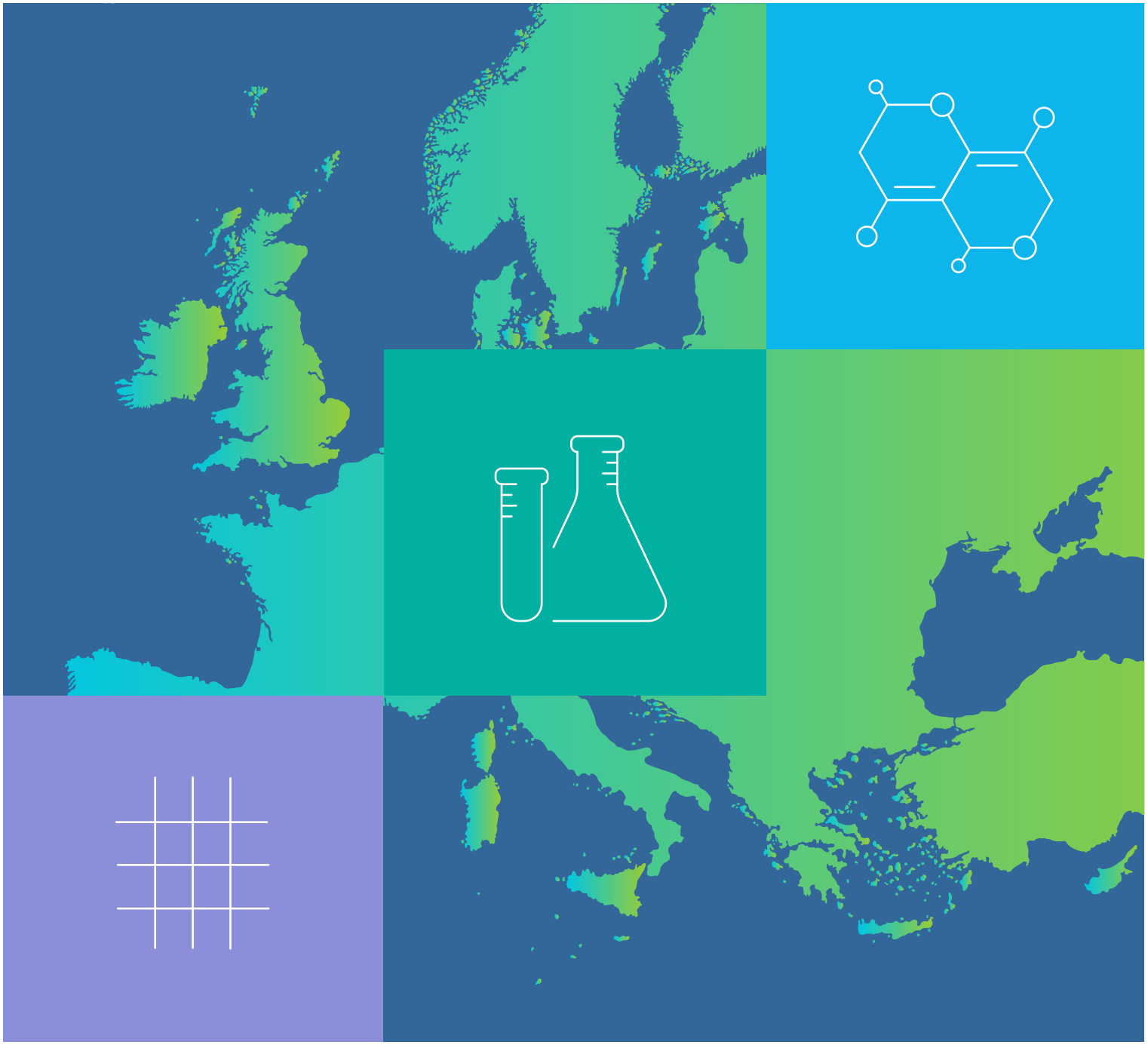
Bio·based Industries Consortium

Lead Markets for Europe's Bioeconomy

Policy Recommendations



Introduction
Creating predictable demand for bio-based products in Europe

This report is the second deliverable of the BIC task forces (TF) on lead-markets and assesses potential policy measures to create predictable demand, de-risk first movers and support the scale up of bio-based products in Europe. The report complements the first deliverable of the BIC TF, a report on identifying potential lead markets in Europe.

