THE BIOTECHNOLOGY IPCEI IDENTIFICATION PROCESS – THE NATIONAL STAKEHOLDERS' INTERVIEWS. SUMMER 2025.

June 25th, 2025

Joint European Forum for IPCEI

Biotechnology IPCEI Work Group

1 What is an IPCEI?

Important Projects of Common European Interest (IPCEIs) are large, cross-border initiatives that **Member States jointly pre-assess and endorse when a technology area is so strategic that normal market forces and traditional EU funding tools are not enough**. A pre-assessment fiche tests whether the proposed field:

- tackles a clearly defined market or systemic failure,
- aligns with EU policy objectives,
- will generate significant economic and societal spill-overs across at least four countries, and
- is better served by the IPCEI State-aid framework than by any existing programme.

Only after this scrutiny—and a positive "common-interest" finding and endorsement by Member States—can the design phase start.

For more information, please refer to:

1. **Factsheets** – simplified explainers of IPCEIs: https://competition-policy.ec.europa.eu/state-aid/ipcei/practical-information_en#factsheets
2. **For more detailed information** – technical guidance on IPCEI conditions and the process: https://competition-policy.ec.europa.eu/document/download/279cbfaf-49b1-4b90-b8f7-89d1f4a21eb3_en?filename=JEF_IPCEI_technical-guidance-calls.pdf

---

2 Why a Biotechnology IPCEI?

Europe's climate-neutral, circular-economy ambition cannot be met by renewable energy and green hydrogen alone: **carbon-based molecules remain indispensable in the production of critical chemicals, materials, components for food and feed**. Today, that carbon is overwhelmingly fossil. The potential future biotechnology IPCEI addresses research and development and innovation projects of major innovative nature and projects of first industrial deployment aiming to:

- replace fossil carbon with renewable carbon from biomass, recycling and CO_2 capture, addressing strategic dependencies and climate targets;

- scale first industrial deployment of bio-processes and bio-refineries whose capital needs and “valley-of-death” risks are too high for a single enterprise or one nation to bear;

- respond to mounting pressures on land, water and nutrition by delivering sustainable proteins, functional ingredients and other food and feed components for a fast-growing global population; and

- leverage Europe’s bioeconomy strengths to contribute to the subsequent creation of high-value manufacturing and jobs in the EU.

---

3 Scoping papers at a glance

The three scoping papers are drafted by the Biotechnology-IPCEI working group (15 Member States, co-led by Germany, Finland and Estonia), in consultation with EU-level industry and research bodies. Their purpose is to identify, at this early IPCEI identification phase, which focus areas on Biotechnology could be the best fit for an IPCEI candidate.

Focus	Essence of the opportunity
Bio-based chemicals	Use renewable carbon to make drop-in or novel platform chemicals (e.g., ethylene, FDCA) that feed multiple value chains—from polymers to agrochemicals—cutting fossil dependence and CO_2 while opening a €21 bn global market.
Bio-based materials	Convert sustainably sourced biomass, wastes and biogenic CO_2 into high-value materials for packaging, textiles, construction, automotive and more. Projects focus on first industrial deployment of breakthrough processing that boosts resource efficiency and EU resilience by substituting imported, fossil-based materials.
Key components for food & feed	Deploy advanced fermentation, cellular agriculture and novel bioprocessing to produce alternative proteins, vitamins, enzymes and functional ingredients for food (for human consumption) and feed (for animal consumption). Address climate, food-security and health challenges while tapping a projected $100–150 bn protein market; needs cross-border pilot-to-demo capacity, shared safety-testing datasets and demand-aggregation mechanisms.

Synergy: all three streams can co-exist in integrated biorefineries, valorising every biomass fraction and creating circular, low-carbon feedstocks for chemicals, materials and nutrition.

4 Biotechnology IPCEI – written questionnaire for national consultation

Purpose. Your answers will feed the pre-assessment fiche that EU Member States that belong to Biotechnology IPCEI working group prepare before proposing an Important Project of Common European Interest (IPCEI) for design. Please complete all sections, **distinguishing between the three focus areas (chemicals, materials, food/feed**), that apply to your organisation. Where questions / focus areas are not relevant for you, indicate "N/A".

