Annual Work Programme and Budget 2025

Circular Bio-based Europe Joint Undertaking

Bio-based Industries Consortium

EUROPEAN PARTNERSHIP

Co-funded by the European Union

ANNEX to the Governing Board decision no 7/2024

In accordance with the Council Regulation (EU) 2021/2085 and with Article 33 of the Financial Rules of the CBE JU.

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1. CONTENTS

List of acronyms and abbreviations 5
Foreword 7
1.1. Mission statement of the CBE JU 9
1.2. CBE JU objectives and link with the SRIA 10
1.3. Strategy for the implementation of the programme 12
2. Work programme 2025 14
2.1. Executive summary 2025 14
2.2. Operational activities 2025 17
2.2.1. Objectives, indicators and risks 17
2.2.2. Scientific priorities, challenges and expected impacts 21
2.2.3. Calls for proposals 24
2.2.4. Cooperation, synergies and cross-cutting themes and activities 75
2.3. Support to operations 78
2.3.1. Communication, dissemination and exploitation 78
2.3.2. Indicative list of events 80
2.3.3. Procurement and contracts 81
2.3.4. Other support operations 82
2.4. Governance activities 90
2.4.1. Governing Board 90
2.4.2. Executive Director 90
2.4.3. States' representatives group 90
2.4.4. Scientific Committee 91
2.4.5. CBE JU Deployment Groups and Working Groups 92
2.5. Strategy and plans for the organisational management and internal control systems 93
2.5.1. Financial procedures 94
2.5.2. Ex ante and ex-post controls 94
2.5.3. Audits 95
3. Budget Year 2025 96
4. Annexes 105
4.1. IKAA Plan 105
4.2. Glossary 106

2025 CBE JU call for project proposals: quick links

2.2.3.1 Specific requirements for the 2025 CBE JU call 24

2.2.3.2 CBE JU 2025 call topics 32

HORIZON-JU-CBE-2025-IAFlag-01 Urban-industrial symbiosis for bio-waste valorisation 32

HORIZON-JU-CBE-2025-IAFlag-02 Bio-based drop-ins/smart drop-in platform chemicals, via cost-effective, sustainable and resource-efficient conversion of biomass 35

HORIZON-JU-CBE-2025-IAFlag-03 Circular-by-design fibre-based packaging with improved properties 38

HORIZON-JU-CBE-2025-IAFlag-04 Retrofitting of industrial plants towards higher-value bio-based products 41

HORIZON-JU-CBE-2025-IA-01 Sustainable macroalgae systems for innovative, added-value applications: cultivation and optimised production systems 44

HORIZON-JU-CBE-2025-IA-02 SSbD bio-based solutions to replace hazardous conventional chemicals for textiles production 47

HORIZON-JU-CBE-2025-IA-03 Scaling-up nutritional proteins from alternative sources 50

HORIZON-JU-CBE-2025-IA-04 Cost-effective and robust continuous biotech bio-based processes 53

HORIZON-JU-CBE-2025-IA-05 SSbD bio-based polymers/copolymers unlocking new market applications 56

HORIZON-JU-CBE-2025-RIA-01 Valorisation of untapped forest biomass 58

HORIZON-JU-CBE-2025-RIA-02 Bio-based and biodegradable delivery systems for fertilising products to reduce microplastics pollution & promote soil health 61

HORIZON-JU-CBE-2025-RIA-03 Alternative biomanufacturing routes for natural and synthetic rubber 64

HORIZON-JU-CBE-2025-CSA-01 Develop and deploy new curricula and knowledge exchange practices relevant to bio-based systems 67

Indicative budget per topic - call HORIZON-JU-CBE-2025 69

2.2.3.3 Conditions of the calls and calls management rules 70

LIST OF ACRONYMS AND ABBREVIATIONS

AAR	Annual Activity Report
AWP	Annual Work Programme
B2B	Business-to-Business
B2C	Business-to-Consumer
BBI JU	Bio-based Industries Joint Undertaking
BIC	Bio-based Industries Consortium
CA	Commitment Appropriations
CAPEX	Capital Expenditure
CAS	Common Audit Service
CBE JU	Circular Bio-based Europe Joint Undertaking
CCS	Carbon capture and storage
CCU	Carbon capture and use
CEN	European Committee for Standardization
CSA	Coordination and Support Action
CIC	Common Implementation Centre
EC	European Commission
ECA	European Court of Auditors
EFTA	European Free Trade Association (Iceland, Liechtenstein, Norway, and Switzerland)
FLAG	Flagship Action
FWC	Framework Contract
GB	Governing Board
HR	Human Resources
IA	Innovation Action
IAS	Internal Audit Service
ICF	Internal Control Framework
ICS	Internal Control Standards

IKAA	In Kind contribution to Additional Activities
IKOP	In Kind Contribution to Operational Activities
OPEX	Operational Expenditure
SRIA	Strategic Research and Innovation Agenda
TRL	Technology readiness level

FOREWORD

I am delighted to present to you the CBE JU's 2025 Annual Work Programme. 2025 will be a pivotal year for the circular bioeconomy, within the new European policy cycle. Both the European Commission (EC) and the Council of the EU included the bioeconomy and the circular economy among their strategic political priorities for the next five years, highlighting the importance of their intrinsic added value for the environment, the competitiveness of European companies and for the benefits they bring to primary producers, local communities and rural areas. The CBE JU stakeholder community looks forward to the action plan following up on the EC communication "**Building the future with nature: Boosting Biotechnology and biomanufacturing in the EU**" and in particular to a new bioeconomy strategy that will be completed in 2025.

Next year, CBE JU will collaborate closely with its founding members – the EC and the Bio-based Industries Consortium (BIC) – in the preparation of these policy initiatives by showcasing examples of successful scaling up of technologies, market penetration for bio-based products, and direct impact of these investments on the European economy and civil society. At the same time, we will provide a voice for our community on the remaining hurdles the bioeconomy is facing in its transition "from niche to norm". The establishment of the deployment group on finance and investments and the working group on primary producers will provide a platform for two communities to discuss and propose action plans on improving access to finance for companies investing in the circular bioeconomy, and how to better involve primary producers in bio-based value chains and offering them diversified income sources.

With competitiveness, innovation, and the green transition at the very top of Europe's political agenda, CBE JU will continue its work at both the programming and call management levels with a much stronger focus on high technology readiness levels. Thanks to the joint work with the EC and BIC, the 2025 call for project proposals has a very strong focus on supporting companies in scaling up technologies (five demonstration topics for 70 million EUR funding) and in particular in deploying first-of-a-kind biorefineries (four flagship topics for 80 million EUR funding) in four different areas addressing key challenges from technological and environmental points of view: bio-waste valorisation, platform chemicals, fibre-based packaging and retrofitting of biorefineries.

On top of our core business, we will further improve the KPI monitoring tool to ensure the follow-up of project outcomes and the performance of the organisation in terms of impact. In this sense, CBE JU will strengthen the narrative on the circular bioeconomy by providing concrete examples of successful projects scaling up innovative technologies in Europe and supporting green growth. A particular campaign will focus on the role of SMEs and start-ups in providing disruptive innovation and supporting the building of novel CBE JU-funded biorefineries in Europe.

At the time of writing this foreword, important high-level reports have been delivered to the EU institutions, proposing a way forward for European innovation and competitiveness in an increasing challenging and volatile global context. Partnerships are spelled out as fundamental instruments to align strategies, to ensure effectiveness and to boost European competitiveness in key areas such as the green transition. The title of Mr Heitor's report "**Align, Act, Accelerate**" sums up perfectly the role of Joint Undertakings like CBE JU in creating a common vision among European decision makers, industry, member states and the scientific community, taking action through its funding programme, and effectively accelerating market penetration of highly innovative solutions.

Together with our stakeholder community, thanks to their competence and commitment, the CBE JU Programme Office colleagues look forward to continuing the strong collaboration with the EC and BIC in implementing the strategic priorities of this work programme and in promoting a common vision to advance a competitive circular bioeconomy for a sustainable Europe.

Nicoló Giacomuzzi-Moore

CBE JU Executive Director

1.1. MISSION STATEMENT OF THE CBE JU

Advancing a competitive bioeconomy for a sustainable future is the primary mission of the Circular Bio-based Europe Joint Undertaking (CBE JU).

In the context of the European Green Deal[1,2,3], A Clean Planet for All Communication and the Farm to Fork, the European bio-based sector, including SMEs, regions and primary producers, should become climate neutral, more circular and more sustainable while remaining competitive on the global market. A strong, resource efficient and competitive bio-based innovation ecosystem can decrease Europe's dependency on and accelerate the substitution of non-renewable fossil raw materials and mineral resources.

CBE JU is thereby supporting research and innovation activities in the field of sustainable bio-based solutions under the umbrella of Horizon Europe, the EU's research and innovation programme for the 2021-2027 period. CBE JU aims to foster the development, upscaling and deployment of new, disruptive and innovative technologies and processes to use all available sources of sustainable biomass to their full potential and turn it into sustainable and circular bio-based products. Also in line with the expectations set in the new Biotechnology and Biomanufacturing Communication and the Clean Industrial Deal and outlined in the EC political guidelines, by replacing non-renewable fossil resources with waste and sustainably sourced biomass to produce industrial and consumer goods, the bio-based industries will help Europe become the world's first climate-neutral continent while increasing the sustainability and circularity of production and consumption systems and be part of a just economic transition. In this way, the bio-based industries greatly contribute to the competitiveness and sustainability of the EU Bioeconomy, and will play a key role in the upcoming EU Bioeconomy strategy update in 2025.

Those activities will be carried out in close collaboration between stakeholders along the entire bio-based value chain, including primary producers and processing industries, consumer brands, SMEs, research and technology centres and universities. CBE JU also aims to support the deployment of bio-based innovation at regional level with the active involvement of local actors and with a view to reviving rural, coastal and peripheral regions. International participation from third countries is welcome as an important element to advance a sustainable bioeconomy globally.

CBE JU's public-private funding scheme will boost innovation and market deployment and pave the way for future investments. To this end, the CBE JU will organise calls for proposals aimed at supporting research, demonstration and deployment activities. To deliver on its objectives, CBE JU should only fund projects that respect the principles of circularity, sustainability and planetary boundaries. CBE JU will build on the success and achievements of its predecessor, the Bio-based Industries Joint Undertaking (BBI JU) while enlarging its scope and addressing the remaining challenges of Europe's bio-based industries.

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640
[2] A sustainable bioeconomy for Europe - Publications Office of the EU
[3] EUR-Lex - 52020DC0380 - EN - EUR-Lex

1.2. CBE JU OBJECTIVES AND LINK WITH THE SRIA

The CBE JU general and specific objectives defined in Article 46 of Council Regulation (EU) 2021/2085[4] of 19 November 2021 (hereinafter the Council Regulation) establishing the Joint Undertakings under Horizon Europe, are reported below in Figure 1.

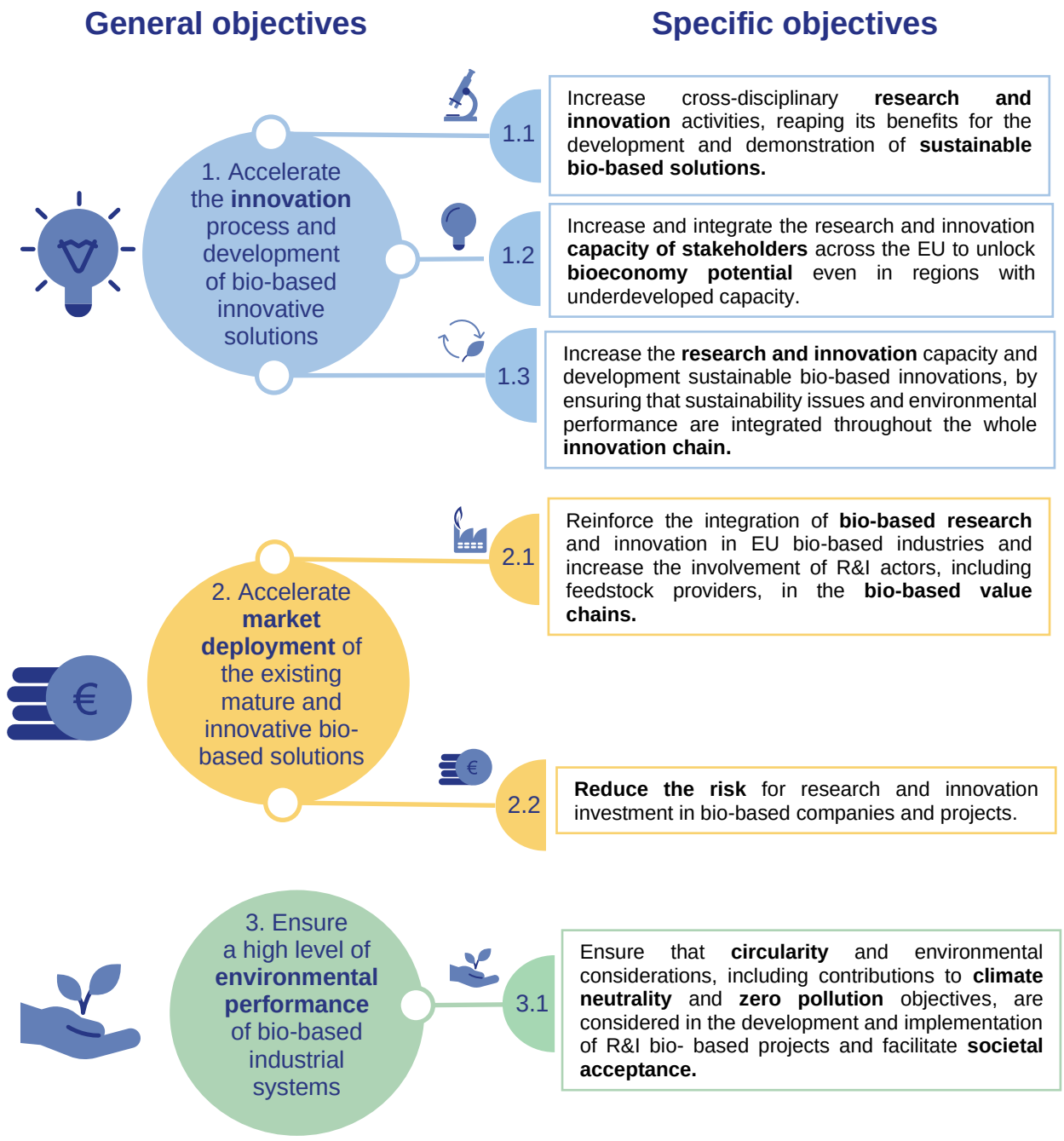

Figure 1 CBE JU general and specific objectives.

[4] Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014, OJ L 427, 30.11.2021, p. 17–119

To achieve these objectives, the CBE JU Programme Office will implement Annual Work Programmes that will support:

- the **acceleration of the innovation process and development of bio-based innovative solutions** by funding actions (ranging from CSAs to RIAs and IAs ending TRL 6) focusing on testing and upscaling the use of novel technologies for converting bio-based feedstock into useful, innovative, environmentally sustainable and circular solutions;

- the **acceleration of market deployment of existing mature and innovative bio-based solutions** by promoting and supporting innovation actions, including Flagships, to scale up innovative bio-based processes, products, and applications starting from at least TRL 5 and ending at TRL 7-8 across Europe;

- the **development of a high level of environmental performance of bio-based industrial systems** through different types of actions, ranging from CSAs to RIAs up to targeted IAs.

The strategic priorities, reported in the figure below, as identified in the Strategic Research and Innovation Agenda (SRIA) for each CBE JU general and specific objectives will be used as baseline in each topic.

FEEDSTOCK		Strategic priority 1.1.1 - Ensure the availability and quality of sustainable bio-based feedstock
		Strategic priority 1.3.1 - Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems
		Strategic priority 2.1.1 - Demonstrate the sustainable supply of bio-based feedstock
PROCESSING		Strategic priority 1.1.2 - Develop innovative production systems in the bio-based industry
		Strategic priority 1.3.2 - Improve environmental performances of bio-based processes
		Strategic priority 2.1.2 - Deploy innovative production technologies
PRODUCTS		Strategic priority 1.1.3 - Develop innovative bio-based products
		Strategic priority 2.1.3 – Scale-up production and market uptake of innovative bio-based products
CROSS-CUTTING	**Communication**	Strategic priority 1.2.1 - Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems
		Strategic priority 1.2.2 – Increase the awareness and capacity of national and regional research support agencies for industrial bio-based systems
		Strategic priority 1.2.3 - Facilitate the development of expertise in bio-based fields by improving higher education and skills development
		Strategic priority 2.1.4 - Build policy makers' awareness and acceptance of bio-based solutions
		Strategic priority 3.1.3 – Facilitate social acceptance of bio-based applications
	Finance	Strategic priority 2.2.1 – Improve the risk profile of bio-based projects
		Strategic priority 2.2.2 - Develop investment tools and approaches that mitigate the investment risk in bio-based systems
	Environmental sustainability framework	Strategic priority 3.1.1 - Set effective and robust environmental sustainability and circularity criteria for bio-based systems
		Strategic priority 3.1.2 - Incorporate the environmental sustainability and circularity criteria in bio-based systems

Figure 2 CBE JU SRIA Strategic priorities mapped along the value chain (Feedstock – Processing – Products) and the identified cross cutting issues.

1.3. STRATEGY FOR THE IMPLEMENTATION OF THE PROGRAMME

CBE JU programming

All CBE JU strategic and programming documents are developed jointly by both partners (EC and BIC) with the support of the CBE JU Programme Office.

In particular, a structured co-creation process is foreseen for the formulation of calls included in the Annual Work Programmes, based on the SRIA and the lessons learned from previous calls, as monitored and reported by the CBE JU Programme Office. The CBE JU Scientific Committee and states' representatives group will also be consulted on the draft Annual Work Programmes.

Types of actions

The CBE JU calls fund three types of actions:

- **Research and Innovation Actions (RIAs)** include activities of 'testing', 'demonstrating' and 'piloting'. These activities aim to establish new knowledge or to explore the feasibility of a new or improved technology, product, process, service, or solution. These may include basic and applied research, technology development and integration, testing, demonstration, and validation on a small-scale prototype, in a laboratory or simulated environment.

- **Innovation Actions (IAs)** include activities of 'testing', 'demonstrating' and 'piloting' and also aim at scaling up activities from prototype, in a (near to) operational environment, industrial or otherwise, to large-scale product validation and market replication.

  Flagships[5] are an important and specific type of Innovation Action which aim to support the first application/deployment in the EU market of an innovation that has already been demonstrated but not yet applied/deployed in the EU market (first-of-its-kind innovation).

- **Coordination and Support Actions (CSAs)** address needs to i) structure stakeholder communities; ii) support dissemination and exploitation of research or innovation projects; iii) exploit synergies of scale among projects; iv) raise awareness in specific areas; v) support technological visions (e.g. road-mapping, user cases, etc.) and outreach (e.g. events, publications, etc.); vi) promote international cooperation with specific regions and/or technological areas for any of the above-mentioned activities; vii) undertake other activities similar in nature to those above (i.e., this is not an exhaustive list).

Other possible types of actions, like Pre-commercial Procurement Action (PCPs), may also be considered if relevant to attain the objectives of the CBE JU in future CBE JU AWP.

Technological Readiness Level (TRL)

[5] Flagship projects are strategically relevant, with very ambitious objectives and large-scale impacts expected, and of potential substantial size with regard to the financial volume, the number of project partners and the running time.

The technological readiness level scale, defined in the General Annex B of the Horizon Europe Main Work Programme, will be used as reference in the CBE JU calls to indicate the appropriate technological context as following:

- **RIAs** projects are expected to be at the level of laboratory or simulated environments and expected to deliver TRL 3-5 at the end of the projects.
- **IAs** projects are demonstration activities in relevant and operational environments and expected to deliver TRL 6-8 at the end of the projects. In particular, **Flagship** projects will need to deliver TRL 8 at the end of the projects.

The expected end TRL is specified in each RIAs and IAs topic.

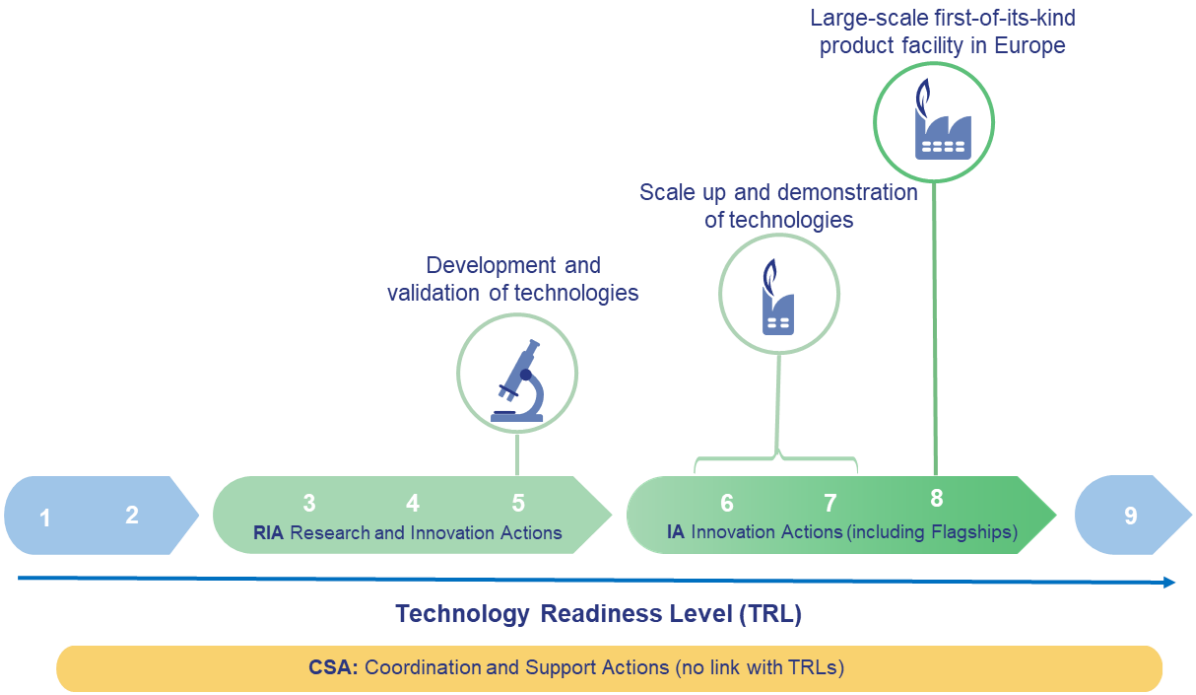

Figure 3 CBE JU types of actions along the TRL scale.

2. WORK PROGRAMME 2025

2.1. EXECUTIVE SUMMARY 2025

The CBE JU is a EUR 2 billion public-private partnership between the European Union, represented by the European Commission, and the Bio-based Industries Consortium. It is established under Horizon Europe, the EU's research and innovation programme, for the period 2021-2031. The CBE JU is not a direct continuation of the Bio-Based Industries Joint Undertaking, but rather a programme that builds on its achievements and aims at addressing its shortcomings.

The Strategic Research and Innovation Agenda (SRIA), adopted by the CBE Governing Board (GB), identifies the strategic priorities and the essential research and innovation actions required to achieve the objectives of the CBE JU, as defined in Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The scope of CBE JU is underpinned by the updated EU Bioeconomy Strategy (2018) and is in line with the European Green Deal objectives – to produce major contributions to the EU climate targets by delivering innovative bio-based solutions and paving the way for Europe to become the first climate neutral continent by 2050; protecting and enhancing biodiversity; combating pollution; reducing fossil resource dependence; and deploying a just transition. Biotechnology and biomanufacturing, recognized as instrumental to increase EU's competitiveness, strategic autonomy and resilience in the recent EU Biotechnology and Biomanufacturing Communication, are core to the CBE JU programme and constitute a significant part of the technologies and processes developed, upscaled and deployed in the CBE JU projects. In line with the Clean Industrial Deal and the new priorities set in the EC political guidelines, by replacing non-renewable fossil resources with sustainably sourced biomass to produce industrial and consumer goods, the CBE JU will support via its funded projects Europe to become the world's first climate-neutral continent while increasing the sustainability and circularity of production and consumption systems and be part of a just economic transition.

