



MP Briefing - BioRevolution Coalition

Backing the Bioeconomy for the UK's
Future Growth and Resilience

Executive Summary

The [BioRevolution Coalition](#) is a nationwide campaign convened by [BBIA](#) - the Bio-based and Biodegradable Industries Association - to unite citizens, industry and parliamentarians to accelerate the UK's bioeconomy. For more on this, please visit [biorevolution.uk](#).

National resilience and economic growth depend on cutting the UK's reliance on imported oil, while scaling new industries that create jobs and strengthen long-term security. Bio-based solutions use renewable bio-based resources - such as plants and agricultural wastes - to produce products more sustainably. Together, they make everyday products including packaging, clothing, cosmetics, cleaning products and fuels - a new kind of economy, the Bioeconomy. These alternatives reduce emissions and waste, while building a more self-sufficient, secure and future-ready economy.

The UK now faces a clear choice: build a world-leading bioeconomy at home, or see its science and innovation commercialised overseas. Only one path secures high-value jobs, skills and long-term economic sovereignty.

But current policy, regulatory and tax frameworks often fail to recognise the value of renewable, bio-based resources. This puts bio-based solutions at a disadvantage to fossil-based incumbents, locking in continued dependence on imported oil and exposing the UK to price shocks, supply chain disruption and geopolitical risk.

An urgent policy review would level the playing field, unlock investment and accelerate commercialisation. It would strengthen national security, support high-quality jobs, and position the UK as a global leader in the bioeconomy.

This is not only a climate issue - it is a modern industrial strategy and national resilience imperative. The UK has the science. Now it needs the policy to match.

THE COST OF INACTION, EVERY YEAR

4,000+ skilled UK jobs lost **£300-500m** in GVA foregone

Despite this potential of bio-based solutions, several barriers are constraining progress in the UK. Bio-based solutions often face higher costs than petrochemical incumbents, while the UK focuses on using biomass for bioenergy over chemicals and materials, reducing supply chain resilience for the every day products modern society relies on. Most critically, regulatory complexity creates significant delays, duplication and cost burdens, disproportionately affecting innovative bio-based solutions, which can be around 45% slower and twice as expensive to bring to market. These barriers slow commercialisation, deter investment and risk the UK falling behind global competitors.

Six facts to anchor any conversation:

01 Today, over 96% of all manufactured products we use in our everyday lives contain chemicals. These are made using fossil oil and gas, and are responsible for around 10% of global greenhouse gas emissions.

02 The UK Government has committed £2 billion over ten years to engineering biology and the wider bioeconomy. Between 2018 and 2024, over £450 million of UKRI funding went to bio-based solutions. Yet, fewer than 10% of those publicly funded innovations have reached commercial production in the UK.

03 The UK bio-based solutions sector already supports more than 1,200 businesses (around 1,100 of which are SMEs), generated £12.5bn in revenue and £5.1bn in GVA in 2024, and supports a workforce of 20,300 employees.

04 Switching just 30% of UK chemical industry feedstock to biomass could generate up to £204bn in annual UK plc revenue and save more than 5.2 million tonnes CO₂eq each year - more than the Renewable Transport Fuel Obligation delivered in 2021.

05 Manufacturing bio-based solutions currently costs at least twice (and in some applications up to seven times) the equivalent of fossil-based products. Current UK tax and regulatory frameworks widen that gap rather than narrow it.

06 More than half of UK bio-based companies interviewed by [BB-REG-NET](#) said they are considering scaling production overseas - principally in the EU or US - to access more stable regulatory and fiscal frameworks.

The BioRevolution Coalition proposition is much more than an environmental ask. It is an industrial policy and national resilience ask, with measurable returns to the Exchequer and regional jobs.

1. What is the bioeconomy and why are bio-based solutions essential for UK's Future Growth and Resilience?

Most carbon used in everyday products today - plastics, textiles, cosmetics, cleaning products, and fuels - originates from fossil oil and gas. In fact, manufactured chemicals are responsible for around 10% of global greenhouse gas emissions.

The bioeconomy, in contrast uses renewable biological resources - plants, microorganisms, agricultural and food wastes - as a carbon feedstock instead.

Bio-based solutions are everyday products made from renewable biological resources such as plants, microbes, and agricultural waste, rather than fossil resources like oil, coal, or gas. In simple terms, they use **carbon from nature instead of carbon extracted from underground**. Many bio-based solutions are created using engineering biology, where scientists use microorganisms as tiny factories without relying on fossil resources.