In general, our position is that if EU Initiatives such as the Biotech Act II are to deliver on the vision laid out in the EU Bioeconomy strategy, policy measures are needed to create predictable lead markets and create the economic conditions that make bio-based solutions competitive:

- This should include a package of market pull measures to accelerate defossilization and to fully unlock the potential of biotech and biomanufacturing 'Made in Europe' as a driver of innovation, strategic autonomy and industrial competitiveness.
- Short-term transition costs must be balanced against the potential cost impact of inaction on the green and industrial transition in long-term.
- Producers of bio-based products lack offtake option whilst end-consumer companies mention the limited availability of suitable bio-based products.

[1] BIC report on dual use, see here.

BIC Task Forces

- Bio-based polymers, bio-based fibre-packaging materials
- Bio-based chemicals
- Textiles from bio-based fibres and fabrics

BIC Deliverables

- D1: Lead Markets for Europe's Bioeconomy / Overview and Key Findings
  Lead Markets for Europe's Bioeconomy / Detailed Market Assessment
- D2: Lead Markets for Europe's Bioeconomy / Policy Recommendations

General considerations

Whilst a high-level ambition to defossilize can be beneficial for the creation of bio-based lead markets in the long-term, specific end-markets for bio-based products require specific market pull measure instruments in the short-term.

For example, Green Public Procurement is a suitable market pull instrument in the construction or dual-use[1] sector, in other sectors like packaging a market pull instrument like targeted bio-based content requirements or harmonised EPR requirements is more suitable. In addition, considering the type of application and/or product category as well the timeframe to implement policy-measures, both incentives to reward front-runners already investing in and commercialising bio-based products, and mandatory requirements to create long-term market pull for bio-based products, should be considered; alongside regulatory simplification and faster, more predictable approval pathways where relevant.

While this report focusses on regulatory incentives for lead-markets, other framework conditions remain important. This includes enablers for creating market pull (see Chapter. Enablers), the sustainable supply of biomass as well as access to financing and funding. (see Chapter. Framework Conditions).

Policy Measures to Create Lead Markets

Assessing market-pull instruments to accelerate adoption

The following section provides an overview of possible market-pull measures, assessing pros and cons of each option against four criteria and provides a rating for each criterion.

We scored the criteria on a scale from high to low, based on aggregated feedback from members collected through a survey launched by the BIC Secretariat. The assessments and ratings reflect the collective expertise and practical experience of BIC members. **It will require further investigation on how to apply policy-measures outlined below for a specific end-market.**

4 Assessment Criteria

1 Scale and impact
What volumes or market share can the measure achieve? Does it trigger investment e.g. capacity built, scalability, R&D spending?

2 Fairness and level playing field
Are obligations distributed symmetrically? What are possible competitive distortions, free-riding, or disproportionate burden on SMEs or specific value-chain actors?

3 Feasability
How quickly can it be deployed? Can it be adapted over time? What is the cost impact — to industry, to public budgets?

4 Implementation & enforceability
Does it require new legislation or can it build on existing frameworks? How is compliance monitored and enforcement being secured?

1. Content targets and quotas

To increase demand, binding mandates or targets are lacking for bio-based materials and bio-based chemicals in Europe. Instead, there are only non-binding targets e.g.