CBE JU will, in particular, aim at strengthening the European bioeconomy primary sectors of the land and sea and its industries by combining the 'public' interests, pursued by the EC, and the 'private' interests of bio-based industries, such as: increasing the competitiveness of the EU economy, job creation, balanced regional development and economic cohesion, climate and environmental performance, creating better market conditions, removal of barriers, de-risking investment, increasing resource efficiency, improving circular technologies and operations while engaging all actors in the bio-based systems.

The SRIA is the basis for the CBE JU Annual Work Programmes that contain the call for proposals, developed jointly by both partners under the coordination of the Programme Office, also considering the recommendations of the advisory bodies. Six calls for proposals are foreseen during the lifetime of the partnership for a total indicative operational budget of EUR 976.5 million.

Progress towards the achievement of the CBE JU objectives will be monitored through a set of Key Performance Indicators (KPIs), reported upon an annual basis and reflected in the Annual Activity Report (AAR).

During the CBE JU Governing Board meeting of October 2024, the Executive Director presented the following priorities for 2025 focussing on four areas:

Governance

CBE JU will work in close collaboration with the EC and BIC on the follow-up of the Biotech and Biomanufacturing initiative, including the EU Biotech Act and the revision of the Bioeconomy strategy.

CBE JU will focus on the deployments' challenges of the bio-based sector by supporting the establishment of a deployment group on finance and investments and a working group on primary producers, addressing some of the critical areas listed in the Commission's communication.

By highlighting the partnership's achievements, CBE JU will contribute to the discussions and the preparation of the next research and innovation framework programme, including the future setup of the partnership.

- Support the EC in following-up the actions foreseen in the Biotech and biomanufacturing communication (i.e. Biotech Act, revision of the Bioeconomy strategy) and in relation to the EC 2025 work plan (e.g. Circularity act).
- Engage with the CBE JU stakeholders on the future research and innovation framework programme.
- Set up the deployment group for finance and investments following the completion of the EIB study on bioeconomy.
- Follow up the implementation of the project funded under the specific 2024 call CSA topic that will support the decision of the Governing Board regarding the establishment of a working group on primary producers.

Project and programme management

Call and project management remains at the core of the JU's work: evaluating, selecting and signing new grant agreements from the 2024 call, ensuring effective and efficient execution of the running projects while launching the 2025 call and supporting the drafting of the 2026 call. CBE JU will also analyse and report about the progress on corporate and specific project KPIs, and on the CBE JU portfolio evolution, ensuring the continuous impact of the initiative.

CBE JU will focus on the following:

- Complete the 2024 call grant agreement preparation and signature.
- Promote and evaluate the 2025 call.
- Support the preparation of the 2026 call text, including its consultation with the two advisory bodies.
- Work on synergies with other EU programmes to raise awareness about additional funding opportunities to CBE JU applicants.
- Collect and elaborate information about CBE JU projects' KPIs via the new tool developed by the Programme Office.
- Analysis the CBE JU portfolio evolution and develop a user-friendly dashboard to visualise it via CBE JU communication channels.

Communication

CBE JU will strengthen the narrative about the circular bioeconomy by providing concrete example of successful projects, which are scaling up innovative technologies in Europe, and supporting green growth. CBE JU will also highlight the role of SMEs in providing disruptive innovation and supporting the building of novel CBE JU-funded biorefineries in Europe. This campaign will also reach the new EC and the European Parliament through exhibitions and ad hoc events.

In particular, CBE JU will:

- Promote the CBE JU role in green transition: telling the story of CBE JU contribution to Europe's competitiveness & local economies (inauguration of flagship biorefineries, potential high-level event at the EP, exhibitions, digital campaigns).
- Support CBE JU's core business (promoting funding opportunities, project achievements stories).
- Prepare the 2026 CBE JU stakeholder forum.

Administration and finance

CBE JU will continue to lead the joint HR activities of all JUs and will participate in joint projects, such as the implementation of the new accounting system SUMMA and the EC's HR transformation project. At the same time, CBE JU will explore artificial intelligence tools to seek efficiencies and economies of scale.

- Prepare the transition to SUMMA.
- Implement an artificial intelligence platform for CBE JU.
- Continue the implementation of the BOA HR in collaboration with other JUs.

2.2. OPERATIONAL ACTIVITIES 2025

2.2.1. Objectives, indicators and risks

Scope of the activities

As presented in the SRIA, the CBE JU will fund projects focused on '*the production of bio-based chemicals, materials, food and feed ingredients and soil nutrients. Biofuels, bioenergy, food and feed, pharmaceuticals and medical devices are not within the remit of the partnership'*.

While the boundary between the industrial activities that are in or out of this scope is difficult to define in a precise way because of multiple outputs from bio-based operations or multiple use of the same bio-based material or product in different applications, the guiding principles for evaluating if an industrial activity falls within the scope of the CBE JU partnership will be based on:

a) assessment of what is the main application of the bio-based product produced and if this main use falls into the scope;

b) the principle of cascading use of biological resources aiming to best valorise the sustainable use of feedstock[6].

For example, while the production of food is excluded from the scope, processes producing food may have co-products and side streams that can be used as feedstock for producing bio-based products within the CBE JU scope. Another example is bioethanol, that can be used as biofuel, which is then excluded from the scope, but when used as an input to other chemicals' production it is included within the CBE JU scope.

In line with above, biorefineries for sustainable processing of biomass into an array of added-value products (e.g. bioactive substances, chemicals and materials) will fall under the CBE JU scope if the focus of the project is on materials and energy production is a complementary activity that improves the overall resource efficiency of the production process and it takes place in accordance with the cascading principle.

In addition, the feedstock for bio-based operations should respect local ecological limits and protect and enhance biodiversity and ecosystems services. Specific requirements on feedstock for the CBE JU Call 2025 are included in the dedicated section 2.2.3.1.

All supported activities must also demonstrate the potential of bio-based solutions in terms of climate and environmental performance, and circularity. Activities that do not meet the agreed requirements of climate and environmental performance will not be supported. In line with the circularity objective, attention will be given to activities that enable the conversion of bio-waste, residues and side-streams into added-value circular bio-based solutions. Supported industrial activities should contribute to local and regional economies, while reducing the dependency on imports of natural resources.

[6] A non-exhaustive list of bio-based feedstock in the scope of CBE JU is included in Annex V of SRIA

CBE JU objectives and Key Performance Indicators

CBE JU will contribute to the general and specific objectives set in the Council Regulation establishing the Joint Undertakings (Figure 1) and the main challenges described in the SRIA (Figure 2), via its portfolio of funded projects. To this end, the programme will be monitored against the targets set at:

- Horizon Europe programme level.
- Horizon Europe partnerships level[7].
- Specific CBE JU level with the KPIs defined in the SRIA Annex IV and described in the CBE JU KPI Handbook.

The operational monitoring is based on indicators which are common to all Horizon Europe programme and include, for example, the following: 1) time to inform (TTI) all applicants of the outcome of the evaluation of their application from the final date for submission of proposals (target TTI max: 153 calendar days); 2) time to grant (TTG) measured from the call deadline to the grant signature (target TTG < 245 days). CBE JU will ensure the efficiency of all operations and the results of its operational monitoring will be included in the AAR.

The monitoring of the KPIs at HE partnership level is embedded into the bi-annual monitoring mechanism managed by the EC, while the monitoring of the specific CBE JU KPIs defined in the SRIA are monitored is based on data collected from the yearly project reporting over the course of the CBE JU programme.

The progress of all levels of KPIs against their respective targets is reported in the CBE JU AAR. In addition, the CBE Programme Office has the legal obligation to monitor, continually and systematically, the implementation of its programme, as well as to report and to disseminate the results of this monitoring on an annual basis.

[7] A robust and harmonised framework for reporting and monitoring European Partnerships in Horizon Europe - Publications Office of the EU (europa.eu).

CBE KPIs: Objectives and units of measurement

		CBE JU AWP 2025 topics												
		IA-Flag01	IA-Flag02	IA-Flag03	IA-Flag04	IA-01	IA-02	IA-03	IA-04	IA-05	R-01	R-02	R-03	S-01
1	**Strategic participation and integration of feedstock producers and suppliers towards large-scale valorisation of sustainable biomass**													
1.1	N of primary producers, involved as project beneficiaries and/or engaged in value chains at project level					x					x	x		
1.2	N of bio- waste management actors, involved as project beneficiaries and/or engaged in value chains at project level	x												
2	**Unlock sustainable and circular bio-based feedstock for the industry**													
2	N of innovative bio-based value chains created or enabled based on sustainably-sourced biomass	x	x			x	x	x		x	x		x	
3	**Ensure environmental sustainability of feedstock**													
3.1	N of projects using feedstock generated with practices that contribute to enhance biodiversity		x			x		x			x		x	
3.2	N of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption		x			x		x			x		x	
3.3	N of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation		x			x		x			x		x	
4	**Improve environmental sustainability of bio-based production processes and value chains**													
4.1	N of projects with innovative & sustainable processes that contribute to GHG emission reduction	x	x	x	x	x	x	x	x	x	x	x	x	
4.2	N of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste	x	x	x	x	x	x	x	x	x	x	x	x	
4.3	N of projects developing innovative & sustainable processes enabling to address zero pollution	x	x	x	x	x	x		x	x	x	x	x	
4.4	N of projects with innovative & sustainable processes with improved energy efficiency	x	x	x	x	x	x		x	x	x	x	x	
4.5	N of products with improved life cycle environmental performance	x	x	x	x	x	x		x	x	x	x	x	
5	**Expand circularity in bio-based value chains**													
5.1	N of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular by design)			x						x		x		
5.2	N projects developing circular production practises (incl. industrial & industrial urban symbiosis)	x					x	x	x	x				
6	**Increase innovative bio-based outputs and products**													
6.1	N of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives	x		x	x	x		x	x	x	x	x	x	
6.2	N of innovative bio-based drop in outputs meeting applications requirements	x	x	x	x	x		x	x	x	x	x	x	
7	**Improve the market uptake of bio-based products**													
7	N of brand owners involved as project partners and/or engaged with other mechanisms			x			x			x				
8	**Attract investment on the bio-based sector**													
8	N of actions implemented at project level to attract investment and/or to create awareness in the investment/funding community													
9	**Increase resilience and capacity in the bio-based sector**													
9	N of projects contributing to develop the skills and capacity needed by the EU bio-based sector				x									x
10	**Improve participation of regions and countries with high unexploited potential and strategic interest to develop it**													
10.1	N of participants from the underrepresented EU countries and region										x			x
10.2	N of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects	x			x						x			
10.3	N of projects with synergies with other funding programmes at EU, national or regional level													

Table 1 CBE KPIs - Call 2025 Topics

CBE JU's risk management

CBE JU conducted a risk assessment exercise over the achievement of the objectives described in this work programme for the year 2025.

The CBE JU did not identify for 2025 any critical risk that needs to be publicly disclosed with possible reservations to be made by the management towards the effective achievement of the objectives of the year. Overall, the results of the risk assessment exercise confirmed the trend of previous years and provides reasonable assurance over the capacity of CBE JU to identify potential threats and set up, in cooperation with relevant stakeholders, adequate responsive actions to support the effective and efficient management of its core activities.

Still, a high and significant level of concern is maintained for 2025 and beyond because of the impact of the current geopolitical and economic scenarios in Europe and on the sector of intervention of the CBE JU initiative. . CBE JU projects are highly exposed to these events being industry driven (out of 1.5k participations in CBE JU projects, 60% are private for-profit companies and notably ~40% are SMEs) and private investment decisions or commitments into ongoing and future projects might suddenly be re-prioritised. The CBE JU governance bodies and its management functions are fully engaged in monitoring these risks, in fostering communication channels with projects' consortia and in preserving the qualitative and timely achievement of the multi annual strategic objectives of the initiative. Furthermore, in 2025, new priorities and course of actions are planned to support the EU policy making and their implementation will not bring changes to the dotation of human resources available to carry on these additional activities.

2.2.2. Scientific priorities, challenges and expected impacts

The topics identified in this Annual Work Programme will continue to be highly relevant to meet the commitments set out in the European Green Deal and the Fit for 55 package and to achieve the ambitious EU targets of reducing net greenhouse gas emissions by at least 55% by 2030 (compared to 1990) and becoming the first climate neutral continent by 2050. They will contribute to the transition from a fossil to a sustainable bio-based economy, in line with the objectives set out in the updated EU Bioeconomy Strategy and its Action Plan and will support the commitments set under the UN Sustainable Development Goals (SDGs) and the COP 21 Paris Climate Agreement.

In addition, they will contribute directly to the new EU initiative on Biotechnology and Biomanufacturing by increasing the innovation and competitiveness of industrial biotechnology across different topics by supporting the scaling up of biotech solutions and fostering the increase of biomanufacturing capacity at European level. In particular, the following topics are expected to contribute strongly to these objectives: IA-01: Sustainable macroalgae systems for innovative, added-value applications: cultivation and optimised production systems; IA-04:Cost-effective and robust continuous biotech bio-based processes and RIA -03: Alternative biomanufacturing routes for natural and synthetic rubber.

More specifically, the following are the scientific areas supported in this work programme:

- **Flagship topics** (end TRL8) focus on the deployment first-of-their kind biorefineries for: (i) urban-industrial symbiosis for the valorisation of biowaste; (ii) the production of bio-based drop-in platform chemicals; (iii) the production of circular-by-design fibre-based packaging; and (iv) the retro-fitting of existing facilities for the production of higher added value bio-based products.
- **Innovation action topics** (end TRL 6-7) support; (i) the sustainable cultivation and processing of macroalgae; (ii) the bio-based solutions to replace hazardous conventional chemicals for textiles production; (iii) the scale up of the production of nutritional proteins from alternative sources; (iv) the upscaling of cost-effective continuous biotech bio-based processes; and (v) production of bio-based polymers/co-polymers for new market applications.
- **Research and innovation action topics** (end TRL 4-5) aim at (i) valorising untapped forest biomass, (ii) increasing soil health by developing biodegradable delivery systems for fertilising products and (iii) developing alternative biomanufacturing routes for natural and synthetic rubber.
- **The Coordination and support action topic** (non-technological) focuses on developing new curricula and knowledge exchange practices relevant for the bio-based systems.

The scientific priorities of this annual work programme are aligned with the CBE JU specific objectives and the strategic priorities, as identified in the CBE JU SRIA. As shown in Table 3, the topics of this work programme will cover all priorities identified along the three main blocks (feedstock, processing and products) and focus on cross-cutting actions notably the one dedicated to the environmental sustainability framework.

CBE JU Specific Objectives		CBE JU TOPICS AWP2025												
		IA-Flag01	IA-Flag02	IA-Flag03	IA-Flag04	IA-01	IA-02	IA-03	IA-04	IA-05	R-01	R-02	R-03	S-01
1. Accelerate the innovation process and development of bio-based innovative solutions	1.1.-Increase cross-disciplinary research and innovation activities, reaping its benefits for the development and demonstration of sustainable bio-based solutions.					X			X		X	X	X	
	1.2 - Increase and integrate the research and innovation capacity of stakeholders across the EU to unlock bioeconomy potential even in regions with underdeveloped capacity.										X		X	X
	1.3-Increase the research and innovation capacity and development sustainable bio-based innovations, by ensuring that sustainability issues and environmental performance are integrated throughout the whole innovation chain.					X	X				X	X	X	
2. Accelerate market deployment of the existing mature and innovative biobased solutions	2.1- Reinforce the integration of bio-based research and innovation in EU bio-based industries and increase the involvement of R&I actors, including feedstock providers, in the bio-based value chains.	X	X	X	X	X	X	X	X	X				
	2.2- Reduce the risk for research and innovation investment in bio-based companies and projects.													
3. Ensure a high level of environmental performance of bio-based industrial systems	3.1- Ensure that circularity and environmental considerations, including contributions to climate neutrality and zero pollution objectives, are considered in the development and implementation of R&I bio- based projects and facilitate societal acceptance.	X	X	X	X	X	X	X	X	X	X	X	X	

Table 2 AWP 2025 topics links to the CBE JU Specific Objectives

SRIA strategic priorities			CBE JU TOPICS AWP2025												
			IA-Flag01	IA-Flag02	IA-Flag03	IA-Flag04	IA-01	IA-02	IA-03	IA-04	IA-05	R-01	R-02	R-03	S-01
FEEDSTOCK		1.1.1 - Ensure the availability and quality of sustainable bio-based feedstock					X					X		X	
		1.3.1 - Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems										X	X	X	
		2.1.1 - Demonstrate the sustainable supply of bio-based feedstock	X	X	X		X								
PROCESSING		1.1.2 - Develop innovative production systems in the bio-based industry					X			X		X		X	
		1.3.2 - Improve environmental performances of bio-based processes						X		X					
		2.1.2 - Deploy innovative production technologies	X	X	X	X	X	X	X	X	X				
PRODUCTS		1.1.3 - Develop innovative bio-based products					X					X	X	X	
		2.1.3 – Scale-up production and market uptake of innovative bio-based products		X	X	X		X	X		X				
CROSS-CUTTING	Communication	1.2.1 - Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems										X			
		1.2.2 – Increase the awareness and capacity of national and regional research support agencies for industrial bio-based systems													
		1.2.3 - Facilitate the development of expertise in bio-based fields by improving higher education and skills development in the private sector													X
		2.1.4 - Build policy makers' awareness and acceptance of bio-based solutions													
		3.1.3 – Facilitate social acceptance of bio-based applications	X		X	X	X		X		X				
	Finance	2.2.1 – Improve the risk profile of bio-based projects													
		2.2.2 - Develop investment tools and approaches that mitigate the investment risk in bio-based systems													
	Environmental sustainability framework	3.1.1 - Set effective and robust environmental sustainability and circularity criteria for bio-based systems													
		3.1.2 - Incorporate the environmental sustainability and circularity criteria in bio-based systems	X	X	X	X	X	X	X	X	X	X	X	X	

Table 3 AWP 2025 topics links to the SRIA strategic priorities

2.2.3. Calls for proposals

In this chapter, the topics identified for the CBE JU 2025 call are presented in section 2.2.3.2 with their expected outcomes, their scope and specific topics' requirements. In addition, the 'Specific CBE JU requirements' are presented at the beginning in section 2.2.3.1 and the call conditions specified in section 2.2.3.3. Please also note that a glossary (Annex 4.2) contains the description of important terms which are marked in the with an * in the topics text.

2.2.3.1 Specific requirements for the 2025 CBE JU call

In addition to the requirements set at topic level, all proposals must address the CBE JU specific requirements set for the respective type of action(s). Rather than repeating these specific requirements in each topic, they are presented in this section and summarised in the following table, highlighting the part of the proposal where they should be addressed.

Specific CBE JU requirement	Type of action	Where to include it in Part B
Feedstock sourcing (eligibility condition)	RIA and IA, incl. FLAG	Structured question (Y/N) in the introduction
Feedstock environmental sustainability	RIA and IA, incl. FLAG	Structured question (Y/N) in the introduction
Description of feedstock	RIA and IA, incl. FLAG	1.2 Methodology
Environmental performance, sustainability and circularity		
a) Ex-ante assessment • identification of environmental issues • estimation of environmental sustainability performance • estimation of carbon removal potential	RIA and IA, incl. FLAG	1.2 Methodology
b) Ex-post assessment • Dedicated task for RIA • Dedicated task or WP (LCA) for IA • Dedicated task or WP (LCSA) for FLAG	RIA IA FLAG	3.1 Workplan and resources
Multi-actor approach (MAA)	IA, incl. FLAG RIA and CSA, when specified	1.2 Methodology
Economic aspects • Qualitative business case for RIA • Quantified business case and business model for IA • Summary of business case and business model for FLAG • Business plan for FLAG	RIA IA FLAG	2.2 Measures to maximise impact - Dissemination, exploitation and communication FLAG: Annex (Business plan)
Digital technologies	RIA and IA, incl. FLAG	1.2 Methodology
Cross-disciplinary aspects and Social Sciences and Humanities (SSH)	All types of actions	1.2 Methodology
Recommendations to stakeholders	IA, incl. FLAG	Part B – 3.1 Workplan and resources

Table 4 CBE JU Specific Requirements for 2025 call

Feedstock sourcing (eligibility condition)

All RIAs and IAs, including Flagships

The consortium shall confirm in Part B, via a structured question (Y/N), that:

- If the bio-based feedstock is processed in EU/EEA/EFTA countries, the bio-based feedstock comes from such countries or from neighbouring Associated Countries;
- If the bio-based feedstock is processed in an Associated Country, the bio-based feedstock comes from the same country or from neighbouring EU/EEA/EFTA countries, or neighbouring Associated Countries.

For limited samples of bio-based feedstock for the purpose of testing processes or technologies this eligibility condition does not apply.

Feedstock environmental sustainability

All RIAs and IAs, including Flagships

Proposals should also include information on how the **feedstock is produced** respecting local ecological limits, and ensuring protection, enhancement and restoration of biodiversity and ecosystems services.

To ensure the environmental sustainability of feedstock, the consortium should confirm in the Part B via a structured question that, if funded, it will comply with the following, when applicable to the type of feedstock used:

a) Climate change mitigation:
   i. will not impact 'Land with high carbon stock'[8]
   ii. will have low/zero ILUC risk[9]
   iii. promote carbon sequestration[9]
   iv. will aim at reducing GHG emissions from the extraction and/or cultivation[10]

b) Biodiversity protection:
   i. will implement Integrated Pest Management (IPM) for a reduced use of plant protection products and not apply those identified as "candidate for substitution"[11], unless safe use and existence of no alternatives are proven,
   ii. will contribute to sustainable forest management practices[12]
   iii. will not have a negative impact on protected species and habitats[13]
   iv. in case of genetic backgrounds, coming from feedstock that is outside the EU/EEA/EFTA, being used for further testing, optimization and scaling up during the project: ensure compliance with applicable EU regulations and international rules on

[8] Article 29, paragraph 4, subparagraphs a, b and c of RED II (Dir 2018/2001/EU)

[9] Although the "Commission Implementing Regulation 2022/996 on rules to verify sustainability and greenhouse gas emissions saving criteria and low indirect land use change-risk criteria" focuses on biofuels , the principles of 'additional biomass' eligible for low-ILUC risk certification (Articles 24, 25 and 26) may apply to the biomass used within the scope of CBE JU. See also the 'Annex VIII Minimum requirements on the process and method for certifying low indirect land-use change (ILUC) risk biomass', which includes a '*Non-exhaustive list of yield increase additionality measures*' (Table 1). Some '*Examples of essential soil management practices to promote soil carbon sequestration and promote soil quality*' are reported in Annex VI Table 1, as well. The general criteria for low-ILUC and additionality can be found in the COMMISSION DELEGATED REGULATION (EU) 2019/807

[10] The 'Methodology for determining the emissions from the extraction or cultivation of raw materials' is described in ANNEX VII of the above-mentioned 2022/996/EU.

[11] Commission Directive (EU) 2019/782 on products containing active substances of Group 3

[12] According to the Biodiversity strategy for 2030 and action plan and the Forest strategy for 2030

[13] According to Natura 2000 framework and to the Staff Working Document "Criteria and guidance for protected areas designations" (SWD(2022) 23)

access to biological resources, such as the UN Convention on Biological Diversity and its Nagoya Protocol, their sustainable use and the fair and equitable sharing of benefits from their utilization..

v. will not introduce invasive species[14] and/or high-risk plants[15]

vi. will not negatively impact protected areas (terrestrial or marine) with high biodiversity value, including highly biodiverse grasslands[16]

c) Pollution prevention (air/water/soil):

i. will avoid open air burning of stubble/crop residues[17]

ii. will contribute to the reduction of chemical pesticides and more hazardous pesticides use[18]

iii. will contribute to the reduction of nutrient losses and of the overall use of fertilisers[19]

iv. will avoid leakage of contaminants in water/soil, including microplastics (e.g. from agro-plastics).

d) Water resources protection:

i. will not deplete surface or groundwater resources beyond replenishment capacities[20].

Description of the feedstock

Proposals should **describe the feedstock** to be used under Part B section 1.2. Methodology, and ensure that it is under the scope of the feedstocks foreseen in CBE JU SRIA (including Annex V)[21].

Under the condition of respecting the “food first” and “cascading use” principles, surplus streams from agricultural biomass processing such as carbohydrates, or oils, can be used as feedstock for CBE JU projects.