Many people already encounter bio-based solutions in daily life without realising it. Examples include alternative proteins made through fermentation, plant-based foods and cultivated meat; plastics derived from plants such as corn or sugarcane; chemicals produced through natural fermentation processes similar to brewing beer; sustainable fabrics made from wood pulp or crop waste; and plant-based ingredients used in cosmetics and cleaning products.

Bio-based solutions matter because they can reduce carbon emissions by lowering dependence on fossil resources, strengthen UK supply chain resilience, create thousands of skilled jobs, support rural and industrial growth, and help deliver Net Zero.

2. Why this matters now

Economic growth and the Industrial Strategy

Engineering biology is named as one of the UK's six frontier technologies in the Modern Industrial Strategy, with £2 billion allocated to engineering biology infrastructure and innovation. The House of Lords Science and Technology Committee, in its January 2025 report *Don't Fail to Scale: seizing the opportunity of engineering biology*, found the UK to be science-rich but commercially under-developed and warned it is in severe danger of losing its lead in engineering biology - a textbook scale-up gap between excellent research and deployed industry. Timely deployment of the government funding is vital to unlock investment, scale innovation, and secure the UK's leadership in this space.

Net Zero

Replacing just 12 high-potential fossil-based chemicals with bio-based equivalents could save more than 5.2 million tonnes CO₂eq annually - greater than the GHG savings achieved by the Road Traffic Fuel Obligation in 2021. Bio-based plastics in NHS supply chains alone could deliver 498 ktCO₂e in carbon savings, based on the NHS's own modelling.

Energy and supply chain resilience

The UK imports the overwhelming majority of the fossil carbon that goes into its chemicals and materials – making its cost heavily reliant on geopolitical events, supply-chain disruption and price shocks. The 2022 Russian invasion of Ukraine alone is estimated to have cost the UK £183 billion over four years through oil and gas price effects - roughly equivalent to the entire cost of the net zero transition to 2050. Transitioning to the use of renewable, domestic carbon feedstocks is a hedge against precisely that exposure.

International competition

The UK is the only G7 nation without a current integrated national bioeconomy strategy. Across Europe, 22 countries have either adopted or are developing dedicated bioeconomy strategies, anchored in the EU Bioeconomy Strategy and Circular Economy Action Plan. The US BioPreferred Program mandates federal procurement preference for over 7,000 certified bio-based products. Japan is targeting a 100 trillion-yen (£500 billion) bioeconomy market by 2030 with clear ministerial leadership in the Cabinet Office. The UK, by contrast, withdrew its 2018 *Growing the Bioeconomy* strategy in 2021 and has not replaced it.

3. The Coalition petition and its cross-party backing

BBIA has convened the UK BioRevolution Coalition, a new nation-wide campaign aimed at uniting citizens, industry, and parliamentarians with a mission to accelerate the UK’s bioeconomy. We have launched a public petition on petition.parliament.uk calling for a coordinated policy review to level the playing field for bio-based solutions. Alongside this, we have convened hundreds of organisations, creating the UK’s largest single voice for the bio-based sector, and we are working on creating an All-Party Parliamentary Group for Bio-based Solutions, which currently has support across the House from George Freeman MP (Conservative), Rachael Maskell MP (Labour) and Lord Markham (Conservative).

Cross-party champions in the House:



George Freeman MP
(CONSERVATIVE)



Rachael Maskell MP
(LABOUR)



Lord Markham
(CONSERVATIVE)

The petition is supported by a coalition of industry, trade bodies and research organisations - and is led by the BBIA – the UK’s trade association for the bioeconomy.

4. Where the system is failing - five key barriers

The key barriers set out below are drawn from extensive independent research, including the work of the Government-funded Bio-based and Biodegradable Materials Regulatory Science and Innovation Network ([BB-REG-NET](#)). They fall into five interlocking domains. Each is followed by questions for the Government which surface naturally from the evidence and remain - to date - unanswered.

Barrier 1 - Strategic vacuum: no plan, no dedicated Minister, no accountability

The UK’s Growing the Bioeconomy 2018 strategy, co-authored by BEIS and Defra, was quietly withdrawn in 2021. Since BEIS was dissolved, accountability for the bioeconomy has fragmented across five main departments - Defra (e.g., environment, extended producer responsibility for packaging, waste), DESNZ (e.g., biomass, emissions trading scheme), DSIT (e.g., engineering biology, R&D), HM Treasury (e.g. Plastic Packaging Tax, fiscal levers) and the Department for Transport (e.g., Road Transport Fuel Obligation). No single Minister is accountable for the cross-cutting industrial outcome and initiatives have proliferated without coordination or evaluation.