How to respond. For each open question use up to **300 words** unless otherwise noted. Numeric answers (e.g. investment size) may be ranges. Deadline for submission: **July, 28th 2025**.

Company name: The Good Food Institute Europe

Section A – Market & Investment Barriers

First industrial deployment of biorefineries or demonstration plants often face higher risk and cost than conventional assets. Understanding the specific barriers helps determine whether State Aid under the IPCEI framework is justified.

1. **Barriers for businesses to invest into first industrial deployment** – What factors are preventing or slowing down the first industrial deployment (e.g., lack of R&D&I, technological hurdles, cost/price competitiveness, market-demand uncertainty, feedstock or energy constraints, demand uncertainty, regulatory challenges, skills, supply-chain readiness, other (which?)?

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: Companies in the alternative protein sector (plant-based, fermentation-enabled and cultivated meat and ingredients) face multiple immediate barriers when moving from pilot to first industrial deployment (FID). Most critically, access to finance is limited. Demonstration and commercial-scale facilities require significant CAPEX, ranging from €15–250 million, yet few investors are willing to back such high-risk, capital-intensive ventures without clear precedents or predictable returns. Many companies are working on first-of-a-kind technologies or novel production methods, with no existing value chains or infrastructure to build upon.

   A key constraint is the lack of accessible food-grade infrastructure. While some capacity exists, for example, in pharma or industrial biotech, it is often designed for ultrapure applications, making it technically unsuitable or prohibitively expensive for food production. This further exacerbates cost and technical challenges, such as scaling bioreactors, meeting food safety requirements, and lowering input costs (e.g. growth media), which in turn undermines cost competitiveness and investor confidence.

   Limited access to finance is further compounded by regulatory uncertainty, particularly for cultivated meat and precision fermentation, where a lack of clarity on novel food authorisations under the EU regulatory framework delays market entry and deters investment.

These barriers not only slow deployment but risk pushing German and European innovators to scale outside the EU.

2. **Root causes** – What are the underlying causes of these problems? Could the barriers/root causes be effectively addressed through regulation, standards, public procurement, private finance or other means without direct public support (funding)? If yes, how? If not, why not?

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: The core issue behind limited industrial deployment is structural market failure. Private investors are hesitant to finance alternative protein projects due to a combination of perceived risk, regulatory opacity, and long timelines to profitability.

   While improvements in regulation and public procurement can help, they are not enough to overcome the capital intensity and high risk of first industrial deployment. FID projects are often non-bankable and cannot proceed without public co-investment to de-risk them. This is especially true for SMEs and startups, which dominate the alternative protein sector.

   At the same time, current public policy frameworks are poorly aligned with the needs of the sector. Alternative proteins sit at the intersection of agri-food, the industrial bioeconomy, biotechnology, and climate innovation, but they are not fully recognised in any of these domains. As a result, the sector lacks a clear institutional anchor and dedicated funding streams. Moreover, many public investors, including development banks, lack sector-specific insights. As a result, even available instruments are often underused or poorly matched to alternative protein company needs.

   Against this background, the US and Singapore, where regulatory pathways are clearer and funding support is more coordinated, are increasingly viewed as more attractive locations for first industrial deployment. This puts Germany and the EU at a competitive disadvantage and risks undermining the return on early-stage public R&D investments made domestically.

   Public funding is therefore critical – not as a substitute for private investment, but to de-risk and catalyse it. Instruments like IPCEIs are essential to close the funding gap by de-risking pioneering projects, unlocking private capital and signalling political commitment. They are key to ensuring that Germany remains competitive in this strategic sector.

3. **Need for public support** – Why is public support by your Member State necessary to solve the problem?

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: Germany has strong industrial and scientific foundations in advanced manufacturing and biotechnology, putting it in a strong position to benefit economically from the alternative protein sector. But without public

funding for FID, these assets risk being underutilised or lost to countries with more proactive industrial policies.

Economic modelling by Systemiq shows that, under a high ambition scenario with coordinated public support, the alternative protein sector in Germany could contribute up to €65 billion to the German economy and up to 250,000 jobs by 2045, along with €35 billion in exports from the manufacture of bioreactors and processing equipment. In a business-as-usual scenario, defined by fragmented support, this potential drops significantly.