Environmental performance, sustainability and circularity (ex-ante & ex-post assessment)

All RIAs and IAs, including Flagships

The proposals should include an **ex-ante assessment** of **environmental performance** in Part B - Section 1.2. Methodology:

- An **identification of the environmental critical issues** early on and the explanation on how the project will steer the development process in the right direction.
- An **ex-ante estimation of the environmental sustainability performance**, including contribution to climate neutrality, resource efficiency, zero pollution (addressing the

[14] Invasive Alien Species (IAS) are animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment. The list of Invasive Alien Species is in Annex I of the Regulation (EU) 1143/2014 on invasive alien species which entered into force on 1 January 2015.The European Alien Species Information Network (EASIN) is an online platform that aims to facilitate access to existing information on alien species from a range of sources. EASIN includes a Species Search and Mapping tool, allowing for basic and advanced search of a database including over 14 000 alien species in Europe, and showing their distribution on a map.

[15] The updated list of high risk plants, plant products or other objects for which introduction into the Union territory shall be prohibited pending a risk assessment are available here https://ec.europa.eu/environment/nature/invasivealien/index_en.htm.

[16] See RED II, Article 29, point 3, letter d)

[17] For example, Ban on burning arable stubble, except for plant health reasons (GAEC 3 Common Agricultural Policy - Annex III)

[18] According to Farm to Fork Strategy and action plan and the Biodiversity strategy for 2030 and action plan.

[19] Communication ‘Ensuring availability and affordability of fertilisers’ and Farm to Fork Strategy and action plan

[20] See also the definition of quantitative status in the Water Framework Directive (DIRECTIVE 2000/60/EC)

[21] Bio-based feedstock may include bio-waste from imported products. A non-exhaustive list of bio-based feedstock in the scope of CBE is included in Annex V of SRIA.

impacts on air, water, soil quality, where relevant) and circularity of the proposed processes/products, compared to benchmark(s) selected by the consortium and described in the proposal. The benchmark(s) should be based on the best performing processes/products and should be duly justified in the proposal. The proposal should provide a detailed justification to demonstrate how it will improve environmental performances compared to the selected benchmark(s) and if available provide relevant references and calculations.

- If applicable, a **preliminary assessment of the carbon removal[22] potential**.

In addition, proposals should include as part of the **project** an **ex-post assessment** of the **environmental and social sustainability and circularity** of all the products and processes developed and of their improvements compared with benchmark(s) and describe it in Part B - Section 3.1 Work plan and resources. More specifically:

- **RIAs**: proposals should include a dedicated task to use the early-stage data to assess the potential improvements of the environmental performances of processes and/or products developed in the project, as well as a preliminary assessment of their social impacts. Clearly define the scope, assumptions and limits of your assessment.

- **IAs:** proposals should include a dedicated work package or task to assess ex-post the environmental impacts and circularity of the products and/or processes developed, using life-cycle-sustainability assessment (LCSA) methodologies as part of the project

- **Flagships:** proposals should include a dedicated work package or task for full assessment of the environmental impacts and circularity of the developed products and/or processes, using life-cycle-sustainability assessment (LCSA) methodologies, as part of the project.

The **life-cycle assessment (LCA)** and **life-cycle-sustainability assessment (LCSA)** methodologies should be based on widely used standards and certifications, and they should make use of accepted and validated approaches[23]. They should use, as a reference, Commission recommendations and the European norms[24], technical reports and technical specifications, but also the standards developed by CEN/TC 411 for bio-based products[25]. Applicants should consider the cradle-to-grave or cradle-to- cradle designs, justifying the choice and describing the methodology.

All IAs, including Flagships

Applicants should foresee in the proposal the publication of the outputs of LCA or LCSA assessment of environmental impacts, following the principles of open science (FAIR data and "as open as possible, as closed as needed"[26]) and use the possibilities offered by the European Open Science Cloud (EOSC) to store and give access to research data. This should be integral part of the overall Open Science strategy of the project and therefore duly described in Part B – Section

[22] The concept of carbon removal has been introduced by the Commission Communication on sustainable carbon cycles (COM(2021)800) and in the Commission proposal for a Regulation on an EU certification for carbon removals. See the Glossary 'Carbon removal'

[23] See 'Life cycle thinking and the use of LCA in policies around the world', 2017

[24] For example: the Product and Organisation Environmental Footprint methods as defined in the EU Recommendation 2279/2021

[25] European Committee for Standardisation Technical Committee 411 on bio-based products

[26] Open science - European Commission

1.2 Methodology and performed e.g., through the publication of peer-review scientific papers, and/or, whenever possible, sharing the data and the outputs with the European Knowledge Centre for Bioeconomy.

Multi-actor approach

All IAs, including Flagships and those RIA/CSAs when explicitly mentioned in the topic text
Applicants should include the multi-actor approach in their concept and describe it in Part B under Section 1.2. Methodology.

The multi-actor approach is a form of responsible Research & Innovation (R&I), it aims to make the R&I process and its outcomes more reliable, demand-driven, shared and relevant to society. It also aims to have these outcomes shared more extensively.

A multi-actor project ensures the genuine and sufficient involvement of a targeted array of actors, which serves the objectives of the topic. These actors include: i) researchers, ii) farmers / farmers' groups and associations, iii) foresters / foresters' groups and associations, iv) aquaculture producers, v) fishers / fishers' groups and associations, vi) advisors, vii) food and bioeconomy businesses, viii) other businesses, including bio-waste managers, ix) consumer associations, x) local communities, xi) citizens, xii) civil society organisations including NGOs, and xiii) government representatives, etc. The identification of key actors to involve, as well as the form of their involvement (i.e. as project beneficiaries and/or external stakeholders), depends on the proposal objectives and methodology. The genuine and sufficient involvement of such actors should take place over the whole course of the project: from participation in development of the project idea, planning and experiments to implementation, communication and dissemination of results and to a possible demonstration phase. This will contribute to and speed up the acceptability and uptake of new ideas, approaches and solutions developed in the project.

Therefore, a **multi-actor project proposal must demonstrate:**

- How the proposed objectives and planning are targeting the needs/problems/challenges of and opportunities for all relevant actors.
- How the description of the project concept and including the composition of the consortium reflects a balanced choice of relevant key actors who have complementary types of knowledge (scientific, practical, etc.), and must ensure that project results which should be ready for practice are broadly implemented; the involvement of the relevant actors is not limited to the consortium partners and should be fit for purpose for the project concept.
- How the project intends to use existing practices and tacit knowledge. This should be illustrated in the proposal with a sufficient number of high-quality knowledge exchange activities outlining the precise and active roles of the different non-scientific actors in the work. The cross-fertilisation of skills, competencies and ideas between actors should generate innovative findings and solutions that are more likely to be applied on a wide scale.
- How the project will facilitate the multi-actor engagement process by making use of the most appropriate methods and expertise.
- The project's added value: how it will complement existing research and best practices.
- How the project will result in practical and ready to use knowledge, approaches, tools or products, that are easily understandable and freely accessible.

- How these outputs ready for practice will feed into the appropriate dissemination channels to reach all relevant actors.

Economic aspects

- **RIAs**: should include in Part B - Section 2.2. Measures to maximise impact - Dissemination, exploitation and communication a **qualitative business case for investment**, encompassing the relevant technical, economic, market, social, environmental and regulatory criteria, appropriately detailed.
- **IAs (excluding Flagship)**: should include in Part B - Section 2.2. Measures to maximise impact - Dissemination, exploitation and communication:
    - a **quantified business case for investment**, including the relevant technical, economic, market, social, environmental and regulatory and
    - a **proposed business model** and an estimate of appropriate economic indicators.
- **IA-Flagships:** should include in Part B - Section 2.2. Measures to maximise impact - Dissemination, exploitation and communication a **summary of the demonstrated business case and business model** and in a separate Annex a **detailed business plan,** which should include an estimate of appropriate economic indicators, including Net Present Value (NPV), with all critical underlying assumptions clearly defined and appropriately justified*.

The critical underlying assumptions *should include: accessible market size and growth, target applications, rate of market penetration, revenues, capital and operating costs based on appropriate engineering assessments, personnel levels and funding sources.*

General definitions of the business case, model and plan are reported below.

Business case: is the justification for investment in a project leading to a profitable business, typically based on pursuing an opportunity or solving a problem. The business case should demonstrate that:

- The proposed change is strategically aligned, and represents a compelling case for change.
- The proposed change will create value through the whole value chain.
- The proposed change is attractive to the market place, and provides convincing evidence that the proposed change is more sustainable than alternative options, is achievable in a realistic timeframe and is sufficiently significant.
- The proposed change is both affordable and financially viable.
- The applicants have the commitment, skills, capabilities, experience, and processes to make the proposed change a technical and commercial reality.

A business case should address the following key questions: *Does it make technical and commercial sense to invest in this project/technology? Are the resources and capabilities available to make this project/technology successful? Are the risks well understood and are mitigating measures defined)?*

Business model: is a description of the way in which a commercial activity generates revenues and value for its customers/ involved stakeholders. It is a strategic plan that describes how a company will offer a product to the market and drive sales. The proposed business model should include:

- The problem or opportunity (customer need); should identify the target markets and customers; and define a solution matching the need and capabilities.
- The value propositions in target markets; and identify the challenges in developing the solution.
- Key partners to help address the challenges.
- Proposed revenue generating strategies.
- An understanding of the costs associated with delivering the solution.
- A mechanism to test the proposed business model during the implementation of the project.

Business plan is a detailed description of how the business will be developed. The business plan should be: clear (unambiguous, leaving no room for misinterpretation), concise (short, precise), compelling (exciting, motivating), coherent (presenting a consistent investment case), comprehensive (leaving no question unanswered), credible (well-grounded with good supporting data).

A Business plan should include: - Executive summary - Company strategy - Management structure - Product development strategy - Market and customer landscape - Competitive landscape - Marketing strategy - Production strategy -Risk analysis - Financial plan - Milestone plan.

A business plan should address the following key questions: - *How will the project team make a success of this project/technology? - What are the expected benefits (monetary and non-monetary) of this project/technology?*

Elements of the financial analysis: the financial analysis enables the financial viability of each new business opportunity to be assessed and should include: projected profit (or loss), projected balance sheet, anticipated cash flow, estimated net present value (NPV).

Recommendations to stakeholders

IAs, including Flagships

Proposals should include an action in Part B – 3.1 Workplan and resources on opportunities/challenges to be addressed for targeted stakeholders, including, where possible, national/regional stakeholders, investors and brand owners. Applicants should include recommendations on how to improve the implementation and/or overcome hurdles and gaps of current policies in the concerned fields.

Digital technologies

Applicants should consider applying and/or adapting existing/mature or novel digital technologies provided that they are instrumental to achieving the project's outcomes and scope.

RIAs and IAs, including Flagships, should consider the applications of digital technologies (e.g. AI, blockchain, Machine Learning, IoT, 6G etc), among the following areas:

i) Process design & modelling (including bioinformatics).

ii) Process monitoring, control and optimisation.

iii) Tracking and tracing.

iv) Data analytics and data management.

IAs, including Flagships, should consider also:

i) (Real-time) process monitoring, control and optimisation (including environmental performance).

ii) Predictive maintenance and plant engineering.

Cross-disciplinary aspects and involvement of Social Sciences and Humanities

All proposals should foster cross-disciplinarity and consider the social, economic, behavioural, institutional, historical and/or cultural dimensions, as appropriate, of the proposed circular bio-based innovations. Applicants should therefore ensure that contributions from the SSH are integrated at various stages of their proposed project, and the actions required, participants and disciplines involved. Whenever relevant, applicants should consider public awareness raising, social engagement and social impact aspects with respect to circular bio-based solutions

Recommendations to stakeholders

IAs, including Flagships

Proposals should include an action in Part B – 3.1 Workplan and resources on opportunities/challenges to be addressed for targeted stakeholders, including, where possible, national/regional stakeholders, investors and brand owners. Applicants should include recommendations on how to improve the implementation and/or overcome hurdles and gaps of current policies in the related fields.

2.2.3.2 CBE JU 2025 call topics

HORIZON-JU-CBE-2025-IAFlag-01 Urban-industrial symbiosis for bio-waste valorisation

Type of action	Innovation Action-Flagship
Indicative budget	The total indicative budget for the topic is EUR 18 million
Expected EU contribution per project	It is estimated that a contribution of EUR 18 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 8 at the end of the project.
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	2.1.1: Demonstrate the sustainable supply of bio-based feedstock 2.1.2: Deploy innovative production technologies 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	1.2: Number of (bio)waste management actors, involved as project beneficiaries and/or engaged in value chains at project level 2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 4: Improve environmental sustainability of bio-based production processes and value chains 5.2: Number of projects developing circular production practices (incl. industrial & industrial-urban symbiosis) 6: Increase innovative bio-based outputs and products 10.2: Number of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy and its action plan, the Waste Framework Directive and the Landfill Directive, with respect of the objectives on bio-waste management. Project outcomes will contribute to the objectives of the Circular Economy communication and action plan.

Projects results are expected to contribute to the following expected outcomes:

- Establishment of a full-scale biorefinery and related value chain(s) for the sustainable valorisation of bio-waste into added-value bio-based products, with high replication potential.
- Reduction of the amount of bio-waste currently going for incineration or landfilled.
- Reduction of greenhouse gas emissions and other pollutants, due to avoiding landfilling and incineration of bio-waste.
- Demonstrated economic and social benefits for the municipalities involved in the provision of bio-waste.
- Increased number and quality of jobs at local and regional levels.
- Increased social acceptance of targeted bio-based products from bio-waste and citizen engagement in bio-waste prevention and separate collection.

Scope

According to the Waste Framework Directive, bio-waste must be '*either separated and recycled at source, or is collected separately and is not mixed with other types of waste*' as of the 1st January 2024 in EU[27] then providing an increasing amount of bio-based feedstock for any circular use. Separately collected urban bio-waste is mostly valorised into state-of-the-art anaerobic/aerobic digestion, currently, resulting mainly in biomethane and/or compost. Alongside such treatments, other valorisation routes could further support phasing out landfilling and incineration[28], while prioritizing the prevention of waste, in general. There is a presently untapped potential at industrial scale to valorise urban bio-waste into higher value bio-based product(s). Some innovative routes have been demonstrated or are under demonstration, tackling the technological challenges related to the complexity of this feedstock in terms of composition and its variability across seasons. Urban-industrial symbiosis may be instrumental to overcome such challenges both upstream and/or downstream the bio-waste valorisation pathways.

The main feedstock in scope for this topic is separately collected urban bio-waste, as defined under the Waste Framework Directive[29]. According to the specific targeted conversion routes, organic waste from industry can be used as supplementary feedstock.

Proposals under this topic should:

- Demonstrate feasibility and viability of a full-scale biorefinery model converting bio-waste (as defined above) into added value[30] products. Approaches exploiting synergies with existing waste management infrastructures, including separate collection of targeted bio-waste, and of urban-industrial symbiosis (upstream and downstream) are in scope.
- Demonstrate the production of safe-and-sustainable-by-design (SSbD) added-value bio-based products, minimising the generation of waste. The projects should include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission.[31] Under this context, projects are expected to also contribute with and

[27] Directive - 2008/98 - EN - Waste framework directive - EUR-Lex (europa.eu)

[28] See also examples for the production of chemicals through the conversion of organic as reported in the BREF on Waste, under the anaerobic processes (4.3.1.1 Innovative processes). Also the Taxonomy regulation indicates how to use bio-waste in the delegated act on circular economy objective (see, for example, the manufacture of plastic packaging goods and the anaerobic digestion of bio-waste into chemicals.)

[29] i.e., biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants

[30] Added value in this case means value higher than compost and biogas

[31] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

develop recommendations that can advance further the application of the SSbD framework.[32]

- Address logistic aspects (including separate bio-waste collection, proximity to urban areas, etc) influencing the economic viability and social acceptance of the value chain.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU Call 2025, proposals under this topic should:

- As part of the multi-actor approach (MAA), ensure adequate involvement of all key actors in the value chains relevant for this topic and across the sustainable circular bio-based system, including bio-waste management operators, local/regional authorities, policy makers, citizens/consumers' representatives, bio-based process developers/biorefineries.
- Include a task to address the regulatory framework aspects related to the use of bio-waste streams and their conversion to end products, with particular reference to the end of waste criteria to ensure future marketability of the developed products.
- Include a task to perform an assessment of social involvement and long-term benefits, including local employment, potential reduction of waste management charges, lower pollution, products and/or services and/or revenues received back from the biorefinery(ies).
- Identify regions/areas in EU/EEA/EFTA countries and ACs with high potential for such industrial/urban symbiotic approach. Include a task to implement in selected regions/areas a knowledge-transfer mechanism towards those where the bio-waste from municipalities is not separately collected and/or not properly valorised, or where there are options applied which are low in the waste hierarchy, i.e. incineration and landfilling. Address the regulatory framework of the identified regions/areas on the management of bio-waste and its treatments, exploring also differentiated business models (e.g., public and private waste management operators).
- Demonstrate innovativeness compared to state-of-the-art processes already targeted in innovation action and flagship projects[33], and establish synergies with past BBI JU and Horizon2020 projects[34].
- Establish within the project synergies with projects under the Circular Cities and Regions initiative (CCRI)[35], the EU Hubs for Circularity (H4C)[36] and the Mission 'Climate neutral and smart cities', through a dedicated task within the communication and dissemination activities.
- Explore within the project synergies with other funding instruments.

[32] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection

[33] E.g. CIRCULAR BIOCARBON, MIXMATTERS, CIRCLE.

[34] For example, BBI JU: URBIOFIN, EMBRACED, DEEP PURPLE. H2020: DAFIA, VOLATILE, VALUEWASTE, SCALIBUR, WaysTUP!, HOOP, RES URBIS

[35] Circular Cities and Regions Initiative | Circular Cities and Regions Initiative (europa.eu)

[36] DOI: 10.2777/938962

HORIZON-JU-CBE-2025-IAFlag-02 Bio-based drop-ins/smart drop-in platform chemicals, via cost-effective, sustainable and resource-efficient conversion of biomass

Type of action	Innovation Action – Flagship
Indicative budget	The total indicative budget for the topic is EUR 20 million
Expected EU contribution per project	It is estimated that a contribution of EUR 20 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 8 at the end of the project.
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors, including feedstock providers in the bio-based value chains. 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance
Link to CBE JU SRIA	2.1.1: Demonstrate the sustainable supply of bio-based feedstock 2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative biobased products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	2: Number of innovative bio-based value chains created or enabled based on sustainably-sourced biomass 3: Ensure environmental sustainability of feedstock 4: Improve environmental sustainability of bio-based production processes and value chains 6.2: Number of innovative bio-based drop-in outputs meeting applications requirements

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy[37] and its action plan, the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[38] and the Zero Pollution Action Plan[39], the EU Industrial strategy[40]as well as and the co-implementation of the Transition Pathway for the chemicals industry[41].

[37] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[38] The EU's chemicals strategy for sustainability towards a toxic-free environment

[39] Brussels, 12.05.2021, COM(2021) 400 final

[40] Brussels, 5.5.2021 COM(2021) 350 final.

[41] Transition Pathway for the chemicals industry

Projects results are expected to contribute to the following expected outcomes:

- Establishment of a full-scale biorefinery and related value chain(s)for the sustainable large-scale production of bio-based drop-in platform chemicals.
- Availability of bio-based products meeting market and technical performance requirements, hence also facilitating the market uptake of bio-based solutions.
- Significantly improved sustainability, strategic autonomy, resilience and competitiveness of the European chemical industry and with impact also in other downstream sectors.
- Reduction of the fossil feedstock dependence of chemicals production and minimise biomass imports dependencies of the bio-based industries.
- New skilled job opportunities and investments in the bio-based sectors.

Scope

Overall, bio-based platform chemicals, according to their chemical structure, can be classified as dedicated and drop-ins.[42] Drop-in and smart drop-in chemicals are compatible with downstream value chains and thus have a theoretically lower market entry barrier compared to novel molecules. However, they have to face direct competition with their fossil-based counterparts, thus needing economies of scale and related large CAPEX investments to be competitive.

Proposals under this topic should:

- Demonstrate cost-effective, robust, sustainable, and resource-efficient, large-scale production processes for obtaining bio-based drop-in (including smart drop-in) platform chemicals at end TRL: 8. Both upstream and downstream process aspects are in scope. Bio-based drop-in platform chemicals should be analogues of fossil-based chemicals that are not substances of very high concern (SVHCs).
- Target resource efficiency, energy efficiency (including Renewable Energy sources), affordable CAPEX/OPEX, minimisation of the E-factor (process waste), as well as process safety aspects. The cascading valorisation of secondary biomass and residual streams is also in scope.
- Demonstrate the further conversion and integration of produced chemicals into final products (reaching an end TRL 6 or higher). The chosen bio-based chemical(s) should be validated in market-relevant application(s).

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- As part of the Multi-Actor Approach, ensure adequate involvement of key actors most relevant for achieving the objectives of the project from across the sustainable circular bio-based system, including B2B end-users and feedstock providers.
- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission[43] for the assessment of the platform chemicals' production process as well as the chosen final products derived from the drop-in platform chemicals. Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[44]

[42] See definitions in the glossary.

[43] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[44] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

- Address compliance with regulatory frameworks, considering the targeted platform chemical(s) and related impurities type and concentration.
- Avoid overlaps and ensure synergies and complementarities with finalised and ongoing projects, including under Cluster 6 and Cluster 4 of Horizon Europe.[45]
- Explore synergies with other funding instruments.

[45] For example: AFTERBIOCHEM, URBIOFIN, BIOFOREVER, OPTISOCHEM, PROMOFER

HORIZON-JU-CBE-2025-IAFlag-03 Circular-by-design fibre-based packaging with improved properties

Type of action	Innovation Action – Flagship
Indicative budget	The total indicative budget for the topic is EUR 18 million
Expected EU contribution per project	It is estimated that a contribution of EUR 18 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 8 at the end of the project.
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance
Link to CBE JU SRIA	2.1.1: Demonstrate the sustainable supply of bio-based feedstock 2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative biobased products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	4: Improve environmental sustainability of bio-based production processes and value chains 5.1: Number of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular by design) 6: Increase innovative bio-based outputs and products 7: Market uptake of bio-based products

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy[46] and its action plan, the Circular Economy Action Plan[47], the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[48] and the Zero Pollution Action Plan[49], the EU Industrial strategy[50], the EU Biodiversity strategy 2030[51], the Regulation on

[46] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[47] Brussels, 11.3.2020 COM(2020) 98 final

[48] The EU's chemicals strategy for sustainability towards a toxic-free environment

[49] Brussels, 12.05.2021, COM(2021) 400 final

[50] Brussels, 5.5.2021 COM(2021) 350 final.

[51] Biodiversity strategy for 2030

Deforestation-free Products[52] and the proposal for a Packaging and Packaging Waste Regulation[53] as well as the Eco-design for sustainable products regulation[54].

Projects results are expected to contribute to the following expected outcomes:

- Establishment of a full-scale manufacturing facility and related value chain(s) for the sustainable large-scale production of fibre-based packaging.
- Availability of a broader range of circular bio-based packaging products meeting market requirements (depending on specific application), ensuring end-users acceptance.
- Improved sustainability, safety and circularity of packaging with respect to existing fossil and/or bio-based benchmarks.
- New skilled job opportunities and investments in the bio-based sectors.

Scope

The packaging industry is facing several challenges in terms of material supply, sustainability, legislation and market dynamics. In particular, the environmental impact of packaging products is a source of concern, especially in relation to the use of fossil-based plastics: over 40% of the plastic produced worldwide is for packaging, but its recycling rate is still very low[55]. Fibre-based packaging products already represent the most common packaging materials in the EU (40%), followed by plastic (19%), and have well-established recycling routes.

New production technologies are emerging yielding fibre-based packaging materials with improved or novel properties enabling their wider use in new application areas, which could lead to a replacement of current incumbents with more circular and sustainable fibre-based alternatives. In order for this to happen, a substantial scale-up of production processes is needed to enable fibre-based packaging with competitive performance and cost.