By contrast: the US Inflation Reduction Act and Bioeconomy programme is led from the Executive Office of the President; the EU bioeconomy is a central pillar of the EU industrial strategy; Japan’s strategy is owned by the Integrated Innovation Strategy Promotion Council under the Cabinet Office.

OUTSTANDING QUESTIONS FOR GOVERNMENT:

- DSIT currently leads on the UK’s engineering biology vision, but which single minister holds end-to-end accountability for delivering the expected outputs of this funding across all the departments involved - Defra, DESNZ, DSIT, HM Treasury and the Department for Transport? In addition, what evaluation framework is in place to measure if this financial commitment is leading to commercial biomanufacturing here in the UK?
- Will the forthcoming Circular Economy Growth Plan (expected early 2026) explicitly address bio-based and biodegradable materials, and how will it interlock with the Modern Industrial Strategy and the National Materials Innovation Strategy?
- Will the Government commit to publishing a successor to the *Growing the Bioeconomy* strategy, with a designated Minister of State, comparable to the arrangements for net zero and space?

Barrier 2 - Tax: bio-based and fossil-virgin materials treated as equivalents

The UK's environmental tax structure - principally the Plastic Packaging Tax and Extended Producer Responsibility (EPR) - was designed to drive recycled content and recycling of fossil plastics. It has had unintended consequences for innovative bio-based and compostable materials.

The PPT applies the same per-tonne rate to bio-based and biodegradable plastics as to virgin fossil plastics. Plastics with over 30% recycled fossil content are exempt. Plastics designed to biodegrade are not exempt. The result: a bio-based, compostable bag pays the same tax as a fossil-based equivalent, even when the bio-based bag has proven environmental benefits.

Defra's Recyclability Assessment Methodology (RAM) under EPR places many bio-based materials in the "other" / RED band - "hard to recycle" - triggering approximately 20% higher fees. RAM evaluates only end-of-life recyclability; it makes no reference to feedstock and does not recognise the carbon benefit of bio-based content.

The Emissions Trading Scheme (ETS) recognises biogenic carbon, but will not come into force for several years and its benefit is insufficient to offset the penalties imposed by EPR, RAM and the PPT.

Defra is not due to review the RAM in respect of bio-based and compostable materials until 2029 - widely viewed by the sector as too late, given investor confidence is already eroding and companies are already relocating outside the UK.

This is the policy trap: the innovative bio-based materials best placed to reduce environmental harm are also the least commercially viable under current rules.

OUTSTANDING QUESTIONS FOR GOVERNMENT:

- Why are bio-based plastics treated identically to virgin fossil plastics under the Plastic Packaging Tax, when they are made from renewable, non-fossil feedstocks and their lifecycle carbon footprint is materially lower? Will HMT consider revising PPT under section 49(8) of the Finance Act 2021, which permits revision without primary legislation?
- Will Defra accelerate the RAM review of '*bioplastics and compostables*' to no later than 2027, and create distinct EPR categories for bio-based, compostable and natural polymer materials?
- Will HM Treasury conduct an urgent review of how bio-based chemicals and materials are treated across UK policies, regulations and taxation, including how their biogenic carbon is accounted for?

Barrier 3 - Regulation: built for fossil-based incumbents, slow for everything else

UK regulation is theoretically feedstock-neutral. In practice, BB-REG-NET's *Bio-Barometer Survey* of over 100 sector stakeholders rated the UK's bio-based policy environment 2.49 out of 5. Regulation was identified as the single largest barrier to commercialisation - ahead of policy, standards and certification.

Specific issues:

- Inconsistent definitions of “plastic” across the Single-Use Plastics Ban, the Plastic Packaging Tax and UK REACH. The same bio-based material can be a “plastic” under one regulation and exempt under another. Crucially, none of these regulations defines what “chemically modified” means, leaving natural polymers (starch blends, chitosan, plant-protein based products) in a permanent grey zone.
- Approval of bio-based chemicals through the UK regulatory system typically takes roughly twice as long and costs roughly twice as much as the equivalent fossil-based product, with no risk-proportionate fast-track for bio-based chemicals.
- Evidence shows that for just three bio-based SMEs, the UK is losing £35.7 million in annual GVA and over 473 unrealised jobs. Extrapolated across hundreds of similar SMEs, the avoidable annual loss is in the tens of billions.
- The Government's own Modern Industrial Strategy commits to a 25% reduction in regulatory administrative costs for businesses by the end of this Parliament. To date, no evidence of how this is going to happen can be seen.

