-derived products to submit inquiries regarding specific products and receive prompt, coordinated responses from relevant agencies. These responses should include practicable information and, when appropriate, informal guidance on the regulatory review process.
- Perform a comprehensive gap analysis of bio clusters, comparing them to established high-performing chemical clusters. Utilising this analysis, formulate shared best practices that organizations can adopt to facilitate the commercialisation of biomass-derived products.
- Facilitate cross-border, transnational, and interregional cooperation to foster biomass-derived value chains among adjacent regions, generating value at the EU level. These collaborations should consider local biomass availability and existing industrial operations.

Creating agile and coherent regulations and government policy to support and realise the opportunities brought by the bioeconomy

- Cross-check existing regulations and thoroughly analyse any potential overlaps or conflicting requirements to ensure compliance.
    - Identify relevant regulations and guidance documents within the jurisdiction of the different DGs and EU agencies that can be streamlined to ensure that biomass-derived products/chemicals are not overregulated.
    - Such a review should be timely executed, within a clear timeframe. (e.g., within 180 days).
    - Address policy and legislative gaps to tackle the fragmentation in bioeconomy-related policies across member states and the lack of cohesive legislative frameworks for biomass-derived products.
- Streamline, accelerate, and harmonise the EU's marketing authorisation procedures so that innovations can be efficiently and swiftly placed on the market.
- Avoid that whole environmental/activity permits need to be revised when introducing a new product; simplified measures or solely notification systems should be used instead. For example, in case a biomass-derived manufacturing activity already holds an activity permit in one of the member states, a simplified approval procedure could be devised.
- Assess the feasibility of fast-tracking environmental permits.
- Offer assistance to public authorities in expediting the permit-granting process. This assistance can be provided through financial resources or skill development initiatives.
- Align EU policies with international standards wherever feasible to ensure that European innovation remains globally competitive.
- Bioeconomy activities should have specific NACE sub-codes to distinguish them from traditional sectors. This formal recognition would promote these activities and boost demand for biomass-derived

products, as suggested in a note from various Member States to the Council [33]. Identifying the sectors that use renewable resources to address environmental issues is crucial. Without these codes, the sector's environmental and social values are not properly recognised, and it cannot be adequately valued within the EU Commission policies.

- Develop a detailed action plan to improve consumer engagement. This plan should effectively communicate the nature of biotechnology, biomanufacturing, and biomass-derived materials, highlight their benefits, and demonstrate how they can address EU climate challenges. Additionally, it should aim to build public confidence and acceptance of these technologies and products.

The 2022 bioeconomy strategy progress report and the Union of Skills EC Communication [34], identify a gap between current workforce skills and those required. It is necessary to support various talent needs, including reskilling, skills development, competency profiles, and labour market requirements. The bioeconomy should be regarded as a strategic sector and benefit from the announced measures. Additionally:

- Support for programs offering on-the-job training and experiential learning opportunities should be provided.
- In collaboration with member states, the inclusion of bioeconomy principles already at the high school level should be promoted, and orientation on bioeconomy already at the end of secondary school should be provided.
- A European Minimum framework of competencies in bioeconomy to serve as a basis for the creation of EU-harmonised university-level courses should be created.
- Under the key deliverable "Future-oriented European Qualifications":
    - Specialised, specific European masters, and European professional master degrees focused on bioeconomy by leveraging the European university alliances should be created
    - The bioeconomy should be included as a key technological domain to be considered for the development of innovative joint European study programmes.

Promoting sustainable sourcing of biomass to support scale-up

- As indicated in a note from the Council[35], the biomass potential in certain EU regions represents an underutilised resource for the EU bioeconomy. Consequently, developing territorial biomass strategies, in conjunction with regional bioeconomy strategies, could enhance resource availability through the optimisation of value chains.
- Ensure compliance with the Waste Framework Directive (WFD) and the Landfill Directive (LD) to expedite the attainment of their objectives (Article 22 and Article 10 of WFD, and Article 5 of LD), thereby preventing biowaste from being disposed of in landfills or incinerated. Despite setting ambitious targets, the European Commission's early warning report published in 2023[36] , along with

[33] Information from the Austrian, Finnish, Slovenian and Swedish delegations, supported by the Bulgarian, Czech, Estonian, Hungarian, Irish, Italian, Latvian, Lithuanian, Polish, Portuguese, Romanian and Slovak delegations - The bioeconomy must stand out at the core of the next European Commission's work programme - 9098/1/24 REV 1 - 26 April 2024

[34] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS - The Union of Skills - COM(2025) 90 – 05.03.2025

[35] Future opportunities for the bioeconomy – Background document to Agriculture and fisheries council - 16244/24 – 28.11.2024

[36] REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS identifying Member States at risk of not meeting the 2025 preparing for re-use and recycling target for municipal waste, the 2025 recycling target for packaging waste and the 2035 municipal waste landfilling reduction target - COM(2023) 304 final – 08.06.2023

reports from various associations[37], indicates that substantial progress is still required. A limited number of EU regions and Member States have initiated bio-waste collection and treatment programs, resulting in low levels of bio-waste capture, including compostable plastics, across Europe. Only seven Member States out of the twenty-seven achieved the 2020 recycling targets, and only nine are on track to meet the 2025 recycling targets. This would help close biological resource loops and maximise the valorisation of wastes.

- An analysis of the existing supply chain pathways should be conducted, and suggestions for enhancing efficiency should be provided. EU-funded initiatives that address the issue of fragmented and disorganised local biomass markets are available and could be utilised (see [38] [39]).
- A study about the necessity of additional transportation infrastructure in function of biomass availability and the location of industry should be executed. Extensive mapping of resources, (potential) production facilities, transportation routes, etc., is already available at the EU level. See, among others, the JRC biomass report[40], the mapping of biorefineries[41], and the mapping of rail/road infrastructure part of TEN/t[42]. The mapping of biomass should be integrated with other existing maps to gather additional valuable information and inform policy.
- Support the transformation of biomass resources management by developing best practices. These should take a sectoral approach (forestry, agriculture, ...).
- The common agricultural policy (CAP) Eco-schemes, and CAP strategic plans should be linked to bioeconomy as well. Thematic approaches in CAP plans in the next review of the CAP strategy should also include bioeconomy-related aspects.
- Agriculture should not be seen anymore as mere cultivation, but instead as a sector that contributes to an integrated EU bioeconomy.

[37] Enzo Favoino, Michele Giavini - Bio-waste generation in the EU: Current capture levels and future potential – BIC 2024

[38] AGROinLOG - Demonstration of innovative integrated biomass logistics centres for the Agro-industry sector in Europe | EU CAP Network – Last viewed April 2025

[39] Sustainable Regional Supply Chains for Woody Bioenergy | BioRES | Projekt | Fact Sheet | H2020 | CORDIS | European Commission – Last viewed April 2025

[40] Avitabile et. Al (2023) – Biomass production, supply, uses and flows in the EU – European Commission - Joint Research Centre

[41] Parisi, C. (2018). Research Brief: Biorefineries distribution in the EU. European Commission - Joint Research Centre

[42] TENtec Map Viewers - Explore the TEN-T Network | European Transport Infrastructure – Last viewed April 2025