To enable the sector's full growth potential, annual investment of roughly €1 billion will be required from 2025 to 2045, primarily from the private sector. However, around €120 million per year in public infrastructure funding would be needed to unlock this investment, particularly to support capital-intensive, high-risk FID projects.

Germany is also falling behind other countries on early-stage public R&D funding. Germany ranks only fifth in Europe for public alternative protein research funding, with €55M invested from 2020 to April 2024, behind Denmark (€96M), the UK (€90M), Finland (€68M), and the Netherlands (€67M). Most German funding was for plant-based proteins, while other solutions, such as fermentation and cultivated meat, only made up a fraction of the investment.

The report "Mehr Auswahl am gemeinsamen Tisch" by the WBAE recommends embedding alternative proteins into a targeted innovation policy that ensures a level playing field and public support (e.g. start-up funding, infrastructure investment, cluster development). A German commitment to a food biotech IPCEI that supports alternative proteins would provide the missing public co-investment to de-risk private capital, enable scale-up, retain innovation, and align with national strategic priorities.

Section B – Existing EU Value Chain & Innovation Gaps

Mapping today's suppliers, customers and infrastructure clarifies where innovation or capacity is missing and how projects interact across borders.

4. **Existing EU value chain**. Briefly describe the present value chain relevant to your technology (from feedstock supply to end-use markets). List major EU players and geographic hubs.

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: It is difficult to describe a single value chain, as plant-based, fermentation-enabled (biomass/mycoprotein and precision fermentation), and cultivated proteins each rely on different inputs, technologies, and levels of maturity. However, the big picture is as follows: the EU's alternative protein ecosystem builds on strengths in food manufacturing and industrial biotechnology, with regional hubs contributing at different stages.

   Upstream, crops like peas, fava beans, soy, and cereals support the plant-based sector, while waste and side streams are increasingly used as biomass for fermentation-enabled production.

   Europe has a globally competitive enzyme and fermentation sector. The Netherlands and Denmark are key hubs, home to global players such as DSM-Firmenich and Novozymes. The EU also hosts major equipment and bioprocessing providers,

including GEA (Germany) and The Cultivated B (Germany), which are critical for scaling fermentation and cultivated production. However, dedicated food-grade infrastructure remains limited.

The Netherlands leads in cultivated meat, with startups like Mosa Meat and Meatable. Belgium, Finland, and France are emerging centres for fermentation-based protein innovation. On the plant-based side, Roquette (France) plays a key midstream role.

In Germany, established meat and dairy companies are diversifying into alternative proteins. Rügenwalder Mühle, for example, now earns around 60% of its revenue from plant-based products. PHW Group, InFamily Foods, and Hochland have also invested in plant-based, fermentation, and cultivated meat ventures.

End markets are strongest in Western and Northern Europe, where consumer adoption is growing and retailers are expanding private-label offerings.

While Europe has strong industrial and scientific assets, the value chain remains fragmented, and coordinated public support is needed to connect stakeholders and existing capacities with emerging technologies.

Many B2B and B2C companies operate across Europe, but cannot all be listed here. GFI Europe maintains a public company database covering plant-based, fermentation, and cultivated protein sectors: https://gfi.org/resource/alternative-protein-company-database/

5. **Innovation pressure points.** Which steps in the value chain still lack proven technology or cost competitiveness? What specific R&D or demonstration activities are needed?

Biobased chemicals: N/A

Biobased materials: N/A

Key components for food and feed: Significant innovation gaps remain across the alternative protein value chain, especially in areas that affect cost, sensory quality, and industrial scalability.

There are clear opportunities to support innovation beyond the current state of the art, with direct benefits for improving taste and cost, the two key drivers of consumer adoption.

- For plant-based products, further innovation is needed in ingredient functionality, flavour masking, and texture optimisation, including new processing methods such as shear-cell or high-moisture extrusion. Improvements here are essential to reach taste parity with conventional animal-based products.

- In fermentation, advancing strain efficiency, feedstock flexibility, and downstream processing is essential to reduce production costs and improve scalability.

- In cultivated meat and ingredients (eg. fat), developing cost-efficient growth media, edible scaffolds, and robust, food-grade cell lines is critical to ensure cultivated meat can be produced efficiently and at scale.