OUTSTANDING QUESTIONS FOR GOVERNMENT:

- Will Government establish a single, consistent definition of “plastic” across UK regulation that distinguishes fossil-derived, bio-based, and unmodified natural polymers?
- How will the 25% regulatory cost-reduction commitment in the Industrial Strategy be achieved, and enable an accelerated transition to bio-based solutions, given they currently face roughly twice the approval cost of fossil incumbents?
- Will the Government commit to using Engineering Biology Sandbox funding to create a regulatory road map for novel bio-based chemicals and materials?

Barrier 4 - Procurement: a market signal the UK is not using

Public procurement is one of the fastest, lowest-fiscal-cost levers a government has for creating early markets in emerging green industries. It is one of the levers the UK is using least.

The NHS is one of the largest single public purchasers in the UK, spending an estimated £8 billion annually on medical equipment and consumables. BB-REG-NET analysis of public contract data identified 670 NHS contracts for single-use plastic products worth £6.7 billion, of which 60% had high potential for bio-based substitution.

Yet, an NHS Supply Chain catalogue of approximately 500,000 products yielded just one result when searched for “bio-based” materials.

For just two further public-sector product categories, where bio-based options are already commercially available - catering disposables and refuse sacks - BB-REG-NET identified £177 million in potential annual demand across local authorities, central government and housing associations.

Internationally: the US BioPreferred Program mandates federal procurement of over 7,000 certified bio-based products. The EU Green Public Procurement Framework sets renewable-content criteria; Italy and the Netherlands mandate bio-based thresholds in public contracts. France’s RE2020 requires 50% bio-based content in new buildings. The UK has no equivalent.

The 2023 Procurement Act gives UK contracting authorities the legal flexibility to set such criteria. The political signal to use it has not yet been given.

OUTSTANDING QUESTIONS FOR GOVERNMENT:

- Will the Department of Health and Social Care commit to piloting an NHS bio-based procurement programme?
- Will the Cabinet Office and Crown Commercial Service mandate compostable food service ware in national procurement frameworks, particularly in closed-loop settings (NHS, prisons, festivals, sporting events) where dedicated organic waste collection can be guaranteed?
- For medically contaminated waste destined for high-temperature incineration, which represents around 156,000 tonnes annually in NHS England alone, will Government mandate the use of bio-based materials in those product categories - so that the carbon released is biogenic and not fossil?
- What review is the Government undertaking of bio-based opportunities in the built environment, given construction is responsible for 25% of UK emissions and the Government has committed to delivering 1.5 million new homes?

Barrier 5 - Finance: the missing middle between R&D and commercial scale

The UK is good at funding bio-based research and bad at funding bio-based scale-up. The sector calls this the “missing middle” - the gap between Innovate UK demonstration grants and commercial production capacity.

Of more than £450m UKRI funding 2018–2024, fewer than 10% of funded bio-based innovations reached UK commercial production.

BB-REG-NET’s *Bio-Barometer Survey* found 72% of respondents would expand UK operations if long-term financing or off-take guarantees were available.

Venture capital in the sector is dominated by early-stage seed funding; Series B and C rounds are routinely raised overseas.

BB-REG-NET research projects that, with targeted investment in scale-up infrastructure, the bio-based sector could grow by 18.6% annually through to 2030. Under a business-as-usual scenario, however, the sector is expected to decline by 5.1% annually. This difference represents around £0.5 billion in lost annual revenue.

There is no UK equivalent to the production tax credits in the US Inflation Reduction Act or the patient infrastructure capital deployed under the EU’s Green Deal Industrial Plan.

OUTSTANDING QUESTIONS FOR GOVERNMENT:

- Will the National Wealth Fund or the British Business Bank establish a dedicated funding mechanism for bio-based solutions, modelled on the offshore-wind energy-transition funding mechanisms that closed cost-parity in that sector?
- How will the £184 million publicised for an Engineering Biology Scale-up Infrastructure Programme be prioritised toward first-of-a-kind pilot and demonstration facilities for bio-based solutions, such as biochemicals, rather than health applications - which have already received significant funding?
- Will HMT extend R&D tax credits to include scale-up activities, not only research and development, to support the transition from lab to commercial deployment for bio-based solutions?
- Will the Government commission research into how the Renewable Transport Fuel Obligation (RTFO) model - already proven to drive private investment in low-carbon fuels - could be adapted for non-fuel bio-based solutions?

5. The five-point ask

The Coalition’s policy ask is a compact, deliverable roadmap drawn from extensive research into the barriers facing the sector:

ASK 01 Name a government lead.

A single Minister of State with end-to-end accountability for the bioeconomy, mirroring the arrangements for net zero and space.

ASK 02 Fix the policy and tax mismatches.