Proposals under this topic should:

- Upscale production technologies and deploy the complete value chain to fibre-based packaging materials at end TRL: 8, with improved or novel properties (over specified bio-based and/or non-bio-based benchmark) addressing relevant market applications. Consumer / industrial primary, secondary and tertiary packaging products are in scope. Fibre-derived packaging is also in scope.
- Demonstrate (at end TRL: 8) the application of targeted fibre-based materials into end packaging products, proving to meet market requirements. The use of bio-based add-ons (e.g., additives, coatings, adhesives, films, etc…) to improve properties of the fibre-based materials and/or end packaging product(s) is also in scope - proven that they are not hindering targeted EoL and that fibre is the main component of the packaging;
- Design the packaging products for circularity and validate their sustainable end-of-life at relevant scale (TRL 6 and above). Recycling, reuse and remanufacturing are all in scope.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

[52] Regulation (EU) 2023/1115 on deforestation-free products

[53] https://eur-lex.europa.eu/EN/legal-content/summary/packaging-and-packaging-waste.html

[54] Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC

[55] lower than 10%, source: OECD

- Consider end-users/consumers perception, behaviour and preferences across the different steps of products' lifecycle: product design, use and end-of-life (for the latter e.g., avoiding littering, enabling easy sorting and high-target recycling with the correct stream).
- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission.[56] Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[57]
- Include a task to address the regulatory status of the demonstrated packaging product(s)[58] and their safety for the intended use.
- Ensure synergies and avoid overlaps and complementarities with finalised and ongoing projects on fibre-based packaging[59], including under Cluster 6 and Cluster 4 of Horizon Europe.
- Explore synergies with other funding instruments.

[56] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[57] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection

[58] With specific reference to the proposal for a Packaging and Packaging Waste Regulation. On 4 March 2024, the Parliament and Council reached a provisional agreement on the proposed Regulation.

[59] Including BBI JU-funded projects FRESH (IA, 2015), PULPAKTION (IA, 2015), SHERPACK (RIA, 2016), CelluWiz (RIA, 2018) and R3PACK (IA)

HORIZON-JU-CBE-2025-IAFlag-04 Retrofitting of industrial plants towards higher-value bio-based products

Type of action	Innovation Action – Flagship
Indicative budget	The total indicative budget for the topic is EUR 20 million
Expected EU contribution per project	It is estimated that a contribution of EUR 20 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 8 at the end of the project.
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance
Link to CBE JU SRIA	2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative biobased products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	4: Improve environmental sustainability of bio-based production processes and value chains 6: Increase innovative bio-based outputs and products 9: Number of projects contributing to develop the skills and capacity needed by the EU bio-based sector 10.2: Number of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy[60] and its action plan, the Circular Economy Action Plan[61], the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[62] and the Zero Pollution Action Plan[63], the EU Industrial strategy[64].

Projects results are expected to contribute to the following expected outcomes:

- Establishment of a brownfield biorefinery based on a retrofitted industrial plant towards bio-based products with a higher value than the ones produced in the old configuration.

[60] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[61] Brussels, 11.3.2020 COM(2020) 98 final

[62] The EU's chemicals strategy for sustainability towards a toxic-free environment

[63] Brussels, 12.05.2021, COM(2021) 400 final

[64] Brussels, 5.5.2021 COM(2021) 350 final.

- Deployment of a competitive, replicable, regional/local business model, encompassing all segments of the value chain, centred on the reconfiguration of the targeted industrial site.
- Improvement in overall sustainability and circularity compared to the old configuration.
- Increased value for society, in terms of number and quality of jobs at local and regional levels - or at least maintaining jobs in plants risking closure/downsizing – and other social benefits.

Scope

Europe is home to many industrial facilities, that are currently redundant, under-exploited, or are becoming obsolete. Their infrastructures nonetheless represent a valuable asset that can contribute to European bioeconomy when converted to biorefineries – an approach exemplified in a number of large-scale projects across Europe. Benefits of exploiting existing plants include easier permits, reduction of CAPEX and other economic and technological benefits (e.g., shorter lead times, faster implementation, fewer production time losses and lower risks compared to fully greenfield plant construction). However, significant challenges are also related to such projects in terms of conversion of industrial equipment and reskilling of the workforce. Both existing biorefineries and fossil-based industrial plants on brownfield are in scope of this topic as a target of the retrofitting action. Greenfield implementation is out of scope.

Proposals under this topic should:

- Retrofit an existing industrial facility with innovative and sustainable biomass conversion process(es) yielding more valuable product(s) than the one(s) produced with the old process(es).
- Demonstrate the production of bio-based chemicals and materials (reaching end TRL 8) and their further conversion into end products (end TRL 6 or higher) to be validated in market-relevant application(s). Moreover, proposals should also address cascading valorisation of residual streams across the value chain.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- As part of the Multi-Actor Approach, establish the full value chain including biomass supply and logistics, with the appropriate involvement of biomass providers, fostering the creation or enhancement of a local/regional ecosystem centred around the biorefinery.
- Design and implement a training programme(s) for upskilling/reskilling the (bio)refinery and related ecosystem workforce.
- Improve the environmental sustainability and safety profile of the biorefinery by: reducing/eliminating the use of hazardous substances, decrease and control pollutants emissions, increase circularity, and reduce energy consumption from non-renewable sources.
- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission.[65] Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[66]

[65] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[66] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

- Ensure synergies and avoid overlapping with past and ongoing R&I projects addressing similar challenges, including under Cluster 6 and other Clusters of Horizon Europe.[67]
- Explore synergies with other funding instruments.

[67] For example: BBI JU-funded Flagship project FIRST2RUN, RESOLUTE, SUSTAINEXT and VIOBOND, CBE JU-funded Flagship projects TERRIFIC and CIRCLE. In addition, proposals should envision assessing possible synergies with projects to be funded under 'HORIZON-CL5-2024-D3-02-03: Development of smart concepts of integrated energy driven biorefineries for co-production of advanced biofuels, biochemicals and biomaterials'.

HORIZON-JU-CBE-2025-IA-01 Sustainable macroalgae systems for innovative, added-value applications: cultivation and optimised production systems

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 14 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 6-7 at the end of the project.
Link to CBE JU Specific Objectives	1.1: Increase the intensity of cross-disciplinary research and innovation activities 1.3 Increase and integrate the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations 2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	1.1.1: Ensure the availability and quality of sustainable bio-based feedstock 1.1.2: Develop innovative production systems in the bio-based industry 1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems 2.1.1: Demonstrate the sustainable supply of bio-based feedstock 2.1.2: Deploy innovative production technologies 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	1.1: Number of primary producers, involved as project beneficiaries and/or engaged in value chains at project level 2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 3: Ensure environmental sustainability of feedstock at contribute to enhance biodiversity 4: Improve environmental sustainability of bio-based production processes and value chains 6: Increase innovative bio-based outputs and products

Expected outcomes

Successful proposals will contribute to EU Initiative on Biotechnology and Biomanufacturing[68], the Bioeconomy Strategy[69] and its action plan, as well as the Zero Pollution Action Plan[70]; the implementation of the EU strategy for a Sustainable Blue Economy and address the EC Communication 'Towards a Strong and Sustainable EU Algae Sector'[71]. Significant contribution is also expected to the objectives of the R&I Mission 'Restore our Oceans and Waters by 2030' in particular to Objective 3: "Make the blue economy carbon-neutral and circular".

Projects results are expected to contribute to the following expected outcomes:

- Proven industrial scalability potential of sustainable and more diverse range of cultivation, pretreatment and valorisation options for macroalgae species.[72]
- Novel bio-based products and viable business opportunities for bio-based applications from cultivated macroalgae.
- Socio-economic benefits with demonstrated potential for job creation and/or preservation (e.g. in case of declining blue economy professions).
- Demonstrated environmental sustainability, encompassing biodiversity and water quality preservation and/or enhancement, and, when applicable, restoration.

Scope

Whether exploiting its biomass or genetic potential, the aquatic environment may play a major role in a sustainable bioeconomy. It may help reduce pressure on land and contribute in a sustainable and more diverse manner with the supply of sustainable biomass for food, feed and other industry applications. Design and engineering principles for marine biorefining are in their infancy compared to biorefineries for terrestrial crops. The development of sustainable, stable and scalable cultivation technologies, as well as addressing sustainable and cost-efficient harvesting, product extraction and biorefinery processes, represent the main challenges of algal biotechnology for production of high-value or bulk products. At the same time, care must be taken to avoid any detrimental effect on marine ecosystems and biodiversity from macroalgae cultivation (especially when carried out in open environments), ideally even contributing to their regeneration.

Proposals under this topic should:

- Select and optimise macroalgal feedstocks (both naturally occurring and modified varieties are in scope), focusing on applications with high market potential. Capitalise on existing data, infrastructures, and knowledge. In line with the EU Algae Initiative, harvesting macroalgae from the wild is excluded, as the topic focuses on cultivation.
- Demonstrate cultivation in suitable and scalable sustainable systems, aiming at high biomass yield, optimised production parameters (e.g. light, O_2, CO_2, nutrients, pH, temperature, seasonal variations). Both cultivation in open environment and in closed systems are in scope. Multitrophic and mixed cultivation approaches (e.g. multiple algae species, algae and fish/shellfish farming etc) are in scope, as well as algae-mediated remediation and the use of nature-based solutions.
- Demonstrate environmentally sustainable and cost-efficient biomass production, harvesting and storage, ensuring at minimum no negative, and ideally positive/regenerative, impacts on marine/land ecosystems and marine biodiversity.

[68] Brussels, 20.3.2024 COM(2024) 137 final

[69] Updated Bioeconomy Strategy 2018

[70] Brussels, 12.05.2021, COM(2021) 400 final

[71] COM(2022) 592 final 'Towards a Strong and Sustainable EU Algae Sector'

[72] EU-native species in open environments, while non-native species may be supported in closed systems

- Demonstrate further sustainable biomass processing and conversion steps into added value bio-based products.
- Maximize the resource / energy efficiency across the value chain. Integration with renewable energy sources can be considered.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Ensure environmental safety and avoidance of environmental risks, including monitoring and mitigation measures during the project. In particular, the environmental assessment must also include aspects such as biodiversity protection and possible enhancement, avoidance of invasiveness, and toxicity, carbon sequestration and nutrients loads.
- Include a task to assess public perception and acceptance of the demonstrated value chains, related, e.g. to (potential) impact of large-scale macroalgae production on land and marine ecosystems.
- As part of the Multi-Actor Approach, include relevant local/regional authorities, to address coastal governance aspects, as well as end-users and consumers, when targeting B2C products.
- Ensure complementarities and avoid overlaps with past and ongoing R&I projects addressing similar challenges[73]. Establish synergies with the European Algae Stakeholder Platform (EU4Algae) and capitalise on its EU Algae projects database.

[73] including BBI/CBE projects ALEHOOP, BIOSEA, MACRO CASCADE, PROTEUS, PROMISEANG and Horizon Europe projects AlgaePro BANOS, LOCALITY

HORIZON-JU-CBE-2025-IA-02 SSbD bio-based solutions to replace hazardous conventional chemicals for textiles production.

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 13.5 million
Expected EU contribution per project	It is estimated that a contribution of EUR 6.75 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 6-7 at the end of the project.
Link to CBE JU Specific Objectives	1.3 Increase and integrate the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations 2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	1.3.2: Improve environmental performances of bio-based processes 2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative bio-based products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 4: Improve environmental sustainability of bio-based production processes and value chains 5.2: Number of projects developing circular production practices 7: Number of brand owners involved as project partners and/or engaged with other mechanisms

Expected outcomes

Successful proposals will address the EU Bioeconomy Strategy, the Chemicals Strategy for Sustainability and the EU strategy for sustainable and circular textiles. Indirect contribution is expected towards the objectives of the Mission "Restore our Ocean and Waters by 2030" in particular to Objective 2: "Prevent and eliminate pollution of our oceans, Seas and waters".

Projects results are expected to contribute to the following expected outcomes:

- Availability of SSbD bio-based solutions for the textile industry, meeting technical and market performance requirements.

- Improvement in sustainability, circularity and safety of the textiles industry. In addition, reduction of pollution (including micropollutants and emerging contaminants, as relevant) from the production, use and end-of-life phases of textile value chains & with a ripple effect in downstream sectors.
- Improved social impacts along the textiles value-chain and broad socio-economic benefits.

Scope

The EU Textiles Strategy announced actions along the textiles value chain to increase circularity and sustainability. The European consumption of textiles has the fourth highest impact on climate change and the environment, after the food sector, housing and mobility. Conventional textiles production is one of the most resource intensive and polluting industries. Many textiles' functionalities and properties can currently only be achieved through processing with chemistry that has been identified as hazardous or of potential concern. This includes coatings such as PFAs, heavy-metal-rich dyes and fixing agents, solvents, and surfactants. Moreover, fossil-based polymers, e.g., PVC and PU, have widespread use in coated fabrics but they are under scrutiny for the potential adverse effects (due to their additives), and high health& safety impacts in their production phase, use, and end of life. Overall, adequate substitutes of hazardous substances need to be demonstrated and introduced into textile value chains, including considering any challenges in the case of potential remanufacturing and textiles-to-textiles recycling. There is a potential to demonstrate innovative bio-based chemicals and processes to substitute currentlyused hazardous chemicals.

Proposals under this topic should:

- Upscale SSbD bio-based alternatives to hazardous conventional chemicals used in the production of textiles. Bio-based solutions applicable to bio-based and/or fossil-based textiles production are both in scope.[74] Chemicals in scope for replacement include both those that are currently only used in production processes and those that are present in the end-product(s). SSbD bio-based solutions in scope are:
    - chemicals (organic and/or inorganic compounds) AND/OR
    - processing routes, removing the need for chemical-to-chemical substitution.
- Ensure compatibility of the innovative chemicals and/or processes with textile manufacturing equipment and practices.
- Test the impact of the alternative bio-based chemical(s) and/or process on the end-product(s), based on available standards. The action can target garments, technical textiles or other products (e.g., footwear, non-woven textiles) towards improving the production of bio-based and/or fossil-based textiles. More specifically, assess their technical performance (depending on end application), human safety and environmental impact against relevant benchmarks, considering production, use and end of life (EoL). Specify all the different and applicable EoL scenarios considered (e.g., recycling, remanufacturing etc.).

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- As part of the Multi-Actor Approach, ensure adequate involvement of all key actors in the value chains relevant for this topic, including textiles manufacturers, especially SMEs and brand owners, raw materials suppliers, process industries, regional/local authorities and workers' organisations (HS&E).

[74] Definition on textiles

- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, including the health and safety of workers and end users.[75] Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[76]
- Ensure complementarities and avoid overlaps with relevant projects from BBI JU/CBE JU[77] but also Horizon Europe Clusters 6[78] and 4 (including the upcoming partnership on Textiles: 'Textiles for the Future').

[75] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[76] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection

[77] For example: GLAUKOS

[78] For example: CELLFIL, TexMaTer, SOLSTICE, BioSusTex

HORIZON-JU-CBE-2025-IA-03 Scaling-up nutritional proteins from alternative sources

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 14 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 7 at the end of the project
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative biobased products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 3: Ensure environmental sustainability of feedstock 4.1: Number of projects with innovative & sustainable processes that contribute to GHG emissions reduction 4.2: Number of projects developing innovative & sustainable processes that improve on resource efficiency and zero waste 5.2: Number projects developing circular production practices (incl. industrial & industrial-urban symbiosis) 6: Increase innovative bio-based outputs and products

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy[79] and its action plan, the EU Industrial strategy[80], the Circular Economy Action Plan[81], Europe's food

[79] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[80] Brussels, 5.5.2021 COM(2021) 350 final.

[81] Brussels, 11.3.2020 COM(2020) 98 final

security and Farm2Fork strategy ambition[82] as well as the Food 2030 pathways[83] and the EU Initiative on Biotechnology and Biomanufacturing[84].

Projects results are expected to contribute to the following expected outcomes:

- Increased availability of sustainably sourced nutritional proteins.
- Increased resilience of food systems via diversification of protein sources.
- Contribution to the sustainability of food systems in terms of resource consumption within planetary boundaries (land use, water use, energy consumption, nitrogen cycle, other nutrients).
- Improved consumers' acceptance of proteins from alternative sources.

Scope

The overarching challenge of ensuring sufficient sustainable availability of proteins for human and animal nutrition is far from being solved. The shift towards sustainably sourced alternative proteins can contribute to building food system resilience. If the proteins are sourced locally, this can also reduce dependency on protein imports as highlighted in the European Protein Strategy[85]. Many alternative protein sources already exist and increasing R&I efforts is needed to boost their uptake as key nutritional food and feed ingredient, while ensuring safety and acceptability to consumers/end-users. Previous R&I projects dealing with alternative proteins have been mainly focused on studying new production technologies, providing relevant contribution to developing new knowledge. However, there is still the need to foster innovation by scaling-up processes enabling to respond to end-user needs, decreasing production costs and improving circularity[86].

Proposals under this topic should:

- Demonstrate innovative processes for the extraction/production of proteins for application as nutritional food starting from alternative sources. Different feedstock sources are in scope: plants, invertebrates, fungi, aquatic biomass, proteins from fermentation, biogenic gaseous carbon. Proposals should target nutritional proteins for food; the co-production of other bio-based products including feed is also in scope via the cascading approach. Pure proteins, protein-rich mixtures and protein-enriched ingredients are in scope[87].
- Address efficient and cost-effective downstream separation and purification processes (when applicable), to meet the targeted quality and stability for final applications.
- Demonstrate nutritional adequacy of the proteins and their effect on food formulations according to established testing procedures. Additional properties (e.g., prevention of intolerances/allergies[88], improved digestibility, etc…) are also in scope depending on the application.
- Address resource efficiency and circularity aspects to increase economic and socio-environmental added value. When pursuing circular models, ensure that neither pathogens nor contaminants are injected back in the loop, to ensure no negative toxicological effects.

[82] Brussels, 20.5.2020 COM(2020) 381 final

[83] Food 2030 pathways for action - Research and innovation policy as a driver for sustainable, healthy and inclusive food systems

[84] Brussels, 20.3.2024 COM(2024) 137 final

[85] European Parliament resolution of 19 October 2023 European protein strategy (2023/2015(INI))

[86] Food 2030 Research and Innovation – Pathways for action 2.0: Research and innovation policy as a driver for sustainable, healthy, climate-resilient and inclusive food systems

[87] At least 50% in weight protein content

[88] Taking into account the opinions of EFSA: EFSA Journal 2022;20(5):7258. EFSA Journal 2022; 20(7):7325. EFSA Journal 2021:19(1):6343. EFSA Journal 2021;19(7):6667; EFSA Journal 2021;19(7):6667.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Test the safety of developed proteins and formulations through toxicological tests, in line with EU regulatory requirements and EFSA guidelines. Moreover, identify potential regulatory gaps and provide recommendations to overcome potential bottlenecks.
- Include a task on consumer awareness and acceptance: involve end-users (including consumers) starting from the early stages to assess market acceptance of the novel proteins and incorporate insights in product development. Moreover, design and implement information campaign to raise awareness about the diversification of protein sources, encompassing young consumers, to help shape sustainable healthy diets.
- Ensure synergies and avoid overlapping with past or ongoing Horizon 2020/Europe[89] and BBI/CBE JU projects[90].

[89] Considering those mentioned in Food 2030 Research and Innovation – Pathways for action 2.0: Research and innovation policy as a driver for sustainable, healthy, climate-resilient and inclusive food systems.

[90] Horizon 2020 projects: SMART PROTEIN, NEXTGENPROTEINS, SUSINCHAIN, PROFUTURE; BBI/CBE-JU IA projects: SYLPLANT, PLENITUDE, ALEHOOP. ZEST, with regards to the consumer acceptance, projects GIANT LEAPS - HORIZON-CL6-2021-FARM2FORK-01 (2022-2026, RIA), LIKE-A-PRO- HORIZON-CL6-2022-FARM2FORK-01 (RIA 2022-2026)

HORIZON-JU-CBE-2025-IA-04 Cost-effective and robust continuous biotech bio-based processes

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 14 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 6-7 at the end of the project.
Link to CBE JU Specific Objectives	1.1: Increase the intensity of cross-disciplinary research and innovation activities 2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	1.1.2: Develop innovative production systems in the bio-based industry 1.3.2: Improve environmental performances of bio-based processes 2.1.2: Deploy innovative production technologies 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	4: Improve environmental sustainability of bio-based production processes and value chains 5.2: Number projects developing circular production practices 6: Increase innovative bio-based outputs and products

Expected outcomes

Successful proposals will contribute to the EU Initiative on Biotech and Biomanufacturing [91], the implementation of the EU Bioeconomy Strategy[92] and its action plan, the Circular Economy Action Plan[93], the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[94] and the Zero Pollution Action Plan[95], the EU Industrial strategy[96], the EU Biodiversity strategy 2030[97].

[91] Brussels, 20.3.2024 COM(2024) 137 final

[92] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[93] Brussels, 11.3.2020 COM(2020) 98 final

[94] The EU's chemicals strategy for sustainability towards a toxic-free environment

[95] Brussels, 12.05.2021, COM(2021) 400 final

[96] Brussels, 5.5.2021 COM(2021) 350 final.

[97] Biodiversity strategy for 2030

Projects results are expected to contribute to the following expected outcomes:

- Increased scale-up potential and sustainability of biotech processes to produce bio-based chemicals, materials and/or ingredients with competitive OPEX, contributing to increased competitiveness of industrial biotech in EU.
- Enhanced biotech processes, adaptability and integrability with existing assets and technical infrastructure.
- Increased and stable productivity and selectivity compared to benchmark batch/fed-batch process(es), if available at industrial scale.
- Purity of end-product(s) in line with application requirements.

Scope

Many bio-based chemicals/products are manufactured via biotech batch or fed-batch processes at commercial scale, which despite of being easier to be controlled and upscaled, often result into lower productivity, higher equipment downtime and increased costs. Continuous biotech processes could represent promising emerging alternatives in biorefineries targeting high productivity and reduced costs. Despite significant advancements in some cases having been achieved, there are still challenges to overcome towards scaling-up: contamination risks, genetic instability of cells, maintaining simultaneously high production titer, productivity and yield, lack of capability of further downstream processing (DSP) to handle flow and concentration variations from upstream process, advanced monitoring and control.

Proposals under this topic should:

- Identify the existing bottlenecks in the switch to continuous, how the proposed innovative approach can overcome challenges of targeted processes, that are currently only operating in batch mode, and specify the advantages of switching to continuous.
- Demonstrate continuous biotech processes (microbial, cell factories and/or enzymatic) for the sustainable production of bio-based chemicals, materials and/or ingredients[98] addressing identified production process bottlenecks.
- Together with addressing continuous upstream processing (encompassing biocatalysis optimisation), demonstrate integration of efficient DSP systems to achieve high purity, in compliance with final applications requirements, while also facilitating/not hindering the continuous upstream operation. Focus on one or more bio-based chemicals, materials and/or ingredients with high market potential.
- Address resource/energy efficiency and circularity by applying process intensification and by valorising upstream and downstream side-streams (e.g., water, fermentation media, exhausted cells, etc…).

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Implement on-line monitoring and control systems including (if relevant) advanced AI/digital tools.
- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission.[99] Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[100]

[98] Food/feed ingredients other than proteins are in scope (for proteins production, see HORIZON-JU-CBE-2025-IA-04 Scaling-up nutritional proteins from alternative sources).

[99] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[100] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection

- Ensure synergies and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU[101] and the BBI JU and CBE JU[102].

[101] ROBUSTOO, CirculH2

[102] Zest, PROMOFER, FLEXIZYME, GoodByO

HORIZON-JU-CBE-2025-IA-05 SSbD bio-based polymers/copolymers unlocking new market applications

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 13.5 million
Expected EU contribution per project	It is estimated that a contribution of EUR 6.75 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 6-7 at the end of the project.
Link to CBE JU Specific Objectives	2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	2.1.2: Deploy innovative production technologies 2.1.3: Scale up production and market uptake of innovative biobased products 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems 3.1.3: Facilitate social acceptance of bio-based applications
CBE JU KPIs	2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 4: Improve environmental sustainability of bio-based production processes and value chains. 5: Expand circularity in bio-based value chains 6: Increase innovative bio-based outputs and products 7: Improve the market uptake of biobased products

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy[103] and its action plan, the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[104] and the Zero Pollution Action Plan[105], the EU Industrial strategy[106], as well as the co-implementation of the Transition Pathway for the chemicals industry[107].