- Bioreactor design and optimisation also remain underdeveloped. Most available systems are designed for pharma or industrial biotech instead of food-grade environments. Public investment in bioprocess innovation tailored to food production is urgently needed.

- Demonstration-scale infrastructure is another key gap. Many companies cannot bridge the transition from lab to market because they lack access to affordable, food-grade pilot or demo facilities that enable testing and validation at scale.

To ensure public funding delivers real-world impact, taste and price, which are consumers' main purchasing drivers, must be the compass. Projects should be selected based on their ability to deliver on consumer expectations, not just technical novelty.

Supporting these innovation pressure points will help build a mature, competitive AP sector that meets consumer expectations and delivers climate, food security, and economic benefits.

6. **Global context & competing regions.** Identify main non-EU competitors (companies or regions) and their relative advantages (cost, policy support, market size, etc.).

Biobased chemicals: N/A

Biobased materials: N/A

Key components for food and feed:

The United States offers deep capital markets and dedicated infrastructure for food biotech and fermentation. Regulatory approvals for some cultivated meat and precision fermentation products demonstrate regulatory progress, and the country also benefits from low-cost energy, feedstocks, and biomanufacturing capacity, supporting scale-up for fermentation and plant-based production.

Singapore has positioned itself as a global hub for food innovation. While it was the first jurisdiction to approve cultivated meat in 2020, its national “30 by 30” strategy supports a wider shift towards alternative proteins. Despite higher input costs, the government provides startup support, alongside clear regulatory guidance via the Singapore Food Agency.

In China, the government’s current five-year agriculture plan encourages research in cultivated meat, while the bioeconomy development plan aims to advance novel foods. President Xi Jinping also called for a Grand Food Vision that includes plant-based and microbial protein sources. As seen in the renewable energy sector, China has a proven track record of scaling industries it deems strategic by using a combination of R&D subsidies, industrial policy, state-backed investment, and public procurement.

The United Kingdom is strengthening its alternative protein ecosystem through a growing network of innovation centres and scale-up facilities. Post-Brexit, the UK is also exploring regulatory improvements to accelerate approval processes for novel foods, including fermentation-enabled and cultivated products. Recent strategic documents and funding programmes position engineering biology, including alternative proteins, as a national priority, alongside specific references to scaling plant-based protein production.

In addition, Israel, Canada, and India support alternative proteins through enabling R&D programmes. South Korea aims to provide regulatory flexibility via a regulatory sandbox for cultivated meat.

7. **SME participation.** Where do small and medium-sized enterprises currently contribute, and how could they be integrated into an IPCEI ecosystem (as direct participants with own projects, joint pilots, specialised services, or as associated or indirect partners)?

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: SMEs are central to the alternative protein sector. Given the diversity of the alternative protein ecosystem, SMEs have different interests and capacities depending on whether they are developing core technologies, providing equipment or services, or commercialising products. As such, they could play any of the above-mentioned roles in an IPCEI.

   Importantly, direct participation by alternative protein SMEs is both feasible and valuable. For example, Solar Foods, a Finnish SME producing protein via gas fermentation, was selected for the Hydrogen IPCEI (Hy2Use) and received public funding to build a production facility and pursue R&D activities. This demonstrates that high-impact SMEs active in the alternative protein ecosystem can be viable IPCEI direct participants.

   To make IPCEIs accessible and impactful for SMEs, it is essential to streamline administrative requirements and ensure clear, predictable payment timelines. This reduces the financing risk for smaller players and helps them secure private co-investment.

8. **Synergies with adjacent value chains.** Could your project integrate with other innovation projects in the same or in related other value chains? Please explain concrete interfaces.

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: As a non-profit think tank, GFI Europe is not submitting a project for IPCEI funding. However, synergies between alternative proteins and adjacent value chains are both likely and strategically important. Alternative protein innovation can integrate with ongoing developments in food processing, biotechnology, agritech, and industrial fermentation. Concrete interfaces include:

   - Feedstock and input supply: Alternative protein projects can align with innovation in sustainable crop production, side-stream valorisation, and sugar or CO_2 inputs used in fermentation processes.
   - Bioprocessing and manufacturing: Biomass (microbial) and precision fermentation, as well as cultivated meat and ingredients, rely on food-grade bioreactors, downstream processing, and quality control systems that overlap with other sectors. For example, Danone and Michelin jointly opened a

precision fermentation pilot plant in France to serve both food and non-food applications, illustrating the potential for multipurpose infrastructure across value chains.
- Technology platforms: Cross-cutting R&D in synthetic biology, strain development, or process engineering can serve multiple value chains, including pharma, cosmetics, and materials.