- to have at least 20% of the carbon used in the chemical and plastic products from sustainable non-fossil sources by 2030 (EU Communication on Sustainable Carbon Cycles).
- "to move away from fossil materials, it is vital to mandate the use of new raw material sources like bio-based materials"(EU Clean Industrial Deal)

Targets & Quotas

Criteria / Policy measure	Targets & quotas	BIC Rating
Scale and impact	• Binding mandates create strong, predictable demand signals and high investment leverage. • Already applied in EU renewables markets e.g RED for bioenergy. • Directly displaces fossil carbon at scale, with high GHG reduction potential.	●●●●●
Fairness and level playing field	• Creates uniform obligations across the value chain. • Targets offer simplicity but very low downstream signals • End-product targets allow sectoral differentiation but raise administrative burden. • Risk of carbon leakage if not paired with trade measures.	●●●●○
Feasibility, flexibility and cost-effectiveness	• Takes time to be deploy. • Cost implications for industry during scale-up. • Flexibility depends heavily on design choices (phase-in periods, tradeable credits, sector-specific pathways), including suitable assessment methodologies e.g. PEF	●●●○○
Implementation & enforceability	• Can build on existing legislation (RED, PPWR, ESPR) and up-coming legislative proposals like the Biotech Act II • Requires robust monitoring, verification and chain-of-custody systems e.g. C14 or mass balance. • Enforcement complexity varies depending on base-level vs end-product scope.	●●●●○

BIC Rating Scale ●●○○○ Medium-Low ●●●○○ Medium ●●●●○ Medium-High ●●●●● High

Targeted minimum bio-based content requirements can represent an effective instrument to create demand at scale and provide the long-term investment visibility needed to develop integrated bio-based value chains within the EU. By establishing clear and predictable requirements, such targets can help address the current market failure whereby the environmental benefits of bio-based products are not sufficiently reflected in market demand.

The most appropriate point to introduce targets in the value chain will depend on the specific market and application, considering complementarity between different EU regulations and targets e.g. recycled content, and including renewability and appropriate sustainability criteria as a requirement in the Ecodesign for Sustainable Products Regulation.

Targets should take into account the contribution of bio-based products and be set at realistic and achievable levels, based on comprehensive impact assessments. These assessments should consider sustainable biomass availability, the technical and economic feasibility of biomass conversion into chemicals and products, market development, existing national legislation, and broader socio-economic impacts.

This should therefore be determined based on further impact assessments, including impact potential, administrative complexity, demand signals for downstream markets, exposure to carbon leakage risks, cost burden and implications e.g. end-product manufacturers, global competitiveness and potential integration into sectoral legislation.

2. Fiscal Measures

Fiscal measures can help to narrow the price gap between bio-based and fossil-based products. Instruments include reduced VAT rates, excise tax exemptions, or accelerated depreciation for investments in bio-based production capacity, which can have a complementary effect to other market-pull measures. The EU VAT Directive already allows member states to apply reduced rates to certain environmentally beneficial goods, and several member states have used this for solar panels, repair services, and second-hand goods. Applied to bio-based products, such measures could stimulate consumer demand by mitigating green premiums and improve the business cases for producers.

Fiscal Measures

Criteria / Policy measure	Fiscal measures (reduced VAT, tax exemptions)	BIC Rating
Scale and impact	• Price incentives can help bridge the "green premium" gap but do not guarantee volumes or investment certainty. • Weaker demand signal than binding mandates. • Impact depends on price elasticity and size of the tax differential.	●●●○○
Fairness and level playing field	• Benefits all market participants in principle • Does not impose obligations on fossil-based producers — incentive-only approach. • Risk of benefiting imports equally unless conditioned e.g. on EU sustainability criteria.	●●●○○
Feasibility, flexibility and cost-effectiveness	• Can be implemented relatively quickly and adjusted over time. Flexible across sectors. • However, fiscal cost to member state budgets. VAT reform requires EU-level coordination (VAT Directive). • Precedent exists for reduced rates on repair services, second-hand goods, and solar panels.	●●●●○
Implementation & enforceability	• Can adapt existing tax frameworks, but requires clear definitions of eligible bio-based products (e.g. via EN 16785-1 standard). • VAT is largely a national competence — risk of fragmentation across member states. • Needs EU-level harmonisation to avoid single market distortions.	●●●○○

BIC Rating Scale ●●○○○ Medium-Low ●●●○○ Medium ●●●●○ Medium-High ●●●●● High

3. Extended Producer Responsibility (EPR)

Extended Producer Responsibility requires producers to finance and organise the collection, sorting, and recycling of products they place on the market, thereby internalising end-of-life costs. An opportunity for bio-based products lies in eco-modulation — adjusting EPR fees so that products with higher bio-based content, better recyclability profile, or lower carbon footprint pay reduced contributions. EPR modulated fees should also consider circular material use in alignment with ISO 590020 and Global Circularity Protocol. At the same time, EPR frameworks can support the fair introduction and integration of bio-based materials into the European market.