[103] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[104] The EU's chemicals strategy for sustainability towards a toxic-free environment

[105] Brussels, 12.05.2021, COM(2021) 400 final

[106] Brussels, 5.5.2021 COM(2021) 350 final.

[107] Transition Pathway for the chemicals industry

Projects results are expected to contribute to the following expected outcomes:

- Availability of broader range of SSbD bio-based (co)-polymers meeting market requirements.
- Improved or novel properties unlocking novel applications and/or market sectors.
- Improved sustainability, safety and circularity when compared to benchmarks.
- Improved social acceptance of bio-based products in the transition to sustainable materials.

Scope

Despite of some advancements, there is the need to scale-up the most promising and innovative solutions to demonstrate the safe, sustainable, cost-competitive, and circular production of bio-based (co)polymers with high bio-based content and imparting advanced performances to unlock market opportunities in large volume sectors where bio-based polymers are currently underrepresented. Both bio-based polymers and co-polymers are in scope.

Proposals under this topic should:

- Demonstrate (at end TRL: 6-7) the production of bio-based (co-)polymeric structure(s) with market potential and functional properties at least on par with fossil-based counterparts (if any) and/or higher than bio-based benchmarks (if any). Adding new functionalities compared to benchmarks is also in scope.
- For the biobased (co)-polymers production, address resource efficiency measures to achieve costs reduction and higher sustainability, as for example reduction of primary energy consumption, water recycling, (bio)-catalyst recycling, side-streams/by-products valorisation, etc.
- Validate (at minimum at end TRL 5) the targeted (co-)polymeric structure(s) into end products proving to meet market requirements. Ensure (co-)polymer(s) processability and compatibility with downstream conversion route(s) into end products, targeting at least two application sectors. The development of bio-based composites is not in scope.
- Eco-design the bio-based (co)polymeric structure and related end products to address sustainable EoL. Validate the selected EoL option(s) of the (co)-polymeric structure at minimum at TRL 5. Existing EoL-frameworks should be taken into account (how the new (co)-polymers fit into existing collection and treatment and which changes may be necessary). Landfilling/incineration are not in scope as EoL options.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission for the polymer formulation(s). [108] Under this context, projects are expected to also contribute with and develop recommendations that can advance further the application of the SSbD framework.[109]
- Ensure synergies and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU.[110]

[108] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

[109] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

[110] CBE-JU projects: BIOPYRANIA, BIORING, CUBIC, FURIOUS, POLYMEER, Polymers-5B, THERMOFIRE

HORIZON-JU-CBE-2025-RIA-01 Valorisation of untapped forest biomass

Type of action	Research and Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 7 million
Expected EU contribution per project	It is estimated that a contribution of EUR 3.5 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 5 at the end of the project.
Link to CBE JU Specific Objectives	1.1: Increase cross-disciplinary research and innovation activities, reaping its benefits for the development and demonstration of sustainable bio-based solutions. 1.2: Increase and integrate the research and innovation capacity of stakeholders across the EU to unlock bioeconomy potential even in regions with underdeveloped capacity. 1.3: Increase the research and innovation capacity and development sustainable bio-based innovations, by ensuring that sustainability issues and environmental performance are integrated throughout the whole innovation chain. 3.1: Ensure that circularity and environmental considerations, including contributions to climate neutrality and zero pollution objectives, are considered in the development and implementation of R&I bio- based projects and facilitate societal acceptance.
Link to CBE JU SRIA	1.1.1: Ensure the availability and quality of sustainable bio-based feedstock 1.1.2: Develop innovative production systems in the bio-based industry 1.1.3: Develop innovative bio-based products 1.2.1: Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems 1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	1.1: Number of primary producers, involved as project beneficiaries and/or engaged in value chains at project level 2: Number of innovative bio-based value chains created or enabled based on sustainably-sourced biomass 3: Ensure environmental sustainability of feedstock 4: Improve environmental sustainability of bio-based production processes and value chains 6: Increase innovative bio-based outputs and products 10.1: Improve participation of regions and countries with high unexploited potential and strategic interest to develop it 10.2: Number of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects

Expected outcomes

Successful proposals will contribute to the implementation of the EU Forest Strategy for 2030[111], the EU Biodiversity Strategy for 2030[112], the EU Bioeconomy Strategy[113], Land Use, Land Use Change and Forestry Regulation[114], the Carbon Removal Certification Framework Regulation[115], and the EU Nature Restoration Law[116].

Projects results are expected to contribute to the following expected outcomes:

- Enhanced contribution of the forest-based sector to climate change mitigation and adaptation, forest restoration and resilience, biodiversity, and rural development objectives.
- Added value to the feedstock at the point of origin with optimised transportation and logistics costs throughout the value chain.
- Informed decision-making by forest owners and managers adopting sustainable forest management practices and novel technologies to better valorise unused and underutilised biomass.
- Development of new value chains, innovative business models and technologies resulting in novel bio-based chemicals, compounds, materials, and products from unused and/or underutilised forest biomass.
- Increased engagement and innovation capacity of regional and local actors, as well as positive social impact in rural areas. This includes additional sources of income for forest owners and managers, and rural actors through increased synergies with bio-based industries.

Scope

Forest managers often face challenges in implementing more sustainable practices. Additional value can be gained from forestry (both monocultured and mixed forests), agroforestry and horticulture as well as from their residual streams, and from the biomass removed for fire, flood, drought, and disease prevention. Valorisation of such biomass streams can contribute to address the risk of forest abandonment while preserving biodiversity. This is particularly important where the resulting forest or forest-like biomass is low in volume, value, or both. The available biomass mainly consists of small wood, damaged wood (e.g., wood affected by parasites), and various types of wood from mixed forests. Additionally, it includes non-wood biomass, such as shrubs, bark, cork, branches, and resin. These kinds of biomass generally have low or even negative economic value, meaning they often need to be disposed of at a cost. Typically, this biomass is burned locally for energy or simply incinerated, releasing CO_2 into the atmosphere and providing little or no economic benefit to forest managers. This topic should explore valorisation pathways for the targeted feedstock beyond bioenergy and biofuel production.

Proposals under this topic should:

- Develop innovative planning tools and technologies for harvesting, storage, pre-treatment of residual and/or low value, unused or underutilized forest biomass or lower volume or/and less homogeneous biomass. Adopt decentralised approaches, including small-scale,

[111] Forest strategy for 2030

[112] Biodiversity strategy for 2030

[113] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[114] Regulation - 2018/841 - EN - EUR-Lex (europa.eu)

[115] Carbon Removals and Carbon Farming - European Commission (europa.eu)

[116] Regulation - EU - 2024/1991 - EN - EUR-Lex (europa.eu)

mobile, containerised units, that consider the unique challenges across different European regions and among large, medium-sized, and small companies.

- Develop and test the feasibility of conversion routes to bio-based chemicals and compounds, materials, products, assessing the viability of new business models around these concepts.
- Test the local value chain by optimising logistics, improving cost efficiency, and collaborating with central hubs for further processing and refining. Actively involve local forest owners, managers, and other primary sector operators (e.g., farmers, horticulturists) to develop and test novel value chains in pilot areas.
- Address the feasibility for different ownership types and cooperative structures to ensure alignment with value-chain cooperation.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Provide recommendations for the development of EU carbon farming certification methodologies for the unused and underutilised forest biomass in long-lasting products (e.g., through forest protection, afforestation, and sustainable forest management).
- As part of the Multi-Actor Approach, ensure adequate involvement of all key actors in the value chains relevant for this topic and across the sustainable circular biobased system, including feedstock providers, industrial players, consumers, advisors, and policy makers. Explore synergies with existing initiatives and networks, such as the Common Agricultural Policy and the European and national CAP, the EIP-AGRI and the Agricultural Knowledge and Innovation Systems.
- Go beyond the specific feedstock environmental sustainability requirements by actively preventing soil degradation and biodiversity and carbon loss during the extraction of previously unused or underutilized forest biomass. Additionally, safeguards should be implemented to differentiate between various forest types and management practices. Assess impact on soil quality and health.
- Ensure synergy and avoid overlaps with projects funded under BBI JU, CBE JU and other relevant Horizon Europe projects.[117]

[117] such as calls BBI.VC2.R5-2015 with projects TECH4EFFECT and EFFORTE, HORIZON-JU-CBE-2023-R-02 with projects OptiForValue and SingleTree, and call HORIZON-JU-CBE-2024-CSA-01, and HORIZON-CL6-2023-CircBio-01-12 with projects Small4Good and SMURF

HORIZON-JU-CBE-2025-RIA-02 Bio-based and biodegradable delivery systems for fertilising products to reduce microplastics pollution & promote soil health

Type of action	RIA
Indicative budget	The total indicative budget for the topic is EUR 6 million
Expected EU contribution per project	It is estimated that a contribution of EUR 3 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 5 at the end of the project.
Link to CBE JU Specific Objectives	1.1: Increase the intensity of cross-disciplinary research and innovation activities 1.3 Increase and integrate the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations 3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.
Link to CBE JU SRIA	1.1.3: Develop innovative bio-based products 1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	1.1 Number of primary producers, involved as project beneficiaries and/or engaged in value chains at project level 4 Improve environmental sustainability of bio-based production processes and value chains 5.1 Number of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular by design) 6 Increase innovative bio-based outputs and products

Expected outcomes

Successful proposals will contribute to the implementation of the EU Bioeconomy Strategy and the updated EU Industrial Strategy. Moreover, successful proposals will deliver significant contribution to the R&I Missions 'A Soil Deal for Europe', in particular objectives 'Reduce soil pollution and enhance restoration', as well as Mission 'Restore our Oceans and Waters by 2030' in particular 'Prevent and eliminate pollution of our oceans, seas and waters' (including microplastics). In addition, there is an expected contribution on the delegated act introducing biodegradability criteria for polymers (such as coating agents) in the context EU fertilising products regulation.

Projects results are expected to contribute to the following expected outcomes:

- Scalable, safe and sustainable bio-based biodegradable delivery systems of fertilising products, with potential spillover effect on other additional inputs (such as pesticides and seeds) applicable to agriculture, with the potential of replacing conventional delivery systems, as reliable alternatives for farmers.
- Enhanced understanding of the biodegradation process, control factors of biodegradable delivery systems of fertilising products and their impact on plant development, on soil health (including soil microbiome) and water.
- Enabling the creation of new value chains incorporating biodegradable delivery systems at regional/local level with increased synergies between farmers and bio-based industries.

Scope

The presence of microplastics in soil has been reported to alter soil organic matter content, pH, electrical conductivity and organic carbon storage. It is estimated that 8 000 tonnes of polymers are used annually in the EU in polymer coated fertilisers (PCF)[118]. PCF can be used as additives to improve physical properties of fertilisers or to produce slow/controlled release fertilisers (SRF/CRF). CRFs help synchronise nutrients release according to crop needs, increasing efficiency and reducing losses to the environment. Non-biodegradable plastics accumulate in the ecosystem, can be assimilated by animals and can be ultimately consumed as food by humans[119]. Each year around 42 000 tonnes of microplastics end up in the environment. Polymer coated fertilisers have been identified by FAO as high priority in terms of risk of microplastic release. Bio-based biodegradable polymers may be an alternative to conventional non-biodegradable plastics. However, more research is needed to develop such biodegradable delivery systems and validate them while assessing improvements associated to microplastics release prevention.

Proposals under this topic should:

- Develop circular and sustainable production processes for novel bio-based and biodegradable delivery system(s) for fertilising products. In addition, assess the applicability/adaptability of the delivery system(s) to additional possible agricultural inputs such as pesticides and seeds.
- Validate the delivery system(s) for fertilising products (lab-scale and/or small-scale field trials), ensuring agronomic efficiency, safety, scalability and sustainability with similar or improved properties compared to conventional systems.
- Assess the long-term effect and biodegradability of delivery system(s) when applied in natural soil conditions, applying standard tests, methods and protocols. Biodegradability-related aspects should also be monitored and assessed in fresh, estuarine or marine water (considering the risk of dispersion in water).[120]

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Include a task to apply the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission,[121] considering the delivery systems and their decomposition products (including microplastics), and taking into account different farming systems (including organic agriculture). Under this context, projects are expected to also contribute

[118] Assessment of agricultural plastics and their sustainability: A call for action (fao.org) 2021

[119] Microplastics – ECHA europa.eu

[120] https://eur-lex.europa.eu/eli/reg_del/2024/1682/oj

[121] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

with and develop recommendations that can advance further the application of the SSbD framework.[122]

- As part of the Multi-Actor Approach, engage with farmers to develop, co-create and test the newly established delivery systems and analyse the effects on plant development, soil health and water.
- Ensure synergies and avoid overlaps with other Horizon projects under Mission Soil and relevant CBE-JU projects funded under the topic CBE-2023-IA-02, CBE-2024-RIA-03, CBE-2024-IA-01.[123]

[122] More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based chemicals. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection

[123] such as: ARAGORN, EDAPHOS and ISLANDR

HORIZON-JU-CBE-2025-RIA-03 Alternative biomanufacturing routes for natural and synthetic rubber

Type of action	Research and Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 6 million
Expected EU contribution per project	It is estimated that a contribution of EUR 3 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts
TRL	TRL 4-5 at the end of the project.
Link to CBE JU Specific Objectives	1.1: Increase the intensity of cross-disciplinary research and innovation activities 1.2: Increase and integrate the research and innovation capacity of stakeholders across the Union 1.3 Increase and integrate the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations 3.1. Ensure that circularity and environmental considerations, including contributions to climate neutrality and zero pollution objectives, are considered in the development and implementation of R&I bio- based projects and facilitate societal acceptance.
Link to CBE JU SRIA	1.1.1: Ensure the availability and quality of sustainable bio-based feedstock 1.1.2: Develop innovative production systems in the bio-based industry 1.1.3: Develop innovative bio-based products 1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	2: Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 3: Ensure environmental sustainability of feedstock 4: Improve environmental sustainability of bio-based production processes and value chains 6: Increase innovative bio-based outputs and products

Expected outcomes

Proposals under this topic are expected to support the 2024 EU Initiative on Biotechnology and Biomanufacturing[124], the EU Bioeconomy Strategy[125] and its action plan, the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability[126] and the

[124] Brussels, 20.3.2024 COM(2024) 137 final

[125] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[126] The EU's chemicals strategy for sustainability towards a toxic-free environment

Zero Pollution Action Plan[127], the EU Industrial strategy[128], the EU Biodiversity strategy 2030[129], the Regulation on Deforestation-free Products[130].

Projects results are expected to contribute to the following expected outcomes:

- Wider availability of sustainable sources of natural and/or bio-based synthetic rubber supporting European industrial competitiveness and strategic autonomy across various sectors of the (bio)economy.
- Competitive and robust production routes for natural and/or synthetic rubber, with high environmental performance, resource efficiency and sustainability.
- Biomanufactured alternatives to conventional natural and/or to fossil-based synthetic rubber meeting market requirements for targeted final applications

Scope

Rubber-based products have a wide array of applications such as automotive, construction, industrial, healthcare products and consumer goods. The market is roughly equally divided between natural rubber and fossil-based synthetic rubber. Natural rubber (NR), included originally in 2017 on the list of 'critical European raw materials', as one of the few 'biotic' critical raw materials, is found in more than 40,000 products and in many applications. Increasing NR demand is linked with sustainability issues, including sustainable land use, deforestation and forest degradation, labour rights, and control of potentially devastating fungal diseases. For its NR supply, Europe fully relies on imports. Natural rubber is amongst the commodities covered by the EU Regulation on Deforestation-free products. Moreover fossil-based elastomeric polymers (synthetic rubber) are also widely imported from outside EU for applications into a variety of sectors including automotive, construction, etc…

Considering the future market developments and related sustainability issues, and the issue of EU strategic autonomy for critical raw materials, European rubber manufacturers are urgently looking for resource diversification, taking care about the sourcing impacts on deforestation and forest degradation, to comply with the EU Regulation on Deforestation-free products. The focus is on broadening the range of sustainable natural rubber sources and alternatives to fossil based synthetic rubber for the European bio-based industry.

Proposals under this topic should:

- Identify and characterise the suitable sources of rubber-bearing genetic backgrounds (e.g., plants, yeast, microbial hosts, etc…) which are suitable for optimisation for natural and/or synthetic rubber biomanufacturing. When targeting plant-based sources, proposals should focus on implementing low-ILUC solutions.
- Develop bio-based solutions aiming at high yield of isoprenoid and/or other elastomers, e.g. by deploying the modern tools of biotechnology or other biomanufacturing approaches.
- Advance EU/AC-based production, extraction and/or processing methods, to enable high productivity and quality of high molecular weight natural rubber and/or other bio-based elastomers. Test the suitability of the developed biomanufactured alternatives into end-products.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

[127] Brussels, 12.05.2021, COM(2021) 400 final

[128] Brussels, 5.5.2021 COM(2021) 350 final.

[129] Biodiversity strategy for 2030

[130] Regulation (EU) 2023/1115 on deforestation-free products

- Address environmental aspects, aiming at lowering the overall environmental impact of the natural and /or synthetic rubber production in the EU/AC (and potentially, in the long term, globally) and at achieving its high sustainability (e.g. resource efficiency), as well as prevention of microplastics release, as appropriate.
- Ensure synergies and avoid overlaps with related ongoing or past EU funded actions[131].
- Contribute to the global discussion[132] on the sustainability of natural rubber and the alternatives developed in the project, e.g. within dissemination activities, as appropriate.

[131] e.g. Project MIDAS under the call HORIZON-CL6-2022-CIRCBIO-01-02 - Marginal lands and climate-resilient and biodiversity-friendly crops for sustainable industrial feedstocks and related value chains, project NORDIC BIO-RUBBER under the call HORIZON-EIC-2022-ACCELERATORCHALLENGES-02 - EIC Accelerator Challenge: Technologies for 'Fit for 55',

[132] e.g. in the International Bioeconomy Forum, Global Bioeconomy Summit, or other appropriate thematic platforms with global partners, especially from the Global South.

HORIZON-JU-CBE-2025-CSA-01 Develop and deploy new curricula and knowledge exchange practices relevant to bio-based systems

Type of action	Coordination and Support Action
Indicative budget	The total indicative budget for the topic is EUR 1 million
Expected EU contribution per project	It is estimated that a contribution of EUR 1 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
TRL	Non-technological action
Link to CBE JU Specific Objectives	1.2: Increase and integrate the research and innovation capacity of stakeholders across the Union
Link to CBE JU SRIA	1.2.3: Facilitate the development of expertise in bio-based fields by improving higher education and skills development
CBE JU KPIs	9: Number of projects contributing to develop the skills and capacity needed by the EU bio-based sector 10.1: Number of participants from the underrepresented EU countries and region

Expected outcomes

Proposals under this topic are expected to contribute to EU Initiative on Biotechnology and Biomanufacturing[133], the Bioeconomy Strategy[134] and its action plan, as well as the Zero Pollution Action Plan[135]; the implementation of the EU strategy for a Sustainable Blue Economy and the CBE JU Widening Strategy[136] and Action Plan.

Projects results are expected to contribute to the following expected outcomes:

- Developed and validated curricula, related to skills' development for the sustainable bio-based systems and increased circularity.
- Deployment of EU-wide actions supporting the acquisition of new skills, as relevant for the sustainable and circular bio-based systems.

Scope

Collaboration between university/higher education and industry is a necessary condition for innovation and essential for greater competitiveness of the circular bioeconomy sector(s). Besides technical/technological development, training and re/up/skilling of (future and present) bioeconomy professionals is essential. Key skills could include digital skills, biotech/biomanufacturing, environmental sustainability assessment and circularity, toxicology/risk assessment, ecodesign and safe-and-sustainable-by-design (SSbD)[137] concept for bio-based products, business development, process development etc. Soft skills and cross-sectorial skills remain an important

[133] Brussels, 20.3.2024 COM(2024) 137 final

[134] European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018

[135] Brussels, 12.05.2021, COM(2021) 400 final.

[136] CBE-JU-widening-strategy.pdf (europa.eu)

[137] Safe and sustainable by design chemicals and materials - Publications Office of the EU (europa.eu)

aspect, as well as overall open-mindedness to new knowledge, points of views and cultural differences.

The scope of this topic covers higher education, vocational training, as well as post-graduate and executive courses, as relevant for training students and reskilling and upskilling adult professionals, as needed for the emerging circular bio-based economy.

Proposals under this topic should:

- Establish a network of industry and universities/RTOs. Ensure engagement of stakeholders from the 'Widening' countries[138] and make sure that their specificities and needs are incorporated in the development and testing of the curricula. Mutual learning from/to rural and coastal/blue bioeconomy[139], including primary producers, should also be considered.
- Mobilise the network to co-create a set of curricula for education, training and retraining/reskilling/upskilling of students and professionals in the field of circular bio-based systems. Curricula should include both STEM and SSH disciplines. Capitalise on any best practices and success stories, available also at international level.
- Test the implementation of the developed curricula with pilot groups of students and professionals. Some of the training methodologies that may be considered are laboratory practices, field work, internships, simulation, case studies, problem-based learning, supervised projects, vocational training, online classes/webinars etc.

In addition to the specific requirements applicable for the type of action, as described in section 2.2.3.1 Specific requirements for the CBE JU 2025 call, proposals under this topic should:

- Consider synergies and links with existing initiatives such as the European Bioeconomy University Alliance (European Bioeconomy University – Driven by demand, accomplished by intellectual leadership), the pact for skills agenda[140], actions linked with the BIOEAST Initiative[141], as relevant. Liaise with biotech industrial clusters and Regional Innovation Valleys, as relevant[142].
- Establish links with the CBE project NEBA Alliance[143]. Link to calls and initiatives under Horizon Europe and related partnerships, as appropriate, to create synergies with their curricula and training activities, including the upcoming Advanced Materials Academy.
- Ensure synergies and avoid overlaps with past and ongoing projects[144].

[138] in view of the CBE JU Widening Strategy and its Action Plan, and ensuring synergies with the call HORIZON-JU-CBE-2024-CSA-02 "Mobilize inclusive participation in bio-based systems and supporting the CBE JU widening strategy and its action plan"

[139] In this context, consider the contribution to the objectives of the Mission "Restore our Ocean and Waters by 2030"

[140] Pacts for skills agenda- agri-food

[141] TWG Bioeconomy education – BIOEAST

[142] Biotech industrial clusters and Regional Innovation Valleys can, thanks to the close collaboration centres, allow industry to advise universities on the design of the curricula and content for biotech related higher education courses, so that they can better adjust to the needs of EU biotechnology and biomanufacturing companies.

[143] NEBA Alliance project

[144] e.g. BIOBEC, Biogov.net, ENGAGE4BIO and Talent4BBI. Potentially also the project under call HORIZON-JU-CBE-2024-CSA-01.

Indicative budget per topic - call HORIZON-JU-CBE-2025

Topic	Million EUR
Innovation actions – flagship	
HORIZON-JU-CBE-2025-IAFlag-01 Urban-industrial symbiosis for bio-waste valorisation	18
HORIZON-JU-CBE-2025-IAFlag-02 Bio-based drop-ins/smart drop-in platform chemicals, via cost-effective, sustainable and resource-efficient conversion of biomass	20
HORIZON-JU-CBE-2025-IAFlag-03 Circular-by-design fibre-based packaging with improved properties	18
HORIZON-JU-CBE-2025-IAFlag-04 Retrofitting of (bio)refineries industrial plants towards higher-value bio-based products	20
Innovation actions	
HORIZON-JU-CBE-2025-IA-01 Sustainable macroalgae systems for innovative, added-value applications: cultivation and optimised production systems	14
HORIZON-JU-CBE-2025-IA-02 SSbD bio-based solutions to replace hazardous conventional chemicals for textiles production.	13.5
HORIZON-JU-CBE-2025-IA-03 Scaling-up nutritional proteins from alternative sources	14
HORIZON-JU-CBE-2025-IA-04 Cost-effective and robust continuous biotech bio-based processes	14
HORIZON-JU-CBE-2025-IA-05 SSbD bio-based polymers/copolymers unlocking new market applications	13.5
Research and innovation actions	
HORIZON-JU-CBE-2025-RIA-01 Valorisation of untapped forest biomass	7
HORIZON-JU-CBE-2025-RIA-02 Bio-based and biodegradable delivery systems for fertilising products to reduce microplastics pollution & promote soil health.	6
HORIZON-JU-CBE-2025-RIA-03 Alternative biomanufacturing routes for natural and synthetic rubber	6
Coordination and support actions	
HORIZON-JU-CBE-2025-CSA-01 Develop and deploy new curricula and knowledge exchange practices relevant to bio-based systems	1
Total	**165**

2.2.3.3 Conditions of the calls and calls management rules

This section sets the general conditions applicable to calls and topics for grants under this Annual Work Programme. It also describes the evaluation and award procedures and other criteria.