9. **Expected EU-level value** – What benefits do you expect from EU-level collaboration in this value chain?

   Biobased chemicals: N/A

   Biobased materials: N/A

   Key components for food and feed: EU-level collaboration in the alternative protein value chain would deliver significant added value by addressing current fragmentation, improving scale-up capacity, and strengthening Europe's position in strategic food and biotech sectors.

   EU-level collaboration would enable Member States to act together within a shared strategic framework, reducing duplication and aligning national efforts. An IPCEI model could also help signal the strategic relevance of alternative proteins by making food biotechnology more visible within the EU and national innovation, climate, and industrial policy agendas. Furthermore, an IPCEI can help overcome political fragmentation. As a coalition-of-the-willing instrument, it enables committed Member States to act together within a structured EU framework.

   A coordinated EU approach would support cross-border partnerships that combine the scaling expertise of large industrial players with the innovation potential of startups and SMEs, many of which struggle to access capital and facilities on their own. It would also help connect partners in collaborations that would not otherwise materialise.

   With global competitors such as the US, China, Singapore, and the UK moving quickly to support alternative proteins, strong EU coordination is essential to avoid falling behind. Cooperation on biotechnology must include food biotech, or Europe risks missing out on strategic opportunities, especially given its strong R&D base in food innovation. To capture value, the EU must not only lead in research but also ensure that innovations scale within Europe.

Section C – Market Failures

EU State-Aid rules require evidence of market failure—situations where markets alone do not allocate resources efficiently. The four types most relevant to IPCEIs are:

Coordination failure – Projects are inter-dependent (e.g. shared feedstock hub) and must move simultaneously; individual investors hesitate without collective action.

Asymmetric information – One party (e.g. financier) may be better informed (e.g. about technical or market risk) than others, affecting decision-making and outcomes of economic transactions and leading to higher capital costs or refusal to fund.

Positive externalities – arise when the activity (e.g., production or consumption) of an economic agent (company, investor, beneficiary) positively affects other economic agents, but for some reason, the agent generating these benefits cannot capture them as revenue.

Negative externalities – happen when a business or consumer's action hurts other businesses or consumers—like polluting air or water—but the price of the product doesn't cover that harm, so others end up paying the cost, distorting pricing.

10. **Market failures** – Describe whether one or several of the following market failures can be observed in the current value chain

- **Coordination issues** – *Explain whether there are interdependencies in the investment process/project realisation in the current value chain and why these can only be successfully implemented simultaneously?*

  Biobased chemicals: N/A

  Biobased materials: N/A

  Key components for food and feed: Yes, there are clear interdependencies in the investment process across the alternative protein value chain.

  In the plant-based sector, processors will not invest in crop-specific infrastructure unless farmers commit to sufficient volumes of underutilised protein crops like fava or lupin. Yet farmers won't scale production without a guaranteed offtake or price stability, and breeders are hesitant to improve varieties without cultivation demand. Without public intervention, each actor waits for the others, creating a systemic deadlock despite market growth.

  In fermentation, innovators need food-grade facilities, but these are expensive and risky to build without confirmed demand. Meanwhile, feedstock suppliers (e.g. sugar producers, side-stream valorisers) and bioprocessing equipment manufacturers will not adapt their operations unless the sector scales together. No single company can bear the risk of moving alone.

  Cultivated meat and ingredients require coordination across cell line development, growth media production, bioreactor design and downstream processing. These investments are highly capital-intensive and technically interdependent. If one component lags, the entire system stalls.

  In addition, regulatory approval is a critical dependency that affects the entire investment process. Without regulatory authorisation, products cannot be marketed, meaning there is no revenue stream, no customer contracts, and no commercial validation, which in turn deters infrastructure investment. Yet accessing or building such infrastructure is often necessary to generate the safety and process data required for regulatory approval in the first place. This creates a closed loop of mutual dependencies, where progress on one front (approval) is blocked by inaction on another (infrastructure), and vice versa.