The Packaging and Packaging Waste Regulation (PPWR), which entered into force in February 2025 and applies from August 2026, mandates eco-modulated fees for packaging across the EU. Under the EPR, the extension of this principle to other product categories e.g. textiles, electronics is currently discussed.

Extended Producer Responsibility (EPR)

Criteria / Policy measure	Extended Producer Responsibility (EPR)	BIC Rating
Scale and impact	• Indirect effect on bio-based uptake via eco-modulated fees rewarding sustainable design. • Primarily addresses end-of-life costs rather than driving upstream demand. • Impact limited to product categories already covered by EPR schemes.	●●●○○
Fairness and level playing field	• Applies uniformly to all producers placing products on the end-market. • Internalises end-of-life externalities on a polluter-pays basis. • Eco-modulation of fees can explicitly reward bio-based content, creating a level playing field between fossil- and bio-based producers.	●●●●●
Feasibility, flexibility and cost-effectiveness	• Well-established schemes already exist for packaging, WEEE, and batteries. • PPWR mandates eco-modulation of fees from August 2026. • Can be extended to new product groups • Relatively cost-effective: industry self-manages through PROs.	●●●●○
Implementation & enforceability	• Can builds on existing infrastructure (PROs, national registers). • PPWR and Waste Framework Directive already mandate EPR expansion and fee modulation. • Enforcement mechanisms are proven and operational across all EU member states. • Low need for new legislation.	●●●●●

BIC Rating Scale ●●○○○ Medium-Low ●●●○○ Medium ●●●●○ Medium-High ●●●●● High

4. Green Public Procurement (GPP)

Green Public Procurement leverages the purchasing power of public authorities to create lead markets for bio-based products.
By embedding bio-based content and/or carbon footprint into tender specifications, public buyers can drive demand in sectors such as construction e.g. via a share of bio-based materials in new residential buildings, and or a requirement for public buyers to meet recycled and

Green Public Procurement (GPP)

Criteria / Policy measure	Green Public Procurement (GPP)	BIC Rating
Scale and impact	• Public procurement represents ~14% of EU GDP — significant but limited to public sector demand. • Can create lead markets and demonstrate viability e.g. construction, dual-use. • Bio-based Europe Alliance aims to aggregate €10bn demand by 2030.	●●●○○
Fairness and level playing field	• Only benefits suppliers competing for public contracts. • May favour larger firms able to meet complex procurement criteria. • Geographically uneven uptake depending on member state commitment. • SME access can be a challenge.	●●○○○
Feasibility, flexibility and cost-effectiveness	• Can be implemented through existing (national) procurement frameworks. • Sector-specific criteria can be tailored (e.g. bio-based construction materials). • Short-to-medium-term measure. • Requires capacity building for (local) procurement officers and willingness to accept a "green premium."	●●●●○
Implementation & enforceability	• Can adapt existing EU Public Procurement Directives (revision forthcoming). • EU GPP criteria and bio-based procurement guidance already exist. • However, implementation is fragmented across member states, regions, and municipalities. • Monitoring and compliance are decentralised.	●●●○○

bio-based content thresholds. Scaling GPP to the EU level through mandatory criteria in the forthcoming revision of the Public Procurement Directives would provide a significant and immediate demand signal, while also demonstrating the technical and economic viability of bio-based solutions to private-sector buyers.

Horizontal policy-measures

This report focuses on end-market and/or product category specific policy measures. We acknowledge the option of horizontal measures like double-side actions, contracts for difference as well as levies and certificate system. Those and other horizontal measures will be assessed following the publication of this report.