Call management and general conditions

Call identifier:	HORIZON-JU-CBE-2025
Call opening:	4 April 2025[145]
Call deadline:	17 September 2025 17:00:00 (Brussels local time) - (single stage call)
Indicative budget:	EUR 165million

In terms of general conditions, the calls included in this AWP will follow General Annexes A to F of the General Annexes of Horizon Europe Main Work Programme 2023-2025 mutatis mutandis (subject to additional conditions or derogations reflected in the section below). If any additional derogation or exception applies, it is indicated in the specific conditions table for the topic. There is no derogation from the Horizon Europe Rules for Participation

Admissibility

The conditions are described in Annex A of the General Annexes to the Horizon Europe Work Programme 2023–2025 which shall apply mutatis mutandis to the actions covered in this AWP, taking into consideration the following:

Page limits

- **Innovation Actions, including Flagships**: the page limit of the application is 70 pages (Part B).
- **Research and Innovation Actions**: the page limit of the application is 50 pages (Part B).

Dissemination and Exploitation plan

- **All types of Actions:** A first version of the 'plan for the dissemination and exploitation including communication activities' of the project's results should be included in the Part B of the proposal in line the standard HE application forms. This plan is an admissibility condition, unless the work programme topic explicitly states otherwise.

Eligibility

The conditions, including countries eligible for funding, type of actions and definition of TRL are described in Annex B of the General Annexes to the Horizon Europe Work Programme 2023–2024 which shall apply mutatis mutandis to the actions covered in this Work Programme, taking into consideration the following:

Given the illegal invasion of Ukraine by Russia and the involvement of Belarus, there is currently no appropriate context allowing the implementation of the actions foreseen in this programme with

[145] The Executive Director may decide to open the call up to one month prior to or after the envisaged date of publication.

legal entities established in Russia, Belarus, or in non-government-controlled territories of Ukraine. Therefore, such legal entities are not eligible to participate in any capacity. Exceptions may be granted on a case-by-case basis for justified reasons. This criterion also applies in cases where the action involves financial support given by grant beneficiaries to third parties established in Russia, Belarus or in non-government-controlled territories of Ukraine (in accordance with Article 204 of the Financial Regulation No 2018/1046).

Financial and operational capacity and exclusion criteria

The criteria are described in Annex C of the General Annexes to the Horizon Europe Work Programme 2023–2025 which shall apply mutatis mutandis to the actions covered in this Work Programme.

Award criteria

If admissible and eligible, the proposals will be evaluated and ranked, depending on the type of action, against the award criteria reported in the table below.

- **Innovation Actions, including Flagships, and Research and Innovation Actions:** In bold, it is highlighted the additional sub-criterion that will be used for Innovation Actions, including Flagships, and Research and Innovation Actions.

	Excellence	**Impact**	**Quality and efficiency of the implementation**
Coordination and support actions (CSA)	- Clarity and pertinence of the project's objectives. - Quality of the proposed coordination and/or support measures, including soundness of methodology.	- Credibility of the pathways to achieve the expected outcomes and impacts specified in the work programme, and the likely scale and significance of the contributions from the project. - Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities.	- Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall. - Capacity and role of each participant, and the extent to which the consortium as a whole brings together the necessary expertise.
Research and innovation actions (RIA) **Innovation actions (IA), including Flagships**	- Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious and goes beyond the state of the art. - Soundness of the proposed methodology, including the underlying concepts, models, assumptions, inter-disciplinary approaches, appropriate consideration of the gender dimension in research and innovation content, and the quality of open science practices, including sharing and management of research outputs and engagement of citizens, civil society and end-users where appropriate.		

Research and innovation actions (RIA) **Innovation actions (IA), including Flagships**		- **Ability to ensure the level of in-kind contribution to operational activities (IKOP)[146] defined in the call/topic as % of total projects eligible costs (RIAs 5%, IAs 15%, IA-Flagship 20%)[147].**	

Scores and weighting

Evaluation scores will be awarded for the criteria, and not for the different aspects listed in the table above. For full applications, each criterion will be scored out of 5.

- **All types of actions:** For the criteria 'excellence' and 'implementation' the threshold will be 3, whereas for the criterion 'impact' the threshold will be 4. The overall threshold, applying to the sum of the three individual scores, will be 11.

To determine the ranking for all 'Innovation actions' including Flagships, the score for 'Impact' will be given a weight of 1.5.

Proposals that pass the individual threshold AND the overall threshold will be considered for funding, within the limits of the available call budget. Other proposals will be rejected.

Documents

The documents including the submission of proposals are described in Annex A of the General Annexes to the Horizon Europe Work Programme 2023–2025 which shall apply mutatis mutandis to the actions covered in this Work Programme, taking into consideration the following:

Annexes

The following separate Annexes should be included in the proposal.

- **Innovation Actions, including Flagships:** For all legal entities that are member of the BIC consortium, a certification from BIC attesting this fact should be included in the proposal[148].
- **Only for Flagship topics:** a detailed business plan.

Evaluation procedure and ranking

The entire evaluation procedure, including indicative timetable for evaluation and for signature of the grant agreement, and ranking are described in Annex F of the General Annexes to the Horizon Europe Work Programme 2023–2025 which shall apply mutatis mutandis to the actions covered in this Work Programme, taking into consideration the following:

[146] Contributions by private members, constituent entities or the affiliated entities of either, by international organisations and by contributing partners, consisting of the eligible costs incurred by them in implementing indirect actions less the contribution of that joint undertaking and of the participating states of that joint undertaking to those costs.

[147] Please refer to the Annexes to be included in the proposal described below.

[148] Each entity participating in the proposal with a PIC number has to provide a separate certificate.

Hearings

- **Only for Flagship topics:** As part of the panel review, the CBE JU will organise hearings with applicants of all Flagships proposals.

Indicative timetable for evaluation and for signature of the grant agreement

Unless otherwise stated in the specific call conditions, the timing for evaluation and grant preparation is as follows:

- information on the outcome of the evaluation: around 5 months from the deadline for submission;
- indicative date for the signing of grant agreements: around 8 months from the deadline for submission.

Legal and financial set-up of the grant agreements

The legal and financial set-up of the grant agreements, including funding rates, are described in Annex G of the General Annexes to the Horizon Europe Work Programme 2023–2025 which shall apply mutatis mutandis to the actions covered in this Work Programme, taking into consideration the following:

Funding rate

- **Innovation actions: up to 60% of the eligible costs** (except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs).

Specific Provisions

Future CBE JU projects need to consider that:

IPR-CBE JU right to object

According to the Horizon Europe rules, and as foreseen in article 16 of the Grant Agreement, and in order to protect Union interests, the right for joint undertaking to object to transfers of ownership of results or to grants of an exclusive licence regarding results should apply to participants. Therefore, the provisions set out in General Annex G to the Horizon Europe work programmes on the right to object apply generally. It should be noted that in accordance with the Council Regulation and the MGA, the right to object applies also to participants that have not received funding from the JU and for the periods set therein.

Consortium agreement (article 7 of the HE Model Grant Agreement)

In line with Horizon Europe Model Grant Agreement, the consortia of the proposals selected for funding must have internal arrangements set out in a written consortium agreement between the beneficiaries regarding their operation and coordination, to ensure that the action is implemented properly.

Contribution to the monitoring framework of the CBE JU – KPIs projects' reporting

For monitoring the contribution of each project to the CBE JU objectives and indicators, as described in the SRIA, all projects will have to report on an annual basis their KPIs progress during the course of Horizon Europe.

The reporting shall consist of filling a template questionnaire in a secure online data collection platform managed by the CBE Joint Undertaking. The projects will need to submit all information included the questionnaire(s) relevant for their type of action. The submission of the questionnaire(s) shall be integrated as a specific annual deliverable in the grant agreement. The template questionnaire(s) with the KPIs Handbook will be made available online at the time of the publication of this AWP.

2.2.4. Cooperation, synergies and cross-cutting themes and activities

Council Regulation (EU) 2021/2085 and the CBE JU SRIA establish strong grounds for synergies and cooperation between Joint Undertakings and other relevant initiatives to achieve maximum scientific, socioeconomic and environmental impacts. In particular, CBE JU is expected to foster synergies at:

1) **European level** with:
   - other parts of Horizon Europe programme, including the HE Missions, relevant co-programmed/co-funded and institutionalised partnerships, Cluster 6 activities, etc.
   - other Union programmes and funding instruments, especially those supporting the deployment of innovative solutions, education and regional development, in order to increase economic and social cohesion and reduce imbalances[1];

2) **National and regional level** with relevant programmes such as Cohesion Policy Funds, and the National Recovery and Resilience Plans.

Synergies with European programmes and/or other EU instruments can take different forms and can range from simple information exchange to strategic coordination and co-programming.

To maximise the synergies and cooperation, the CBE JU foresees to implement specific actions in 2025 with the following programmes and mechanisms.

1. Synergies at European level with other parts of HE programme

- **HE missions:** CBE JU will continue ensuring synergies at both programming and projects' level with Restore our Ocean and Waters and A Soil Deal for Europe missions to ensure thematic alignment of the respective Work Programmes and avoiding overlaps, as well as to foster mutual learning, networking, multistakeholder engagement and capacity building.
- **HE Pillar I – Marie Skłodowska-Curie:** synergies have been implemented and will be consolidated with the MSCA Staff Exchange programme that funds short-term inter-sectoral exchanges of staff members involved in research and innovation activities with the aim to develop sustainable collaboration between academic and industries (in particular SMEs).
- **HE Pillar II**
  - ***Cluster 6 -*** *Food, bioeconomy, natural resources, agriculture and environment****:*** Cooperation and synergies between CBE JU and the Cluster 6 are paramount to reach the expected impacts of the underlying policy priorities and are mainly implemented at programming level as well as at portfolio management level, via strategic alignment, information sharing, and creating of joint initiative. Also, specific action aimed at fostering exchange of information with relevant executive agencies on projects in similar areas of interventions are currently ongoing in specific sectors, i.e. textile.
  - ***HE partnerships*****:** Cooperation with HE partnerships is aimed at ensuring alignment of the respective objectives and SRIAs, identifying areas for complementary calls to address more effectively and efficiently common challenges as well as promoting knowledge exchange and mutual learning among partnerships.

With this spirit, CBE JU will continue to cooperate to ensure strategic alignment with co-programmed partnership such as Processes4Planet, as well as the forthcoming European Partnership on Textiles of the Future. CBE JU will also pose particular attention in collaborating with the co-funded partnerships that falls within the scope of HE Cluster 6 - Food, bioeconomy, natural resources, agriculture and environment, such as: Sustainable Blue Economy Partnership, Safe and Sustainable Food Systems, and Accelerating Farming Systems Transition. Also, cooperation with relevant EIT Knowledge and Innovation Communities (KICs), such as EIT Food, are sought.

- **HE Pillar III - European Innovation Council**: synergies are under development with the EIC Accelerator instrument to foster opportunities of funding for highly innovative SMEs aiming to the upscale of bio-based solutions.

- **HE Horizontal Pillar European Cooperation in Science and Technology (COST)**: synergies and cooperation have been established and will be consolidated with COST, EU-funded intergovernmental framework composed by 41 member countries to support the CBE JU Widening Strategy and encourage excellent researchers and innovators from widening countries to apply in future CBE calls, create networking opportunities and promote capacity building.

2. Synergies at European level with Other EU programme and funding instruments

Cooperation and synergies with the following funding programmes have been thoroughly assessed and a plan of activities have been outlined to be pursued:

- **InvestEU:** this is an important part of the Green Deal Investment Plan and could support the mobilization of further investments in the bio-based sector. Synergies will be sought to provide CBE JU beneficiaries projects alternative financing opportunity that may allow them to take the extra step needed to reach the market.

- **Innovation Fund:** this is the EU fund for climate policy which aims at bringing to the market solutions to decarbonise European industry and support its transition to climate neutrality while fostering its competitiveness. CBE JU aims at sharing information of respective projects' portfolios where the mutual learning and networking can be useful for multistakeholder engagement and potential scale-up of projects' results.

- **LIFE programme:** this is an EU's funding instrument for environment and climate actions. CBE JU will seek potential synergies in the area of knowledge exchange and mutual learning with this programme particularly with the « Circular Economy and Quality of Life » and the «Climate Change Mitigation and Adaptation» sub-programmes which aims at facilitating the transition toward a sustainable, circular, energy efficient and climate-resilient economy, a toxic-free environment and at protecting, restoring and improving the quality of the environment.

3. Synergies with national and regional programmes

CBE JU will continue to interact with Member States through the states' representatives group to explore possible funding synergies at regional level with the European Structural and Investment Funds (ERDF, ESF+, CF, EAFRD and EMFF) and at national level with the national recovery and resilience plans, while continuing strengthening the adoption of policy and funding initiatives in the bioeconomy field.

In particular, at this stage, synergies will be assessed with the aim to enhance capacity building and provide trainings with a specific interest to enhance the participation from the regions identified in the CBE Widening strategy as less developed and in transition.

Also, CBE JU will evaluate potential synergies with managing authorities and national/regional stakeholders to identify R&I priorities in relevant national/regional programme that could be used as role model for local deployment and uptake of relevant technologies and innovative solutions.

2.3. SUPPORT TO OPERATIONS

2.3.1. Communication, dissemination and exploitation

CBE JU communication: a strategic approach

The annual communication work programme supports the CBE JU strategic objectives based on the multi-annual CBE JU communication policy and strategy.

In 2025, the CBE JU communication will focus on showing the value that bio-based economy is bringing to the European people and regions. After the completion of the BBI JU programme in the second part of the year, CBE JU will highlight its predecessor's achievement stories. CBE JU's contribution to Europe's competitiveness and local economies will be the main feature of communication campaigns and at events. Communication will continue supporting CBE JU's core business by promoting funding opportunities and project achievements. CBE JU will actively seek stakeholders' opinion on various aspects of the joint undertaking, in preparation of the next stakeholder forum to be held in 2026.

Communication priorities in 2025

- **Highlighting the BBI & CBE JU role in green growth**

CBE JU will work on showing the CBE JU's and the circular bio-based sector's **contribution to Europe's competitiveness and local economies** to decision makers in the European institutions, in particular the new Parliament and Commission, via dedicated events, exhibitions and campaigns.

A campaign on the **biotechnology and biomanufacturing achievements** of the CBE JU-funded projects will provide concrete examples for the European policy in making.

The **BBI JU programme** will end in the 2024. CBE JU's communication will highlight a **selection of achievement stories** from the programme, in particular various application areas of bio-based solutions for everyday use and the benefits that these projects have brought to the people in regions.

In 2025, several CBE JU-funded **flagship projects** will reach important milestones (e.g. inauguration of the plant, successful completion of the project), which the partnership will support via dedicated communication actions, in collaboration with the projects' teams. Their inauguration events are expected to attract high-level representatives of the EC, local government and industry.

- **Supporting CBE JU's core business**

Promoting the call for project proposals will be at the heart of the 2025 communication activities and, as every year, will include a dedicated call page on the website along with useful material for potential applicants. The in-person CBE JU Info Day will take place in Brussels in April, with a remote participation option. The online CBE JU networking platform will be the main interaction hub for potential applicants and will provide such features as partner search, ideas pitching and

meeting scheduling. CBE JU Programme Office will take part in national and regional info days across Europe ensuring a good geographical and sectoral distribution, and funding opportunities will be promoted at every high-level event with CBE JU's participation.

Results of the 2024 call will be highlighted in a dedicated campaign in the second quarter of 2025, with a focus on the new projects.

CBE JU will work with the network of project communicators to actively **promote project milestones** (e.g. innovation breakthrough, take-up of bio-based solutions by large industries) and results.

In preparation of the next stakeholder forum to be held in 2026, CBE JU will launch a stakeholder survey to evaluate the progress of the programme and various aspects of the partnership.

Communication tools and channels

Stakeholder engagement via events, exhibitions and campaigns will be at the heart of the 2025 communication activities.

The **CBE JU website** will remain its main information hub. All communication activities will link to the web content, to be enriched with a narrative about the added value of the European bio-based economy.

CBE JU **newsletter and social media** accounts (LinkedIn, YouTube and, to a smaller extent, X) will drive CBE JU's digital communication and support campaigns.

CBE JU will embrace the opportunity to connect with its community, reach out to new audiences and showcase the partnership at **key bioeconomy events**, such as BIOKET, ECOMONDO, EUBCE and World Bio Markets. The events organised by CBE JU (e.g. the info day on the 2025 call) will provide a remote participation option for those who cannot attend in person.

A number of **publications and videos** will support CBE JU's communication campaigns.

CBE JU will collaborate with its vast **network of multipliers** (governing and advisory bodies, national contact points, project teams and, if possible, influential personalities) to share the messages with their audiences.

2.3.2. Indicative list of events

Event	Date(s)	Place	CBE JU role
BIOKET	11-13 March	Brussels, Belgium	Speaker, exhibitor, session organiser
CBE JU Info Day	03 April	Brussels, Belgium & online	Organiser
Inter-JUs exhibition at the European Parliament	07-11 April	Brussels, Belgium	Exhibitor
EUBCE	09-12 June	Valencia, Spain	Speaker, exhibitor, session organiser
World Bio Markets	26-26June	The Hague, Netherlands	Speaker, exhibitor
EUCYS award ceremony	September	TBC	Sponsor of the bio-based economy award
ECOMONDO	4-7 November	Rimini, Italy	Speaker, exhibitor
EU Bioeconomy conference	TBD	Brussels, Belgium	Speaker, exhibitor

2.3.3. Procurement and contracts

For the year 2025, the CBE JU will implement its administrative budget also by means of procurement procedures and contracts, supporting the administrative and operations services in accordance with its financial rules. It is essential that the CBE JU makes the most efficient use of its resources by using existing framework contracts and service level agreements (SLAs) with EC services.

As part of the BOA procurement, Clean Aviation Joint Undertaking leads as contracting authority the common JU's procurement that have been identified in the BOA procurement as the ones that will achieve efficiency gains and economies of scale. In 2025, common JU's procurement will cover among others: data protection, building management and IT.

The table below provides a summary of tenders planned for 2025 under the administrative budget and the related procurement procedure expected to be used on the basis of the information currently available. The planning may be subject to modifications and procurement will be launched in collaboration with other JUs having similar needs.

Subject	Indicative/Maximum amount, €	Type of procedure	Indicative timeline
Provision of technical and administrative support services to the CBE JU	1 500 000 over a period of three years	Open	Q1-Q4
CBE JU stakeholder survey	39 000	Middle value negotiated procedure	Q2-Q4
Thematic Communication Services[149]	945 000	Open Procedure[150]	Q1

[149] Procurement that was included already in the WP 2024 but that will be published finally in 2025.

[150] Inter Joint Undertakings FWC with CBE JU in the lead.

2.3.4. Other support operations

IT and logistics

CLOUD MIGRATION

After the preparatory works implemented in 2024 with the involvement of all CBE staff, CBE JU corporate data will be fully migrated to the cloud in multiple SharePoint libraries hosted on the CBE JU infrastructure. Such migration will move away from the limits of the old file share technology, improve the security of corporate data, introduce new tools for information retrieval and organisation.

CYBERSECURITY REGULATION

Following the requirements of the new Cybersecurity regulation, CBE will perform an initial review of its cybersecurity posture as a coordinated exercise with other joint undertakings, that will result in a maturity assessment and a cybersecurity plan to fill any identified maturity gap,

REFURBISHMENT OF COMMON MEETING ROOMS

A direct dialogue was engaged with DIGIT SCIC services to establish an MOU for installation and support services to equip the common meeting rooms in the white atrium with hybrid meeting rooms in a similar way as the other EC buildings.

LOGISTICS INVENTORY

After a successful inventory of IT assets conducted in 2024, CBE JU will perform, in 2025, an inventory of non-IT assets, to clear obsolete and depreciated items as a prerequisite for the migration to the new SUMMA platform, developed by DG BUDG to replace the ABAC suite for assets and budget management.

AI@CBE

After a first proof of concept with a case study presented by the IT Officer and the Communication team followed by a successful technical feasibility study conducted in 2024 by the IT Officer, the Communication team will be provided with an internal, self-hosted AI tool in 2025. The latter will replace external commercial platforms like ChatGPT or Gemini for text generation and summarisation. This system will be based on available open-source software and hosted on-premises for full compliance with EC security and data protection guidelines.

KPI TOOL

The web app developed by the programme unit for the collection of KPI data from project coordinators will be improved with new functions, for integration with CORDA data and a better management of user creation tasks and assignment of project to users.

Building management

In 2025, the management of the White Atrium building and its related contracts will be centralised in the Back Office Logistics. Under the coordination of CHIPS JU, the JUs will strengthen their collaboration in this area by defining the list of shared services and by establishing an SLA.

For what concerns the CBE JU office, minor improvements are foreseen to maximise the available space and provide adequate space for all colleagues, including hybrid meeting rooms.

Human resources

HR management

The CBE JU Programme Office will continue implementing its activities in compliance with the applicable rules and procedures to support the appropriate management of public and private funds under the leadership of the Executive Director, who is the Chief Executive responsible for the day-to-day management of the CBE JU in accordance with the decisions of the Governing Board.

In the HR domain, the CBE JU seeks to accomplish its objectives through a comprehensive HR strategy that focuses on effective recruitment procedures, proper allocation and administration of resources as well as fostering the development, motivation and retention of highly qualified staff while ensuring an optimal and efficient working environment.

After completing the recruitment of all staff, HR's priority is to provide them with the best conditions to excel in their roles and efficiently manage an increasing workload. In 2025, the office structure will be slightly adapted to better suit the current staff needs and create an optimal working environment both at the office but also when teleworking. To achieve this goal, staff is provided with reliable IT infrastructure, IT equipment and IT tools. Within the boundaries of the rules, the CBE JU allows staff to enjoy flexible working arrangements. The HR Office will continue to raise awareness of the staff about the best practices and to provide clear guidelines and framework to continue enjoying the new work experience in the New Ways of Working.

Staff implementation and recruitment

In 2025, the CBE JU will be fully staffed in line with its staff establishment plan. Therefore, additional recruitments will be limited to turnover.

As in previous years, the CBE JU will give the opportunity to trainees to acquire a first-hand experience as well as an understanding of the objectives and activities of the JU. Thanks to this initiative, the CBE JU will benefit from the input of enthusiastic young graduates, who can give a fresh point of view and up-to-date academic knowledge, which will further enhance the everyday work of the JU.

The HR function will also perform an analysis on how the Programme Office should evolve in the near future in terms of staff allocation, ensuring that the organisation achieve its objectives. This will also serve as a basis for potential revisions of the staff establishment plan, to be decided by the CBE JU governing Board.

Legal matters and HR management

In 2025, the CBE JU will continue to develop its internal guidelines and strengthen its legal framework, paying particular attention to how EC staff implementing rules apply to the JU particularities. Following the adoption of the EC implementing rules on working time and hybrid work, the HR function will perform a mid-term assessment of the implementation of the hybrid work and working time regime. The HR Office will also provide the CBE JU management and staff with advice and best practices on the matter. The Programme Office will also organise an annual appraisal and reclassification exercise.

New staff implementing rules are expected to be adopted in 2025 in consultation with DG HR and the Standing Working Party[151].

Learning and development opportunities for better efficiency and staff engagement and motivation

The CBE JU promotes the continuous development of its staff to ensure that they are competent in their roles and can respond to the challenges of their job in fast evolving environment. Offering learning and development opportunities is crucial to engage staff and ensure their professional growth and commitment. In that respect, Learning and development is an integral part of the CBE JU human resources policy and serves the interests of both the individual and the organisation. In 2025, the HR function will continue to develop a learning and development framework focusing on the following priorities:

- **Collaborative and knowledge-sharing** to favour effective teamwork across the whole organisation.
- **Vision, leadership** and effective **management** of people, projects and processes in an increasingly complex world, with increasing pressure on staff.
- **Staff well-being** to foster the quality and safety of the staff in the working environment and to maintain their wellbeing while teleworking from home in the context of the new ways of working and the hybrid working. Staff well-being is a key factor in determining the CBE JU long term effectiveness.