  This interdependence leads to a "first-mover penalty", particularly for SMEs.

- **Asymmetric information** – *Explain whether you perceive asymmetric knowledge about the investment risk between transacting parties in the current value chain.*

  Biobased chemicals: N/A

Biobased materials: N/A

Key components for food and feed: There is a significant information gap in the alternative protein sector between those developing the technologies (startups, researchers) and those evaluating or financing them – both private investors and public funders or policymakers.

Private investors often lack the technical expertise to assess the scalability of innovations in cultivated meat or fermentation, or to understand the regulatory uncertainties and market dynamics involved. As a result, they tend to overestimate risk or apply higher return thresholds, making it difficult for even promising companies to raise sufficient capital, particularly for demonstration and scale-up phases.

At the same time, public funders and policymakers have historically lacked visibility into the specific needs and maturity of food biotech projects, partly because the sector falls between existing categories (agri-food, biotech, climate tech). This has led to underrepresentation in funding programmes and industrial policy, despite strong alignment with sustainability and innovation goals.

On the other side, SMEs and innovators often struggle to communicate risks and milestones in ways that resonate with capital providers or government evaluators, especially when lacking benchmarks or comparables. This mutual information gap creates inefficiencies in capital allocation and slows progress across the value chains.

Targeted public support, such as through an IPCEI, can help correct these information asymmetries.

- **Positive externalities** – *Explain whether investments in the value chain would include hidden benefits for others and why investors are not able to obtain them.*

  Biobased chemicals: N/A

  Biobased materials: N/A

  Key components for food and feed: Investments in alternative proteins generate wider societal benefits that go well beyond the private returns captured by individual companies and investors. These include substantial environmental benefits (e.g. reduced greenhouse gas emissions, lower land and water use), public health gains (e.g. lower antibiotic use, reduced zoonotic disease risk), major improvements in animal welfare by reducing reliance on industrial animal agriculture, and strategic benefits such as improved food security, supply chain resilience, and energy/resource efficiency.

  Alternative protein innovation also generates knowledge spillovers like advances in microbial strain development, food-grade biomanufacturing, or sustainable feedstock use that can benefit adjacent sectors such as industrial biotech, enzymes, and sustainable materials.

  In addition, improved animal welfare, while not a traditional market good, is increasingly valued by consumers. However, the producers creating animal-free

products cannot fully monetise this value, as it is largely reputational or captured downstream (e.g. by retailers or food service brands differentiating on ethics).

- **Negative externalities** - *Explain whether you can identify negative effects (usually environment related) in the current value chain and why are these externalised and not addressed by existing regulation.*

  Biobased chemicals: N/A

  Biobased materials: N/A

  Key components for food and feed: Alternative protein solutions must compete against established products that benefit from both unpriced externalities and structural support.

  The current food system, particularly protein production based on industrial animal agriculture, carries significant societal and environmental costs that are not fully priced into market transactions. These include greenhouse gas emissions, water pollution, antimicrobial resistance, and vulnerability to zoonotic diseases. These impacts place pressure on public health systems, the environment and long-term food system resilience, yet they are not consistently reflected in product prices.

  In addition, conventional production models are supported through public subsidies, which further reinforce this imbalance. The result is a distorted playing field where cost signals do not reflect the true environmental and social impacts of different protein sources.

Section D – EU-Level Added Value

11. **Cross-border spill-overs.** What knowledge, skilled jobs, cross-border supply, or shared assets would your project create benefitting undertakings beyond the sectors concerned and beyond the Member State the project would be located?

    Biobased chemicals: N/A

    Biobased materials: N/A

    Key components for food and feed: N/A - As a non-profit think tank, GFI Europe is not submitting a project for IPCEI funding

12. **Strategic autonomy.** Which critical dependencies on imports, intellectual property or skills would your project mitigate for the EU as a whole?