Enablers

The foundations needed to make market-pull measures work

Market-pull policy measures can only achieve their intended effect if they are underpinned by a set of cross-cutting enablers that allows to identify, verify, and differentiate bio-based products from their fossil-based alternatives.

A common terminology, measurement tools, and other mechanisms are enablers to validate targets, apply fiscal incentives correctly, modulate EPR fees meaningfully and to apply procurement criteria at local level.

Getting the enabler framework right is a precondition for effective market-pull and to promote a regenerative and sustainable bio-based economy.

[2] Cf. BIC position on sustainability criteria

1. Standards

Standards establish a common technical language across the single market. A number of bio-based standards already exists e.g. determining bio-based content like EN 16785. A comprehensive and up-to-date standards framework can enable that each policy instrument applies the same definition e.g. of what counts as "bio-based".

2. Sustainability criteria

To fully support the developments of lead markets through targets, mandates or (financial) incentives, establishing sustainability criteria for using agricultural biomass in the production of biomaterials and biochemicals is important e.g. on the basis of European directives or regulations, including RED III Art 29 and other sustainability certification schemes (see below).

Regarding the sustainability of forest biomass, there is already an extensive regulatory framework at both EU and national level (including RED, EUDR, Nature Directives etc.), some of which is still in the early stages of implementation.[2]

3. NACE codes

NACE codes are an enabler as it they provide the statistical infrastructure used to classify economic activities and products. The current NACE classification system largely does not distinguish between bio-based and fossil-based production within the same product category e.g. bio-based and a petrochemical chemicals can fall under the same code. To monitor market development and measure the effectiveness of policy interventions the development of specific bio-based NACE codes should be considered.

4. Credible validation and verification methodologies

Credible validation and verification methodologies like C14 for bio-based content or mass balance for bio-attributed are enablers to underpin e.g. targets and quotas, whilst keeping the administrative burden for low and ensuring that imports meet equivalent requirements.

In addition, the EU Product Environmental Footprint (PEF) Methodology should account for the benefits of biogenic carbon e.g. via the -1/+1 approach. This should include establishing a science-based definition of non-fossil virgin carbon and its consistent use in EU legislation. This definition should recognise biogenic carbon.

5. Voluntary and national certification scheme

Voluntary schemes and national certification schemes are an important enabler to ensure that bio-based products are sustainably produced by verifying that they comply with the EU sustainability criteria e.g. under the Renewable Energy Directive schemes such as ISCC+, RSB, REDcert, and Better Biomass

Framework Conditions

Financing, biomass availability and industrial competitiveness

The BIC report "Financing the bio-based revolution: crossing the valleys of death"[3] outlines the potential biomanufacturing represents for Europe's bioeconomy if only the financing problems can be overcome.

The report provides a concise list of the actions we have identified that could be undertaken to improve access to finance for biomanufacturing in Europe. Partnership instrument like the CBE JU have proven to successfully mobilize stakeholder and investments in order to accelerate the uptake of bio-based innovation and products. The setting-up of value-chain partnership can also be considered as an enabler for creating lead markets, alongside targeted support to de-risk scale-up and first commercial deployment.

Second, BIC continues to urge EU policymakers to strengthen the EU's competitiveness and strategic autonomy by increasing the use and availability of all types of sustainably sourced biomass, including primary biomass. Europe can built on diverse biomass sources (including landless C8 sugars), but depending on the region and application requirements, different sources of biomass will be used. BIC provides industries and policymakers with the key elements to develop a strategic roadmap for harnessing biomass as a sustainable carbon source, sharing actionable data and scenarios to drive the transformation.[4]

Conclusion

From recommendations to implementation

Following the publication of the BIC reports on lead markets and policy-recommendations, we will engage with EU policy makers and sector association to further deep-dive and assess the opportunities to create lead markets. The BIC lead markets report will be evaluated if and how to apply policy measures for specific end-markets.

[3] https://biconsortium.eu/publication/financing-bio-based-revolution-crossing-valleys-death

[4] BIC/RCI report on biomass availability by 2050, see here

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