The HR function will also organise coaching opportunities for specific key functions and team coaching to help staff to develop their growth and potential within the organisation. Moreover, teambuilding activities will be organised to foster and promote team spirit and strengthen the collaboration among staff members. In addition, several common learning events will be organised in house to build common working methods and to further foster the cohesion in the team. Tailor-made training will be organised to reinforce the knowledge and use of IT tools as part of the digitalisation of our processes.

The HR function will also continue to improve the CBE JU Intranet to facilitate communication within the team and access to key documents by staff. As previous years, a staff engagement

[151] The Standing Working Party, composed of DG HR, representatives of agencies and partner DGs, has been created by the Commission to discuss and draft implementing rules to the Staff Regulations in agencies, allowing the harmonisation of HR rules in the agencies network.

survey will be organised to gain insight into job satisfaction, employee commitment, engagement and motivation. The aim of this survey is to use the insight gained, to address possible issues and to propose targeted actions where necessary.

In 2025, the HR function will continue developing the digitalisation of HR processes and will actively follow the latest developments of the HR Transition programme led by the European Commission.

Strategy for achieving efficiency gains, synergies through back office arrangements

According to Council Regulation (EU) 2021/2085, Joint Undertakings shall achieve synergies via the establishment of back-office arrangements (BOA), operating in some identified areas. Article 13 identifies Human Resources Support among the areas where common BOA can be set up. In that respect, CBE JU expressed its willingness to be the lead JU for the BOA HR with IHI JU as back-up JU.

The BOA HR will implement actions in three main areas of HR Support: recruitment, HR legal framework and HR digitalisation. Its objective is to maximise synergies among the JU's, harmonise procedures by valorising best practices, ensure coherent HR support services, achieve efficiencies and economies of scale, increase the negotiation power of JU's operating under the SBA towards contractors and service providers.

The Joint Undertakings established under Council Regulation (EU) 2021/2085 will contribute to BOA HR Support, together with EuroHPC and SESAR JU that will participate on specific initiatives in line with their internal priorities and according to their own specificities[152].

Scope of the BOA HR support

In line with the proposal of an enhanced coordination of the Network of JUs' HR officers, the conclusion of a Service Level Agreement (SLA) among the JU's has been deemed necessary since a clear commitment to the execution of the BOA HR Annual Work Plans must be made by the JU's under the coordination of the Lead JU.

The actual implementation of the BOA HR which started in 2024 and will continue in 2025 focuses on three predefined areas of HR support:

Recruitment

- ***Alignment and harmonisation of the JUs' recruitment processes***: the JU's will finalize the work started in 2024 on the best practices by establishing a common selection process based on the existing relevant legal framework. This common selection process shall then be applied across all JU's when launching a selection procedure. This project will include, for example, the creation of common templates, scoring guides, platforms and tools that will provide a consolidated ground for individual and common selection procedures and recruitments.

[152] SESAR JU despite being part of the SBA, is exempted by the provisions related to the Back-office arrangements

- ***Organisation of joint selection procedures***: to increase efficiency gains, the JU's will strive to organise joint selection procedures for common profiles with same grades. This practice is already in place and will continue in 2025.

- ***Establishment and sharing of reserve lists/ job profiles library***: the JUs will continue to share their reserve lists to shorten their recruitment processes and time-to-recruit and will start to work on the harmonisation of job profiles.

HR legal framework

The JUs share a common legal framework in the HR domain, therefore, additional synergies can be achieved by enhancing the existing collaboration in this area. The focus in 2025 will be on:

- ***Inter-JU network of Confidential Counsellors (CCs):*** currently the JUs share a common network of confidential counsellors and regularly organise joint calls for expression of interest to expand the network. Training, information campaigns and joint actions are also organised to promote the JUs staff well-being and raise awareness on psychological and sexual harassment and to prevent interpersonal conflicts.

- IA new inter-JU call for expression of interest will be launched to replace the Confidential Counsellors who will depart due to the end of their mandates. New training sessions will be provided to both the Confidential Counsellors but also to staff members on this matter. In the context of the HR BOA, the JU's will also promote the visibility of mediation services.

- ***Collaboration with the EU agencies network (EUAN) and the EC***: the JU's will continue to attend EUAN meetings, including possible ad-hoc participation of the HR Officers to different working groups. The JUs will continue to liaise with DGHR /PMO about common HR matters and seek advice for specific topics.

- ***Inter JU's HR Officers network:*** the JUs HR Officers will continue to meet bi-weekly to share best practices and to also provide support to the newly established JUs. To that end, a common collaborative platform will be created (using Teams) to facilitate the interactions between HR Officers, the exchange of information and documents.

HR digitalisation

In 2025, the JUs will continue to move towards a digitalisation of HR processes and will work on the harmonization of their IT systems in the HR area. The inter-JU HR Officers will continue to share good practices in the use of their IT systems and will continue to actively take part in the HR Transformation programme led by the EC, notably by contributing to the projects of the second wave (2024-2025). In 2025, the JU's will implement the actions defined in the 2025 BOA HR Annual Work Plan and more specifically:

- Align and harmonise the practice for selection and recruitment procedures: Implementation phase.

- Develop an inter-JU Competency Framework.

- Identify the common recruitments for 2025 and shared reserve lists.

- Continue the 2024 actions.

Staff establishment plan

Function group and grade	2024				2025	
	Authorised budget		Actually filled as of 31/12		Authorised budget	
	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Permanent posts	Temporary posts
AD 16						
AD 15						
AD 14		1		1		1
AD 13		1				
AD 12		1				1
AD 11				2		1
AD 10		2		2		2
AD 9		3		3		4
AD 8		2		1		
AD 7				1		1
AD 6						
AD 5						
TOTAL AD		10		10		10
AST 11						
AST10						
AST 9						
AST 8						
AST 7						
AST 6						
AST 5		1		1		1
AST 4		1		1		1
AST 3		1		1		1
AST 2						
AST 1						
TOTAL AST		3		3		3
AST/SC 6						
AST/SC 5						
AST/SC 4						
AST/SC 3						
AST/SC 2						
AST/SC 1						

TOTAL AST/SC						
TOTAL AD+AST+AST/SC						
GRAND TOTAL	13		13		13	

Contract Agents	**FTE corresponding to the authorised budget 2024**	**Executed FTE as of 31/12/2024**	**Headcount as of 31/12/2024**	**FTE corresponding to the authorised budget 2025**
Function Group IV	10	9	10	10
Function Group III	6	6	6	6
Function Group II				
Function Group I				
TOTAL	16	15	16	16

Seconded National Experts	**FTE corresponding to the authorised budget 2023**	**Executed FTE as of 31/12/2023**	**Headcount as of 31/12/2032**	**FTE corresponding to the authorised budget 2024**	**FTE corresponding to the authorised budget 2025**
TOTAL					

Recruitment forecast 2025 following retirement/mobility or new requested posts					
Job title in the JU	**Type of contract (Official, CA, TA)**		**TA/Official**		**CA**
			Function group/grade of recruitment internal (Brackets) and external (single grade) foreseen for publication		**Recruitment Function Group (I, II, III and IV)**
	Due to foreseen retirement/ mobility	**New post requested due to additional tasks**[153]	**Internal (brackets)**	**External (brackets)**	

[153] As included in the legal and financial statement of the Council Regulation (EU) 2021/2085, of 19 November.

TOTAL	1				

2.4. GOVERNANCE ACTIVITIES

2.4.1. Governing Board

CBE JU's Governing Board (GB) has an overall responsibility for the strategic orientation and the operations of the CBE JU and shall supervise the implementation of its activities in accordance with Article 17 of Council Regulation (EU) 2021/2085.

The GB is composed of five representatives of the ECn on behalf of the EU, and five representatives of BIC.

The indicative key decisions of the GB in the year 2025 are listed below:

Key decisions in 2025 – timetable	Quarter (Q1, Q2, Q3, Q4)
Approval of the evaluation outcome for the 2024 call	Q1
Assessment of the Annual Activity Report 2024	Q2
Adoption of the Annual Work Programme 2026	Q4

2.4.2. Executive Director

The Executive Director is the chief executive responsible for the day-to-day management of the CBE JU in accordance with the decisions of the Governing Board.

2.4.3. States' representatives group

The states' representatives group (SRG) is one of the advisory bodies of CBE JU. In accordance with Article 20 of Council Regulation (EU) 2021/2085, the SRG provides recommendations and the opinion of EU's Member States and associated countries on the CBE JU, including: the progress of the programme implementation, the draft annual work programmes, the annual activity report, as well as other measures taken to address specific objectives of the initiative.

During 2025, at least two SRG meetings are planned: one in Q2 and the second in Q4. Additional meetings may take place, if needed. In all meetings, SRG members will be invited to report information about national and regional activities and initiatives linked to CBE JU with a view to ensuring complementarities and identify areas of cooperation with the CBE JU.

SRG Timetable for 2024

7th SRG meeting will focus on: discussing SRG's comments to the 1st draft of the CBE JU Annual Work Programme 2026; presenting the results from the Call 2024 evaluation and information on the granted projects; presenting the progress of the CBE JU programme progress and achievements and other updates from EC and BIC on relevant initiatives for CBE.	Q2
8th SRG meeting will focus on: discussing the final draft of the CBE JU Annual Work Programme 2026; presenting the Call 2025 submission statistics; and presenting the progress of the CBE JU programme progress and achievements and other updates from EC and BIC on relevant initiatives for CBE, among any other relevant activities.	Q4

2.4.4. Scientific Committee

The Scientific Committee (SC) is one of the advisory bodies of CBE JU. According to Article 21 and 55 of Council Regulation (EU) 2021/2085, the SC provides advice to the Governing Board on the scientific priorities to be addressed in the annual work programmes and feedback on the scientific achievements described in the annual activity report. It will suggest, in view of the progress of the Strategic Research and Innovation Agenda and individual actions, corrective measures or re-orientations to the Governing Board, where necessary; and will provide independent advice and scientific analysis on specific issues as requested by the Governing Board.

The SC is composed of 15 independent experts with a balanced representation of world-wide recognised experts from academia, industry, SMEs, non-governmental organisations and regulatory bodies. During 2025, at least two SC meetings are planned: one in Q1 and the second in Q4. Additional meetings may take place, if needed.

SC Timetable for 2025	
7th SC meeting will focus on: discussing SC's comments to the 1st draft of the CBE JU Annual Work Programme 2026, presenting the results from the 2024 call, presenting the progress of the CBE JU programme progress achievements and discussing EC and BIC initiatives and activities relevant to CBE JU.	Q1
8th SC meeting will focus on: discussing the final draft CBE JU Annual Work Programme 2026, presenting the 2025 call submission statistics, presenting the CBE JU programme progress and discussing EC and BIC initiatives and activities relevant to CBE JU.	Q3

2.4.5. CBE JU Deployment Groups and Working Groups

In accordance with Article 22 and 56 of Council Regulation (EU) 2021/2085, the CBE JU Deployment Groups are new types of advisory bodies that will play a key role in the creation of favourable conditions for deployment of sustainable circular bio-based solutions in their thematic area. They are established to advise the CBE JU Governing Board on issues critical to market uptake of bio-based innovation and are expected to provide their opinion on request from the Governing Board, but they may also act on their own initiative.

Without prejudging the future decision of the Governing Board, the **Deployment Group on finance & investment (DEG F&I)** will be established in two phases: in 2024, the European Investment Bank (EIB) commissioned a study to identify challenges for access to finance, investment barriers and perceived funding gaps. The study also provides recommendations as well as key stakeholders who should be involved in the DEG F&I. In 2025, the core group of the DEG F&I is planned to be established to prepare the Action plan to be presented to the Governing Board.

Another important group will also be set up in 2025: the CBE JU working group on primary producers, set up in accordance with article 17(2)(x) of the Council Regulation (EU) 2021/2085. The main objectives of this group will be to address the challenges faced by the primary producers that might hinder the deployment of circular bio-based solutions and innovations while ensuring that primary producers benefit from their involvement in new and innovative circular and bio-based value chains. To prepare and then implement its action plan, as specific CSA will be funded from the 2024 call (topic CSA-03).

2.5. STRATEGY AND PLANS FOR THE ORGANISATIONAL MANAGEMENT AND INTERNAL CONTROL SYSTEMS

The Internal Control Framework (ICF), approved in 2019, provides reasonable assurance to the GB regarding the achievement of BBI JU's objectives as well as those of the CBE JU. In line with the requirements provided for in the CBE JU Financial Rules and in the EU Financial Regulation[154], it shall:

- Ensure that operational activities are effective and efficient. The CBE JU meets its objectives defined in the AWP using the adequate human and financial resources.
- Ensure that legal and regulatory requirements are met. The CBE JU operates in full accordance with all legal and regulatory requirements.
- Ensure that reporting is reliable. The CBE JU management produces regular, reliable and easily accessible management information on financial management, use of resources and progress on the achievement of operational objectives.
- Ensure that assets and information are safeguarded. The CBE JU managers take the measures necessary to ensure the completeness and preserve the integrity of the data on which management decisions are taken and reports are issued.

All CBE JU management processes and functions concur to these four objectives, granting the largest possible preventive, detective and corrective controls in line with the available resources.

In 2025 the CBE JU will continue to run its operations by improving the quality level of programme implementation while integrating the corrective actions that were identified in the past.

The main activities that will be performed include the following:

- Report on compliance and effectiveness of internal control in the annual activity report.
- Carry out periodic review of risks at least yearly in the context of preparing the annual work programme.
- Coordinate visits of the European Court of Auditors and of the external auditor of CBE JU accounts.
- Liaise with the auditors of the Internal Audit Service.
- Follow up on the implementation of action plans on audit recommendations and on observations of the discharge authority.
- Ensure a smooth implementation of the findings of the ex-post audit strategy and optimise the JU's specific audit efforts based on the analysis of the ex-post audits and of the specificities of CBE JU beneficiaries.

[154] Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012.

2.5.1. Financial procedures

In 2025, the CBE JU will continue to improve its financial procedures in both the administrative and grant management areas, in line with its Manual of Financial Procedures as well as the general EU financial regulatory framework and IT tools used for financial transactions performed by the CBE JU.

On the grants side, transactions will continue to be mainly dealt with via the corporate tools COMPASS/SYGMA, with certain grants-related transactions being performed directly in the EC accounting system ABAC, or completed in ABAC following initiation in other tools (e.g. COMPASS/SYGMA). Staff will continue to be trained adequately to ensure competence in the use of the IT tools as well as in the performance of the financial-related project tasks (e.g. grant amendments, the participant guarantee fund mechanism, recoveries).

On the administrative side, the business procedures already in force should ensure high-quality processing, optimal budgetary implementation and accurate accounts. There will be continued monitoring of these procedures to evaluate their efficiency and fine-tune or update them where necessary.

The administration and finance unit and the programme unit will continue to coordinate with corporate services to ensure coherent understanding and implementation of the financial rules. This will also ensure the speedy and efficient verification and validation of all transactions.

2.5.2. Ex ante and ex-post controls

Ex-ante controls

The existing full set of processes and procedures will provide, as this was the case for previous years, reasonable assurance that the principles of sound financial management is applied to each transaction. In addition, ex-ante controls on operational expenditure will be implemented by the CBE JU in line with the adopted Horizon 2020 and Horizon Europe ex ante control strategies.

In order to implement ex ante controls, desk reviews will be performed by the CBE JU Programme Office; on top of this reviews, periodic reports will be carried out by external experts and ad-hoc technical reviews will also be launched when deemed necessary. The CBE JU will continue to update and develop internal procedures defining the *ex-ante* controls to be performed and taking into account risk-based and cost-effectiveness considerations.

In 2025, the CBE JU will continue to cooperate with the Fraud and Irregularities in Research (FAIR) Committee of the R&I family as well as with the CAS, in line with the H2020 working arrangements for OLAF cases. Relevant CBE JUstaff have received training on fraud detection and prevention; the possibility to deepen the knowledge in this field will continue to be promoted within the learning and development framework of the CBE JU.

For what concerns the prevention of possible double funding, the CBE JU will continue to collaborate with EC services and the Research Executive Agency in order to detect at an early stage possible overlapping during the grant agreement preparation, subsequent to the adoption of

the ranking list by the Governing Board. Any possible overlapping at the level of topic definition is monitored by EC services responsible for the preparation of relevant work programmes. Regarding possible double funding controls, the grant management tools automatically launch a double funding and plagiarism check during GAP, in addition, to the checks done during the project implementation and the Programme Office implements any appropriate measure in accordance.

Ex-post controls

In 2025, *ex-post* controls of operational expenditure will continue to be implemented in line with the Horizon 2020 and Horizon Europe audit strategies. The Common Implementation Centre (CIC) of the EC developed the latter in cooperation with the entities implementing the Horizon 2020 budget namely the EC services, Executive Agencies and Joint Undertakings.

The main objective of the *ex-post* controls is to provide the individual Authorizing Officers with the necessary elements of assurance in a timely manner, thus allowing them to report on the budget expenditure for which they are responsible. Ex-post controls on operational expenditure contribute, in particular, to:

- Assessing the legality and regularity of expenditure on a multi-annual basis.
- Providing an indication of the effectiveness of the related ex-ante controls.
- Providing the basis for corrective and recovery mechanisms, if necessary.

The Common Audit Service (CAS) of the European Commission is the part of the CIC serving all Horizon Europe stakeholders in the implementation of the audit strategy. Its mission is to deliver a corporate approach for the audit cycle: audit selection, planning, application of rules, relations with beneficiaries and management information on the audit process.

The CBE JU is effectively integrated in this control chain: it participates in the audit process definition and in the monitoring of its implementation in continuous collaboration with CAS and its clients. The main objectives of the cooperation are to align operations and exploit synergies on the common audit effort. The efficiency gains should reduce the audit costs and the administrative burden on auditees, always in line with the specific objectives for ex-post controls explained above.

In 2025, the CBE JU will continue to implement the results of the ex-post audits on its beneficiaries and will provide adequate reporting through the budget discharge process.

2.5.3. Audits

The audit environment is an accountability pillar within the CBE JU's internal control framework since it provides reasonable assurance about the state of effectiveness of risk management and control processes and serves as a building block for the annual Declaration of Assurance of the Executive Director. In 2025, the CBE JU will continue to ensure the coordination and support to the audits carried out by the Internal Audit Service (IAS), and the Court of Auditors (ECA) and by the external auditor of the CBE JU accounts. The CBE JU will also continue to follow up and confirm the implementation of the relevant recommendations.

3. BUDGET YEAR 2025

The 2025 budget covers all administrative needs for 2025 as well as H2020 and Horizon Europe operational activities. The budget of the JU shall be adapted to take into account the amount of the Union contribution as laid down in the budget of the Union. The EFTA rates in use are 2.33% since 2021 for all BBI JU remaining C1 budget (‘frontloaded’ by the EC from the previous MFF), and 2.75% for CBE JU for 2025.

STATEMENT OF REVENUE (EUR)

Heading	Item	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA	Executed budget 2023 PA
EU contribution (excl. third countries contribution/EFTA)		**117,088,457**	**153,408,608**	**144,173,389**	**153,717,118**	**149,712,288**	**98,477,488**
of which administrative (BBI)	1001	0	0	0	0	1,912,288	1,912,288
of which administrative (CBE)	1007	2,443,500	2,443,500	1,691,126	1,691,126	800,000	800,000
of which operational (BBI) (*see reactivations*)	1002	0	0	0	0	0	10,885,723
of which operational (CBE) [155]	1007	114,644,957	150,965,108	142,482,263	152,025,992	147,000,000	84,879,477
	1007		0	0	0	0	0
Third countries contribution (including EFTA) [156]		**28,219,932**	**4,218,736**	**5,103,738**	**5,441,586**	**4,311,769**	**2,746,175**
of which operational (CBE) Third countries contribution	1007	25,000,000	0	0	0	0	0
of which administrative EFTA (BBI)	1001	0	0	0	0	40,349	40,349
of which administrative EFTA (CBE)	1007	67,196	67,196	59,866	59,866	23,120	23,120
of which operational EFTA (BBI)	1002	0	0	0	0	0	229,689
of which operational EFTA (CBE)	1008	3,152,737	4,151,540	5,043,872	5,381,720	4,248,300	2,453,017
Industry (financial) contribution		**2,510,697**	**2,510,697**	**1,750,991**	**1,750,991**	**2,775,757**	**2,775,757**
of which administrative (BBI)	1003	0	0	0	0	1,952,637	1,952,637
of which administrative (CBE)	1009	2,510,697	2,510,697	1,750,991	1,750,991	823,120	823,120
Other		0	0	0	0	0	0

[155] For 2025 operational payment appropriations (including EFTA) include EUR 750,000 for the budget of the expert evaluators for the CBE Call 2025 (managed by REA on behalf of CBE) – moved from Title 2 under BBI JU to Title 3 under CBE JU

[156] The budget figures take into account an EFTA rate of 2.33% used for BBI JU remaining budget since 2021 (calculated annually up to the end of the BBI JU programme), as well as a rate of 2.75% for the 2025 EU administrative and operational contribution to the CBE JU.

Heading	Item	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA	Executed budget 2023 PA
SUB-TOTAL revenues		**147,819,087**	**160,138,042**	**151,028,118**	**160,909,694**	**156,799,814**	**103,999,420**
C2 reactivation of unused appropriations from administrative expenditure [157][158]		**2,079,125**	**2,396,646**	**2,826,379**	**3,246,795**	**2,201,480**	**2,589,376**
of which from 2020 (BBI)		*0*	*0*	*0*	*0*	*38,010*	*446,848*
of which from 2021 (BBI)		*0*	*0*	*78,155*	*269,769*	*1,013,470*	*813,694*
of which from 2022 (BBI)		*0*	*0*	*729,860*	*1,148,627*	*150,000*	*328,834*
of which from 2022 (CBE)		*0*	*265,619*	*922,832*	*312,452*	*387,896*	*0*
of which from 2022 (CBE)		0	0	56,005	69,149	612,104	1,000,000
of which from 2023 (CBE) included at chapter level		*797,920*	*532,301*	*0*	*0*	*0*	*0*
of which from 2023 (CBE)		400,000	400,000	0	0	0	0
of which from 2023 (CBE)		2,080	467,699	1,039,527.11	1,446,798.14	0	0
of which from 2023 (CBE)		29,125	731,027	0	0	0	0
of which from 2024 (CBE)		850,000	0	0	0	0	0

[157] Unused budgetary commitment and payment appropriations from prior years' administrative budget, which can be reactivated in the budgets of up to 3 subsequent years following the year of origin, in accordance with the 'N+3' rule

[158] In the administrative budget an additional kEUR 850 in unused commitment appropriations (from 2024) and kEUR 731 in unused payment appropriations (from 2023) were reactivated, to cover forecasted increases in the 2025 admin budget following a recent revision.