    Biobased chemicals: N/A

    Biobased materials: N/A

    Key components for food and feed: N/A - As a non-profit think tank, GFI Europe is not submitting a project for IPCEI funding

Section E – Ecosystem Building

13. **Role of an industrial alliance or cluster.** Could an existing or new EU-level industrial alliance accelerate standard-setting, demand aggregation, skills development or financing and help build an EU ecosystem in this value chain? Suggest governance models if relevant.

    Biobased chemicals: N/A

    Biobased materials: N/A

    Key components for food and feed: Yes, an EU-level industrial alliance or coordinated platform could complement an IPCEI by helping to accelerate ecosystem-building activities such as standard-setting, skills development, demand aggregation, and improved visibility for financing needs. Such a structure could foster knowledge exchange, strengthen cross-border collaboration, and support the long-term development of a coherent EU value chain for alternative proteins.

    While we do not wish to suggest a specific governance model at this stage, any such initiative would need to be clearly aligned with, and complementary to, strategic instruments like the IPCEI.

Section F – Company-Specific Inputs

14. **Scope match** – Which scoping paper(s) does your planned project fit?

    ☐ Bio-based chemicals
    ☐ Bio-based materials
    ☐ Key components for food & feed

15. **Your slot in the value chain -** Which segment of the value chain do you target, and how is your product/technology positioned within that chain? (You may tick several)

    Biobased chemicals:
    ☐ Upstream feedstock / pretreatment
    ☐ Intermediate processing (“mid-stream”)
    ☐ Final product formulation
    ☐ Enabling equipment / services
    ☐ Other – please explain.

    Biobased materials:
    ☐ Upstream feedstock / pretreatment
    ☐ Intermediate processing (“mid-stream”)
    ☐ Final product formulation
    ☐ Enabling equipment / services
    ☐ Other – please explain.

    Key components for food/feed:
    ☐ Upstream feedstock / pretreatment
    ☐ Intermediate processing (“mid-stream”)
    ☐ Final product formulation
    ☐ Enabling equipment / services
    ☐ Other – please explain.

16. **Where and how your project adds value** – Please give a concise, **non-confidential** snapshot of your project and added value to assess its potential for an IPCEI cluster.
    - **Value-chain slot in more detail**: Which step do you address? (e.g., lignocellulose pretreatment, C1-gas fermentation, bio-monomer purification, protein texturising, speciality enzyme formulation, etc.).

      Biobased chemicals:

      Biobased materials:

      Key components for food and feed:

    - **Core principle**: Shortly state the process type or scientific approach—not detailed information.

      Biobased chemicals:

      Biobased materials:

      Key components for food and feed:

    - **Advantage over the current state-of-the-art**: Quote one or two measurable gains you aim to deliver

      Biobased chemicals:

      Biobased materials:

      Key components for food and feed:

    - **Barriers to reaching first industrial deployment** (e.g., technical, cost, market-demand)?

      Biobased chemicals:

      Biobased materials:

      Key components for food and feed:

17. **Investment size** – Estimate the required investment (CAPEX) in million euro. What would be the estimated cost range (CAPEX and OPEX) of your innovation project:

    Biobased chemicals
    Your required investment (CAPEX): _____million euro

    Cost range of your innovation project:
    ☐ < €10 m ☐ € 10 - 49 m ☐ €50 - 100 m ☐ > €100 m

    Biobased materials
    Your required investment (CAPEX): _____million euro

    Cost range of your innovation project:
    ☐ < €10 m ☐ € 10 - 49 m ☐ €50 - 100 m ☐ > €100 m

    Key components for food and feed
    Your required investment (CAPEX): _____million euro

Cost range of your innovation project:
☐ < €10 m ☐ € 10 - 49 m ☐ €50 - 100 m ☐ > €100 m

18. **Technology readiness** – What is the current TRL range (see short explanations in the table below) of your innovation project and what are the key (R&D) challenges still to be addressed:

Biobased chemicals
☐ TRL 1-2 ☐ TRL 3-4 ☐ TRL 5-6 ☐ TRL 7-8 ☐ TRL 9

Key (R&D) challenges still to be addressed:

Biobased materials
TRL 1-2 ☐ TRL 3-4 ☐ TRL 5-6 ☐ TRL 7-8 ☐ TRL 9

Key (R&D) challenges still to be addressed:

Key components for food and feed
TRL 1-2 ☐ TRL 3-4 ☐ TRL 5-6 ☐ TRL 7-8 ☐ TRL 9

Key (R&D) challenges still to be addressed:

Note: The following short explanations of TRLs (technology readiness levels) might be helpful:

Discovery (TRL 1-2). Basic principles observed → Technology idea formulated. *"Sketch the idea and show it works once in a test tube."*
Lab translation (TRL 3-4). Build & test first lab prototypes; Experimental proof-of-concept → Lab validation under controlled conditions. *"Build a bench-top gadget and show it works every time in the lab."*
Pilot validation (TRL 5-6). Validation/demonstration in a relevant or operational environment; Bench/mini pilot validation →Late demonstration/pilot line. "*Prove it works every day in a pilot hall."*
Demonstration in operational settings (TRL 7-8). Semi-industrial to full industrial demo on an industrial site - **First industrial deployment.** *"Prove it works every shift in a factory."*
Commercial roll-out (TRL 9). Routine operation, full commercial manufacturing

19. **Further or other individual company-specific input** on the questions above (*free text; max. 1000 words*):

Biobased chemicals: N/A

Biobased materials: N/A

Key components for food and feed: N/A

20. **Alternative contribution** – If you are **not** planning a direct participation in a potential Biotechnology IPCEI, which EU bio-based value chains interest you and what assets or know-how could you offer (*free text; max. 1000 words)?*
The Good Food Institute Europe is a non-profit think tank focused on advancing alternative proteins as a pillar of a more sustainable, secure, and just food system. While we are not seeking funding or direct participation under the Biotechnology

IPCEI, we are open to contributing as a knowledge partner in an advisory role (i.e., as an indirect partner), in line with our public-benefit mission.

Given our expertise across the science, industry, and policy dimensions of alternative proteins, we are particularly interested in the IPCEI's focus on key components for food and feed, including the following areas outlined in the scoping paper:

- Plant-based proteins: utilizing regional legume-based alternatives like soybean, pea, faba bean, lupin, lentil, water-lentils (duckweed) and other plants to produce protein-rich foods.
- Cell-based (cultivated) proteins: cultivating plant cells, animal cells to create meat, dairy, and seafood products.
- Fermentation-derived proteins: using microbial fermentation to produce proteins, such as mycoprotein (biomass fermentation), and precision fermentation, for specific protein molecules.

In this context, we maintain a strong evidence base and policy perspectives that may support the wider IPCEI ecosystem, especially as far as the above-mentioned technologies are concerned.

However, as a non-profit organisation, we do not offer consultancy services and are not available for commissioned work. Our contributions are rooted in our mission to support the ecosystem in unlocking the economic, environmental, and societal benefits of alternative proteins, and are not tied to any commercial interest.

We would be glad to share open-access data and insights, including:

- Market and industry landscape analysis (eg, investment trends, consumer research);
- Public R&I funding trends and recommendations on research priorities to unlock innovation;
- Policy-relevant knowledge on how food biotech can contribute to government priorities on competitiveness, sustainability, and food security.
- Global insights from other world regions, drawing on GFI's international network, to highlight public investment models and regulatory approaches from the US, Asia Pacific, Brazil, India, Israel, and Japan.

Should Member States decide that indirect partners are to be included in the IPCEI governance structure, as is allowed under current guidance, we would be eager to contribute in an advisory capacity, in line with our experience in designing strategic R&I agendas. We have contributed in similar roles, including as advisor, knowledge partner, and expert contributor to research and innovation initiatives involving public bodies and industry platforms, such as the UK Research and Innovation Alternative Proteins Roadmap, the EU Food 2030 and beyond process, the Eureka Food Tech Call (with Vinnova, Innosuisse, the Israel Innovation Authority, and Enterprise Singapore), EIT Food's Cultivated Meat Innovation Challenge, and the Strategic Research and Innovation Agenda of the European Technology Platform 'Food for Life'.

While representation of indirect partners in IPCEI governance is not mandatory and remains at the discretion of participating Member States, we believe such involvement could add value by bringing a neutral, evidence-based perspective to the development and implementation of the initiative.

We would also welcome the opportunity to learn from and participate in educational, ecosystem-building and networking activities that may emerge from the IPCEI process, where appropriate.