Ensure policy, regulation and taxation account for where a product’s carbon comes from (its feedstock) as well as what happens to it at end-of-life. We call on the UK Government to conduct an urgent review of how bio-based solutions are treated across UK policies, regulations and taxation, including how their biogenic carbon is accounted for.

ASK 03 Align carbon accounting.

As a starting point, adopt BS EN 18027:2025 as the standard for bio-based vs fossil-based comparative life cycle assessment in regulation and procurement, and fund further research to develop additional impact categories (biogenic carbon, biodegradability, microplastic formation) needed for fair comparison.

ASK 04 Use public procurement.

Use government buying power to create market demand: a guaranteed early market lets bio-based solutions scale, which is what brings their cost down. Establish a UK Bio-based Procurement Scheme, beginning with an NHS pilot, alongside Cabinet Office mandates for compostable food service ware in closed-loop settings.

ASK 05 Back first-of-a-kind plants.

Deploy co-funded scale-up capital through the National Wealth Fund and British Business Bank, prioritise use of the £184 million Engineering Biology Scale-up Infrastructure Programme for bio-based chemicals and materials, and scale-up tax credits.

6. Quick reference - the numbers

FIGURE	SOURCE
£2bn UK Government commitment to engineering biology and the wider bioeconomy	UK Modern Industrial Strategy (2025)
£450m+ UKRI funding to bio-based research and demonstration, 2018–2024	BB-REG-NET, From Research to Revenue
<10% of UKRI-funded bio-based innovations reaching UK commercial production	BB-REG-NET, From Research to Revenue
1,200+ businesses, ~1,100 SMEs in the sector	Perspective Economics, 2025
£12.5bn revenue, £5.1bn GVA, 20,300 employees in 2024	Perspective Economics, 2025
£204bn potential annual UK plc revenue from 30% chemicals feedstock switch	DESNZ-commissioned study (RAF097/2223)
5.2m+ tonnes CO₂eq annual saving from substituting just 12 high-potential bio-based chemicals	DESNZ RAF097/2223; BB-REG-NET
4,500 new skilled jobs annually, achievable with reformed UK policy	BB-REG-NET, From Research to Revenue
£225/tonne Plastic Packaging Tax applied uniformly to virgin fossil and bio-based plastics	HMRC
670 NHS contracts (£6.7bn) for single-use plastics, ~60% suitable for bio-based substitution	BB-REG-NET, Buying into Biomanufacturing
£177m additional annual public-sector demand identified in catering disposables and refuse sacks alone	BB-REG-NET, Buying into Biomanufacturing
£183bn UK economic cost of fossil price shock following Russia’s invasion of Ukraine, 2022–26	Energy and Climate Intelligence Unit
£35.7m annual GVA, 473 jobs lost from just 3 UK bio-based SMEs unable to scale	BBA, Unlocking Regulatory Pathways for Novel Bio-Based Chemicals and Materials in the UK
156,000 tonnes annual NHS clinical waste (England) destined for high-temperature incineration	NHS England

7. Further reading

BBIA - the Bio-based and Biodegradable Industries Association - is the UK trade body for the bioeconomy and the convenor of the BioRevolution Coalition. BB-REG-NET, the Bio-based and Biodegradable Materials Regulatory Science and Innovation Network, is the BBIA-convened, and Government funded, research network whose evidence base underpins much of this briefing. The full BB-REG-NET white paper *Growing the UK's Modern Industrial Bioeconomy: Driving Economic Growth with Bio-based Solutions for People and Planet* (foreword by Alistair Carmichael MP, Chair of the EFRA Select Committee) also underpins this briefing and contains the supporting evidence in full. Available at <https://bb-reg-net.org.uk/>.

Key BBIA reports (found at www.bbia.org.uk):

- Bio-Based Solutions: Financing the Future
- Rethinking UK Packaging Policy to Unlock Bio-Based Innovation, National Resilience and Economic Growth
- Unlocking Regulatory Pathways for Novel Bio-Based Chemicals and Materials in the UK
- Economic and environmental benefits of a transformative UK bioeconomy
- UK Fermentation & Downstream Processing Capacity
- Building Resilient UK Bio-based Supply Chains
- Bio-Beauty: The Future of Engineering Biology in UK Cosmetics

BB-REG-NET reports referenced:

- Plastic Definitions in UK Regulation
- From Research to Revenue
- Buying into Biomanufacturing: Harnessing Public Procurement for the UK Bioeconomy
- Standardised but Unfair (LCA standards review)
- Beyond the Label: UK Public Attitudes and Policy Gaps
- Bio-Barometer Survey
- Do Biodegradable Plastics Encourage Littering?
- Addressing Persistent Plastic Pollution: The Case for Biodegradable Solutions

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