Heading	Item	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA	Executed budget 2023 PA
C2 reactivation of unused appropriations from operational expenditure [159]		**23,637,691**	**21,494,997**	**68,683,112**	**27,118,677**	**67,581,955**	**30,000,000**
of which from 2020 (voted) (BBI)	2033	0	0	0	0	281,955	0
of which from 2021 (voted) (BBI)	2033	0	0	18,679,114	18,589,502	0	30,000,000
of which from 2022 (voted) (BBI)	2033	0	2,580,086	3,703,998	8,000,000	0	0
of which from 2022 (voted) (CBE)	2033	19,889,574	0	43,700,000	529,175	67,300,000	0
of which from 2023 (voted) BBI	2033	5,2580	4,867,482	763,799	0	0	0
of which from 2023 (voted) CBE	2033	3,742,859	4,192,533	1,863,201	0	0	0
of which from 2024 (voted) (BBI)	**2033**	**0**	**6,500,000**	**0**	**0**	**0**	**0**
Of which from 2024 (voted) CBE	**2033**	**0**	**3,354,897**	**0**	**0**	**0**	**0**
SUB-TOTAL reactivations		**25,716,816**	**23,891,643**	**71,509,491**	**30,365,472**	**69,783,435**	**32,589,376**
OTHER (ad hoc recoveries)		**0**	**0**	**0**	**0**	**782,911**	**782,911**
TOTAL REVENUES		**173,535,902**	**184,029,684**	**222,537,609**	**191,275,166**	**227,366,160**	**137,371,707**

[159] Unused budgetary commitment and payment appropriations from prior years' operational budget, which can be reactivated in the budgets of up to 3 subsequent years following the year of origin, in accordance with the 'N+3' rule applicable to Joint Undertakings

STATEMENT OF EXPENDITURE (EUR)

Title/ Chapter	Heading	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA[160]	Executed budget 2023 PA	% Ratio 2023 CA to 2025	% Ratio 2023 PA to 2025
1	**Staff expenditure**	**3,621,540**	**3,621,540**	**3,270,300**	**3,270,300**	**2,978,293**	**2,938,469**	**82.24%**	**81.14%**
11	Staff in active employment	3,208,840	3,208,840	2,860,400	2,860,400	2,676,520	2,658,710	83.41%	82.86%
12	Staff recruitment / Miscellaneous expenditure	55,000	55,000	75,000	75,000	16,000	594	29.09%	1.09%
13	Mission and duty travels	75,000	75,000	60,000	60,000	50,073	46,894	66.76%	62.53%
14	Other staff costs (socio-medical structure)	272,700	272,700	264,900	264,900	225,700	225,834	82.76%	82.81%
15	Entertainment and representation expenses	10,000	10,000	10,000	10,000	10,000	6,437	100.00%	64.37%
2	**Other administrative expenditure**	**2,197,773**	**2,197,773**	**1,962,530**	**1,962,530**	**2,669,358**	**1,642,786**	**119.36%[161]**	**73.46%**
20	Rental of buildings and associated costs	400,000	400,000	365,000	365,000	360,601	360,528	90.15%	90.13%

[160] BBI JU budget was still being executed in priority in 2023. Around EUR 1.6 million of administrative budget for CBE JU was reactivated in 2023 and 2024 budgets. With respect to the 2023 administrative budget execution in the expenditure table, as the reactivated unused appropriations from prior years are incorporated in the budget lines at chapter level (so each chapter is a mix of both fresh budget and reactivated appropriations), the % ratio of total 2023 executed costs to 2025 budgeted costs is also performed at chapter level, and explanations provided for any unusual results. For clarity, beneath the main budget tables are added budget execution tables for 2023, showing the detailed split between CBE and BBI across the different fund source types.

[161] The high overall % in this title for 2023 CA execution (compared to 2025 budget) is due to exceptional costs in 2023 related to: i) the CBE JU Stakeholder Forum event (Comms chapter 26), ii) the development of a new KPI reporting tool (IT chapter 21) and for the expert reviewers' budget (chapter 29), this varies each year in line with the number of ongoing projects. The last BBI JU call was in 2020 so the number of BBI ongoing projects continues to decline each year (last payment due in 2027-28). The high % is not reflected on PA side as for all lines mentioned a large part of the payments were made in 2024.

Title/ Chapter	Heading	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA[160]	Executed budget 2023 PA	% Ratio 2023 CA to 2025	% Ratio 2023 PA to 2025
21	Administrative information technology)	613,393	613,393	449,983	449,983	741,998	371,480	120.97.80%	60.56%
22	Movable property and associated costs	5,000	5,000	5,000	5,000	0	0	0.00%	0%
23	Current administrative expenditure	24,000	24,000	35,000	35,000	14,921	18,819	62.17%	78.41%
24	Telecommunications and postal charges	37,000	37,000	26,000	26,000	4,000	2,010	10.81%	5.43%
25	Expenditure on formal meetings	74,380	74,380	49,800	49,800	45,000	26,667	60.50%	35.85%
26	External communication, information, publicity	417,000	417,000	423,500	423,500	940,523	340,117	225.55%	81.56%
27	Service contracts	452,000	452,000	408,247	408,247	312,315	291,798	69.10%	64.56%
28	*Experts' contracts and evaluations (in T3 under H Europe)*	*0*	*0*	*0*	*0*	*0*	*0*	*0.00%*	*0.00%*
29	Expert reviewers	175,000	175,000	200,000	200,000	250,000	231,367	142.86%	132.21%
	Reactivations of prior year unused	**2,079,125**	**2,396,646**	**2,826,379**	**3,246,795**	***0***	***0***	**N/A**	**N/A**

Title/ Chapter	Heading	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA[160]	Executed budget 2023 PA	% Ratio 2023 CA to 2025	% Ratio 2023 PA to 2025
	administrative budget [162]163								
	of which from 2019 (BBI)(included at chapter level)	*0*	*0*	*0*	*0*	*0*	*0*	*N/A*	*N/A*
	of which from 2020 (BBI)(included at chapter level)	*0*	*0*	*0*	*0*	*0*	*0*	N/A	N/A
	of which from 2021 (BBI)(included at chapter level)	*0*	*0*	*78,155*	*269,769*	*0*	*0*	N/A	N/A
	of which from 2022 (BBI) (included at chapter level)	*0*	*0*	*729,860*	*1,148,627*	*0*	*0*	N/A	N/A
	of which from 2022 (CBE) (included at chapter level)	*0*	*0*	*922,822*	*312,452*	*0*	0	N/A	N/A
	of which from 2022 (CBE) (included at chapter level)	*0*	*265,619*	*0*	*0*	*0*	*0*	N/A	N/A
	of which from 2022 (CBE)	0	0	56,005	69,149	0	0	N/A	N/A

[162] Unused budgetary commitment and payment appropriations from prior years' administrative budget, which can be reactivated in the budgets of up to 3 subsequent years following the year of origin, in accordance with the 'N+3' rule applicable to Joint Undertakings. Figures shown in italics are already included at chapter level in Titles 1 and 2.

163 In the administrative budget an additional kEUR 879 in unused commitment appropriations (from 2024) and kEUR 731 in unused payment appropriations (from 2023) were reactivated, to cover forecasted increases in the 2025 admin budget following a recent revision.

Title/ Chapter	Heading	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA[160]	Executed budget 2023 PA	% Ratio 2023 CA to 2025	% Ratio 2023 PA to 2025
	of which from 2023 (CBE) included at chapter level	*797,920*	*532,301*	0	0	0	0	N/A	N/A
	Of which from 2023 (CBE)	2,080	467,699	639,527	1,046,798	0	0	N/A	N/A
	of which from 2023 (CBE)	400,000	400,000	400,000	400,000	0	0	N/A	N/A
	of which from 2023 (CBE)	29,125	731,027	0	0	0	0	N/A	N/A
	of which from 2024 (CBE)	850,000	0	0	0	0	0	N/A	N/A
3	**Operational expenditure**	**142,797,693**	**155,116,648**	**147,526,135**	**157,407,712**	**216,168,370**	**119,128,830**	**147.13%**	**77.17%**
32	Expert evaluators	750,000	750,000	1,000,000	1,000,000	644,000	644,000	85.87%	85.87%
30	Previous years' calls BBI	0	0	0	0	0	39,012,653	N/A	N/A
	Previous years' calls CBE	0	154,366,648	0	156,407,712	0	79,472,177	0	0
31	Current year's call (s) CBE	142,047,693	0	145,526,135	0	215,524,370	0	N/A	N/A
	Reactivations of prior year unused operational budget [164]	**23,637,691**	**21,494,997**	**68,683,112**	**27,118,677**	**0**	***0***	**N/A**	**N/A**
	of which from 2020	0	0	0	0	0	*0*	N/A	N/A
	of which from 2021 (BBI)	0	0	18,679,114	18,589,502	0	0	N/A	N/A

[164] Unused budgetary commitment and payment appropriations from prior years' operational budget, which can be reactivated in the budgets of up to 3 subsequent years following the year of origin, in accordance with the 'N+3' rule applicable to Joint Undertakings

Title/ Chapter	Heading	Budget 2025 CA	Budget 2025 PA	Amended budget 2024 CA	Amended budget 2024 PA	Executed budget 2023 CA[160]	Executed budget 2023 PA	% Ratio 2023 CA to 2025	% Ratio 2023 PA to 2025
	of which from 2021 (CBE)	0	0	0	0	0	0	N/A	N/A
	of which from 2022 (BBI)	0	2,580,086	3,703,998	8,000,000	0	0	N/A	N/A
	of which from 2022 (CBE)	19,889,574	0	43,700,000	529,175	0	0	N/A	N/A
	of which from 2023 (BBI)	5,258	4,867,482	763,799	0	0	0	N/A	N/A
	of which from 2023 (CBE)	3,742,859	4,192,533	1,836,201	0	0	0	N/A	N/A
	of which from 2024 (BBI)	0	6,500,000	0	0	0	0	0	0
	of which from 2024 (CBE)	0	3,354,897	0	0	0	0	0	0
	SUB-TOTAL reactivations	**25,716,816**	**23,891,643**	**71,509,491**	**30,365,472**	***0***	***0***	**N/A**	**N/A**
	TOTAL EXPENDITURE	**173,535,902**	**184,029,684**	**222,537,609**	**191,275,166**	**221,816,021**	**123,710,085**	**127.82%**	**67.22%**

4. ANNEXES

4.1. IKAA PLAN

As stated in Article 51 of Council Regulation 2021/2085, the additional activities are those directly linked to projects and activities of the Circular Bio-based Europe Joint Undertaking, including in particular:

(a) Investments in new facilities demonstrating a new value chain, including investments in durable equipment, tools and accompanying infrastructure, in particular related to regional deployment and its sustainability verification.
(b) Investments in a new innovative and sustainable production plant or flagship.
(c) Investments in new research and innovation and justified infrastructure, including facilities, tools, durable equipment or pilot plants (research centres).
(d) Standardisation activities.
(e) Communication, dissemination and awareness-raising activities.

The investments directly linked to projects are in particular:

(a) Non-eligible investments needed for the implementation of a Circular Bio-based Europe Joint Undertaking project during the duration of that project.
(b) Investment made in parallel with a Circular Bio-based Europe Joint Undertaking project, complementing the results of the project and bringing it to a higher TRL.
(c) Investments needed for the deployment of a Circular Bio-based Europe Joint Undertaking project's results following the closure of the project until the winding up of the Circular Bio-based Europe Joint Undertaking. In justified cases, the investment related to deployment of results of projects from the preceding initiative (BBI JU) may be taken into account.

As the IKAA is directly linked to the project portfolio of CBE JU, multi annual IKAA plans are formulated after each CBE JU call. The Work Programme will be amended to reflect them in 2025.

4.2. GLOSSARY

Added-value product = a product with a significantly increased value from a technical, economic and/or environmental perspective, compared with the starting material or feedstock from which the product is obtained.

B2B product = a product destined to be sold by one business entity to another business entity.

B2C product = a product destined to be sold by one business entity directly to the end consumers.

Benchmark = a standard product/process/service representative of a specific technological field or market application, used as reference with which features of another product, process or service developed are compared. Depending on the bio-based output developed, the benchmark can be fossil- and/or bio-based.

Bio-based = derived from biomass.

Biodiversity enhancement (coming on top of biodiversity protection) = refers to reporting practices, methodologies and tool improvements about the integration and improvement of biodiversity aspects related to bio-based systems. Note that the EC will put forward a proposal for legally binding EU nature restoration targets[165]. Restoring EU's ecosystems will help to increase biodiversity, mitigate and adapt to climate change, and prevent and reduce the impacts of natural disasters.

Biodiversity protection (see also biodiversity enhancement) = is expected to be a starting condition for all CBE JU projects (100 % of projects should comply). Several drivers for biodiversity protection should be accounted for: climate change mitigation, LULUCF, sea/freshwater pollution, soil pollution, invasive alien species, direct exploitation of endangered plants, animals, other organisms, and their habitats, and respective ecosystems services.

Bioeconomy = the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy.

Biogenic = derived from biomass. Such as 'biogenic carbon cycle': the natural carbon cycle.

Biomass = material of biological origin excluding material embedded in geological formations and/or fossilised.

Bio-based content = The overall recommendation is that CBE JU projects strive to fully bio-based solutions. Nonetheless, it is recognised that minor (%) parts of inorganic components and/or fossil-based carbon may be justified for functionality, safety and sustainability and therefore are allowed. Moreover, the non-bio-based carbon and/or inorganic content must not affect the safety, sustainability and circularity of the product. The exact % may vary, depending on the end application. Higher % bio-based composition is expected, the higher the end TRL (going from RIA,

[165] The EU #NatureRestoration Law (europa.eu)

to IA to FLAG). For the bio-based content, please refer to available standards which cover the measurement of bio-based carbon content. Any non-bio-based content must described, quantified and justified.

(Bio-based) dedicated chemicals = Bio-based chemicals that are produced via a dedicated pathway and do not have an identical fossil-based counterpart. As such, they can be used to produce products that cannot be obtained through traditional chemical reactions and products that may offer unique and superior properties that are unattainable with fossil-based alternatives.

(Bio-based) drop-in chemicals = Bio-based versions of existing petrochemicals which have established markets. They are chemically identical to existing fossil-based chemicals.

Bio-based product = a product wholly or partly bio-based.

(Bio-based) smart drop-in chemicals = a special sub-group of drop-in chemicals. They are chemically identical to existing chemicals derived from fossil resources, but their bio-based production pathways provide advantages compared to the conventional pathways.

Biodegradation = complete breakdown of an organic matter by microorganisms, in the presence of oxygen (aerobic biodegradation) into carbon dioxide, water, and mineral salts of any other elements present (mineralisation) plus new biomass, **or** in the absence of oxygen (anaerobic biodegradation) into carbon dioxide, methane, mineral salts, plus new biomass.

Biodegradable = a material or product is biodegradable if it can, under specific environmental conditions and with the help of microorganisms, naturally break down into basic components (e.g., water, carbon dioxide and biomass).

Bio-based polymer = a polymer comprised, at least in part, of building blocks called monomers, produced from renewable feedstock. Bio-based polymers can lead to a number of products like bio-based plastics.

Biomanufacturing = The use and conversion of biotechnology and biological resources into chemicals, products and energy (Brussels, 20.3.2024 COM(2024) 137 Building the future with nature: Boosting Biotechnology and Biomanufacturing in the EU). In the context of CBE JU AWP, the interpretation of biomanufacturing refers to biotechnology or other enabling technologies to produce and/or convert biological resources into bio-based products (energy applications are excluded).

Bio-waste = defined as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants (Waste Framework Directive). It does not include forestry or agricultural residues, manure, sewage sludge, or other biodegradable waste such as natural textiles, paper or processed wood. It also excludes those by-products of food production that never become waste.

Brand owners = refer to industrial stakeholders selling commodities under a registered brand. They may be existing or new stakeholders of bio-based value chains, contributing thus to the market uptake of bio-based products.

Building block = a molecule which can be converted to various secondary chemicals and intermediates, and, in turn, into a broad range of different downstream uses. Examples of large markets for bio-based chemical building blocks are in the production of bio-based polymers, fibres, surfactants, and solvents.

Carbon removal = the carbon removals described in the Communication on sustainable carbon cycles[166] include '*recycle carbon from waste streams, from sustainable sources of biomass…to use it in place of fossil carbon in the sectors of the economy that will inevitably remain carbon dependent…promote technological solutions for carbon capture and use (CCU) and the production of sustainable synthetic fuels or other non-fossil based carbon products… upscale carbon removal solutions that capture CO_2 from the atmosphere and store it for the long term, either in ecosystems through nature protection and carbon farming solutions or in other storage forms through industrial solutions*'.

Cascading use of biomass = The cascading use of biomass entails maximising the resource-use efficiency by prioritising the processing steps by value creation (cf. definition on p. 21 of the SRIA). In the context of CBE topics, this means: while maximising the value creation and resource efficiency for the biomass conversion route(s) in scope of the topic, it also addresses valorisation of any fraction(s) of the biomass feedstock not converted by the main conversion route(s) and/or of residual streams in order to maximise the valorisation of the biomass feedstock and minimise waste.

Please also consider the "Guidance on cascading use of biomass, with selected good practice examples on woody biomass" and especially the five guiding principles. 1) Resource efficiency 2) Sustainability ('Any cascading solution to promote the highest economic added value must consider its impact on the other two pillars of sustainability: the social and environmental aspects') 3) Circularity in every stream and at every step 4) New products and new markets ('Stimulate uses of biomass with high added value by making new products and new markets') 5) Subsidiarity ('Cascading should respect not only national contexts but also regional and local ones in assessing the most economically viable use of biomass').

CAGR = Compound Annual Growth Rate.

CCS = Carbon dioxide capture and storage. The geological storage is ruled by Directive 2009/31/EC. Other storage are mentioned in the Communication on sustainable carbon cycles. See the European Commission framework for carbon capture, use and storage.

CCU = Carbon dioxide capture and use. See the European Commission framework for carbon capture, use and storage[57].

Circular bio-based system = a full operational system, from feedstock intake through market application and use of resultant bio-based products, and their end-of-life handling to close the circle (cradle-to-cradle).

[166] The concept of carbon removal has been introduced by the Commission Communication on sustainable carbon cycles (COM(2021)800) and in the Commission proposal for a Regulation on an EU certification for carbon removals. See the Glossary 'Carbon removal'"

Circular-by-design = including circular economy considerations at the design stage of a product and/or business model considering their lifecycle. It aims to minimise resource consumption intensity, waste generation, extend the lifetime of products and optimise production and logistics.

Circular economy = a business concept aiming to create a closed-loop system and maintain the value of products, materials, and resources for as long as possible by returning them into the product cycle at the end of their use, while minimising the generation of waste. In this economic system, 'waste' can become a feedstock source for another process or value chain.

Climate change adaptation = is the process of adapting to climate change, taking action to prepare for and adjust to both the current effects of climate change the predicted impacts in the future.

Climate change mitigation = consists of actions to limit global warming and its related effects. This involves reductions in human emissions of greenhouse gasses (GHGs) as well as activities that reduce their concentration in the atmosphere. It is one of the ways to respond to climate change, along with adaptation.

Ecosystem services = the benefits that people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth' (Millennium Ecosystem Assessment). An ecosystem service could also include practices that prevent or cut down pollution. People describe e.g., the green biorefinery to have an ecosystem service function by cutting down the run-off of nutrients that could otherwise have polluted the surrounding waters.

Emissions (Scope 1, 2 and 3) = Scope 1 greenhouse gas emissions are emissions coming directly from a company and its controlled entities (including process emissions). Scope 2 emissions come indirectly from the generation of purchased energy. Scope 3 emissions are all indirect emissions that are not included in scope 2 and occur in the value chain of the reporting entity, including both upstream and downstream emissions.

Feedstock = any unprocessed/raw material fed into a manufacturing/conversion process.

FMCG = Fast-moving consumer goods.

Fossil-based = made from fossil resources.

GHG emissions = GHGs comprise carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and fluorinated gases. There are direct and indirect emissions that need to be monitored and addressed (see also emissions (scope 1, scope 2 and scope 3).

HS&E= health, safety and environment.

Indirect land use change (ILUC) = displacement of agricultural production into non-croplands (e.g., grasslands and forests) due to the destination of croplands previously used for food agricultural production having been shifted to the production of non-food bio-based products (e.g., biofuels). Indirect land use change risks causing an increase in greenhouse gas emissions

because non-croplands such as grasslands and forests typically absorb high levels of CO_2. By converting these land types to cropland, negative environmental effects may occur, including increase of atmospheric CO_2 levels, and biodiversity loss.

Industrial symbiosis/ Industrial-urban symbiosis = the concept affects both material and energy flows. It refers, partly, to a process by which waste or by-products of an (industry) or an (industrial) process become the raw material for another. Application of this concept allows for materials to be used in a more sustainable way and can contribute to circular (bio)economy. Industrial symbiosis creates an interconnected network that strives to mimic the functioning of ecological systems within which energy and materials cycles operate in a continuous mode, without waste products. Deploying industrial and/or industrial-urban symbiosis solutions for energy, water and waste and other by-products can also contribute to the regional development of circular bio-based systems.

Intermediate product = a product (e.g. material) requiring further processing or conversion steps to obtain the final product.

Life cycle assessment (LCA) = assessment of the environmental impacts of a product, process, or service throughout the entire life cycle. The main references for LCA methodologies are the international standards ISO 14040 and ISO 14044. **Environmental LCA** is complemented by **life cycle costing assessment** (LCCA), which aims to assess the economic impacts of a product/process/service, and by **social life cycle assessment** (S-LCA), which aims to evaluate social implications of a product/process/service.

Life cycle sustainability assessment (LCSA) = assessment of the environmental, economic, and social impacts of a product, process, or service throughout the entire life cycle.

Marginal land = Low quality land the value of whose production barely covers its cultivation costs (EEA https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/marginal-land).

Material = a substance or a mixture of substances also resulting from a production process, constituting one of the components which more complex products are made by.

Multi-material, Multi-layered products = products composed of multiple layers where the choice on material per layer depends on the final product technical characteristics (e.g providing barrier properties, mechanical strength, heat resistance etc).

Multi-material products, Composites = materials composed of at least two materials of different properties. When combined, they provide unique and superior properties (e.g. strength and lightweight characteristics), compared to those of the individual constituents. The individual components do not dissolve or blend into each other, with one material being the matrix and combined an additional material (the reinforcement).

Nature-based solutions = Nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits...

New = refers to a product or a process that entails clearly described innovative and/or advanced properties or enhancements compared to existing benchmarks (for example a 'new material' does not mean that such types of material currently does not exist on the market, but it means that the material has properties that are unmatched by existing benchmark products available on the market).

Novel = novel technologies are such as new, emerging, so far unused for bio-based feedstock conversion; novel bio-based feedstock.

Organisational innovation = an idea, a new product, a new method, a new service, a new process, a new technology, or a new strategy adopted by an organisation.

Outputs = referring to the following product categories: i) Chemicals (platform chemicals, additives, solvents, surfactants…), ii) Materials, 3) other products related with end use. Use established classification for reporting, for example the one in: EU Biorefinery outlook 2030.

Plastic = any synthetic or semisynthetic organic polymer entailing the property of plasticity, i.e., the ability to deform without breaking. For example, thermoplastics and thermosetting polymers are the two types of plastic.

Platform chemicals = intermediate molecules which can be converted to a range of chemicals or materials.

Primary biomass producers = biomass feedstock suppliers (primary and/or secondary biomass), including the following sectors: agriculture, forestry, fisheries, and aquaculture/marine.

Resource efficiency = means using the Earth's limited resources in a sustainable manner while minimising impacts on the environment. It allows us to create more with less and to deliver greater value with less input. Improved energy efficiency addresses technoeconomic feasibility but also environmental sustainability aspects. Resource efficiency aspects addressed in bio-based processes covers biomass feedstock valorisation efficiency but also encompasses the other resources such as water, solvents, (bio)catalysts and other auxiliaries etc.

SSbD = Safe and sustainable by design.

Secondary bio-based feedstock = waste, residues and side-streams that can be reused/remanufactured/recycled in a circular economy and are injected back into the economy as secondary raw materials. In this context, secondary bio-based feedstock is any waste, residues and side-streams that can be used in bio-based processes.

Soil health: the continued capacity of soils to support ecosystem services assessed through a set of measurable indicators. (Source: Mission Soil Implementation Plan).

Sustainable = this refers to a product/process/system that enhances and creates benefits for the environment, economy, and society. In a broad sense, sustainability has four dimensions: environmental sustainability, productivity, fairness, and macroeconomic stability (European Commission, 'Annual Sustainable Growth Strategy 2020', COM(2019) 650 final, 17 December 2019).

Waste hierarchy = (a) prevention;(b) preparing for re-use;(c) recycling;(d) other recovery, e.g. energy recovery; and (e) disposal, as in the Waste Framework Directive 2008/98.

Zero-pollution ambition = on 12 May 2021, the European Commission adopted the EU Action Plan: "Towards a Zero Pollution for Air, Water and Soil" (and annexes)- a key deliverable of the European Green Deal. The action plan aims to strengthen the EU green, digital and economic leadership, whilst creating a healthier, socially fairer Europe and planet. It provides a compass to mainstream pollution prevention in all relevant EU policies, to step up implementation of the relevant EU legislation and to identify possible gaps.

Zero waste = preserving the natural resources and significantly reducing/eliminating waste during production but also across the value chain.